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Office of Science and Technology

Review of the Inter-Relationships Between the Science, Engineering and Technology Expenditure of Government Departments

December 1996

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Department of Trade and Industry

Government spending policy
Science
Technology

Review of the Inter-Relationships Between the

Science, Engineering and Technology

Expenditure of Government Departments

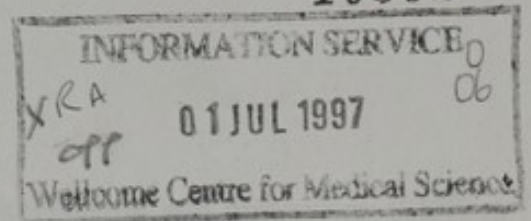## Office of Science and Technology

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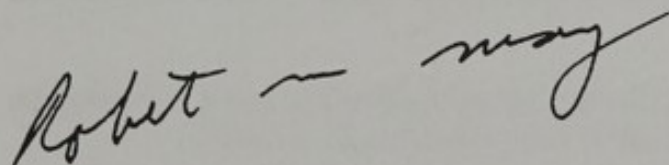
Office of Science and Technology

Preface

One of the Government's objectives for science, engineering and technology (SET) is "to promote collaboration between Government Departments and ensure that trans-departmental SET issues are handled effectively, while improving efficiency and value for money" (Forward Look of Government-funded SET 1996). In pursuit of that objective, the President of the Board of Trade and the Chief Secretary to the Treasury asked me to undertake a review of the inter-relationships between the SET expenditure of different Government Departments. This Report sets out the findings of the review and reflects the situation as it was in mid-1996.

Overall, the review did not find major areas of duplication or unnecessary overlap but, as the recommendations show, there is some scope for improving co-ordination and collaboration. Departments are now taking forward the relevant recommendations. The Office of Science and Technology will play a central co-ordinating role where appropriate, for example through the annual Forward Look.

The Report was of course written for those in Departments. But it provides a snap-shot of the extensive existing network of relationships and co-ordination among Government Departments and their agencies in many areas of SET. It may therefore be of interest beyond Government circles.

Robert ~ may

Sir Robert May FRS
Chief Scientific Adviser
Office of Science and Technology

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1. Scope of the Review

1.   The review was carried out by a small team attached to the Directorate of the Office of Science and Technology that deals with trans-departmental S&T and the Forward Look, and with input from a wide range of Government Departments. The judgements made are necessarily those of the Review team, although we are not aware of any unresolved differences on issues of fact.

2.   Throughout this Report, the terms "science", "SET", "science and engineering base", and "innovation" have the same meaning as in the annual Forward Look of Government-funded SET. A list of acronyms used in the Report is given in Annex E.

3.   Publication of the Forward Look was a commitment in the 1993 SET White Paper, Realising Our Potential, with the aim of giving the industrial and research communities a clear and up-to-date statement of the Government's SET strategy. The present Forward Look process, involving extensive liaison between OST, the Research Councils, and Departments, results in a report which is published every Spring. This sets out the Government's policy and plans for publicly-funded SET, gives an overview of Departments' and Research Councils' programmes, and describes the measures being taken across Government to achieve the objectives of the White Paper.

4.   The present review aimed to build on this annual Forward Look exercise by:

☐ examining areas of SET expenditure where different Departments have adjacent, complementary or shared interests;

☐ taking account of existing work to promote collaboration, e.g. the Civil and Defence Working Forum on SET Collaboration, and of the Prior Options reviews of public sector research establishments;

☐ identifying areas where the inter-relationship between Departments' SET expenditure seems capable of improvement (for example where there are gaps or overlaps), and making appropriate recommendations; and

☐ examining the adequacy of existing mechanisms to ensure co-ordination between Departments' SET programmes, and the scope for enhancing them.

5.   The main Departments covered by the review were: DTI, MOD, MAFF, DOE (including HSE), DFEE, ODA, DH, DOT, the Home Office, the Scottish, Welsh and Northern Ireland Offices, and the Forestry Commission.

6.   As agreed by Ministers, the review did not look at the relationships between the Research Councils and Departments, or the High Education Funding Councils, against the background of the thorough Review of the Science Budget by the Director

General of Research Councils completed in May 1995, and of the Prior Options reviews. Nor did it examine the boundaries between UK and international bodies, except where these are relevant to cross-Departmental relationships, or expenditure on SET schemes, which is being examined in the Simplification of Business Support Review.

2. Summary of Main Recommendations

7.   The main recommendations for ways in which inter-Departmental co-ordination and co-operation can be improved are listed below in the order that they appear in the report and with paragraph references. Other more detailed recommendations are given in Annex A.

☐ DOE and DH to consider using an approach similar to DOE's "interaction matrix" as one means of managing their present links (on environment and health and safety) with each other and with the MRC and the NHS. (17)

☐ OST to consider strengthening the customer focus of the Inter-Agency Committee on Global Environment Change (IACGEC) as part of its review of this committee. (18)

☐ IACGEC should review the scope for improving its links on agriculture and the environment if it is decided that there is a continuing role for this committee. (18)

☐ ODA to consider the scope for greater consultation with other interested agencies in representing the UK on the Global Environment Facility (GEF). (19)

☐ The Inter-Agency Committee on Marine S&T (IACMST) to take full account of the findings of the Marine Technology Foresight Panel in developing a clear future focus. (20)

☐ OST, DTI, DOE (including HSE), DH and MAFF, as the Departments with the major interest in biotechnology and bioethics, to jointly review the adequacy of present co-ordination arrangements, if possible before the end of 1997. (23)

☐ DOT to consider with SO, NI and WO strengthening co-ordination arrangements on transport and the environment issues. (24)

☐ MOD to review with OST and DTI increased MOD involvement in Technology Foresight panels other than Defence; for example, Information and Communications Technology. (28)

☐ MOD and DOT to consider the extent to which technology developed for military use could be relevant to civil transport applications. (28)

- ODA, DTI and OST to discuss the strategic implications of ODA's funding policy in relation to the marketing opportunities for SET-based British industry. ODA to prepare a short paper, cleared with Departments and EDS(O) as necessary. (33)

- DOE, DTI/OST, SO, HSE, DH, DOT, MAFF, and MOD to consider: (a) whether more formal links between project managers on risk assessment and genetically modified organisms (GMOs) (and perhaps more widely) would be justified, and (b) whether the Inter-Departmental Liaison Group on Risk Assessment (ILGRA), as presently constituted provides sufficient high level strategic guidance to ensure appropriate direction is given to lower level links. (34)

- HO to review its activities in the area of security/privacy/enforcement technology and fraud to see if there is scope for further collaboration with other Government Departments. (35)

- OST with SO, NI and WO to give consideration to any outstanding issues relating to the SET expenditure of these Departments and other Departments in the 1997 Forward Look, in the light of developments between now and then. (37)

- Additional co-ordination mechanisms should only be considered where a need which can be fulfilled usefully and cost effectively, perhaps by building on existing structures, has been clearly identified. (41)

- Departments, when reviewing or establishing inter-Departmental committees to always consider giving them a time-limited remit, with provision for extension only after a subsequent review of the continued need for the committee. (42)

- For all but the key strategic senior level committees (covered below) each Department to review, against its own SET priorities and in whatever depth it considers appropriate, by August 1997: (a) the main mechanisms it uses to involve others where it is in the lead; and (b) its participation in other inter-Departmental fora, including the level and nature of continuing participation. (43)

- OST to facilitate, as part of the annual Forward Look process, a planned programme of review by lead Departments which would cover the key strategic senior level inter-Departmental committees involving three or more Departments on a three year cycle. (44)

- Rather than a centralised database the more practical and cost effective approach to improving Departmental access to SET information is likely to be the development of an improved information network (in the broadest sense) including better inter-relationships between existing systems. (53)

- OST to encourage Catermill International to expand the scope and size of the data on Government SET funding in its CRIB database. (54)

□ Departments to keep under review the extent to which they make public information about their SET activities. (55)

□ A small working group, under OST Chairmanship, and involving DTI, DOE, MAFF, SO and MOD to be set up to examine the opportunities for the improved availability of information to help in SET co-ordination and co-operation, and to report to the Chief Scientific Adviser by March 1997. Other Departments' views should be taken on emerging conclusions as the work progresses. (59)

□ In future, all ROAME or equivalent statements for SET programmes should specifically cover, in the rationale section: the question of the relationship between the proposed programme and the work of other Departments; whether a co-ordination need is foreseen; and, if so, how this would be met. (60)

□ Departments to individually consider whether interaction matrices should be drawn up with their main contacts, taking due account of the costs and benefits involved. (62)

□ The Forward Look Directorate in OST to consider the suggestions in this report (and any others) for developing the Forward Look process with the present EDS(O) ad hoc group in time for action in respect of the 1997 edition.   This examination will need to bear in mind the variety of Departmental activities, interests and needs, the resource implications, and the need to avoid unduly expanding the Forward Look report itself, if it is to remain accessible to outside readers. Any action agreed might well need to be phased. (68)

3. Main Cross-Departmental Boundaries

8.   In 1996-97, Government Departments plan to spend some £2.1 billion on their SET programmes, as compared with total public sector SET spending of £5.9 billion, (which includes expenditure on the SET base and MOD development funding).

9.   With one or two exceptions, (such as SOAEFD), Departments' SET spending is aimed mainly at supporting their policy requirements, not the science base. Since, depending on current policy interests and pressures, Departments will have some areas of overlapping concern and joint interest, inter-Departmental co-ordination mechanisms are needed in order to monitor overlap in a way which minimises duplication and to ensure that complementarity is managed effectively. The review examined current activity and co-ordination arrangements in forty "boundary" areas between Departmental programmes. In this context, a "boundary" is defined as covering complementary and adjacent areas of research as well as research into different aspects of a common, often broad, topic. (There is inevitably some arbitrariness in these definitions, and a number of the boundary areas overlap. What

is important is not the precise categorisation adopted, but that all the main areas of potential duplication - or complementarity - should have been covered.)

10. Annex A sets out a full list of these areas, grouped under broad topic headings which largely correspond to the coverage of the Technology Foresight Panels. The lead Departments, together with other Departments having an interest are listed, along with a brief description of the areas of key interest and examples of existing co-ordination mechanisms and activities. Annex B gives a Department by Department check list of interests in these topics, together with a brief overview of Departments' overall approach towards co-ordination issues. Annex C sets out more detail on existing inter-Departmental co-ordination and collaboration mechanisms. The focus of the annex, and in the review in general, is on arrangements where the primary function is co-ordination of SET funders rather than policy co-ordination, although clearly the two are closely interlinked and existing mechanisms often serve both purposes.   Taken together, these annexes represent a thorough analysis of the ground: by subject, by Department, and by co-ordination arrangement.

11. Of these boundary areas, twelve were felt to be of particular significance for the review, generally because their size, or the number of Departments involved pose particular co-ordination issues. These (in the order in which they appear in Annex A, not the order of importance), were:

☐ Environment and Health and Safety;

☐ Global Environment Change;

☐ Marine Science and Technology;

☐ Fisheries: Territorial Co-ordination;

☐ Agriculture and the Environment: Territorial and General Co-ordination;

☐ Biotechnology and Bioethics;

☐ Transport and the Environment;

☐ Transport and Health and Safety;

☐ Civil/Defence Dual Use Technologies;

☐ Developing Countries;

☐ Risk Assessment and Perception;

☐ Security/Privacy/Enforcement Technology and Fraud.

12. These are of course not necessarily the most important SET topics per se, but rather those areas where the most significant issues relevant to the scope of this

review arise. The focus of expenditure on supporting policy, and the consequent need for Departments to maintain sufficient flexibility and strategic capability to cope with unforeseen developments should also be borne in mind.

4. Main Findings: Boundary Areas

13. Overall, **the review did not find major areas of duplication or unnecessary overlap**. It is important to recognise that different Departments may legitimately commission work in the same or similar areas, drawing on the same basic knowledge, for different purposes. Departments fund research for a variety of primary purposes. These include: specific and general policy support; procurement and other operational support; and in fulfilment of statutory and regulatory responsibilities. Since the rationale for the work differs, the outputs will be different. Although it will often be useful to be aware of what other work is being done in related areas, for example in negotiating with contractors to avoid any risk of double-paying for overheads, the simple fact that two Departments are interested in the same area of SET is not prima facie evidence of unnecessary duplication or wasteful expenditure.

14. That there does not appear to be any significant duplication reflects, in large measure, the success of the existing, extensive inter-Departmental co-ordination mechanisms in identifying and avoiding wasteful expenditure on overlapping projects. The emphasis in the 1993 White Paper on Realising Our Potential on identifying a clear rationale for programmes and on effective collaboration, together with the subsequent follow up, particularly the Technology Foresight and Forward Look processes, have been important factors in improving the targeting of SET expenditure. Departments' willingness to consult more widely on their programmes and publish the results, together with the tight public expenditure climate, and the resultant close scrutiny of individual programmes have also been key factors.

15. This is not to say that there is no scope for improving co-ordination and collaboration, particularly the effectiveness with which commonality of purpose and complementarity are identified and promoted, and also in terms of the cost/benefit of co-ordination effort itself. The general issues which arise are reviewed later in this report, together with some recommendations for improvement. There are also a number of specific areas where improvements can be made. The most important of these are set out below, together with the review's recommendations for action. The topics are set out in the order in which they appear in Annex A, not the order of importance. Further detailed recommendations, covering all forty topics, are set out in Annex A, together with a more detailed account of the ground covered in the following paragraphs.

Environment and Health and Safety

16. As defined in Annex A, this is a wide-ranging and heterogeneous topic, in which a large number of Departments have an interest. There is extensive co-ordination, both at working and strategic level, which appears to be generally effective and appropriate. The recent inclusion of HSE in DOE should further reinforce this.

17. DOE and DH have close links on public health issues. This collaboration builds on the co-ordination of DH and NHS R&D programmes and the close relationship between the Health Departments and the MRC through the HD/MRC Concordat. The establishment of the Institute of Environment and Health - which is sponsored by DOE, DH and MRC - shows how this wider collaboration can work in practice. DOE have developed a systematic framework for mapping and discussing their relationships with other Government Departments - an interaction matrix - which has been used effectively with DOT and MAFF (and which is further discussed later in this report, in the section on Inter-Departmental Co-ordination). **We recommend DOE and DH consider using a similar approach as one means of managing their present links with each other and with the MRC and the NHS.**

Global Environment Change

18. The Inter-Agency Committee on Global Environment Change (IACGEC) has been an effective co-ordinating mechanism at a strategic level for this major international topic, but has now completed its task. It may be worth further developing this Committee's role which is due for review, following agreement on the Hoskyns Report, by strengthening its customer focus along the lines of the Agriculture, Food and Fisheries Funders Group (see below). **We recommend that OST consider this as part of the review.** There could also be scope for improved links between work on this topic, and on Agriculture and the Environment (which is a closely related topic), particularly at the R&D planning stage. **We recommend that, if it is decided there is a continuing role for IACGEC, the Committee should review this area**, taking due account of the role of the Inter-Departmental Group on Geographical Information, and of the differences between the agendas for the two topics (particularly the pan-national character of Global Environment Change).

19. There are a number of other organisations active in the global environment field which may not be fully covered by the IACGEC mechanism. The Global Environment Facility (GEF) is a mechanism for funding projects and activities in developing countries and the Countries in Transition (CIT). The incremental costs are met of protecting the global environment in four focal areas: climate change, biodiversity, protection of international waters, and protection of the ozone layer (includes CITs). Recipient national Governments propose projects to the implementing international agencies and the agencies and GEF secretariat assess proposals. ODA represents the UK on the GEF Council and comments on and approves summaries of proposals. It is not involved in submitting proposals or lobbying for proposals that further the interests of national institutions. **Given the wide range of issues dealt with we recommend that it would be helpful if ODA considered the scope for greater**

consultation with other interested agencies in representing the UK on the GEF, whilst recognising that this may be limited.

Marine Science and Technology

20. This is a topic in which many Departments are interested, but where no one Department has a clear lead role. The OST-chaired Inter-Agency Committee on Marine S&T (IACMST) has therefore provided an effective vehicle for inter-Departmental co-operation. It will be reconsidering its role following the report of the Marine Technology Foresight Panel at the end of the year. It will be important to give the Committee a clear focus for the future. It is possible that this might usefully be developed into a more strategic body involving Departments, RCs and other bodies. **We recommend that IACMST takes full account of the findings of the Marine Technology Foresight Panel in developing a clear future focus.**

Fisheries: Territorial Co-ordination

21. In addition to the Agriculture Food & Fisheries Research Funders Group (see below), there are three major inter-Departmental groups looking at different aspects of fisheries and aquatic environment R&D requirements. However the effectiveness of co-ordination arrangements, including the research effort, was criticised in the recent House of Lords report on Fish Stock Conservation and Management. The Government's reply, submitted in April by MAFF in consultation with DOE and Fisheries Departments, makes clear that close co-operation already exists.

Agriculture and the Environment: Territorial and General Co-ordination

22. This is a major area of co-ordination between the agricultural and environmental Departments. We welcome the setting up of the Agriculture, Food and Fisheries Research Funders Group in July 1995, and its customer focus. This Group is currently reviewing the effectiveness of existing co-ordination arrangements across a wide range of interests. The implementation of its findings will be the most important co-ordination issue in this area, and should be given appropriate priority by Departments.

Biotechnology and Bioethics

23. This is an economically important, and fast developing, area in which a large number of Departments have interests of one kind or another. There are good inter-Departmental links in some areas, for example genetic modification technology and the Human Genetics Advisory Commission. This is such a new and complex area that it is difficult to be sure that all worthwhile co-ordination avenues have been fully explored, although the recent launch of the "Crusade for Biotechnology" should provide an additional impetus to co-ordination. **We recommend that, if possible before the end of 1997, the Departments with the major interest - OST, DTI, DOE (including HSE), DH and MAFF - jointly review the adequacy of the**

present arrangements. This might be done on the basis of interaction matrices, (on which see paragraphs 61-62 below). On GMOs and risk assessment, see paragraph 34 below.

Transport and the Environment

24. DOT and DOE have well developed and effective links, based on an interaction matrix approach and regular discussion at all levels from Chief Scientist down. These links require significant resources to maintain, given the differing structures of the two Departments - one organised mainly by transport mode, one by areas of pollution - but it is important that this is done in view of the significance of the interactions. It is not clear that the Welsh, Scottish and Northern Ireland Offices are so actively engaged, and it may be worthwhile strengthening the relevant co-ordination arrangements, in view of the increasing attention likely to be given to the environmental implications of traffic growth. **We recommend that DOT consider this with the relevant Departments.**

Civil Defence and Dual Use Technologies

25. With planned expenditure for 1996-97 of £595m, (excluding development work in aid of procurement, which is not covered by the Review) MOD is the highest SET spending Department. However only a small proportion of this expenditure is in areas of potential overlap with expenditure by other Departments. Most of MOD's research work is carried out through the Defence Evaluation and Research Agency (DERA), which arose from recommendations in the Defence Costs Studies Four (DCS4). DCS4 also resulted in the restructuring of MOD research into the Corporate Research Programme (CRP) and the Applied Research Programme (ARP). The CRP is aimed at maintaining and developing the defence SET base, covers innovative underpinning and targeted research, and is managed through 10 technology groups. Increased collaboration (particularly with industry rather than with other Departments) is key in order to maximise financial gearing and technology transfer. The ARP also contributes to the defence SET base but serves specific future military equipment requirements.

26. The second Competitiveness White Paper announced the establishment of the Civil and Defence Working Forum on SET Collaboration. This aims to co-ordinate the planning of S&T Programmes with civil and defence relevance and to promote a joint civil/defence response to Technology Foresight, by building on existing collaborative mechanisms. Developing the already close relationship between MOD and DTI, the Forum:

☐ has mapped defence interests against Foresight findings;

☐ is working up four proposals for dual use programmes;

☐ has constructed a LINK-type mechanism for Departments and RCs to co-sponsor dual use programmes;

☐ is exploring ways of jointly planning publicly funded civil and defence R&D to identify early opportunities for collaboration; and

☐ is considering establishing a formal consultation process between working specialists at major points in the annual planning cycle to improve co-ordination and prevent overlap.

