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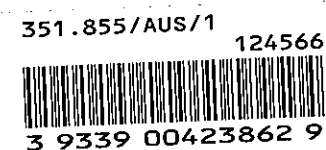


SCIENCE STATEMENT 1979-80

by
The Minister for Science and the Environment
The Honourable David Thomson, M.P.

APRIL 1980

SCIENCE STATEMENT 1979-80



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1979-80

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The Honourable David Thomson, M.C., M.P.

*Prepared by the Department of Science and
the Environment on the basis of information
provided by agencies of the Commonwealth Government*

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ISBN 0 642 04909 2

First Printed May 1980

Reprinted September 1980

Printed by C. J. THOMPSON, Commonwealth Government Printer, Canberra

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ROUNDING CONVENTION

All entries are presented to the accuracy quoted by respondents. Totals have been rounded to the same number of decimal places as the least accurately specified item in the aggregate. It should be recognised, however, that the data are often less accurate than implied by the number of figures presented.

SCIENCE STATEMENT 1979-80

INTRODUCTION

Australia does not have a central science coordinating body nor is there a single budgetary channel for funds in support of Research and Development (R & D)(1). Such funds are obtained individually by a wide range of Commonwealth, State, higher education and private bodies from Commonwealth and State Governments, the business enterprise sector and private bodies and persons.

This first and pilot Science Statement is a post-budget analysis which has been prepared by the Department of Science and the Environment in accordance with the stated Government policy of advising Parliament on trends in R&D. Impetus was provided by a recent recommendation of the Australian Science and Technology Council (ASTEC) and the agreement of the Prime Minister.

It is hoped that this first attempt to bring together a consolidated statement of Commonwealth Government funding of R&D will be of value to Parliament, to policy developers and to the interested community generally. It will assist the Department of Science and the Environment and ASTEC to discharge their responsibilities for providing advice to the Commonwealth Government on matters relating to science and technology.

The Statement identifies R & D activities of the Commonwealth Government in three ways: by ministries, by Budget function, and by socio-economic objective classification as used in Project SCORE, the biennial Survey and Comparison of Research Expenditure for which the Department of Science and the Environment has overall responsibility(2). It gives an overview of the funding of R & D in Australia, and highlights some recent initiatives in Commonwealth Government funding.

Data for 1968-69, 1973-74 and 1976-77 from Project SCORE have been used for purposes of comparison and to provide an historical overview. An attempt has been made to construct the Statement in such a way that the figures will be broadly comparable with those of Project SCORE, but differences in collection methods and data sources have, inevitably, produced some inconsistencies. In the main, this Statement is based on information provided by funders whereas Project SCORE is based on past expenditure information provided by performers.

-
- (1) The Organization for Economic Co-operation and Development (OECD) standard definition of R & D has been adopted as a guide in preparing this document. This definition is: 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.
 - (2) Responsibility for conducting the survey lies with the Australian Bureau of Statistics.

Other points which should be noted are that:

- . the Statement, since it concentrates on funding, is not primarily concerned with the sectors in which R & D is performed. Thus, Commonwealth payments to other bodies to perform R & D are included while R & D performed by Commonwealth bodies but funded through contributions from other sectors is excluded;
- . the Statement does not address scientific activities other than R & D; the extension of future statements to areas other than R & D (for example to science information and scientific services) is under consideration;
- . in addition to departments, Commonwealth Government agencies, public enterprises, and other statutory authorities are included in the scope of this Statement;
- . in addition to identifiable Budget appropriations directed towards R & D, the Statement contains estimates of R & D performed in units whose principal objective is not research; in the majority of cases these estimates have been made by the agencies concerned; and
- . in the absence of a fully developed, commonly adopted methodology, the treatment of data has naturally varied somewhat from ministry to ministry: while figures for the elements which are solely concerned with R & D, (e.g. CSIRO, Defence Science and Technology Organisation and research granting schemes) are taken from public accounts, data from other elements should be regarded as indicative. The data reported are as supplied by the participating agencies.

In preparing Statements for future years it is intended that a uniform methodology will be developed. Consideration also is being given to extending the coverage of future Statements to include such aspects as the separation of capital and recurrent expenditure and of intramural and extramural funding.

The Department of Science and the Environment wishes to acknowledge the assistance of other departments and agencies and the supportive role played by ASTEC in developing the format and content of this Statement.