27. This seems very much the right approach. Other main areas of formal cross-Departmental co-ordination are civil aircraft (CARAD), space (BNSC), and marine S&T (IACMST), all of which seem to be working well. These formal relationships are supplemented by a wide variety of informal working level inter-Departmental relationships. For example, following a useful recent working level initiative, DTI has access to the MOD research records. This will allow a sift through information on their research programmes with the aim of better exposing the MOD research portfolio to DTI sector divisions. Conversely MOD will benefit from a greater knowledge of DTI's, and hence industry's, R&D priorities.

28. The main area in which co-ordination might be profitably improved is by increasing MOD involvement in other Foresight panels, for example on Information and Communication Technology and **we recommend that MOD review this with OST and DTI**. There may also be advantage in a further review of the extent to which technology developed for military use could be relevant to civil transport applications, and **we recommend that MOD and DOT consider this**.

Developing Countries

29. ODA plan to spend some £83m on SET in 1996/7 in support of their overall aim of improving the quality of life of people in poorer countries by contributing to sustainable development and by reducing poverty and suffering. SET contributes to ODA's wider development objectives by underpinning some of its bilateral programmes and the programmes of multilateral development institutions to which it contributes.

30. About a third of this expenditure (which is not always easily separately identifiable within overall aid funding), is spent on a geographical basis, i.e. on country based programmes. Most of this is for very specific projects which are demand led, and on which the need for co-ordination with other Government Departments is limited.

31. In addition to its country by country spending ODA has five sectoral technology development and research (TDR) strategies which seek solutions to general constraints to development in poorer countries. These cover: renewable natural resources and environment; health and population; engineering-related sectors; economic, institutional development and social development; and education. Outputs may be taken up by the ODA bilateral programmes or by national institutions or other agencies.

32. In principle TDR funding, which amounts to about £60m, is more amenable to cross-Departmental co-ordination. In practice much of it is in specialist areas, demand led, or more likely to be of interest to Research Councils and research providers than to other Government Departments, and hence not within the main focus of this review. ODA's links with other Departments fall into four main areas:

□ formal policy consultation with other Government Departments through the Joint Aid Policy Committee (ODA, FCO, DOE, DTI, HMT); and representation on various inter-Departmental fora (EDS(O), Foresight Group, IGGMOT, IACGEC, etc.);

□ commissioning of jointly funded work with other Government Departments (DOE, DTI, MAFF, DH);

□ extensive use of UK research establishments, mainly universities and private contractors but also various Departmental agencies when commissioning research work; and

□ bilateral relations with other Government Departments.

33. Overall, these arrangements seem to work well, although they obviously need to be kept under review in the light of changing circumstances. One particular issue worthy of further inter-Departmental discussion is the consequences of ODA's increasing concentration of funding on the very poorest countries (mainly in Southern Asia and sub-Saharan Africa). This could mean inadequate UK attention is given to countries which, although no longer aid recipients, nonetheless represent good marketing opportunities for SET-based British industry. **We recommend that ODA, DTI and OST discuss the implications of this at a strategic level on the basis of a short paper by ODA, cleared with Departments and EDS(O) as necessary.**

Risk Assessment and Perception

34. Risk Assessment is an important aspect of a very wide range of Departmental policies and programmes, especially in regulatory areas. This justifies the current widespread co-ordination arrangements, in which HSE play a leading role, despite the relatively small sums of SET expenditure involved. Although these arrangements are generally satisfactory, it is possible that they could be improved in some areas at both working and strategic levels. **We recommend that DOE, DTI/OST, SO, HSE, DH, DOT, MAFF, and MOD consider: (a) whether more formal links between project managers on risk assessment and GMOs (and perhaps more widely) would be justified, and (b) whether ILGRA, as presently constituted provides sufficient high level strategic guidance to ensure appropriate direction is given to lower level links.**

Security/Privacy/Enforcement Technology and Fraud

35. HO policy of placing responsibility for SET in the relevant business areas with little central SET co-ordination means that responsibility for co-ordination with other Government Departments also rests with line divisions. This inevitably makes the task of reviewing the adequacy of these links harder, and it has not been possible for this review to thoroughly explore this. On a specific issue, it is important that the new research into technological approaches to combating fraud and security and privacy technology recommended by Foresight is carried out in the most effective way. **We recommend that the HO review its activities in these areas to see if there is scope for further collaboration with other Government Departments.**

UK Co-ordination

36. One area not explicitly covered above, is the general question of the proper relationship between the research programmes of the Scottish, Welsh and Northern Ireland Offices, and those of other Departments where, prima facie, there may appear to be an inherent risk of duplication. It is clear that this risk is well appreciated by the Departments concerned, who have made positive efforts to avoid unnecessary overlap, for example the sensible agreements made between MAFF and the SOAEFD about which Department should lead on which areas of common interest. (Examples of this are set out in Section 4(10) of Annex A.)

37. A closely related issue, particularly in the case of the Scottish Office, which has by far the largest SET expenditure of the three, is the future of these Departments' Research Establishments. The close attention being given to this has limited the extent of the examination of this area during the present review. The obvious context in which to follow up these issues at this stage is therefore the implementation of the Prior Options reviews of the PSREs, although there may be a case for further consideration of other aspects once this process has been completed. **We recommend that appropriate consideration be given to any outstanding issues relating to the relationship between the SET expenditure of these Departments and other Departments in the 1997 Forward Look, in the light of developments between now and then.** The extent to which work needs to be done on this should be discussed between OST and the Scottish, Welsh and Northern Ireland Offices in the run-up to the 1997 Forward Look.

5. Main Findings: Inter-Departmental Co-ordination

38. There are extensive, well-established, and generally effective inter-Departmental co-ordination mechanisms, ranging from formal committees at various levels from the Ministerial Committee on Competitiveness (EDC) and the Cabinet official Committee on SET (EDS(O)), downwards to numerous contacts between Departments at desk level. Some of the more important mechanisms, both formal and informal are listed in Annex C, together with their remit, membership and current areas of activity.

These are supplemented by the work of the OST's Trans-departmental Science and Technology Directorate, and, in particular, the now well-established Technology Foresight and Forward Look processes introduced following the 1993 White Paper.

39. These mechanisms, some of which have wider purposes than promoting collaboration on programmes but also fulfil that role, appear, as noted above, to have been generally successful in minimising wasteful duplication of effort. They have also encouraged collaborative activity, although we believe there is scope for improvement in encouraging the development of further cost-effective inter-relationships.

40. The review therefore concentrated on identifying:

□ any gaps or duplication in the existing co-ordination and collaboration mechanisms;

□ best practice which could be spread more widely (i.e., which co-ordination and collaboration mechanisms work best in particular circumstances and why; and best practice in assessing the need for co-ordination);

□ any areas where existing processes could usefully and cost effectively be strengthened or extended, particularly in relation to more effective identification and exploitation of areas of potential common purpose; and

□ any improvements in the general background against which individual co-ordination efforts take place, for example the Forward Look process itself;

against the overall need for all such arrangements to be cost effective.

41. Co-ordination mechanisms can, depending on their extent and nature, impose a significant bureaucratic overhead. They tend to be easier to introduce than to wind up, leading to a risk that they will sometimes outlive their usefulness. (It may be significant that, in the course of the review we only came across one example of a time-limited committee outside the NHS, on vaccine strategy.) Moreover the success of co-ordination activity often depends as much on the personalities involved as on the particular form it takes, and is usually closely linked to the importance of the issues being co-ordinated. In view of the extensive - arguably too extensive - mechanisms which already exist, and the limited resources for increased co-ordination, **careful consideration should be given to the costs and benefits of any changes before they are implemented. We recommend that additional co-ordinating mechanisms should only be considered where a need which can be fulfilled usefully and cost effectively, perhaps by building on existing structures, has been clearly identified.**

42. Equally important is the need to avoid perpetuating co-ordination mechanisms which have become unwieldy or have outlived their original purpose. In each of the six major health research areas, time-limited multi-disciplinary groups were convened to identify, characterise and prioritise problems as the basis for research.

They were then disbanded. This has proved model working practice for the NHS R&D programme, and could have useful wider application. **We recommend that Departments, when reviewing or establishing inter-Departmental committees always consider giving them a time-limited remit, with provision for extension only after a subsequent review of the continued need for the committee.** The recommendations in paragraphs 43-44 below, for a systematic review over time of all inter-Departmental committees, would mean that this provision would automatically be widely applied. **The ideal outcome would be fewer and better mechanisms**, making the most of the available resources; the worst would be a proliferation of overlapping and ill-focused inter-Departmental committees. It is difficult to make precisely quantified recommendations in this area, but we believe it is important that **any changes introduced following this report should be at least broadly resource neutral, and that proper consideration of the costs and benefits should be undertaken.**

43. There is no ideal co-ordination model which suits all circumstances, and Departments will wish to draw their own conclusions from the material in Annex C in considering what action should be taken on specific areas of working or lower level co-ordination, either in response to particular recommendations or more generally. Although we have found it possible to make a number of recommendations, a fully comprehensive review requires a more detailed, area by area examination, and greater input from Departments, than has been possible within the timescale of the present review. **We therefore recommend that for all but the key strategic senior level committees covered in paragraph 44 each Department review, against its own SET priorities and in whatever depth it considers appropriate, by August 1997: (a) the main mechanisms it uses to involve others where it is in the lead; and (b) its participation in other inter-Departmental fora, including the level and nature of continuing participation.** The reviews would aim to examine the need for, and the effectiveness of, each mechanism as a means of cross-Departmental SET co-ordination and each Department's role within it. They will need to take account of the results of any reviews which have recently taken place, the relevant parts of this Review, and any time limited or ad hoc committees so as to avoid unnecessary effort. The resource implications of such reviews will need to be borne in mind, especially when selecting priorities and deciding the depth of review. The possibility of resource savings from reduced overall effort and better targeting is a countervailing consideration. One Department which recently conducted a similar review found it was possible to reduce the overall resource put into co-ordination. Departments will wish to consider whether a similar approach might be taken to fora outside the scope of this review, for example involving the RCs.

44. Action at strategic level is best considered inter-Departmentally. **We recommend that the OST facilitate, as part of the annual Forward Look process, a planned programme of review by lead Departments which would cover the key strategic senior level inter-Departmental committees involving three or more Departments on a three year cycle.** This programme would of course need to take account of existing review arrangements. Which committees should be covered, in what order, and in what depth (bearing in mind resource implications) would need to be agreed between the OST and Departments as

part of the 1997 Forward Look. **The usefulness of this exercise should be reviewed on the completion of the first three year cycle.**

45. Co-ordination between Government Departments can be achieved at various levels:

□ at the strategic/policy level for broad areas of Departmental SET interest and spend (e.g. via Chief Scientists' Groups, EDS(O), etc.);

□ at the level of financial approval for specific programmes (also at Chief Scientists' level and below);

□ at the level of development and management of specific programmes (Programme Managers); and

□ at the level of those who undertake the SET work (PSREs, academic and private researchers and intermediaries, etc.).

46. Different approaches are appropriate for different levels. At the level of the researcher, checking what similar research has already been done or is underway ought to be the normal modus operandi, and is not further considered here. Co-ordination at the strategic level has improved significantly since the 1993 White Paper but, as recommended at the end of this Report, can be further improved via the Forward Look process. What follows concentrates on the second and third levels. These are particularly important because this is where future programmes get developed and approved, (and existing ones are monitored).

47. Effective co-ordination depends, inter alia, on:

□ the ability to easily identify a real co-ordination need;

□ the use of an appropriate co-ordination method (supported, where appropriate by guidance on co-ordination issues); and

□ the will to co-operate across Departments (supported, where appropriate, by central mechanisms).

48. Identification of the co-ordination need requires the easy availability of relevant information (both on work which is being or has been done and on areas of interest) including an effective communications network. This can take a variety of forms, from the simplest paper systems to the latest IT networks.

49. The fieldwork for this review, which revealed a few gaps in some Departments' knowledge of existing inter-Departmental committees in which they might well have an interest, showed that there might be a useful place for up-to-date, well structured and easily available Departmental SET and contact information. This would also

serve the purpose of laying out clearly how Departments organise their SET policy formulation and funding arrangements. The material in Annexes A and C would be a good starting point although it needs further development. On the other hand, experience with such directories shows there is a danger of their quickly becoming out of date unless considerable effort is put in to updating them, and the Forward Look already gives general contacts. The effort needed will only be worthwhile if Departments find the output useful. The issue of the availability of clear Departmental SET and contact information could be addressed by the working group proposed in paragraph 59.

50. Although there is a wide range of information sources on current SET capabilities, activities and expenditure including databases such as CRIB (on which see paragraph 52 below) and CORDIS (on EC research projects), these tend to be aimed at the research providers rather than at Departmental customers. There is no single authoritative source of detailed information covering all Government funded SET programmes and projects available to programme or project managers in Departments. The introduction of NEST (a new database on the exploitation of R&D), although extremely valuable to SMEs and research providers, at whom it is aimed, will not plug this gap, although its electronic networking approach is of interest as a possible technique for improving inter-Departmental networking at desk level. As long as it remains necessary to search diverse sources of information, often on paper, in order to identify what SET activities Departments are undertaking, who the contacts are, and what the co-ordination activities are, Departmental practice and thoroughness are likely to be variable.

51. In theory, one possibility would be to create a new database of all Departmentally funded SET programmes. This would need to record the nature of the research, the interested parties and the co-ordination arrangements where appropriate, the proposed timescale, and any published outputs, and give a contact point for further information. It would be essential for it to be kept up to date and to cover the full range of SET as defined in the Forward Look. Any Department considering a new research programme would then have easy access to the information necessary to avoid commissioning unnecessary research, and to identify areas of adjacent and complementary work, opening up new possibilities for more effective collaboration. Although OST, as a matter of practicality, would need to assume overall responsibility for the database, it would be vital to ensure that Departments, who would provide and update the information, found it worth the effort from what could be a potentially resource intensive enterprise. This means that Departments would need to be convinced of the benefits and fully involved in specifying the system from an early stage.

52. The information in such a database would also be a valuable input into the Foreword Look and Technology Foresight processes, and might to be open to all comers outside Government, except for sensitive areas, e.g. defence, police and security, possibly on a chargeable basis through Business Links. **However introducing such a database would be a major step, quite likely not justified by the potential gains.** It might well be expensive to devise, set up and operate, particularly if a bespoke system was needed and depending on the precise coverage.

53. **We recommend that a more practical and cost effective approach is likely to be to develop an improved information network (in the broadest sense) including better inter-relationships between existing systems.** This could realise some, if not all the advantages of a new central system. Most, if not all, Departments and RCs have, or are developing, databases to hold information about their own projects and programmes or at least have this information in the form of word processor files. Departments have different needs from this material, and the size and spread of their SET expenditure varies considerably, as do their systems for recording it. A standard system is probably impracticable for these reasons, and bearing in mind the considerable resources already invested in this area. But as Departmental systems are upgraded and replaced, it would considerably aid co-ordination if:

□ compatible systems (e.g. Windows based) were adopted;

□ there were agreement on a set of key words and core definitions and possibly categorisations;

□ Departmental systems were open to interrogation by other Departments (for example to enable desk officers to conduct a simple keyword search of current and recent projects); and

□ this information was, as far as possible, publicly available.

54. The Current Research in Britain (CRIB) database provides details of publicly funded research projects in the UK, covering project details, researcher information, subject keywords, period of work and funding source for 62,000 projects. The past focus has been on Research Council funded and HEI-based projects in the physical, biological and social sciences and the humanities. In the present database only half the records identify the 'source of funding' and in any case this simply gives the name of the Government Department. However, the suppliers, Catermill International, are keen to build up the information in the central Government funded side of the database. We understand that they have had a number of recent queries reflecting a demand for this, and **we recommend that it would be worth OST encouraging them to expand the scope and size of the present database, especially if this could be done at little or no cost to Departments.** The Departmental and SET contact information mentioned in paragraph 49 above would be a useful input to such an exercise.

55. **We recommend that Departments should keep under review the extent to which they make public information about their SET activities.** The Open Government Initiative encompasses this and provides a code of practice on access to Government information. It would also be worth involving the CO Central IT Unit when considering ways of disseminating research information. Wider access to information not only improves the ease of co-ordination, it also improves accountability and can act as a catalyst for profitable relationships. A possible way forward would be an additional annex to the Forward Look, giving a broad brush picture of the SET interests of each Department with a contact point.

56. Departmental use of the Internet and the World Wide Web (WWW) as a method for disseminating information is mushrooming. The CCTA Government Information Service has a Web site that links to all UK Government Departments' home pages and those of many Government agencies. Only the Forestry Commission of all the bodies included in the Review appear not to have a WWW presence. The OST site for example includes information on the Forward Look (summary only), Technology Foresight/Foresight Challenge, LINK, Research Councils and the Fourth Framework Programme.

57. This is a new and rapidly growing area that could provide one delivery mechanism for any future cross-Departmental SET information service. The ability to link to existing sites of information (on the Internet) and to conduct searches of relevant site information should make it possible to develop a relatively general, probably OST-based, information service that would enable the user to link to other more specific Departmental services as required. It is possible, although this needs further investigation and discussion, that there could be some modest funding available under the "IT For All" initiative. There are however some limitations at present that mean that the Internet should certainly not be the only delivery mechanism:

□ it is new, Departments are only just beginning to provide information, and access tends to be centralised through Departmental libraries or designated stand alone terminals (see security below);

□ the volume of transatlantic traffic means that at present it can grind to a virtual halt during the afternoon;

□ security concerns mean that Departments tend not to allow direct individual Internet access by officials from their in-house networks. Conversely they do not tend to allow external access through the Internet to their in-house databases and other networked computer resources; and

□ if individual contacts in Departments are given (one of the main reasons for having such a system) then they could be subject to considerable unwanted and inappropriate mail.

58. Another worthwhile initiative could be for Departments to make information on their planned future funding activities more available in electronic, searchable form. This would supplement the developing Government SET information network and reinforce the forward-looking aspect of the Forward Look exercise. Users could check if anything they were planning to do impinged on anything anyone else was planning. Early information is important. The co-ordination check ideally needs to start before approval for a programme if co-ordination is to be most effectively built-in. Departments would therefore need to be prepared to include activities that might not subsequently go ahead.

59. This is not an area in which decisions should be taken hastily or lightly. **We recommend a small working group, under OST Chairmanship, and involving**

DTI, DOE, MAFF, SO and MOD be set up to examine the opportunities for the improved availability of information to help in SET co-ordination and co-operation, and report to the Chief Scientific Adviser by March 1997. Other Departments' views should be taken on emerging conclusions as the work progresses.

60. In addition to improving the availability of the information on which judgements about co-ordination needs can be based, it would be useful to formalise a requirement for co-ordination issues to be considered before new work is undertaken. This is best done by building such a requirement into Departments' procedures for the approval of new SET programmes. Most Departments now use the ROAME approach, or something similar. **We recommend that, in future, all ROAME or equivalent statements for SET programmes should specifically cover, in the rationale section: the question of the relationship between the proposed programme and the work of other Departments; whether a co-ordination need is foreseen; and, if so, how this would be met.** Such a requirement, which EDS(O) might wish to confirm, will of course not remove the need for care in avoiding overlaps at project level.

61. Where two Departments have a significant degree of shared interests there can be considerable benefit in a structured approach to identifying the co-ordination need. One such approach which has been employed to good effect by DOE and DOT, by DOE and MAFF, and by DTI and MOD is the development of an interaction matrix. The Agriculture, Fisheries and Food Funders Group is using a similar approach. This is essentially a joint mapping and comparison of interests exercise. It will not of itself resolve all problems - for example, where Departments have a differing view of priorities, based on their own needs and objectives - and care needs to be taken with both the classification system adopted and the interpretation of boundary issues. However it is a useful basis for the identification of such issues, and for discussion of the effectiveness of and priority for co-ordination mechanisms. A sample matrix prepared by DOE, together with more detail about its construction and use, are set out in Annex D.

62. Such an approach is probably of most value as a periodic exercise where relationships are close but complex and where common knowledge down to project level is important, for example in commissioning research. It is probably also of most assistance when two parties are involved, and they have a good general understanding of each other's business. **We recommend that Departments individually consider whether interaction matrices should be drawn up with their main contacts, taking due account of the costs and benefits involved.**

The Forward Look

63. At the strategic level, the key mechanism for ensuring overall co-ordination of Departmental SET programmes, and for encouraging collaboration and synergy between programmes, is - and should remain - the annual Forward Look of Government-funded SET. By providing an authoritative and informative account, at a general level, of Departments' main objectives and the programmes for achieving them, it has helped to spread awareness not only of what is - or is not - being done, thus helping to avoid unnecessary duplication, but also of potential areas of common interest and joint action. The OST also have in place mechanisms for discussing with Departments general issues such as Technology Foresight, raising the profile of wealth creation, and opening up the market for Government-funded SET. However we believe there is scope to develop the catalytic role further at a more specific level, building on the objectives set out in the 1993 White Paper, Realising Our Potential. It is important that this should be done without overburdening the process, and without adding significantly to the length of the Forward Look report itself.

64. It is worth recalling, in summary, what the 1993 White Paper says about this second aspect of the Forward Look:

"The purpose of the Forward Look will be to set strategic objectives over a 5-10 year perspective and to consider:

☐ gaps or imbalances in the education, training and research effort;

☐ the balance between civil and defence research, and research commissioned by Departments and that undertaken by the SET base;

☐ opportunities for achieving synergy across programmes;

☐ the scope for greater concerted action and collaboration, both within the public sector and between the public and private sectors.

The Forward Look will in time form the basis for better-informed decisions between competing priorities which can inform PES decisions. The CSA will co-ordinate an assessment of all Departments' proposals. The Forward Look should reflect the results of Departmental consultation with those having an interest in the output of their SET programmes.

The Forward Look (and Technology Foresight) will set the broad framework for an active OST role of drawing together Government initiatives, promoting opportunities for cross-Departmental collaboration and identifying areas of overlap or duplication. OST to particularly ensure cross-Departmental issues are effectively handled, with additional co-ordination machinery if necessary."

65. Progress in improving the Forward Look has been and continues to be made. However the time is now right to look particularly at this catalytic/interactive aspect of the Forward Look process. For example, in the 1996 Forward Look report one of the five key objectives quoted for the strategy for publicly funded SET is "to promote

collaboration between Government Departments and ensure that trans-departmental SET issues are handled effectively, while improving efficiency and value for money". Even taking account of the underlying PES context, this part of the report is in fact not particularly forward looking, and focuses mainly on a description of recent activities or at best further developments of these in the very near future.

66. In general, and given the wide extent of co-ordination activity we have found in the course of this Review, co-ordination has been under-represented in the Forward Look. It contains separate statements from the main Departmental SET spenders, etc. describing their policy challenges and strategy over the next 5-10 years, international issues, and measures to improve efficiency and effectiveness. Departments draft these largely in isolation from one another, and little information on plans for further customer-side co-ordination and new co-operation initiatives has been forthcoming. The 1966 report (Section 3.74) says it provides an important mechanism for enabling Departments to examine the boundaries between their SET work, although this appears mainly to be left up to Departments to do after publication. Nor is it used as a mechanism for spreading best practice in co-ordination.

67. **We have the following suggestions as to how the customer-side co-ordination and collaboration function of the Forward Look could be further strengthened.**

(i)   Make the Forward Look report a more effective tool for identifying the future need for co-ordination (and to some extent for describing the extent of present activity) by:

    ☐ Departments providing a specific sub-section on this issue in each of their statements, and being strongly encouraged to provide reference to future co-ordination needs in their 'policy challenges and strategy' sections. The Review report and follow-up would form the basis of the entries in the 1997 Forward Look;

    ☐ in parallel with the work on information management recommended above, OST considering greater standardisation of and revisions to the structure of the Departmental information in the Forward Look report. The aim would be to facilitate the clearest cross-Departmental comparison of policy, strategy and SET areas and hence the identification of future collaboration opportunities without further lengthening of the statements. This would best be taken forward in the ad hoc group on the basis of an OST outline;

    ☐ considering the introduction of meaningful output measures and performance indicators for agreed cross-Departmental collaboration and co-ordination mechanisms. These should, of course, not themselves encourage the unnecessary creation of such mechanisms; and

    ☐ noting significant achievements and examples of best practice on co-ordination, for example on committee structure and operating style.

(ii)   EDS(O) to consider after publication of the Forward Look and once Departments have had a chance to digest and compare their entries, with a view to co-ordination of areas of common purpose. The outcome would be reflected in the next Forward Look. Alternatively or additionally Departments could exchange and discuss their draft statements during preparation of the Forward Look, although this would require an earlier start to what would then be a lengthier process, and might therefore need to be introduced gradually if it were thought desirable to proceed on this basis.

(iii) If any significant areas of common purpose which lack co-ordination or SET funding emerge then either OST should satisfy itself that the appropriate Departments are taking action or consider initiating something itself. The nature of the action will depend very much on the area concerned, but it is important that it is not confined to an unrealistic effort to impose views in a top down fashion, and does not become too detailed but rather centres on action to encourage genuine consensus at a strategic level. One way of tackling this would be for OST to initiate preliminary discussions with Departments of cross cutting issues which appear to call for a more co-ordinated approach.

68. We recommend that the Forward Look Directorate in OST consider these (and any other) suggestions for developing the Forward Look process with the present EDS(O) ad hoc group in time for action in respect of the 1997 edition. This examination will need to bear in mind the variety of Departmental activities, interests and needs, the resource implications, and the need to avoid unduly expanding the Forward Look report itself, if it is to remain accessible to outside readers. Any action agreed might well need to be phased.

Annex A: Areas of Interest and Detailed Conclusions

1. Introduction

1. This annex summarises information on what, in the view of the Review team, have emerged as the 40 most significant topics of inter-Departmental interest and co-ordination in relation to SET expenditure. These areas are not, of course, necessarily the most significant SET areas per se; but rather the key boundary areas. These in themselves represent a relatively small proportion of Departmental SET expenditure.

2. A list of individual topics is given under more general headings which broadly run from the natural world through to complex electronic technology, and finally assorted generic and miscellaneous issues. The main headings, although inevitably subject to a degree of arbitrariness, correspond fairly closely to the coverage of the Technology Foresight panels. The range of topics is fairly inhomogenous, with: some overlapping; some more strategically important than others; some covering broad concepts and policy issues, and others co-ordination of one or more specific activities. However, a particular combination of Departments should have an interest in most of the issues covered by a specific topic. A broad topic, such as Sustainable Development, will focus on co-ordination issues at that broad level, with more specific aspects being covered by some of the other topics.

3. In Section 4 brief information is given against each topic in the following format:

☐ Departments, etc. having an interest: with lead/important Departments or bodies in bold, "non-Review" Departments, Research Councils (RCs), etc. in round brackets, and bodies that do not appear to be involved in co-ordination but perhaps should be shown with a "?";

☐ a note, for illustrative purposes, of some selected key interest areas and some of the main co-ordination mechanisms and activities. (The latter are set out more fully, although not completely comprehensively in Annex C.)

4. The annex then goes on to make suggestions on any areas of possible concern and to make recommendations for possible improvement. (The main recommendations, relating to the twelve most significant topics, are also set out in the main body of the Report.) **Specific recommendations are set out in bold.**

2. Summary of Recommendations

☐ DOE and DH to consider using an approach similar to DOE's "interaction matrix", as a means of managing their present links with each other and with MRC and the NHS on <u>environment and health and safety</u>. (2)

☐ OST to consider strengthening the customer focus of the Inter-Agency Committee on <u>Global Environment Change</u> (IACGEC) along the lines of the Agriculture Food and Fisheries Funders Group and as part of its review of this committee. (3)

☐ IACGEC should review the scope for improving its links between <u>global environment change</u> and <u>agriculture and the environment</u> if it is decided that there is a continuing role for this committee. Due account should be taken of the Inter-Departmental Group on Geographical Information (IGGI), and of the differences, particularly internationally, in the agendas for the two topics (see (10)). (3)

☐ ODA to consider the scope for greater consultation with other interested agencies in representing the UK on the <u>Global Environment</u> Facility (GEF). (3)

☐ The Inter-Agency Committee on <u>Marine Science and Technology</u> (IACMST) to take full account of the findings of the Marine Technology Foresight Panel in developing a clear future focus. (4)

☐ It is worth examining the degree of co-ordination at the R&D planning stage between <u>agriculture and the environment</u> and those involved with <u>global environment change</u> (see (3)). (10)

☐ HO to review with OST the comprehensiveness of its cross-Departmental links on <u>health and criminal/justice issues</u>. (13)

☐ OST, DTI, DOE (including HSE), DH and MAFF to jointly review the adequacy of present co-ordination arrangements in <u>biotechnology and bioethics,</u> if possible before the end of 1997. (18)

☐ DOE to reconsider the adequacy of existing liaison arrangements on aspects of <u>energy and energy efficiency,</u> covering alternative energy sources and energy technology to minimise emissions. (19)

☐ DOE to keep under active review co-ordination issues arising from new areas of <u>construction</u> research. (21)

☐ DOE and DOT Chief Scientists to keep co-operation on <u>transport and the environment</u> issues under active review. (22)

☐ DOT to consider with SO, NI and WO strengthening co-ordination arrangements on <u>transport and the environment</u> issues. (22)

- DOT and DTI to jointly consider whether it would be worthwhile strengthening their links on <u>teleworking</u>. (22)

- DOT, DH, DOE and DfEE to jointly review the following <u>transport and health and safety issues</u>: DOT/DH/DOE and transport emissions and health, DOT/DH and car accident and injury data, DOT/DH/DfEE and carriage of disabled school children. (23)

- DTI and DOT to jointly review the priority they give to collaboration on <u>transport telematics</u>. (24)

- DTI and DOE to jointly review their wider links on <u>business and the environment</u>. (26)

- DTI to review the nature and scope of inter-Departmental activity in the area of <u>business processes</u>. (27)

- In the area of <u>civil/defence dual use technologies</u>, MOD to review with OST and DTI increased MOD involvement in Technology Foresight panels other than Defence (see (32)). (30)

- In the area of <u>civil/defence dual use technologies</u>, MOD and DOT to consider the extent to which technology developed for military use could be relevant to civil transport applications. (30)

- MOD to review its co-ordination activities in the area of <u>information and communication technologies</u> (see (30)). (32)

- DTI and DfEE to review with SOEID co-ordination on aspects of <u>education and employment</u> research. (33)

- MOD, DTI, and HSE to review the adequacy of existing links on <u>modelling, simulation and prediction of complex systems</u>, consulting ODA if appropriate. (35)

- ODA, DTI and OST to discuss the strategic implications of ODA's funding policy for <u>developing countries</u> in relation to the marketing opportunities for SET-based British industry. ODA to prepare a short paper, cleared with Departments and EDS(O) as necessary. (36)

- DOE, DTI/OST, SO, HSE, DH, DOT, MAFF, and MOD to consider: (a) whether more formal links between project managers on <u>risk assessment</u> and genetically modified organisms (GMOs) (and perhaps more widely) would be justified, and (b) whether the Inter-Departmental Liaison Group on Risk Assessment (ILGRA), as presently constituted provides sufficient high level strategic guidance to ensure appropriate direction is given to lower level links. (37)

- HO to review its activities in the area of <u>security/privacy/enforcement technology and fraud</u> to see if there is scope for further collaboration with other Government Departments. (38)

☐ **DOT and DTI to review their present links on transport telematics standards** as a matter of urgency. (40)

3. Summary of Scope of Topics

Environment

(1) **Biodiversity**
Conservation and enhancement of wild species and wildlife habitats.

(2) **Environment and Health & Safety**
Air pollution and quality, indoor air quality, noise, hazardous substances including ionising radiation and dangerous pathogens, fire research.

(3) **Global Environment Change**
Modelling and prediction of climate change (atmospheric, oceanic, land and freshwater processes), impact on land-based systems, significance of polar regions, historical studies.

(4) **Marine Science & Technology**
All marine issues: environment & pollution; coastal zone; offshore oil & gas; transport and navigation; structures; exploration & exploitation; safety.

(5) **Sustainable Development**
Relates to broad co-ordination activity on sustainable development. More specific aspects are covered under other topics and in general sustainability is being built into a variety of Government policies and activities.

Agriculture & Fisheries

(6) **Fisheries: Territorial Co-ordination**
Territorial co-ordination on fisheries and the aquatic environment: marine fisheries; aquaculture; fish disease; aquatic environment protection; salmonid & freshwater fisheries; marine mammals.

(7) **Forestry**
Tree health, forest products, biodiversity.

(8) **Horticulture**
Market needs, novel/improved products and markets, pest & disease control.

Agri-Environment

(9) Agriculture & the Environment: Specific Issues
Environmental protection, flood defence, land use, pollution, pesticides, veterinary products, sustainable farming, non-food crops.

(10) Agriculture & the Environment: Territorial and General Co-ordination
Relates to broad and largely territorial co-ordination on environmental, agricultural and interrelated issues. More specific aspects are covered under other topics.

Food & Drink

(11) Food Health/Safety/Quality and Territorial Co-ordination
Safe, contamination free food supply.

(12) Food Technology: Innovation and Transfer
Food processing and the take-up of innovative techniques.

Health & Life Sciences

(13) Health & Criminal/Justice Issues
Drugs-related issues, mentally disordered and the justice system, juvenile delinquency.

(14) Healthcare Telematics
Patient information systems; systems to support diagnosis, treatment, rehabilitation and evaluation; remote working.

(15) Health: Territorial and General Co-ordination
Broad and more specific health related co-ordination activities, particularly involving the health Departments and RCs.

(16) Nutrition
Nutrition, dietary reference values.

(17) Vaccines
UK vaccine R&D strategy.

Biotechnology

(18) Biotechnology & Bioethics
Gene therapy, genetically modified organisms and crops, recombinant technology, bioengineering/cell factories, bioremediation, public perception, biotechnology industry. (For risk assessment see Topic 37.)

Energy

(19) Energy & Energy Efficiency

Energy efficiency: technology, best practice, management techniques, in transportation; nuclear safety and radioactive waste management; offshore oil & gas safety; non-nuclear energy (excluding renewables).

(20) Renewable Energy

Energy from biomass (energy crops) and waste, hydropower, solar energy - photovoltaics and thermal applications, wind turbines, geothermal, building design; integration into the energy market.

Construction

(21) Construction Industry

R&D (e.g. improving the construction process, road construction), innovation, best practice and competitiveness in the industry; best environmental practice; building regulations and compliance (e.g. health, environmental and fire protection issues).

Transport

(22) Transport & the Environment

Noise, external air quality, air and marine pollution, environmental impact of land use change, sustainability and developmental vs. environmental needs, impact of road schemes, co-ordination on these issues with territorial Departments.

(23) Transport and Health & Safety

Railway and helicopter safety research, transport of dangerous goods and substances, drug testing of road accident fatalities, transport design and safe carriage of disabled, transport emissions and health, accident statistics and transport design.

(24) Transport Telematics

Electronic data services for travellers and freight operators; network management, operation and control; fleet operations and vehicle control; research and demonstration projects.

(25) Transport: Territorial and General Co-ordination

Broad and more specific transport related co-ordination activities, particularly between the territorial Departments and DOT.

Manufacturing, Production & Business Processes

(26) Business and the Environment

Environmental technology best practice, ecolabelling, product and manufacturing lifecycle analysis, cleaner processing technologies.

(27) Business Processes

Process re-engineering, JIT, lean processes, processes for control of credit and debt; diffusion of best practice.

(28) Fine Chemicals

Pharmaceuticals, agrochemicals, chemical industry.

Defence & Aerospace

(29) Civil Aircraft

Research and technology demonstration. In particular: new materials for wings and engines; more efficient, quieter, less polluting jet engines; improved aerodynamic design.

(30) Civil/Defence Dual Use Technologies

Chemical and biological sensors, synthetic environments and systems integration, structural materials, surface technology, supercomputing, software engineering, telecommunications and information processing, electronics, marine technology. (For privacy/security technology see Topic 38.)

(31) Space

Earth observation and remote sensing, space science, satellite communications, space technology, space transportation.

Information and Communications Technologies

(32) Information and Communications Technologies

Multimedia, safety critical systems, communicating with machines.

Generic and Miscellaneous Issues

(33) Education, Training and Employment

Sustainable local economic development, evaluation of employment policies and their impact on special groups in society, working practices, evaluating the education process or policy, learning technologies.

(34) Industrial Innovation & Best Practice: Territorial and General Co-ordination

Local operation of DTI support programmes (TCS, SMART, LINK, EUREKA, M90s), territorial Departments' participation in support mechanisms, development of territorial equivalent of Business Links.

(35) Modelling, Simulation & Prediction of Complex Systems

Software and mathematical techniques for modelling complex systems and events in areas such as: product design, risk analysis, behavioural analysis, the environment, financial products and markets.

(36) Developing Countries

Covers a broad range of SET issues relevant to many of the other topics listed here apart from defence and aerospace.

(37) Risk Assessment and Perception

Varying Departmental practices, the value of the benefits of risk reduction, public perception of risk, risk assessment and toxicology, setting of safety standards, risk assessment and safety of GMOs.

(38) Security/Privacy/Enforcement Technology and Fraud

Privacy and security technology (work under Civil/Defence Dual Use Technology programme), transport security and detection of weapons and explosives, enforcement technology, technologies to combat fraud.

(39) Social Science/Social Work: Territorial Co-ordination

Territorial co-ordination on programmes related to crime and social work.

(40) Standards and Standards Policy

Physical standards to do with radiation, transport telematics standards.

4. Details of Topics: Departments, Interests and Conclusions

Environment

(1) Biodiversity

[MAFF, **DOE**, FCO, ODA, SO, NI, FC, WO]

The UK Biodiversity Steering Group (on the Biodiversity Action Plan) includes officials from the above Departments. They published a report of advice to Government on 13 December 1995. Departments (including those on the steering group) worked with DOE to prepare a Government response, which was published on 15 May 1996. (See also Sustainable Development.)

This is an area where DOE has a clear lead and there are no particular co-ordination concerns.

(2) Environment and Health & Safety

[MOD, DTI, MAFF, **DOE, HSE**, ODA, SOAEFD, **DH**, DOT, NI, HO, WO, (Environment Agency, SEPA, SNH, MRC, IEH, NRPB, NERC)]

DOE, DH and MRC have jointly established the Institute of Environment & Health (IEH). Through this a joint programme has been initiated on air pollution, a major area of common interest. Departments co-ordinate closely on areas of mutual interest. For example: jointly funded research on health effects of ionising radiation; reciprocal attendance at Advisory Committee meetings; Advisory Committee on Dangerous

Pathogens (DH/HSE); liaison on infectious diseases and on areas such as nuclear and chemical dispersion and vehicle emissions. (DOE, DH, DOT). Two recent developments on strategic collaboration are the co-ordination group of MAFF, DOE, IEH and RCs on environmental oestrogens and other endocrine disrupters to ensure research coherence; and the inter-Departmental working group (DOE, MAFF, HSE and others) to develop and implement a national policy on dioxins.

This is a very wide ranging and heterogeneous topic with most co-ordination tending to be at the working level. Co-ordination is extensive and appears to be developing well. The Environment Agency, SEPA, and the Environment and Heritage Service (NI) were created explicitly to improve regional co-ordination on a broad range of issues. It is too early to judge their effectiveness, but there still needs to be effective national co-ordination too. The recent inclusion of HSE in DOE should further improve co-ordination in some areas (e.g. noise research). DOE and DH co-ordinate closely on Health and the Environment, but **it may be that a more detailed mapping of interests at working level could lead to further improvement. We recommend that DOE and DH consider using an interaction matrix, as a means of managing their present links with each other and with MRC and the NHS.** The PSRE Scrutiny saw overlap in the fire research area, but subsequent liaison by the Departments concerned showed their respective work to be complementary.

(3) Global Environment Change

[MOD, DTI/BNSC, MAFF, **DOE,** ODA, SOAEFD, DOT, DH, FC, WO, DANI/DOENI, (BBSRC, ESRC, EPSRC, MRC, **NERC**, Met Off, Environment Agency, SEPA, English Nature, CCW)]

This is a major topic where the UK has a significant international presence. There is an Inter-Agency Committee on Global Environment Change (IACGEC), which has been an effective co-ordinating mechanism at a strategic level. Its role is now due for review, following the completion of the Hoskins report. There is an Environmental Change Network (ECN) Programme with an executive committee and steering group and a series of ECN of Terrestrial Monitoring Sites (see Sustainable Development).

Co-ordination with, and below the level of, the inter-agency committee appears satisfactory; for example, other Government Departments participate in MAFF research programme reviews. DOT co-operates with DOE on modelling the amount of greenhouse gas emissions caused by transport operations, and there are a number of technical working groups. However **it could be useful to strengthen IACGEC's customer focus along the lines of the Agriculture Food and Fisheries Funders Group, and we recommend that OST consider this as part of the forthcoming review of IACGEC. We also recommend that, if it continues, IACGEC review links between this topic and Agriculture and the Environment, which are closely related, taking due account of the IGGI, and of the differences, particularly internationally, in the agendas for the two topics.** (See also Agriculture & the Environment: Territorial and General Co-ordination.)

There are a number of other organisations active in the global environment field which may not be fully covered by the IACGEC mechanism. The Global Environment Facility (GEF), which provides financial support to developing countries for projects and

activities that aim to protect the global environment, is an example. ODA represent the UK on the GEF, and it has been suggested that there could be advantages in increasing the extent to which the UK line represents a wider governmental view. **We recommend that ODA consider the scope for greater consultation with other interested agencies in representing the UK on the GEF.**

(4) Marine Science & Technology

[MOD/DERA/Hydrographic Office, **DTI/OST**, MAFF, DOE, HSE, ODA, SOAFED, DOT, DANI, (EPSRC, NERC, Met Office, Environment Agency, Southampton Oceanography Centre)]

The OST chaired Inter-Agency Committee on Marine S&T (IACMST), and its working groups aim to ensure that marine issues are dealt with effectively by Government. The Committee has recently been reviewed by OST, and will continue with small changes to its terms of reference. and membership. (For example, HSE(Offshore Safety Division) have now joined.) DOT are involved in joint research projects. DTI and DOE co-ordinate on the EC Marine Sciences & Technologies programme. DOT's Marine Safety Agency liaise closely with HSE. Technology Foresight has established a new Marine Science Panel that IACMST will liaise with closely.

This area appears to be well co-ordinated. The OST chaired IACMST fills a gap in Departmental coverage because of the lack of a clear single Departmental lead. There could be advantages in developing the committee's role further, involving wider strategic guidance. **We recommend that IACMST takes full account of the findings of the Marine Technology Foresight Panel in developing a clear future focus.**

(5) Sustainable Development

[MOD, DTI, MAFF, **DOE**, DfEE, FCO/ODA, SO, DH, DOT, NI, FC, WO, (CO, HMT, OPS, PM's Office, ONS, RCs)]

A key topic at the 1992 Earth Summit. The UK strategy document was published in January 1994, and an independent advisory Panel on Sustainable Development set up (also covering climate change, biodiversity and forestry). Their reports in January 1995 and 1996 were met two months later with Government responses. The Ministerial Committee on the Environment (EDE) provides ministerial co-ordination. The Cabinet Office chair the Official Group on Sustainable Development. An inter-Departmental working group published its conclusions on Indicators of Sustainable Development for the UK in March 1996.

This is a very broad concept with DOE clearly the lead Department. More specific aspects are covered under other topics such as Agriculture & the Environment, Forestry, Biodiversity and Global Environment Change. (Liaison between DOT and DOE is described under Transport and the Environment.) The sustainable development concept is being built into a number of these areas. DOE bilaterals at Chief Scientist level with other Government Departments will also aid co-ordination.

With the strong DOE lead other Department's interests appear to be well co-ordinated. This is an area covered by Foresight recommendations (e.g. on clean processing technology, sustainable technology and resourcing), which will need to be carried through.

Agriculture & Fisheries

(6) Fisheries: Territorial Co-ordination

[**MAFF**, DOE, ODA, **SOAEFD**, DANI, (NERC, various bodies)]

Co-ordination of Departments' fisheries and aquatic environment R&D requirements is an important topic. In addition to the Agriculture, Food & Fisheries Funders Group (see 10), there are three research co-ordinating groups. The UK Fisheries Customer Group deals with overall co-ordination of the research programmes of MAFF, SOAEFD and DANI. Co-ordination of Fisheries R&D allows for co-ordination between researchers. The Committee for Aquaculture R&D provides industrial input into the development of the research strategy and programme. A new LINK programme on aquaculture was initiated this year.

This is an area which has been the subject of recent study, and where the Prior Options Review has recently reported. The House of Lords report on Fish Stock Conservation and Management, (January 1996), recommended as a matter of priority closer liaison between DOE and Fisheries Departments, and for the various aspects of Government involvement in fisheries to be more closely co-ordinated including better focusing of research effort. The Government's reply, submitted in April by MAFF following consultation with other interested Departments, makes clear that close co-operation already exists.

(7) Forestry

[DTI, MAFF, DOE/BRE/Environment Agency/English Nature, ODA, SOAEFD/SNH, DANI, **FC**, WO/CCW, (BBSRC, ESRC, NERC)]

Forestry research is co-ordinated through the Forestry Research Co-ordination Committee (FRCC) set up in 1982. The main areas of cross-Departmental interest are tree health, farm woodlands, forest products and biodiversity. Sustainability and climate change issues are being built into the work of the FRCC. Work to improve timber quality and find new uses for forest products was recommended by Foresight (see also Sustainable Development).

Forestry is very much an international issue and FC have good international links. The FRCC seems to be a mature and effective mechanism, under whose auspices a wide range of data about publicly funded research programmes and projects have been collected and made available, although information on commercially funded research is less complete. The Forestry Commission Research Division has been subject to a Prior Options Review, following which it will become an Agency of the Forestry Commission with a proposed launch date of April 1997.

(8) Horticulture

[**MAFF**, DOE, ODA, SOAEFD, DOT, DANI, (BBSRC, NERC)]

There is a new LINK programme in response to Foresight priorities. Research will cover: modelling the supply chain, availability of UK produce timed to market need, production and harvesting systems, crops for novel/improved food products, pest and disease control, diagnostic and monitoring techniques, efficient use of resources, and waste reduction and management.

Horticulture is also covered by the Funders Group (see below). It will be important that any recommendations they make for improved co-ordination in this area are fully considered.

Agri-Environment

(9) Agriculture & the Environment: Specific Issues

[DTI, **MAFF**, DOE, MOD, DH, DOT, HO, FC, HSE, ODA, **SOAEFD**, DANI, WO, (Environment Agency, BBSRC, EPSRC, MRC, NERC, English Nature, English Heritage)]

The DOE and MAFF Chief Scientists hold bilaterals about once a year to discuss matrix analysis of areas of common interest. There are regular co-ordination meetings on flood defence. MAFF/DOE co-ordinate on land use and the impact of pesticides. Departments co-operate on pesticide safety, veterinary products, and a jointly funded project on organophosphorous sheep dips. DTI/MAFF/RCs have a LINK programme on the Biological Treatment of Soil and Water (to clean up pollution). The LINK programme on the Sustainable Farming ended in 1995, but there will be a future programme on Sustainable Livestock Production (MAFF/SOAEFD/BBSRC). The LINK programme on 'Crops for Industrial Use' is being followed by 'Competitive Industrial Materials from Non-Food Crops' (DTI/MAFF/SOAEFD/BBSRC/EPSRC). DTI and MAFF liaise on agricultural machinery (particularly for non-food crops).(See also Sustainable Development.) MAFF/DOE working parties co-ordinate research on food safety aspects of the disposal of sewage sludge on agricultural land.

This is a generally well co-ordinated area, with no major concerns.

(10) Agriculture & the Environment: Territorial and General Co-ordination

[DTI, OST, **MAFF**, DOE, **SOAEFD**, DH, DANI/DOENI, FC, WO, (BBSRC, ESRC, EPSRC, MRC, NERC)]

This is a major area of co-ordination between Departments, overseen on the agriculture side by the Agriculture, Food & Fisheries Research Funders Group set up in July 1995. There are also various more or less formal arrangements in specific areas. The Funders Group is presently reviewing the effectiveness of existing co-ordination arrangements. Other co-ordination mechanisms include: the Agri-Environment Register, which lists projects by all public sector funders, MAFF Strategy Forum for detailed discussion

between Departments and RCs on topics of mutual interest; SOAEFD's new Joint Consultative Committee for discussion of their plans with other Departments and RCs; Scotland and NI Forum for Environment Research (SNIFFER) established 1994; and the annual bilateral co-ordination meetings between MAFF and DOE. Foresight recommended investing in more widely integrated environmental research programmes and co-ordinated action to improve geographical data for use by retail, distribution and other industries. (See also Sustainable Development.)

Rationalisation of overlapping interests has been undertaken at a number of levels between MAFF and SO. For example MAFF takes the lead in funding BSE-related research, while the SOAEFD takes the lead on raspberries and potato related research.

From the above activity this appears to be an area of good co-ordination but it will be important to see how the Funders Group works out, and how any findings are implemented. This should be given appropriate priority by the Departments concerned. **It is also worth examining the degree of co-ordination at the R&D planning stage, with those involved with Global Environment Change.** (See Global Environment Change above.) On geographical data Foresight proposed that the DOE-chaired Inter-Departmental Group on Geographical Information take the lead.

Food & Drink

(11) Food Health/Safety/Quality and Territorial Co-ordination

[**MAFF**, DTI/OST, ODA, SOAEFD, DH, FC, NI, WO, (BBSRC, **ESRC**, MRC, NERC)]

A number of the points under 10 above, for example on rationalisation between SO and other Government Departments, are relevant here also. Extensive co-ordination includes: the Inter-Departmental Group on Microbiology; the Co-ordination Group on Transmissible Spongiform Encephalopathies chaired by DH; arrangements between DH and MAFF to co-ordinate food hygiene research and surveillance; ESRC initiative on Nation's Diet & Health; past LINK programme on food quality (with DTI); Inter-Departmental Group on Food Surveillance; the Advisory Committee on Microbiological Safety of Food; and the Funders Group and MAFF Research Strategy Forum mentioned above.

This is an area covered by a number of Foresight recommendations, and ensuring these are fully addressed appears to be the main issue. On BSE, DH are preparing a directed programme of research on BSE/CJD links involving various Government agencies, and both MAFF and DH are increasing funding this year. This represents an appropriately co-ordinated response to the present situation. Whether or not sufficient priority was given to this area previously is not an SET co-ordination issue, although DH will no doubt continue to consider the appropriate weight to give to non-medical factors in drawing up their research programmes.

(12) Food Technology: Innovation and Transfer

[DTI/OST, MAFF, ODA, BBSRC]

LINK programmes cover several Foresight priority areas, including Agro-food Quality (MAFF, BBSRC, DTI); Advanced and Hygienic Food Manufacturing (MAFF, BBSRC); and Food Processing Sciences (MAFF, DTI). There is DTI/MAFF consultation on Sensors, and MAFF BBSRC consultation on diet and health and raw material quality. Joint funding of food processing TCS progammes.

Initiatives to promote innovation in the food and drink industry include four regional technology transfer centres. Foresight recommended a review by OST of technology transfer, and following this up is the main outstanding issue.

Health & Life Sciences

(13) Health & Criminal/Justice Issues

[DH, HO, SO, WO, MOD, DOT, NI]

This is an area of potentially wide interest. There is liaison on: mentally disordered and justice system; drugs issues (Advisory Committee on Misuse of Drugs has R&D sub-committee with DH and HO representation); and juvenile delinquency. DOT and HO share research results related to enforcement and drink/drive policy. DOT also liaise with coroners, via HO, on drink and drug testing of road accident victims. DOT supports a joint Police Liaison Officer.

The HO's lack of a central co-ordinating point for SET issues has made it difficult for the review team to assess the strength and effectiveness of HO's inter-Departmental collaboration. **We recommend that the HO review, with OST, the comprehensiveness of its cross-Departmental links in this area.**

(14) Healthcare Telematics

[DTI, ODA? DH]

DTI leads on Telematics as a whole. They and DH have been collaborating on Healthcare Telematics for a number of years. Much work is focused on the EU Framework Programme for Telematic Applications, although there is also a Foresight recommendation to be followed up. ODA expressed an interest in this work to the Review team.

This is a well co-ordinated area, although ODA's potential interest needs to be followed up.

(15) Health: Territorial and General Co-ordination

[OST, MAFF, DOE, FCO, ODA, HSE, DOT, SODoH, **DH**, MOD, DHSSNI, WO, (ESRC, EPSRC, MRC, BBSRC, other bodies)]

Again, an area of wide interest, given that health issues effect the entire population. There is collaboration on a broad range of R&D initiatives (e.g. infectious agents) including jointly funded and managed programmes through the Concordat between MRC, Health Departments and NHS, and the more recent Concordat with EPSRC and strategic agreement with ESRC. There is a New National Forum to consider implications of Foresight on DH R&D plans (e.g. initiatives on ageing). UK-wide NHS R&D Managers Group. UK Health Departments' Survey Network Group. Health of the Nation Working Groups. (See also Food Health/Safety /Quality above.)

This would appear to be a well co-ordinated area.

(16) Nutrition

[**MAFF**, ODA, **DH**, SOAEFD, (BBSRC, MRC)]

MAFF lead on nutrition research, and have an important programme on the links between diet and disease. There is close co-ordination with related DH research, and with SO. MAFF sit on the Human Nutrition Forum, and the Nutrition Programme Committee, and there is cross representation on respective steering committees to ensure complementarity.

Again, a well co-ordinated area.

(17) Vaccines

[DTI, MAFF, ODA, **DH**, MOD, (BBSRC, MRC)]

A time limited cross-Departmental committee is charged with developing a co-ordinated UK vaccine R&D strategy and is due to complete work by October 1996.

The time-limited model is one which might be applicable in other areas. **We have recommended in the main body of the Report that Departments consider this approach in setting up new co-ordinating mechanisms, and reviewing existing ones.**

Biotechnology

(18) Biotechnology & Bioethics

[MOD/DERA, **DTI**, **OST**, **MAFF**, **DOE**, HSE, ODA, SO, **DH**, NI, HO, FC, WO, (CO, BBSRC, EPSRC, MRC, NERC)]

The OST chaired Inter-Departmental Group on Genetic Modification Technology

(IGGMOT) has 18 Departments/RCs as members, and HSE and DOE have a Memorandum of Understanding on the use and release of GMOs. There is close collaboration between DOE, SOAEFD and MAFF on the environmental aspects at scientific level. HSE provides the Secretariat to the Advisory Committee on Genetic Modification, and also maintains close links with the Secretariats to the Advisory Committee on Releases to the Environment (DOE), the Gene Therapy Advisory Committee (DH), and the Advisory Committee on Novel Foods and Processes (MAFF/DH). Other co-ordination includes: co-ordination across territorial Departments; the LINK programme on Cell (Bio-)Engineering; annual Chief Scientist reviews between MAFF and DOE; and MAFF, DH and DTI representation on "Biotechnology Means Business" steering group. This area is covered by several Foresight recommendations, and DTI and DH interact on various Foresight groups (e.g. diagnostic applications of molecular biology, genetics, biomolecular engineering). There are plans for a new trans-departmental biotechnology initiative.

This is a large and important area of immense economic potential with four major Departments involved. Given the range of Departmental interests in this complex and rapidly evolving area the effectiveness and completeness of the co-ordination picture is an important issue. **We recommend that probably before the end of 1997, OST, DTI, DOE (including HSE), DH and MAFF jointly review the adequacy of the present arrangements.** This might be done on the basis of interaction matrices. On GMOs and risk assessment, see Risk Assessment and Perception below.

Energy

(19) Energy & Energy Efficiency

[MOD, DTI, MAFF, **DOE**, HSE, DH, DOT, HO, ODA, SO, Environment Agency]

DOE take the lead on energy efficiency through their Energy Efficiency Office and Energy Efficiency Best Practice Programme. There is liaison between DTI, DOT and the EEO and joint research projects involving DOT. HSE provide the Secretariat to the Nuclear Safety Research Steering Group which also includes MOD, DTI and SO. The Radioactive Waste Management Policy Group includes DOE/DTI/Environment Agency/HSE/MAFF/MOD/SO. DTI/HSE/(DOT) liaise on offshore and gas safety research issues and DTI, DOE and DH co-ordinate on the EC Non-Nuclear Energy and the Nuclear safety and Safeguards programmes.

Foresight recommended encouraging more work on alternative energy sources and energy technology to minimise emissions. There might be scope for wider co-ordination with other Government Departments, for example MAFF, NI, ODA and WO. **We recommend DOE reconsider the adequacy of existing liaison arrangements.**

(20) Renewable Energy

[DTI/OST/ETSU, **MAFF**, DOE, ODA, SOAEFD, DOT, DANI, FC, WO, (BBSRC, CCLRC)]

This topic falls under the Government's sustainable development strategy. The Renewable Energy Advisory Committee contains a mixed representation from Departments, industrialists, etc. The Inter-Departmental Group on Energy Crops and Renewable Energy (IGEC-RE) co-ordinates research and policies between Departments.

Foresight recommended encouraging more work in this area, and following this up is the main issue.

Construction

(21) Construction Industry

[DTI, **DOE**, DOT, HSE, ODA, (EPSRC)]

The DOE is developing a Whole (Construction) Industry Research Strategy, in consultation with other interested Departments (e.g. HSE on construction safety). The Construction Research and Innovation Strategy Panel (CRISP), which includes a number of separate theme groups, is taking this forward. There is concern over the very low level of research undertaken in the construction industry, partly attributable to its fragmentary, highly subcontracted nature.

Cross-Departmental Foresight recommendations in this area covered better exploitation of IT and improved learning and learning networks (involving education Departments). The need to stimulate more research is not necessarily principally a co-ordination issue, although **new areas of research will pose new co-ordination issues, which we recommend DOE to keep under active review.**

Transport

(22) Transport & the Environment

[DTI, **DOE**, DfEE, ODA, SOAEFD, DH, **DOT**, MOD, DENI, HO, WO, (Environment Agency, GOL)]

A major issue with a need for new research following the national transport debate and Green Paper, e.g. on the extent to which the demand for road travel increases with economic growth. There are many formal and informal links between DOT and DOE, including cross-membership of Departmental research planning committees. The DOT and DOE Chief Scientists meet from time to time to review co-operation. DOE and DTI have links on industry issues and external air quality. A joint central and local Government group is developing a national air quality strategy. There are cross-Departmental links at various levels. For example: joint policy statements; joint projects; joint research on teleworking; cross membership of committees; land use &

transport research group with joint DOT/DOE research projects incorporating sustainability issues. The Foresight Clear Zones project will be supported by DOE and DOT and DTI are on the Foresight vehicle project committee. DOE and MOD have close liaison on atmospheric chemistry and pollution.

The continued growth in traffic levels is leading to greater pressure on the environment. Effective co-operation between DOE and DOT will need to be maintained to ensure the demand for travel can be managed in ways which take proper account of environmental issues, and **we recommend that the two Chief Scientists keep this under active review**. It will also be important to ensure that the territorial Departments are fully engaged, and **we recommend that DOT consider this with the relevant Departments. We also recommend that DOT and DTI jointly consider whether it would be worthwhile to strengthen links on teleworking.**

(23) Transport and Health & Safety

[MOD, DTI, DOE, HSE, DfEE? DH, ODA, **DOT**, HO, (CAA)]

There are a number of joint research projects in this area. There is liaison on: railway and helicopter safety research; transport of dangerous goods/substances; transport of radioactive materials; drink & drug testing of road accident fatalities; safety aspects of transport design; and the safe carriage of wheelchairs and disabled schoolchildren. The main inter-Departmental committees include HSE's Advisory Committee on Dangerous Substances (ACDS), MOD's Sensitiveness Collaboration Committee, Health of the Nation Working Groups and the Physical Activity Task Force.

There is a possible need for better co-ordinated research between DOT, DH and DOE on the growing concern over transport emissions and health. Extended co-ordination between DOT and DH on linking car accident and injury data could be beneficial; this might include the joint development of a national database as an early priority. The existing liaison between DOT and DH on carriage of disabled children to school could usefully be extended by the closer involvement of DfEE. **We recommend the relevant Departments jointly review these issues.**

(24) Transport Telematics

[DTI, DOE? ODA, SO, **DOT**, NI, HO, WO]

It has been estimated that the transport telematics market may be worth as much as £12 billion by the year 2010. Until recently there had been good liaison between DOT and DTI on transport telematics through informal contacts and membership of various groups: EC Transport Telematics Programme Management Committees and Transport Telematics Implementation High Level Group, a DOT-led Task Force on EC Framework Four programme, and a DOT strategy group reviewing policy on transport telematics. Communicating with machines, including guidance and control of vehicles, was a key generic S&T priority area of Foresight.

DOT feel that there was a need for more co-ordination with DTI. Transport Telematics technology has developed to the stage where widespread implementation is feasible. The focus now needs to be on institutional and operational issues. Unfortunately DTI decided earlier this year as part of its overall priorities, to discontinue a detailed role in Transport Telematics. **We recommend that DTI and DOT jointly review the priority they give to collaboration in this area, to see if there is a mutually acceptable way forward.**

(25) Transport: Territorial and General Co-ordination

[DTI, SO, **DOT**, NI, WO, (ESRC, EPSRC)]

Territorial Departments are members of the relevant Departmental research committees. The new LINK programme on Inland Surface Transport is in part a response to Foresight. (See also, Transport Telematics.)

This appears to be a well co-ordinated area.

Manufacturing, Production & Business Processes

(26) Business and the Environment

[DTI, DOE, ODA]

This topic is addressed by the Advisory Committee on Business and the Environment (ACBE). This is made up of senior business people with DTI and DOE jointly providing the secretariat and is thus also a means of co-ordination at official level. It has just been reconstituted and may well spawn sub-committees involving officials over the next few years. There is joint DTI/DOE funding of the UK Ecolabelling Board, and the Environmental Technology Best Practice programme. Product and manufacturing lifecycle analysis and cleaner processing technologies were emerging generic S&T priority areas in Foresight. Investing in materials and processes which improve the environment was also a key recommendation (involving co-ordination on regulations and standards).

There may well be scope for other Government Departments such as MAFF and DOT to be more closely involved in this area. **We recommend that DTI and DOE jointly review their wider links.**

(27) Business Processes

[DTI, DOE, ODA, DOT, MOD, (BBSRC, ESRC, **EPSRC**)]

EPSRC's Innovative Manufacturing Initiative (IMI) covers a number of sector-driven research programmes with an overarching business processes programme. It seeks to address the findings of Technology Foresight in this area and is of relevance to 20 specific Foresight recommendations. Priority areas are: business processes; aerospace;

construction; process industries; and transport. MOD's interest in new business processes, particularly synthetic environments, is being taken forward through the Civil/Defence Forum, and is a particular item in the programme of the Defence andAerospace Foresight Panel. (See Civil/Defence Dual Use Technologies.) DOT is hoping shortly to agree a Concordat with EPSRC which should lead to improved co-operation between the two organisations in this area and elsewhere.

It is not clear that cross-Departmental interests in this area have been fully resolved; there could be interests which existing co-ordination mechanisms are not fully picking up. **We recommend that DTI review the nature and scope of inter-Departmental activity in this area.**

(28) Fine Chemicals

[MOD, **DTI**, MAFF, DH]

There is cross-Departmental interest in areas such as such as pharmaceuticals, agrochemicals and the chemical industry, with liaison at programme manager level in each area. There is a LINK programme on competitive Industrial Materials from Non-Food Crops. The main scope for collaboration is probably between Departments and the chemical industry, rather than amongst Departments, so the present level of co-ordination appears adequate.

Defence & Aerospace

(29) Civil Aircraft

[MOD/DERA, **DTI**, (EPSRC)]

The jointly funded CARAD R&D programme is a good collaboration model which should be maintained. There is a significant materials and dual-use component. Foresight praised this collaborative mechanism and recommended establishment of a new University-linked applied research scheme. Following this up appears to be the main issue.

(30) Civil/Defence Dual Use Technologies

[MOD/DERA, DTI/OST, DOE, DOT? HO, (NERC, RCs)]

The Civil & Defence Working Forum on SET Collaboration was a major new initiative in the Second Competitiveness White Paper. Various proposals for programmes are under development, and there are several spin-off working groups and other co-ordination activities planned (see Security, Privacy & Enforcement Technology). Work in this area is reviewed by the MOD's Chief Scientist.

This is an important topic where the UK has been well behind some of its competitors such as the USA. The key questions are whether the steps now being taken are the best ones, and whether they cover all the ground. The initial indications are good. Response to the Defence and Aerospace Foresight Panel is strong, but there is scope for greater MOD involvement in other Foresight Panels. **We recommend that MOD, DTI and OST review this.** DOT and MOD have in the past explored the issue of whether technology developed for military use could be adapted for applications in civil transport. **We recommend that the case for renewed discussions on this be re-examined by MOD and DOT.**

(31) Space

[MOD, **DTI/BNSC/**OST, MAFF, DOE, FCO/ODA, DOT, (Met Office, NERC, PPARC)]

The British National Space Centre (BNSC), staffed by MOD, DTI, NERC and PPARC personnel, is the overall trans-departmental co-ordination mechanism and focus for UK civil space activity. In addition, BNSC as a body co-operates with other Government Departments and agencies. BNSC has a well established structure of Programme Boards, Working Groups, etc. Earth Observation. on which DTI lead, is the largest area and has a new LINK programme funded by DTI, DOE and NERC. MAFF, FC and DTI liaise on remote sensing work, whilst MOD funds the majority of the METOP Earth Observation programme. DOT, in co-operation with other Government Departments and overseas organisations, is working on developing the European Air Traffic Management System. The use of satellite based communication and location technologies will be an important component.

BNSC policy is presently under review, and it would not be appropriate for us to make any detailed recommendations. The key point is whether the long established committee and advisory structure continues to work well, and whether it has been dynamic enough to keep up with changes in policy and emphasis over the years. If the model continues to be valid, it is possible that it could be applied in other areas where a number of Departments have a strong common interest, for example Marine SET.

Information and Communications Technologies

(32) Information and Communication Technologies

[MOD/DERA, **DTI**, DOE, HSE, DfEE, ODA, DOT, HO? (DNH, RCs)]

DTI co-ordinates with other Government Departments on a number of issues, for example, on multimedia, and on software-related safety critical systems through the Inter-Departmental Committee on Software Engineering/Safety-related Systems (ICSE/SRS). Communicating with Machines was a key generic S&T priority area from Foresight covering the information superhighway, virtual reality, multimedia, etc. DTI, DNH (& National Film and TV School) are considering setting up a creative media technology centre, a Foresight recommendation. (See also Telematics topics).

This is likely to be an increasingly important area, where there will be growing scope for useful inter-Departmental links, most importantly perhaps between DTI, MOD and

other Government Departments. **We recommend that MOD review its co-ordination activities in this area.**

Generic and Miscellaneous Issues

(33) Education, Training and Employment

[DTI/OST, DOE, **DfEE**, ODA, SOEID, DH, DOT, DENI, HO, WO, (DSS, ONS)]

Sustainable local economic development is co-ordinated by a DOE-led inter-Departmental liaison group. Evaluation of employment policies and their impact on special groups in society involves co-ordination at various levels from the Permanent Secretaries' Group on the Underclass to individual project managers. Evaluating the education process/policy involves co-ordination by relevant policy divisions. OST and DfEE co-ordinate on the EC Training & Mobility of researchers programme. A Foresight recommendation on learning technology proposed co-ordination through one lead Department. DOT sponsors the Road Safety Education Research Steering Group, which includes DH, DfEE and DTI. There are a number of joint research projects aimed at developing methods for educating school children on road safety.

Co-ordination between Departments on educational and employment research could be improved in one or two areas. For example on education (which is an area of minor spending by Departments), SOEID Research & Intelligence Unit would like better links with DfEE and DTI. SOEID would also like to improve links with DTI on new technology development. **We recommend that DTI and DfEE review these areas with SOEID.**

(34) Industrial Innovation & Best Practice: Territorial and General Co-ordination

[DTI, SOEID, DEDNI, WO]

The local operation of DTI support programmes (TCS, SMART, LINK, EUREKA, M90s) through GOs and Business Links is a form of co-ordination. There is also joint participation in support mechanisms (TCS Sponsor Group, LINK Implementation Group, promotion of SMART). Territorial equivalents of Business Links are being developed.

This is an area to which much attention has been devoted in recent years, particularly by DTI. In general, industry Departments appear to have good links on these issues. The outcome of the present Review of Government Schemes for Supporting Business will have an impact on future co-ordination arrangements.

(35) Modelling, Simulation & Prediction of Complex Systems

[MOD, DTI, HSE, ODA]

An intermediate generic S&T priority area from Foresight.

It is not clear whether this is covered by an existing co-ordination activity, for example work under Civil/Defence Dual Use Technologies. **We recommend the three main Departments involved review the adequacy of existing links consulting ODA if appropriate.**

(36) Developing Countries

[MOD, DTI/OST, DOE, HSE, FCO, **ODA**, SO, DH, HMT, NI, HO, FC, WO, (RCs)]

Assistance to developing countries can be in the form of bilateral financial aid, technical co-operation and multilateral aid through international bodies. ODA commissions R&D in a wide range of subjects in support of the aid programme from many UK based institutions as well as in developing countries. It has co-funded research with DOE, DTI, MAFF and DH, for example on global environmental issues and HIV/Aids. It has well defined research strategies covering: economics and social development; engineering; health and population; renewable national resources and the environment. The overall SET content of this aid is relevant to many of the topics in this review (except those in Defence & Aerospace), and other Government Departments have expertise that is relevant to ODA's activities. (For example, TRL (now privatised) has carried out extensive research on transport issues for ODA.) ODA is represented on various inter-Departmental and international fora. OST provides overall co-ordination for the EC International Co-operation programme.

ODA is closely in touch with many of the other Departments active in complementary areas and commissions work from them or their agencies, and there are well defined boundaries and co-ordination arrangements. ODA interest in developing these arrangements further will depend crucially on the extent to which an international, and specifically, developing country, perspective features in group deliberations on particular topics. This understandable approach should be borne in mind by other Government Departments seeking to examine whether these links could profitably be developed further.

For the reasons given in the main report, we recommend that ODA, DTI and OST discuss the implications for SET based exports of ODA's policy of concentrating on the very poorest countries, on the basis of a paper prepared by ODA and cleared with Departments and EDS(O) as necessary.

(37) Risk Assessment and Perception

[MOD, DTI, MAFF, DOE, **HSE**, DfEE, ODA, SOEID, DH, DOT, NI, HO, WO, (Environment Agency, CAA, CO, DNH, HMT, IR, BBSRC, MRC, ESRC, EPSRC, NERC)]

HSE provides the secretariat to the Inter-Departmental Liaison Group on Risk Assessment (ILGRA) which was created in 1991. ILGRA published a survey in January 1996 of the Use of Risk Assessment in Government Departments which revealed some variations in Departmental practice and made recommendations on co-ordination. This issue was given attention in the 1995/6 Forward Looks and by Technology Foresight. Departments are collaborating in research to determine the value placed on the

benefits of risk reduction and on how Departments communicate with the public on risk. Risk assessment and toxicology crosses Departmental boundaries and MAFF, DOE/HSE and MRC have a preliminary research programme at IEH (see Environment and Health & Safety). A Steering Committee chaired by MAFF and with an HSE co-ordinator has been set up on this sub-topic. On methodology, two inter-Departmental working groups, on risk assessment/toxicology and on the setting of safety standards, will report to ILGRA in 1996. A risk assessment research database has been compiled to aid cross-Departmental collaboration. HO are participating in an HSE-led project. EPSRC plans to collaborate with NERC/DTI/DOE on public perception of environmental risk. Work on risk assessment and safety of GMOs (see Biotechnology and Bioethics) is separately funded by DOE, HSE, DTI, MAFF and SO but with some informal co-ordination.

Risk assessment is an important aspect of a wide range of Departmental policies and programmes. It is, for example, critical to much environmental work. This justifies the present widespread co-ordination arrangements, and efforts to make improvements in them. There appears, for example, to be some scope for improving co-ordination on risk assessment and GMOs at working level. Although the sums involved are relatively small, **we recommend that it would be worth supplementing the present informal arrangements with a formal link between project managers.** Most of the present co-ordination is at an operational level. There may also be scope for improving the overall strategic direction of this work. **We recommend that HSE, DOE, DTI, MOD and SO consider whether ILGRA as presently constituted and tasked, is able to give sufficient high level strategic guidance to other groups working in this area.**

(38) Security/Privacy/Enforcement Technology and Fraud

[MOD/DERA, DTI/OST, ODA, DOT, HO, (HMT, HMCE, EPSRC)]

There are discussions under the Civil and Defence Working Forum on SET Collaboration (see Civil/Defence Dual Use Technologies) exploring areas of common interest. There are formal transport security liaison committees, and joint research programmes covering transport security (weapons and explosives). The Police Scientific Development Branch liaises closely with DERA, and acts as an "intelligent customer" for the DOT, HMCE and MOD in this area. The CO and HO are working to rationalise some of the security activities of the PSDB and the special services group of SAFE. Foresight recommended new research into technological approaches to combat fraud and Security & Privacy Technology was a key generic priority area. (See also Health and Criminal/Justice Issues.)

This appears to be a reasonably well co-ordinated area, although the full extent of HO participation is unclear. **We recommend that the HO review its activities in these area to see if there is scope for fuller collaboration with other Government Departments.**

(39) Social Science/Social Work: Territorial Co-ordination

[**SOHD/SODoH**, DH, ODA, MOD, NI, HO, WO, (DSS, Lord Chancellor's Dept, ESRC)]

Although other Government Departments are interested in social topics to various degrees, for example MOD/DERA in relation to service recruitment and the performance of teams, the main area of potential overlap is with Scotland. The SO ensures crime related programmes complement equivalent activities in England and Wales. There are also links and joint funding of projects in the social work area. The four Health Departments collaborate and jointly fund projects on a broad range of R&D initiatives in areas of shared interest, such as Personal Social Services. The HO, NIO and SO liaise on criminal justice research at working level.

(40) Standards and Standards Policy

[MOD, **DTI**, MAFF, DOE, HSE, ODA, DH, DOT]

An area of wide interest and application, where DTI lead. For example, DTI and MOD co-ordinate on physical standards on radiation.

The need for standards related to transport telematics, and what form they should take is a matter of current debate. Greater co-operation between DOT and DTI would assist the resolution of these issues and **we recommend that the two Departments review their present links as a matter of urgency.** (See also Transport Telematics.)

Annex B: Departmental Approaches and Interests

1. This annex sets out a Department-by-Department summary of interests in all forty of the main boundary areas covered by the Review. Topics are numbered in the right hand column as in Annex A. SET expenditure figures are taken from the 1996 Forward Look. Departments are listed in decreasing order of their planned SET expenditure for 1996/97. Titles in bold indicate a Department which is a leading player. A question mark on the left indicates a topic where there may be a need for Departmental involvement but where no reference to this was found.

2. The last table is intended to serve as a quick cross reference to Departmental interests in what the Review team identified as the twelve most important topics for the review.

1.1 Ministry of Defence (MOD)

Planned SET Expenditure (96/7):

£594.6m (excludes development work for procurement)

Overview of Departmental Approach & Involvement:

MOD is the top spending SET Department, even when development work in support of military equipment procurement is removed. MOD needs access to the widest possible range of technologies, and collaboration with other Government Departments (especially DTI), industry and academia (including the Research Councils) is essential. At the same time, MOD's research programme provides substantial new knowledge in areas of interest to the civil sector. Whilst inter-Departmental collaboration has generally been good, Technology Foresight and Wealth Creation initiatives have given a renewed impetus. MOD has taken the lead on the new 'Civil and Defence Working Forum' which was established to identify opportunities for a more co-ordinated approach to planning civil and defence S&T. The Forum has recently put a draft paper forward for EC approval outlining a Dual Use LINK mechanism.

Topics of Interest:

- Environment and Health & Safety	2
- Global Environment Change	3
- Marine Science & Technology	4
- Sustainable Development	5
- Agriculture and the Environment: Specific Issues	9
- Health and Criminal/Justice Issues	13
- Health: Territorial and General Co-ordination	15
- Vaccines	17
- Biotechnology & Bioethics	18
- Energy & Energy Efficiency	19
- Transport and the Environment	22
- Transport and Health & Safety	23
- Business Processes	27
- Fine Chemicals	28
- Civil Aircraft	29
- **Civil/Defence Dual Use Technologies**	30
- Space	31
- Information & Communication Technologies	32
- **Modelling, Simulation & Prediction of Complex Systems**	35
- Developing Countries	36
- Risk Assessment & Perception	37
- **Security/Privacy/Enforcement Technology & Fraud**	38
- Social Science/Social Work: Territorial Co-ordination	39
- Standards & Standards Policy	40

1.2 Department of Trade and Industry (DTI) Including Office of Science and Technology (OST)

Planned SET Expenditure (96/7):

£359.0m (excludes science budget)

Overview of Departmental Approach & Involvement:

The second largest SET spender with an active interest in more of the 40 boundary topics than any other Department and a lead or prominent interest in 15 topics. Networking between DTI and practically all the other review Departments is extensive and mostly conducted at the working level across the various DTI directorates. Broader and more senior level co-ordination is provided where it is felt appropriate, for example: meetings at Chief Scientist level with DOE and DOT, matrix of topics of mutual interest drawn up with MOD.

Topics of Interest:

- Environment and Health & Safety	2
- Global Environment Change	3
- **Marine Science & Technology**	4
- Sustainable Development	5
- Forestry	7
- Agriculture & the Environment: Specific Issues	9
- Agriculture & the Environment: Territorial & General Co-ordination	10
- **Food Technology: Innovation and Transfer**	12
- **Healthcare Telematics**	14
- Health: Territorial and General Co-ordination	15
- Vaccines	17
- **Biotechnology & Bioethics**	18
- Energy & Energy Efficiency	19
- **Renewable Energy**	20
- Construction Industry	21
- Transport and the Environment	22
- Transport and Health & Safety	23
- Transport Telematics	24
- Transport Territorial & General Co-ordination	25
- **Business and the Environment**	26
- **Business Processes**	27
- **Fine Chemicals**	28
- **Civil Aircraft**	29
- Civil/Defence Dual Use Technologies	30
- **Space**	31
- **Information & Communication Technologies**	32
- Education, Training & Employment	33
- **Ind. Innovation & Best Practice: Territorial/General Co-ord.**	34
- **Modelling, Simulation & Prediction of Complex Systems**	35
- Developing Countries	36
- Risk Assessment & Perception	37
- **Security/Privacy/Enforcement Technology & Fraud**	38
- **Standards & Standards Policy**	40

1.3 Ministry of Agriculture, Fisheries and Food (MAFF)

Planned SET Expenditure (96/7):

£138.1m

Overview of Departmental Approach & Involvement:

One of the larger SET spending Departments with an interest in over half the 40 review topics and a lead or prominent player in eight of these. The main links are with the territorial Departments on agriculture, fisheries and the agri-environment, and with DOE on the agri-environment; DH on Food Health/Safety/Quality and Nutrition; and DTI/OST on Food Technology.

There are a host of co-ordination arrangements, from the strategic to the specific which the Funders Group are presently examining, following various recent recommendations for improvements.

Topics of Interest:

- Biodiversity	1
- Environment and Health & Safety	2
- Global Environment Change	3
- Marine Science & Technology	4
- Sustainable Development	5
- **Fisheries: Territorial Co-ordination**	6
- Forestry	7
- **Horticulture**	8
- **Agriculture & the Environment: Specific Issues**	9
- **Agriculture & the Environment: Territorial & General Co-ord**	10
- **Food Health/Safety/Quality and Territorial Co-ordination**	11
- **Food Technology: Innovation and Transfer**	12
- Health: Territorial and General Co-ordination	15
- Nutrition	16
- Vaccines	17
- **Biotechnology & Bioethics**	18
- Energy & Energy Efficiency	19
- **Renewable Energy**	20
- Fine Chemicals	28
- Space	31
- Risk Assessment & Perception	37
- Standards & Standards Policy	40

1.4 Department of the Environment (DOE) Excluding Health and Safety Executive/Commission (HSE)

Planned SET Expenditure (96/7):   £114.3m

Overview of Departmental Approach & Involvement: DOE has an interest in the largest number of topics after ODA and DTI and with a lead or principal interest in 8 topics. (Although the DOE is now responsible for the HSE/C there is a separate entry for this body under Section 1.10.) Co-ordination with other Government Departments is normally achieved within the general policy co-ordination framework. More senior officials become involved if the issues cut across several areas of responsibility and there are regular meetings at Chief Scientist level with MAFF and DOT to review general co-ordination issues.

Topics of Interest:

- Biodiversity	1
- Environment and Health & Safety	2
- Global Environment Change	3
- Marine Science & Technology	4
- Sustainable Development	5
- Fisheries: Territorial Co-ordination	6
- Forestry	7
- Horticulture	8
- Agriculture & the Environment: Specific Issues	9
- Agriculture & the Environment: Territorial & General Co-ordination	10
- Health: Territorial and General Co-ordination	15
- Biotechnology & Bioethics	18
- Energy & Energy Efficiency	19
- Renewable Energy	20
- Construction Industry	21
- Transport and the Environment	22
- Transport and Health & Safety	23
? Transport Telematics	24
- Business and the Environment	26
- Business Processes	27
- Civil/Defence Dual Use Technologies	30
- Space	31
- Information & Communication Technologies	32
- Education, Training & Employment	33
- Developing Countries	36
- Risk Assessment & Perception	37
- Standards & Standards Policy	40

1.5 Department for Education and Employment (DfEE)

Planned SET Expenditure (96/7):

£95.0m (excludes Higher Education Funding Council for England expenditure)

Overview of Departmental Approach & Involvement:

The £95m figure is somewhat misleading, since the majority of planned SET expenditure goes in support of humanities research, postgraduate awards, and training projects. Less than £5m a year is spent on the Department's own budget for research. The arrangements for handling this following the merger of the two former Departments in July 1995 have been reviewed. The merger has already reaped dividends through sharing the results of research on the demand for graduates and their utilisation by employers. The interests of the DfEE do not appear to overlap with other Departments on many topics (the list below is the shortest of all the bodies in the review). The benefits of increased co-ordination in one or two areas, for example with the territorial Departments are worth considering.

Topics of Interest:

- Sustainable Development	5
- Transport and the Environment	22
- Transport and Health & Safety	23
- Information & Communication Technologies	32
- **Education, Training & Employment**	33
- Risk Assessment & Perception	37

1.6 Overseas Development Administration (ODA)

Planned SET Expenditure (96/7):	£83.4m

Overview of Departmental Approach & Involvement: ODA funds technology development and research in a wide range of topics, including economics and social development; engineering; health and population; and renewable natural resources and the environment. It commissions work at a large number of UK based and overseas institutions. There are well defined boundaries and co-ordination arrangements with other Government Departments. ODA's research is relevant to many of the topics in the review, and ODA is closely in touch with many of the other Departments activities in these areas. However, given their very wide interest, it would be useful to consider if there would be merit in developing these links further.

Topics of Interest:

- Biodiversity	1
- Environment and Health & Safety	2
- Global Environment Change	3
- Marine Science & Technology	4
- Sustainable Development	5
- Fisheries: Territorial Co-ordination	6
- Forestry	7
- Horticulture	8
- Agriculture and the Environment: Specific Issues	9
- Food Health/Safety/ Quality and Territorial Co-ordination	11
- Food Technology: Innovation and Transfer	12
- Healthcare Telematics	14
- Health: Territorial and General Co-ordination	16
- Nutrition	15
- Vaccines	17
- Biotechnology & Bioethics	18
- Energy & Energy Efficiency	19
- Renewable Energy	20
- Construction Industry	21
- Transport and the Environment	22
- Transport and Health & Safety	23
- Transport Telematics	24
- Business and the Environment	26
- Business Processes	27
- Space/Remote Sensing	31
- Information and Communication Technologies	32
- Education, Training and Employment	33
- Modelling, Simulation and Production of Complex Systems	35
- **Developing Countries**	36
- Risk Assessment & Perception	37
- Security/Privacy/ Enforcement Technology & Fraud	38
- Social Science/Social Work: Territorial Co-ordination	39
- Standards and Standards Policy	40

1.7 Department of Health (DH)

Planned SET Expenditure (96/7):

£81.0 (excludes NHS research related expenditure)

Overview of Departmental Approach & Involvement:

A medium SET spender with an interest, at varying levels in half the 40 topics identified in the review covering a wide variety of health related issues. DH's research strategy comprises two main complementary R&D programmes: the Department's Policy Research Programme and the NHS R&D programme. DH also oversees the research programmes of the health related NDPBs. It has particularly strong links with DOE, MAFF and the Territorials. In general areas of common interest seem to be closely co-ordinated from the strategic to the working level.

Topics of Interest:

- Environment and Health & Safety	2
- Global Environment Change	3
- Sustainable Development	5
- Agriculture and the Environment: Specific Topics	9
- Agriculture & the Environment: Territorial & General Co-ordination	10
- Food Health/Safety/Quality and Territorial Co-ordination	11
- Health & Criminal/Justice Issues	13
- Healthcare Telematics	14
- Health: Territorial and General Co-ordination	15
- Nutrition	16
- Vaccines	17
- Biotechnology & Bioethics	18
- Energy & Energy Efficiency	19
- Transport and the Environment	22
- Transport and Health & Safety	23
- Fine Chemicals	28
- Education, Training & Employment	33
- Developing Countries	36
- Risk Assessment & Perception	37
- Social Science/Social Work: Territorial Co-ordination	39
- Standards & Standards Policy	40

1.8 Scottish Office (SO)

Planned SET Expenditure (96/7):	£78.3m (excludes Scottish Higher Education Funding Council expenditure)
Overview of Departmental Approach & Involvement:	The highest spending of the Territorials with an interest in over half the topics in the review because of broad regulatory and policy responsibilities. Co-ordination with other Government Departments is organised separately by the five SO Departments. Good UK co-ordination is important on fisheries and agricultural issues, particularly for forthcoming international negotiations, and there have been various recent recommendations for improvements here.

Topics of Interest:

- Biodiversity	1
- Environment and Health & Safety	2
- Global Environment Change	3
- Marine Science & Technology	4
- Sustainable Development	5
- **Fisheries: Territorial Co-ordination**	6
- Forestry	7
- Horticulture	8
- Agriculture & the Environment: Specific Issues	9
- **Agriculture & the Environment: Territorial & General Co-ord**	10
- Food Health/Safety/Quality and Territorial Co-ordination	11
- Health and Criminal/Justice	13
- Health: Territorial and General Co-ordination	15
- Nutrition	16
- Biotechnology & Bioethics	18
- Energy & Energy Efficiency	19
- Renewable Energy	20
- Transport and the Environment	22
- Transport Telematics	24
- Transport Territorial & General Co-ordination	25
- Education, Training & Employment	33
- Industrial Innovation & Best Practice: Territorial & General Co-ord.	34
- Developing Countries	36
- Risk Assessment & Perception	37
- **Social Science/Social Work: Territorial Co-ordination**	39

1.9 Department of Transport (DOT)

Planned SET Expenditure (96/7):	£37.9m
Overview of Departmental Approach & Involvement:	DOT seeks to align its SET objectives with relevant other Government Departments, and to maximise co-operation. DOT leads on transport research, and liaises widely to ensure complimentarity and to avoid duplication. It liaises most closely with DTI and DOE, with whom its interaction is most clearly mapped out, and with the Territorial Departments.

Topics of Interest:	
- Environment and Health & Safety	2
- Global Environmental Change	3
- Marine Science & Technology	4
- Sustainable Development	5
- Horticulture	8
- Agriculture and the Environment: Specific Issues	9
- Health: Territorial and General Co-ordination	5
- Energy & Energy Efficiency	9
- Renewable Energy	10
- Construction Industry	21
- Transport and the Environment	22
- Transport and Health & Safety	23
- Transport Telematics	24
- Transport Territorial & General Co-ordination	25
- Business Processes	27
? Civil/Defence Dual Use Technologies	30
- Space	31
- Information & Communication Technologies	32
- Education, Training & Employment	33
- Risk Assessment & Perception	37
- Security/Privacy/Enforcement Technology & Fraud	38
- Standards & Standards Policy	40

1.10 Health and Safety Commission/Executive (HSC/E)

Planned SET Expenditure (96/7):	£28.7m
Overview of Departmental Approach & Involvement:	A relatively small SET expenditure and specialised interests, with a lead in Environment and Health & Safety and Risk Assessment and Perception and most contact with DOE, MAFF, the Territorials, DH, HO, DOT and DTI. Co-operation appears to be extensive and is fundamental to HSE's mode of operation.

Topics of Interest:

1.11 Northern Ireland Office (NI)

Planned SET Expenditure (96/7):	£25.5m (excludes Department of Education for Northern Ireland)
Overview of Departmental Approach & Involvement:	External co-ordination is organised separately by the six NI Departments. Because of its broad regulatory and policy responsibilities, interests cover over half of the 40 review topics.

Topics of Interest:

- Biodiversity	1
- Environment and Health & Safety	2
- Global Environment Change	3
- Marine Science & Technology	4
- Sustainable Development	5
- Fisheries: Territorial Co-ordination	6
- Forestry	7
- Horticulture	8
- Agriculture & the Environment: Specific Issues	9
- Agriculture & the Environment: Territorial & General Co-ordination	10
- Food Health/Safety/Quality and Territorial Co-ordination	11
- Health & Criminal/Justice Issues	13
- Health: Territorial and General Co-ordination	15
- Biotechnology & Bioethics	18
- Renewable Energy	20
- Transport and the Environment	22
- Transport Telematics	24
- Transport Territorial & General Co-ordination	25
- Education, Training & Employment	33
- Industrial Innovation & Best Practice: Territorial & General Co-ord.	34
- Developing Countries	36
- Risk Assessment & Perception	37
- Social Science/Social Work: Territorial Co-ordination	39

1.12 Home Office (HO)

Planned SET Expenditure (96/7):	£16.3m

Overview of Departmental Approach & Involvement:

One of the smaller SET spenders, the HO has a number of separately managed R&D programmes in diverse non-overlapping areas. Whilst the individual programmes have little in common, and are not subject to strong overall co-ordination, a significant amount of liaison takes place with other Departments researching similar or related areas.

Topics of Interest:

1.13 Forestry Commission

Planned SET Expenditure (96/7):	£8.8m
Overview of Departmental Approach & Involvement:	The second lowest SET spending body in the review, the FC co-ordinates with DOE, MAFF, and the Territorials via the Forestry Research Co-ordination Committee.
Topics of Interest:	

Topic	
- Biodiversity	1
- Global Environment Change	3
- Sustainable Development	5
- **Forestry**	7
- Agriculture & the Environment: Territorial & General Co-ordination	10
- Biotechnology & Bioethics	18
- Renewable Energy	20
- Developing Countries	36

1.14 Welsh Office (WO)

Planned SET Expenditure (96/7):	£5.1m (excludes Higher Education Funding Council for Wales)
Overview of Departmental Approach & Involvement:	The WO has the lowest SET expenditure of all the Departments/bodies included in the review. It is nevertheless involved in co-ordination activities across a range of topics including all the major territorial co-ordination areas. It might be worth considering whether this effort could be reduced.

Topics of Interest:

- Biodiversity	1
? Environment and Health & Safety	2
- Global Environment Change	3
- Sustainable Development	5
- Forestry	7
- Agriculture & the Environment: Specific Issues	9
- Agriculture & the Environment: Territorial & General Co-ordination	10
- Food Health/Safety/Quality and Territorial Co-ordination	11
- Health & Criminal/Justice Issues	13
- Health: Territorial and General Co-ordination	15
- Biotechnology & Bioethics	18
- Renewable Energy	20
- Transport and the Environment	22
- Transport Telematics	24
- Transport Territorial & General Co-ordination	25
- Education, Training & Employment	33
- Industrial Innovation & Best Practice: Territorial & General Co-ord.	34
- Developing Countries	36
- Risk Assessment & Perception	37
- Social Science/Social Work: Territorial Co-ordination	39

2. Cross-Departmental Interest in Priority Review Topics: A Summary Table

Ref No.	Area of Inter-Departmental Interest/Co-ordination	Departments in Review													
		MOD	DTI	MAFF	DOE	HSE	DfEE	ODA	SO	DH	DOT	NI	HO	FC	WO
2	Environment and Health & Safety	□	□	□	■	□		□	□	□	□	□	□		?
3	Global Environment Change	□	□BNSC	□	■			□	□	□	□	□		□	□
4	Marine Science & Technology	□	■+OST	■	□	□		□	□		□	□			
6	Fisheries: Territorial Co-ord.			■	□			□	□			□			
10	Ag & Env. Territ. & Gen Co-ord.	□	□	■	□				□	□		■		■	□
18	Biotechnology & Bioethics	□	■+OST	□	□	□		□	□	■		□	□	□	□
22	Transport & the Environment	□	□		□		□	□	□	□	■	□	□		□
23	Transport and Health & Safety	□	□		□	■	?	□		□	■		□		
30	Civil/Defence Dual Use Technol.	■	□+OST		□			■+FCO	□		?	□	□		
36	Developing Countries	□	□+OST		□	□			□	□	□	□	□	□	□
37	Risk Assessment & Perception	□	□	□	□	■	□	□	□	□	□	□	□		□
38	Sec/Priv/Enfmt Technol. & Fraud	■	□+OST					□			□		□		

Note

■ The lead (or most important) Department for a particular topic
□ An important Department for a particular topic
□ Some Departmental involvement
? No apparent Departmental co-ordination when perhaps there should be
"blank" No known Departmental interest or co-ordination.

Annex C: Trans-departmental Co-ordination Arrangements for Science, Engineering and Technology

1. Introduction

1. Two lists of arrangements for co-ordination and collaboration between Departments in areas involving SET expenditure (as defined in the Government Forward Look) are given below. The first and shorter list (Section 2) covers the broader arrangements, for example the bilaterals that some Departments hold to review SET co-ordination issues. The second list (Section 3) takes the 40 more specific and significant areas of Departmental SET expenditure where existing co-ordination has been identified and illustrates the nature of these arrangements. It should be noted that the list goes wider than bodies set up primarily for co-ordination purposes, where those bodies play a significant co-ordinating role alongside their other functions, or represent, in themselves, a significant collaborative effort.

2. The main emphasis is on customer-side mechanisms and the identification of arrangements in which co-ordination between Government Departments as funders of research is a main function. Hence Departmental officials and those from Government agencies and NDPBs tend to be most involved in the various groups and activities listed. However, Research Councils are frequently represented and industry and other bodies are also involved. In general, activities whose main and direct function is not the trans-departmental co-ordination of SET spend between the Departments and bodies in this 'Boundaries Review', for example bodies whose primary focus is giving advice on policy have been excluded. However, details of relevant Research Council Concordats, Technology Foresight Panels and open LINK programmes have been included, given their significance as major examples of inter-Departmental collaboration. Information on very specific and working level co-ordination is illustrative rather than comprehensive.

3. In Section 3 more details have been provided in boxes of some of the more formal and significant co-ordination arrangements, generally involving at least three Departments. Organisations have been listed starting with Departments covered in this Review (generally in order of decreasing overall SET spend) followed by other Departments, Research Councils, and other bodies. Some leading organisations have been underlined. Other signficant, if less formal, co-ordination and collaboration arrangements are also listed in the indents following the boxes, to give an idea of their range and scope. The lists are not intended to be, and are not, fully comprehensive.

2. Broad Departmental Co-ordination and Collaboration Arrangements

☐ EDC Ministerial Committee on Competitiveness (incl. S&T) and Cabinet official Committee on Science and Technology (EDS(O)) [EDS(O): DOT, MOD, DTI, OST(chair), MAFF, DOE, DfEE, FCO, DH, SO, DOT, HMT, Prime Minister's Office, HSE]. There are also various ad hoc groups under the general EDS(O) umbrella which co-ordinate Departmental activities on Technology Foresight and the Forward Look

☐ OST lead responsibility for: (a) implementing the SET White Paper reform programme, (b) developing and co-ordinating the policy for SET across all Government Departments (including the annual Forward Look) and (c) promoting collaboration between Government Departments and ensuring that trans-departmental SET issues are handled effectively and efficiently

☐ Chief Scientific Advisor's PES bilaterals with Departments and input to Ministerial Committee on Expenditure (EDX)

☐ Chief Scientists' meetings to assess and review co-ordination across R&D programmes [for example, MAFF+DOE, DOE+DOT+DTI, DTI+DOT]

☐ **Concordats with Research Councils**

The MRC and the Health Departments pioneered the Concordat concept, which was given a further boost by the 1995 White Paper. It provides a means of circulating each party's expectations and obligations, and a framework for the systematic development review and evaluation of their respective needs and activities.

[BBSRC and: DTI, MAFF, DOE, DH, SO, NI]

[EPSRC and: MOD(negotiating), DTI, DOE, DH, SO, DOT(negotiating) DHSSNI]

[ESRC and: DTI, DOE, DfEE(discussing), DH, SO, DHSSNI, HMT]

[MRC and: DTI, MAFF, DOE, ODA, DH, SO, DHSSNI, WO]

[NERC and: MOD, DTI, MAFF, DOE/Environment Agency(1st approach), DH(discussing), SO(discussing), DOT(discussing)]

[PPARC and: MOD, DTI]

The Environment Agency is developing a Concordat with DOE, and is expected to develop separate Concordats with EPSRC, NERC, BBSRC and ESRC

□ **Technology Foresight Panels:**

Agriculture, Horticulture & Forestry [MAFF, SOAEFD, DANI, FC, BBSRC, NERC, and others]

Chemicals [DTI/OST, EPSRC, and others]

Construction [OST, DOE, and others]

Defence [MOD/DERA, DTI/OST, EPSRC, and others]

Energy [DTI/OST, DOE and others]

Financial Services [DTI, HMT, and others]

Food & Drink [MAFF, BBSRC, MRC, and others]

Health & Life Sciences [DTI, DH, BBSRC, MRC, and others]

IT, Electronics & Communications [DTI, Post Office, EPSRC, and others]

Leisure & Learning [OST, DfEE, DNH/British Library, ESRC, and others]

Manufacturing, Production & Business Processes [DTI/OST, EPSRC, and others]

Marine [MOD/DERA, DTI/OST, MAFF, NERC, and others]

Materials [MOD/DERA, DTI, EPSRC, and others]

Natural Resources and Environment [DTI/OST, DOE/Environment Agency, MAFF, NERC, and others]

Transport [OST, DOT, and others]

□ Parliamentary Select Committee Reports resulting in co-ordinated Government response (e.g. Human Genetics) [various Departments]

3. Departmental Co-ordination on Specific Issues

Environment

(1)   Biodiversity

United Kingdom Biodiversity Steering Group
Purpose: To co-ordinate work on conserving biodiversity in the UK.
Involves: MAFF, <u>DOE</u>, SO, NI, FC, WO, Environment Agency, industry, voluntary sector.
Contact: Mr R. Bendall (secretary)   **Tel:**   0117 987 8791 DOE   **Fax:**   0117 987 8182

□ UK Plant Genetic Resources Group [<u>MAFF</u>, ODA]

(2)   Environment and Health & Safety

Committee on Air Pollution Effects Research (CAPER)
Purpose: To promote liaison and co-ordination between scientists engaged in air pollution effects research and with Government Departments and agencies.
Involves: MAFF, <u>DOE</u>, ODA, SNH, NERC.
Contact: Dr L. Shephard   **Tel:**   0131 445 4343 Institute of Terrestrial Ecology   **Fax:**   0131 445 3943

Institute for Environment and Health
Purpose: To promote a healthier environment by facilitating information exchange, identifying and evaluating environmental health issues, and managing research programmes on the adverse impacts of chemicals on human health and the environment.
Involves: DOE, DH, HSE, MRC.
Contact: Dr M. Kemp   **Tel:**   0171 636 5422 MRC   **Fax:**   0171 636 6289

Radioactivity Research and Environmental Monitoring Committee		
Purpose: To co-ordinate research on radioactivity in the environment.		
Involves: MOD, DTI, MAFF, <u>DOE</u>/Environment Agency/NRPB, DH, SOAEFD, NI, NERC, industry.		
Contact: Dr R. Jackson DOE	**Tel:** 0171 276 8138 **Fax:** 0171 276 8909	

☐ Extensive and growing co-operation by HSE with other Departments [MAFF, DOE, DH, HSE]

☐ All DOE Research Committees have cross-Departmental and Agency representation

☐ Co-ordination Group on environmental oestrogens and other endocrine disrupters [MAFF, DOE, IEH, RCs]

☐ Inter-Departmental Working Group to develop and implement a national policy on dioxins [MAFF, DOE, HSE, others]

☐ Liaison on vehicle emissions [DOE, DH, DOT]

☐ Liaison on fire safety research [DOE, HSE, HO]

☐ Co-ordination (to avoid duplication) on noise and noise pollution research [DOE, HSE]

☐ Cross-representation on various advisory committees on toxicity of chemicals/toxic substances [DH, HSE, other Departments]

☐ Collaborative arrangements on disposal of radioactive and toxic wastes [DOE, HSE, Environment Agency]

☐ Attendance by HSE at DOE Research Forum on Environmental Aspects of Industrial Major Accident Hazards and DOE-led Steering Group for an Integrated Environmental Risk Assessment Tool [<u>DOE</u>, HSE]

☐ Jointly funded research on health effects of ionising radiation (under CCHARR) [DH, HSE]

(3) Global Environment Change

Inter-Agency Committee on Global Environment Change (IACGEC)
Purpose: To maintain under review scientific research in the UK directed to global environment change.
Involves: DTI/BNSC, <u>DOE</u>, ODA, Meteorological Office, BBSRC, EPSRC, ESRC, MRC, <u>NERC</u>.
Contact: Mr S. Morgan (secretary)   **Tel:**   01793 411779/34   UK Global Environment Research (GER) **Fax:**   01793 444513   Office

UK Environmental Change Network Steering Committee
Purpose: To manage and decide policy on the Environmental Change Network (ECN) Programme and to liaise between ECN monitoring sites.
Involves: MOD, MAFF, <u>DOE</u>/English Nature/Environment Agency, SOAEFD/SEPA, DANI/DOENI, FC, WO(CCW), BBSRC, <u>NERC</u>.
Contact: Dr T. Parr (Secretary and co-ordinator   **Tel:**   015395 32264   UK ECN)   **Fax:**   015395 34705   NERC, Institute of Terrestrial Ecology   **Email:** merlewood@ite.ac.uk

□ Co-operation on modelling transport derived greenhouse gas emissions [DOE, DOT]

(4) Marine Science & Technology

Inter-Agency Committee on Marine Science & Technology (IACMST), plus working groups
Purpose: To maintain an overview of national and international marine S&T activities and ensure that there are satisfactory arrangements for co-ordination of national and international work.
Involves: MOD/DERA/Hydrographic Office, DTI/<u>OST</u>, MAFF, DOE, SOAEFD, DOT, HSE, DANI, Environment Agency, Southampton Oceanography Centre, Meteorological Office, EPSRC, NERC, (advisers from industry and academia, assessors from FCO and DFEE).
Contact: Dr D. Pugh (secretary)   **Tel:**   01703 596611   Southampton Oceanography Centre   **Fax:**   01703 596395   **Email:** d.pugh@soc.soton.ac.uk

□ Jointly funded research on high strength materials for the marine environment [MOD, HSE]

□ Joint projects on oil and chemical pollution at sea and fish tainting/fish farming and seabirds in North Sea [DTI, MAFF, DOT]

(5)   Sustainable Development

Official Group on Sustainable Development, plus working groups		
Purpose: To provide support and guidance to the Government's Panel on Sustainable Development and to co-ordinate the Government's follow-up to the UK Sustainable Development Strategy.		
Involves: MOD, DTI, MAFF, DOE, DfEE, FCO/ODA, DH, SO, DOT, NI, WO, HMT, CO, OPS, PM's Office.		
Contact: Mr M. Capstick CO	**Tel:** 0171 270 0034 **Fax:** 0171 270 0057	

□ Indicators Working Group: inter-Departmental working group to develop indicators of sustainable development [DTI, MAFF, <u>DOE</u>, ODA, DH, SO, DOT, NI, FC, WO, HMT]

□ Liaison on sustainable local economic development [DTI, <u>DOE</u>, DfEE, ODA]

Agriculture & Fisheries

(6)   Fisheries: Territorial Co-ordination

Committee for Aquaculture Research & Development (CARD)		
Purpose: To advise Fisheries Departments on the extent to which current and planned publicly-funded strategic research aligns with industry's current and future R&D programmes and review the balance and priorities of publicly-funded aquaculture research.		
Involves: <u>MAFF</u>, SOAEFD, DANI, the Crown Estate, the Seafish Industry Authority, Industry Associations (e.g. Scottish Salmon Growers Association).		
Contact: Miss C. Skilling MAFF	**Tel:** 0171 238 5940 **Fax:** 0171 238 6045	

Co-ordination of Fisheries R&D (CFRD), plus working groups			
Purpose: To review and assess the need for and co-ordination of Government-funded R&D within fisheries science in the UK.			
Involves: <u>MAFF</u>, <u>SOAEFD</u>, DANI, NERC, universities.			
Contact: Dr P.W. Greig-Smith (Directorate of Fisheries Research)	**Tel:** **Fax:**	01502 562244 01502 513865	

United Kingdom Fisheries Customer Group (FCG)			
Purpose: To keep under review Fisheries Departments' requirements for R&D in relation to marine and inland fisheries and the aquatic environment with a view in particular to ensuring that:			
there is no duplication and no significant gaps in the R&D commissioned by the Fisheries Departments; and			
there is adequate co-ordination with other relevant UK and EC R&D programmes.			
Involves: <u>MAFF</u>, <u>SOAEFD</u>, DANI.			
Contact: Dr J Lock (Secretariat) MAFF	**Tel:** **Fax:**	0171 238 5549 0171 238 5599	

☐ Programme Management Committee for the LINK Aquaculture Programme [MAFF, SOAEFD, NERC]

(7)   Forestry

Forestry Research Co-ordination Committee (FRCC)			
Purpose: To identify and define forestry research needs, to advise on requirements and prioritise, to stimulate the exchange of information and collaboration between organisations and to encourage the financing of research.			
Involves: DTI, MAFF, DOE/BRE, ODA, SOAEFD, <u>FC</u>, BBSRC, ESRC, NERC.			
Contact: Prof J Evans Forestry Commission, Alice Holt Research Station	**Tel:** **Fax:**	0142 022 255 0142 023 653	

(8)   Horticulture

☐ Programme Management Committee for the LINK Horticulture Programme [MAFF, DOE, SOAEFD, DANI, BBSRC, NERC]

Agri-Environment

(9)   Agriculture & the Environment: Specific Issues

Water Research Co-ordination Committee

Purpose: To enable sponsors of water research to liaise on priorities.

Involves: MAFF, DOE/Environment Agency, SOAEFD,EPSRC, industry.

| **Contact:** Mr R Agg | **Tel:** | 01628 891 589 |
| Foundation for Water Research | **Fax:** | 01628 472 711 |

Inter-Departmental Group on Geographical Information (IGGI)

Purpose: To provide a forum for Government Departments to consider and develop a common view on geographical information issues, including the need to make full use of Government held geographical information both within and outside central Government and taking account of the latest technology.

Involves: MOD/Hydrographic Office/Meteorological Office/Military Survey, DTI/ETSU, MAFF/ADAS, DOE/English Nature/English Heritage/Environment Agency, DfEE, DH, SO/General Register Office for Scotland, DOT, NI(Ordnance Survey), HO, FC, WO, DNH/British Library, DSS, HMCE, HMT, HM Land Registry, CCTA, Lord Chancellor's Dept, Office of Fair Trading, ONS , Ordnance Survey, Valuation Office Agency.

Contact: Mr J Garnsworthy (secretary)	**Tel:**	0171 276 3999
DOE, Planning and Land Use Statistics	**Fax:**	0171 276 4912
Division		

□ Liaison at research procurement level, including: exchange of information, cross-representation on steering committees and joint projects [MAFF, DOE]

□ Regular co-ordination meetings on flood defence, to ensure co-ordination between RCs' basic research, MAFF's strategic work and Environment Agency's applied research [MAFF, DOE/Environment Agency, EPSRC, NERC, (and liaison with SOAEFD, DANI, WO)]

□ Co-ordination on land use [MAFF, DOE]

□ Soil Science Advisory Committee co-ordinates BBSRC and NERC research but also has co-ordinating function for main sponsors of soil research [MAFF, DTI, DOE, SOAEFD, BBSRC, NERC, industry]

□ Alternative Crops Unit co-ordinates research and policy on alternative crops, including liaison with other Government Departments[DTI, MAFF, DOE, SO, DOT, NI, FC, WO, BBSRC, EPSRC, ROs, industry]

- Inter-Departmental Committee on Fertilisers [MAFF, SOAEFD, HSE, DANI, WO, ADAS, State Vet. Service, Central Vet. Lab., LGC]

- Inter-Departmental Committee on Animal Feedstuffs [MAFF, DH, SOAEFD, HSE, NI, LGC]

- Liaison on impact of pesticides and pesticide safety including requirements for future research [MAFF, DOE, DH, HSE], including a jointly funded project on possible chronic health effects of organophosphorous sheep dips [MAFF, DH, HSE] and liaison on veterinary products via Veterinary Products Committee [MAFF, HSE]

- Cryptosporidium Research Steering Group to co-ordinate research [MAFF, DOE/Environment Agency, DH, MRC]

- Liaison on agricultural machinery [DTI, MAFF]

- Joint operation of Environment Technology Best Practice Programme (waste minimisation and cost effective cleaner technologies) [DTI, DOE]

- Piscivorous Birds R&D Programme Advisory Group to co-ordinate jointly funded research programme [MAFF, DOE/Environment Agency/JNCC, SOAEFD, research contractors]

- Programme Management Committee for the LINK Technologies for Sustainable Farming Systems Programme [DTI, MAFF, SOAEFD, BBSRC]

- Programme Management Committee for the LINK Biological Treatment of Soil and Water Programme [DTI, MAFF, BBSRC, NERC]

(10) Agriculture & the Environment: Territorial and General Co-ordination

Agriculture Food & Fisheries Research Funders Group
Purpose: To keep under review the requirements for publicly funded research in relation to agriculture, fisheries, the agri- and marine environment and food by ensuring effective co-ordination between Departments and Research Councils. Thus ensuring that research programmes are complementary, with no significant gaps or unnecessary duplication, and that the interests of industry are taken into account in their development.
Involves: MAFF, SOAEFD, DANI, FC, WO, BBSRC, NERC.
Contact: Ms A. Pawlyn   **Tel:** 0171 238 5608 MAFF   **Fax:** 0171 238 5597

Joint Consultative Committee (JCC)		
Purpose: To provide SOAEFD annually with a co-ordinated source of advice from other sponsors of agriculture and related R&D before it finalises its decisions on programme priorities for the coming year.		
Involves: MAFF, DOE, <u>SOAEFD</u>, DANI, BBSRC, EPSRC, MRC, NERC.		
Contact: Mrs C. McCracken SOAEFD	**Tel:** **Fax:**	0131 244 6049 0131 244 6566

MAFF Research Strategy Forum		
Purpose: To enable MAFF to present its policies and supporting research needs to the Research Councils, and the Research Councils to input ideas and information to MAFF.		
Involves: OST, <u>MAFF</u>, SOAEFD, DANI, WO, (DTI, DOE, DH, EPSRC, ESRC when appropriate) BBSRC, MRC, NERC.		
Contact: Ms A. Pawlyn (Secretariat) MAFF	**Tel:** **Fax:**	0171 238 5608 0171 238 5597

□ Scotland and Northern Ireland Forum for Environment Research (SNIFFER) provides a mechanism for co-ordinating water, waste and environmental research (and wider liaison) [DOE SOAEFD/Scottish River Purification Authorities, DOENI]

□ Territorial co-ordination on agricultural SET issues through membership of various R&D policy bodies and functional committees (e.g.: dairy cow welfare, potato research) [MAFF, SOAEFD, DANI, WO, BBSRC]

Food & Drink

(11)   Food Health/Safety/Quality and Territorial Co-ordination

Inter-Departmental Group on Microbiology		
Purpose: To exchange information on the food microbiology programmes of the member Departments.		
Involves: <u>MAFF</u>, DH, SOAEFD, DANI.		
Contact: Mrs K. Dowden/Dr A. White MAFF/DH	**Tel:** **Fax:**	0171 238 6101/ 0171 972 5333 0171 238 5696/ 0171 972 5155

□ ESRC initiative on the Nation's Diet and Health [MAFF, DH, BBSRC, <u>ESRC</u>]

- Co-ordination of food hygiene research and surveillance [MAFF, DH]

- Programme Management Committee for the LINK Agro-Food Quality Programme [DTI, MAFF, BBSRC]

- The Funders Group and Strategy Forum listed under 10 above also cover food.

- Co-ordination Group on Transmissible Spongiform Encephalopathies [MAFF, DH, BBSRC, MRC]

(12) Food Technology: Innovation and Transfer

- Various LINK programmes [MAFF, DTI, BBSRC]

Health & Life Sciences

(13) Health & Criminal/Justice Issues

- Liaison on drugs issues, e.g. Advisory Committee on Misuse of Drugs (R&D sub-committee) [DH, HO]

- Liaison on mentally disordered and the justice system [DH, HO]

- Liaison on juvenile delinquency [DH, HO]

(14) Healthcare Telematics

- (EC Framework Four sub-programme)

(15) Health: Territorial and General Co-ordination

Inter-Departmental Group on Public Health
Purpose: To facilitate inter-Departmental discussion and exchange of information on health issues, including: keeping hazards to public health under review; providing advice to Government of assessment of such hazards; providing a forum for discussion of relevant S&T issues; fostering trans-departmental links and identifying and correcting gaps in communication.
Involves: MOD, OST, MAFF, DOE, DfEE, FCO, ODA, DH, SODoH, DOT, HSE, DHSSNI, HO, WO, CO, DSS, HMT, ONS, LGC, CSOHS.
Contact: Mrs A. Walker   **Tel:**   0171 972 5091   DH   **Fax:**   0171 972 5138

□ Collaboration, and joint funding of projects, on broad range of R&D initiatives in areas of shared interest [DH/NHS, SODoH, DHSSNI, WO]

□ Collaboration and joint funding of work on infectious agents [ODA, DH, SODoH, DHSSNI, WO, BBSRC, MRC, industry, voluntary sector]

□ Jointly funded and managed programmes via MRC Concordat [DH/NHS, SODoH, DHSSNI, WO, MRC]

□ The National Forum, to advise the Health Service and the Government by bringing together health-related funders and promoting better links between all research funders [DH/NHS, SODoH, DHSSNI, WO]

□ Health of the Nation Working Groups [DOT, DH, DOE]

□ NHS R&D Managers Group which considers shared areas of interest in R&D [DH/NHS, SODoH, DHSSNI, WO]

□ UK Health Department's Survey Network Group, fostering closer links and common areas of interest involving population surveys [DH/NHS, SODoH, DHSSNI, WO]

□ Liaison on drugs issues, e.g. Advisory Committee on Misuse of Drugs (R&D Sub-Committee)

(16)   Nutrition

Human Nutrition Forum
Purpose: To develop complementary strategies in human nutrition research.
Involves: MAFF, DH, SOAEFD, BBSRC, MRC, industry.

Contact: Dr M. Anderson/Dr M. Kemp   **Tel:**   0179 341 3209
          BBSRC/MRC   0171 636 5422
                                                                      Fax: 0179 341 4674
                                                                                 0171 636 6289

□ Cross-representation on respective steering committees (e.g. Nutrition Programme Committee) and collaboration to ensure complementarity of research [MAFF, DH]

(17)   Vaccines

Expert Group on Vaccine R&D			
Purpose: To report on the priorities for UK vaccine R&D, and recommend an overall strategic framework for R&D, and production.			
Involves: DTI, MAFF, DH, BBSRC, MRC, academia, industry, others.			
Contact: Dr K. Finney MRC		**Tel:** **Fax:**	0171 637 6354 0171 636 3427

Biotechnology

(18)   Biotechnology & Bioethics

Inter-Departmental Group on Genetic Modification Technology (IGGMOT)			
Purpose: To co-ordinate and develop cross-Departmental policy on genetic modification technology and to co-ordinate the presentation of that policy in the EC and in international fora.			
Involves: MOD/DERA, DTI, OST, MAFF, DOE, ODA, DH, SO, NI, HO, WO, CO, BBSRC, MRC, NERC.			
Contact: Dr I. Gillespie (secretary) OST, Trans-departmental S&T		**Tel:** **Fax:**	0171 271 2077 0171 271 2028

□ Close links between HSE and Secretariat to Advisory Committee on Releases to the Environment [DOE, HSE]

□ Close links between HSE and Secretariat to Gene Therapy Advisory Committee [DH, HSE]

□ Close links between HSE and Secretariat to Advisory Committee on Novel Foods and Processes [MAFF, DH, HSE]

□ Steering group of "Biotechnology Means Business" initiative [DTI, DH, MAFF]

□ Memorandum of Understanding on the Control and Regulation of Contained Use and Deliberate Release of Genetically Modified Organisms [DOE, HSE]

□ Programme Management Committee for the LINK Cell Engineering Programme [DTI, MAFF, BBSRC, MRC]

Energy

(19) Energy & Energy Efficiency

Nuclear Safety Research Steering Group		
Purpose: To oversee the HSC co-ordinated programme of nuclear safety research.		
Involves: MOD, DTI, SO, <u>HSE</u>.		
Contact: Mr M. Bassett HSE, Nuclear Safety Directorate	**Tel:** **Fax:**	0151 951 4943 0171 717 6896 30151 922 5980 0171 717 6682

Radioactive Waste Management Policy Group		
Purpose: To consider policy on radioactive waste management.		
Involves: MOD, DTI, MAFF, <u>DOE</u>/Environment Agency /HSE, SO.		
Contact: Ms C. Shaw DOE	**Tel:** **Fax:**	0171 276 8401 0171 276 8909

- Liaison on energy efficiency [DTI, DOE(EEO), DOT]

- Joint research on alternative fuels [DOT, DTI, MAFF]

- Liaison on radioactive waste and decommissioning [MAFF, DOE, HSE]

- Liaison on offshore and gas safety research and decommissioning [DTI, HSE]

- Jointly funded research on high strength materials [MOD, HSE]

- Co-ordination of public and industry funded work into safety in mines [DTI, HSE]

- Joint research projects on energy efficiency [DOE(EEO), DOT]

(20)   Renewable Energy

Inter-Departmental Group on Energy Crops and Renewable Energy (IGEC-RE)		
Purpose: To provide an inter-Departmental forum for consultation on policy, strategic, technical and commercial aspects of energy crop and farm-based renewable energy project development and deployment. To advise on relevant programmes of work sponsored by participating Departments. To ensure co-ordination of activities to minimise duplication and maximise the benefits of collaboration. To promote a coherent inter-Departmental view.		
Involves: <u>DTI/ETSU</u>, <u>MAFF</u>, DOE, SOAEFD, DOT, DANI, FC/FA, WO, BBSRC.		
Contact: Mrs J. Tagg (secretary) ETSU	**Tel:** **Fax:**	01235 432 359 01235 433 964

☐ Energy Technology Support Unit (ETSU), Environmental Liaison Group co-ordinates DTI funded research on energy crops [<u>DTI</u>/ETSU, MAFF, DOE, FC, various agencies, voluntary sector]

Construction

(21)   Construction Industry

Construction Research and Innovation Strategy Panel (CRISP), plus working groups		
Purpose: (i) to identify the construction community's research and innovation priorities; (ii) to promote research and innovation among the construction community in order to improve performance.		
Involves: DTI(invited), MAFF(invited), <u>DOE</u>, DOT(Highways Agency), HSE, EPSRC, industry and other bodies.		
Contact: Mr R. John (CRISP Secretariat) Building Research Establishment	**Tel:** **Fax:** **Email:**	01923 664255 01923 664687 johnr@bre.co.uk

☐ Liaison and exchange of research results [DOE, DOT]

Transport

(22)   Transport & the Environment

Local Air Quality Management Working Group	
Purpose: To help implement the new local air quality management system.	
Involves: <u>DOE</u>, Environment Agency, DH, SOAEFD, DOT, DENI, HO, WO, GOL, others.	
Contact: Ms H. Cromarty (Secretary) DOE	**Tel:** 0171 276 8477 **Fax:** 0171 276 8299

- ☐ Joint policy statements [DOE, DOT]

- ☐ Cross membership of research committees and links at research procurement level [DOE, DOT]

- ☐ Exchange of information [DOE, DOT]

- ☐ Liaison and joint research on teleworking [<u>DTI</u>, DOE, DfEE, SO, DOT, NI, WO]

- ☐ Liaison group on transport planning and the environment [DOE, DOT]

- ☐ Land use and transport research group [DOE, DOT]

- ☐ Foresight Vehicle project committee [DTI, DOT]

- ☐ Joint research projects [DOE, DOT]

- ☐ Liaison on noise insulation regulations for railways [DOE, DOT]

- ☐ Liaison on atmospheric chemistry and pollution [DOE, MOD]

(23)   Transport and Health & Safety

Inter-Departmental Committee on Vehicle Pollution	
Purpose: To develop UK position on EU Directives on vehicle emissions.	
Involves: <u>DOT</u>, DTI, DOE, DH, HMT, CO, FCO, UKRep.	
Contact: Dr P. Greening DOT	**Tel:** 0171 271 4636 **Fax:** 0171 271 4624

- ☐ Joint development of policy [DH, DOT]

□ Joint Police Liaison Officer, funded by HO and DOT, who, inter alia, facilitates liaison on research issues. The HO liaises closely with DOT and ACPO on research into road safety and traffic policing [DOT, HO]

□ MOD Sensitiveness Collaboration Committee which agrees test methods to determine hazards of transporting explosive materials [MOD, HSE]

□ Joint research on drink-drive enforcement [DOT, HO]

□ HSC's Advisory Committee on Dangerous Substances has a research co-ordination function

□ Liaison on railway and helicopter safety research [MOD, DOT/CAA, HSE]

□ Liaison on marine safety (e.g. likelihood of collisions) [DOT(Marine Safety Agency), HSE]

□ Liaison on carriage of disabled children to school [DH, DOT]

□ Physical Activity Task Force [DH, DOT]

□ Transport of dangerous goods including joint work in support of international agreements and Enforcement Liaison Committee on the Transport of Radioactive materials (ELCTRAM) [DOT, HSE]

□ Work at international standards committees by HSE on behalf of DOT on road tanker design [DOT, HSE]

□ Liaison on transportable pressure vessels [DTI, HSE]

□ Collaboration and joint research projects (e.g. safe carriage of wheelchairs, standards) [DH, DOT]

□ Health of the Nation Working Groups

(24)   Transport Telematics

□ DOT strategy group reviewing policy on transport telematics (DOT, DTI)

(25)   Transport: Territorial and General Co-ordination

□ Membership of relevant DOT research committees by Territorial Departments [SO, DOT, NI, WO]

□ Programme Management Committee for the LINK Inland Surface Transport Programme [DTI, DOT, EPSRC, ESRC]

Manufacturing, Production & Business Processes

(26) Business and the Environment

☐ Advisory Committee on Business and the Environment with joint DTI/DOE secretariat and future sub-committees of officials likely [DTI, DOE]

☐ Joint funding of Environmental Technology Best Practice Programme [DTI, DOE]

☐ Joint funding of UK Ecolabelling Board [DTI, DOE]

☐ Joint Environmental Marketing Unit [DTI, DOE]

☐ Joint funding of various economic and commercial topics [DTI, SO]

(27) Business Processes

☐ EPSRC's Innovative Manufacturing Initiative (IMI) covering various sector driven research programmes and overarching business processes programme [DTI, DOE, DOT, BBSRC, ESRC, EPSRC]

(28) Fine Chemicals

☐ Liaison at programme manager level in various areas (e.g. pharmaceuticals, agrochemicals and the chemical industry) [MOD, DTI, MAFF, DH]

Defence & Aerospace

(29) Civil Aircraft

☐ Joint funding and co-ordination via the Civil Aircraft Research and Demonstration programme (CARAD) [MOD/DERA, DTI, EPSRC]

☐ Liaison between MOD's Procurement Executive and DTI's Aerospace and Defence Industries Directorate

(30)   Civil/Defence Dual Use Technologies

Civil and Defence Working Forum on SET Collaboration, plus working groups
Purpose: To help co-ordinate the planning of S&T programmes with both civil and defence relevance. In particular, to promote wherever possible a joint civil and defence response to Technology Foresight, building on existing collaborative mechanisms and involving industry and academia. **Involves:** MOD/DERA, DTI/OST, RCs. (Plus others in working groups.)

Contact: Mr P. Ewins	**Tel:**	0171 218 2848
Chief Scientist, MOD	**Fax:**	0171 218 6552

☐ Dual Use Technology Centres covering: structural materials, supercomputing, software engineering, marine technology, telecommunications and information processing, and electronics [MOD/DERA, DTI]

☐ Defence Scientific Advisory Council (DSAC) [MOD, DTI]

☐ National Defence Industry Council (NDIC) [MOD, DTI]

(31)   Space

British National Space Centre (BNSC), including various programme boards, advisory panels, etc.
Purpose: To draw together the civil space interests of participating Departments and research councils into a coherent UK space programme. **Involves:** MOD, DTI, DOE, FCO, DOT, CO, Meteorological Office, PPARC, NERC.

Contact: Mr M. Blackwell	**Tel:**	0171 215 0806/7/8
BNSC	**Fax:**	0171 215 0936

☐ Liaison and co-ordination between BNSC and other Government Departments

☐ Programme Management Committee for the LINK Earth Observation Programme [DTI, DOE, NERC, MAFF, Environment Agency]

Information and Communications Technologies

(32)   Information and Communications Technologies

Inter-Departmental Committee on Software Engineering/Safety Related Systems (ICSE/SRS)		
Purpose: To co-ordinate research to develop software based safety-critical systems.		
Involves: MOD/DERA, DTI, HSE, DH, DOT, EPSRC, NPL, CAA.		
Contact: Mr R. Bell HSE	**Tel:** **Fax:**	0151 951 4788 0151 951 4630

Generic and Miscellaneous Issues

(33)   Education, Training and Employment

Road Safety Education Research Steering Group		
Purpose: To sponsor joint research projects aimed at developing methods for educating school aged children on road safety.		
Involves: DOT, DH, DfEE, DTI.		
Contact: Ms D. O'Reilly DOT	**Tel:** **Fax:**	0171 271 4772 0171 271 4728

□ Co-ordination of employment policy evaluation and impact on special groups in society through: Permanent Secretaries' Group on the Underclass; policy manager liaison, project managers collaboration on research; and inter-Departmental liaison through chief research officers [DOE, DfEE, HO, DSS]

□ Co-ordination with other Government Departments on DfEE evaluation of the education process or policy [DOE, DfEE, DH, ONS]

□ Collaboration at project manager level on research into working practices [DTI, DfEE, DOT]

□ Liaison on programme on 'Supporting Parents' [DfEE, DH]

□ Co-ordination across Territorial Departments [DfEE, SOEID, DENI, WO]

(34)   **Industrial Innovation & Best Practice: Territorial and General Co-ordination**

□ Liaison on local operation of support programmes and development of Business Link equivalents, and participation in national underpinning mechanisms [DTI, SOEID, DEDNI, WO]

(35) Modelling, Simulation & Prediction of Complex Systems

(See 30 and 32.)

(36) Developing Countries

☐ Ministerial Committee on Overseas Aid (FCO, DTI, HMT)

☐ Commissioning of jointly funded research with other Government Departments [ODA, DOE, DTI, MAFF, DH]

☐ United Nations Environment and Development - UK (UNED-UK) [ODA +DOE]

(37) Risk Assessment and Perception

Inter-Departmental Liaison Group on Risk Assessment (ILGRA)		
Purpose: To help secure coherence and consistency within and between policy and practice in risk assessment as undertaken by Government, and help disseminate and advance good practice.		
Involves: MOD, DTI, MAFF, DOE/HSE/Environment Agency, DfEE, ODA, DH, SOEID, DOT, HO, WO, CAA, CO, DNH, HMT, IR.		
Contact: Dr J M Le Guen (secretary) HSE	**Tel:** 0171 717 6403 **Fax:** 0171 717 6417	

Steering Committee on Risk Assessment and Toxicology		
Purpose: To promote coherence and consistency in policies and practices of risk assessment in the area of toxicology. (Reports to ILGRA.)		
Involves: DTI/OST, MAFF, DOE/HSE, DH, DOT, HO, BBSRC, MRC, (others, ad hoc).		
Contact: Dr P. Illing IEH	**Tel:** 0116 223 1603 **Fax:** 0116 223 1601	

☐ Inter-Departmental methodology working groups on risk assessment and toxicology, and on the setting of safety standards

☐ Risk assessment research database compiled to aid cross-Departmental collaboration

☐ Joint research projects on the valuation of safety benefits and on how Departments communicate with the public on risk [DOT, HSE, HO, HMT]

☐ Plans for collaboration on public perception of environmental risk [DTI, DOE, EPSRC, NERC, chemicals industry]

□ Joint research programme at IEH on risk assessment and toxicology [MAFF, DOE, HSE, MRC]

(38) Security/Privacy/Enforcement Technology and Fraud

□ Pilot dual-use programme, as part of work of the Civil/Defence Forum, in security and privacy technology (see 30)

□ Formal transport security liaison committees [MOD, DOT, HO]

□ Liaison on police related research [MOD/DERA, DOT, HO, CO, HMCE]

□ Joint research programmes, funded by DOT, into aspects of transport security [MOD, DOT, HO]

(39) Social Science/Social Work: Territorial Co-ordination

□ Liaison on crime-related programmes [SOHD, NI, HO, WO, Lord Chancellor's Dept.]

□ Liaison and joint project funding on social work [DH, SOHD, DHSSNI, HO, WO, DSS, ESRC]

(40) Standards and Standards Policy

□ DTI-led co-ordination of Government standards policy

Annex D: Interaction Matrix Approach to Mapping Cross-Departmental Knowledge and Liaison

1. Introduction

1. The matrix approach, which has been used so far to map DOE's links with DOT and MAFF, has been developed as a means of allowing Chief Scientists to monitor the progress of co-ordination activities at programme level within their Departments. It is particularly applicable where responsibility for SET procurement has been devolved to policy divisions. A major benefit of the method is that it allows the Chief Scientists to maintain a light touch, but, if circumstances appear to make it necessary, it gives the opportunity for their intervention.

2. The matrix aims to map the extent of co-ordination at SET programme level between two Departments by providing in tabular form a summary of the level of interaction between all the programmes of one Department with all those of the other. When first prepared it provides the basis for reviewing co-ordination, and it can then be updated regularly to monitor progress.

2. Development of the Matrix

3. The basic steps leading up to the development of the matrix are as follows:

☐ Chief Scientists agree the need for a matrix, and identify an official in each of their Offices to be responsible for its preparation;

☐ these officials exchange information on their Department's SET programmes, in particular the titles of programme areas, and agree a scoring system to describe the extent of co-ordination at programme level;

☐ officials circulate a list of the other Department's programme areas to their own programme managers, and ask them to report on the extent and nature of links with each of the other Department's programmes;

☐ on receiving replies from programme managers, officials develop a matrix from their own Department's viewpoint using the managers' ratings and comments;

☐ officials compare the two resulting matrices, and if possible consolidate them into one. Areas of apparent mismatch, or where potential for greater co-ordination may exist, are noted for discussion at a Chief Scientists' meeting.

3. Outcome

4. The matrix relies on the interpretation of general criteria for marking the extent of co-ordination by many officials, and cannot therefore claim to give an accurate or detailed picture of co-ordination arrangements. It does however provide the opportunity for all involved in the management of SET to consider whether their links with related programmes in other Departments are at an appropriate level. Chief Scientists can monitor the progress of co-ordination, and call for the matrix to be updated at regular intervals. There is unlikely to be any benefit in doing this more often than annually, and two years between matrix revisions may prove adequate.

4. Examples of the Use of Matrices

5. The DOE/MAFF matrix opposite was first discussed at a meeting of Chief Scientists in March 1995. They were reassured to see a large measure of agreement between the summary papers prepared by the two Departments, and upon which the matrix was based, and that co-ordination arrangements appeared to be working well on the ground. Action was agreed to foster further links in the areas of land use planning and flood/coastal defence.

6. A further example of the use of Chief Scientists' meetings in the development of appropriate links between Departments is in the field of noise research, where the DOT/DOE matrix appeared to show a weakness in co-ordination arrangements. This confirmed a conclusion of a recently completed evaluation of the DOE programme, and has resulted in enhanced management support for the programme within DOE, enabling the setting up of a Noise Research Advisory Committee, which met for the first time in December 1995. This includes a representative of DOT, and others from HSE, DTI, MOD, DH and other interested institutions.

Key	
0	No Contact
1	General awareness of MAFF activity in
	area, but no detailed information
	programme. Occasional meetings at
2	A higher degree of awareness, and
	exchanges of more detailed
	Meetings at least once a
3	High level of awareness,
	exchanged involving high degree of detail
	activities. Frequent meetings - at least twice
	year. Possible research

DOE Programmes	
AQ	Air Quality
GA	Global Atmosphere
TS	Toxic Substances
LEQ	Local Environmental Quality (Noise)
RAS	Radioactive Substances
WRM	Water and Marine
CLL	Contaminated Land
WT	Waste Technical
DRA	Rural Affairs (Countryside)
LUP	Land Use Planning
GMP	Geological & Minerals Planning
LG	Local Government
HUG	Housing and Urban
CD	Construction
HMIP	Pollution Inspectorate
EPS	Environment Protection Statistics
EEO	Energy Efficiency

Example of a Matrix: DOE & MAFF

MAFF Research Area	DOE Research Programme																
	AQ	GA	TS	LEQ	RAS	WRM	CLL	WT	DRA	LUP	GMP	LG	HUG	CD	HMIP	EPS	EEO
Arable Crops/ Horticulture	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Livestock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conservation Policy	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Countryside	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
ESA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Land Use/ Tenure	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0
Marine Fisheries	0	0	0	0	3	1	0	0	0	0	0	0	0	0	1	0	0
Environmental Protection	2	3	0	0	0	0	1	1	1	0	0	0	0	0	3	0	0
Flood / Coastal Defence	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0
Marine Envmt Protection	0	0	0	0	3	1	0	1	0	0	2	0	0	0	0	0	0
Directorate of Fisheries Res	0	0	1	0	3	3	0	0	0	0	0	0	0	0	2	0	0
Salmon, Whaling, Inland Fisheries	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Food Safety	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Food Science	0	0	3	0	0	0	0	1	0	0	0	0	0	0	2	0	0
Pesticides Safety	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Agricultural Resources	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Animal Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Animal Welfare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meat Hygiene	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Biotechnology	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Veterinary Medicines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Economics/ Statistics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annex E: Acronyms

Acronym	Full Name
ACBE	Advisory Committee on Business and the Environment
ACDS	Advisory Committee on Dangerous Substances
ACPO	Association of Chief Police Officers
ADAS	MAFF agency, previously the Agricultural Development Advisory Service
BBSRC	Biotechnology and Biological Research Council
BNSC	British National Space Centre
BRE	Building Research Establishment
CAA	Civil Aviation Authority
CAPER	Committee on Air Pollution Effects Research
CARAD	Civil Aircraft Research and Demonstration Programme
CARD	Committee for Aquaculture R&D
CCHAR	Co-ordination Committee on Health Aspects of Radiation Research
CCLRC	Council for the Central Laboratory of Research Councils
CCTA	Central Computer and Telecommunications Agency
CCW	Countryside Council for Wales
CFRD	Co-ordination of Fisheries R&D
CIT	Countries in Transition
CO	Cabinet Office
CORDIS	Community R&D Information Services
CRIB	Current Research in Britain
CRISP	Construction Research and Innovation Strategy Panel
CS	Chief Scientist
CSA	Chief Scientific Adviser
CSOHS	Civil Service Occupational Health Service
DANI	Department of Agriculture for NI
DEDNI	Department of Economic Development for NI
DENI	Department of Education for NI
DERA	Defence Evaluation and Research Agency
DfEE	Department for Education and Employment
DH	Department of Health
DHSSNI	Department of Health and Social Services for NI
DNH	Department of National Heritage
DOE	Department of the Environment
DOENI	Department of the Environment for NI
DOT	Department of Transport
DSAC	Defence Scientific Advisory Council
DSS	Department of Social Security
DTI	Department of Trade and Industry

ECN	Environmental Change Network
EDC	Ministerial Committee on Competitiveness (incl. S&T)
EDE	Ministerial Committee on the Environment
EDS(O)	Cabinet official Committee on S&T
EDX	Ministerial Committee on Expenditure
EEO	Energy Efficiency Office
ELCTRAM	Liaison Committee on the Transport of Radioactive Materials
EPSRC	Engineering and Physical Sciences Research Council
ESRC	Economic and Social Research Council
ETSU	Energy Technology Support Unit
EUREKA	A pan-European initiative for market driven collaborative R&D

FA	Forestry Authority
FC	Forestry Commission
FCG	UK Fisheries Customer Group
FCO	Foreign and Commonwealth Office
FRCC	Forestry Research Co-ordination Committee

GEF	Global Environment Facility
GER	Global Environment Research
GMOs	Genetically Modified Organisms
GOL	Government Office for London
GOs	Government Offices

HMCE	HM Customs and Excise
HMT	HM Treasury
HO	Home Office
HSC/E	Health and Safety Commission/Executive
HSL	Health and Safety Laboratory

IACGEC	Inter-Agency Committee on Global Environment Change
IACMST	Inter-Agency Committee on Marine S&T
ICSE/SRS	Inter-Departmental Committee on Software Engineering/Safety-related Systems
IDCAFS	Inter-Departmental Committee on Animal Feedstuffs
IEH	Institute of Environment and Health
IGEC-RE	Inter-Departmental Group on Energy Crops and Renewable Energy
IGGI	Inter-Departmental Group on Geographical Information
IGGMOT	Inter-Departmental Group on Genetic Modification Technology
ILGRA	Inter-Departmental Liaison Group on Risk Assessment
IMI	Innovative Manufacturing Initiative
IR	Inland Revenue

JCC	Joint Consultative Committee
JNCC	Joint Nature Conservancy Council
LGC	Laboratory of the Government Chemist
LINK	Programmes of support for collaborative R&D between industry and the science base
M90s	Managing in the 90s programme
MAFF	Ministry of Agriculture, Fisheries and Food
MOD	Ministry of Defence
MRC	Medical Research Council
NDIC	National Defence Industry Council
NDPBs	Non-Departmental Public Bodies
NERC	Natural Environment Research Council
NEST	Network for the Exploitation of S&T
NI	Northern Ireland Office
NPL	National Physical Laboratory
NRPB	National Radiologocal Protection Board
ODA	Overseas Development Administration
ONS	Office for National Statistics
OPS	Office of Public Service
OST	Office of Science & Technology
PES	Public Expenditure Survey
PPARC	Particle Physics and Astronomy Research Council
PSDB	Police Scientific Development Branch
PSRE	Public Sector Research Establishment
RCs	Research Councils
ROs	Research Organisations
SAFE	Security Facilities Executive
SEAC	Spongiform Encephalopathy Advisory Committee
SEPA	Scottish Environmental Protection Agency
SET	Science, Engineering & Technology
SMART	Small Firms Merit Award for Science & Technology
SMEs	Small and Medium-sized Enterprises
SNH	Scottish Natural Heritage
SNIFFER	Scotland & Northern Ireland Forum for Environment Research
SO	Scottish Office
SOAEFD	SO Agriculture, Environment and Fisheries Department
SOEID	SO Education and Industry Department

SODD	SO Development Department
SODoH	SO Department of Health
SOHD	SO Home Department
TCS	Teaching Company Scheme
TDR	Sectoral Technology Development and Research Strategies of ODA
TRL	Transport Research Laboratory
UKRep	UK permanent representation to the EU
UNED-UK	United Nations Environment and Development - UK
WO	Welsh Office
WWW	World Wide Web

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