RECENT TRENDS IN COMMONWEALTH FUNDED R & D

Commonwealth Government funding of R & D rose substantially between 1968-69 and 1973-74, and was then maintained in real terms between 1973-74 and 1976-77. Private enterprise expenditure on R & D declined significantly between 1973-74 and 1976-77, leading to a decline in real terms for gross domestic expenditure on research and development (GERD)⁽¹⁾ over that period. Table 1 compares the contributions to R & D funding by the different sectors for these years⁽²⁾.

Table 1: Distribution of Australia's gross domestic expenditure on R & D (GERD) by source of funds: 1968-69 to 1976-77

Source of funds	Estimated values of funds at constant 1974-75 prices (a)		
	1968-69	1973-74	1976-77
	(\$ m)		
Commonwealth Government (b)	274	403	408
State Government	93	79	93
Private Enterprise	200	220	117
Other Australian	15	8	9
Overseas	17	13	11
Total (GERD)	599	724	639

Source: Project SCORE 1976-77.

(a) Implicit GDP deflator used in 1976-77 Project SCORE report, from GDP figures published in Australian Bureau of Statistics Catalogue No. 5204.0, Australian National Accounts: National Income and Expenditure 1976-77.

(b) These figures were compiled on a different basis from those of Table 2 (see pages 1, 18).

(1) Gross Domestic Expenditure on R & D (GERD) is total intramural expenditure for R & D performed on national territory during a given period, in this case a financial year. Intramural expenditure includes all funds used for the performance of R & D within a particular organisation or sector of the economy, whatever the source of finance.

(2) Except for Table 1, where expenditures are at estimated constant 1974-75 prices, all expenditures in the Statement are at current prices.

Commonwealth Government funds expended on R & D, for the years 1976-77 to 1979-80, are compared in Table 2 to total Commonwealth expenditures and Gross Domestic Product. Figures presented for the Budget sector (1) are net of recoveries and comprise expenditures from appropriations specifically identified for R & D, estimated expenditures on R & D from other appropriations, and, in the case of Research Trust Funds, the Commonwealth contributions to these Funds from Special Appropriations. It should be noted that R & D expenditures from these Trust Funds usually differ significantly from the net Commonwealth contributions, because of other funding sources such as industry levies, States contributions and interest, and because of different phasing of the R & D expenditure and the Commonwealth payments. Figures presented for Commonwealth bodies outside the Budget sector represent the R & D funded by these bodies from their own trading revenues. Except in Table 1 (where the sources are identified) and Appendix 2 (which refers to R & D performed by Commonwealth agencies) funds from other sources are not included in the data presented. Table 3 shows the estimated Commonwealth funds expended on R & D by ministry with prime responsibility for planning the expenditure.

Table 2: Trends in Commonwealth Government funds expended on R & D 1976-77 to 1979-80

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80(c)
Estimated Commonwealth Government funds expended on R & D (Budget sector)	432.	458.	507.	574.
% Total Commonwealth outlays	1.79	1.71	1.75	1.81
Estimated Commonwealth Government funds expended on R & D including funds provided by Commonwealth Statutory Authorities	464.	487.	537.	606.
% GDP	0.56	0.54	0.53	-
Total Commonwealth outlays (a)	24123.	26802.	29045.	31692.
GDP (b)	82780.	90295.	101633.	n.a.

(a) Source: 1979-80 Budget Paper No. 1, Budget Speech, Statement No. 6, Table 4.

(b) Source: 1979-80 Budget Paper No. 9, National Income and Expenditure 1978-79, Table 1.

(c) Estimate - all 1979-80 figures throughout the Statement are estimates.

(1) The Budget sector consists of all transactions relating to the Commonwealth Revenue Fund, the Loan Funds, and the Trust Funds, as reported in the Budget Statements.

Table 3: Estimated Commonwealth Government funds(a) expended on R & D by ministry: 1976-77 to 1979-80

	(\$ m)			
Ministry	1976-77	1977-78	1978-79	1979-80
Aboriginal Affairs	1.643	1.591	1.894	1.944
Administrative Services	0.017	0.017	0.026	0.124
Attorney General (a)	1.447	1.797	1.901	2.040
Capital Territory	0.591	0.565	0.603	0.585
Defence	93.0	100.0	96.1	100.7
Education (b)	62.9	70.7	76.8	83.5
Foreign Affairs (c)	0.119	0.116	0.061	0.134
Health	16.198	19.641	22.389	24.783
Housing and Construction	1.790	1.940	2.190	2.320
Immigration and Ethnic Affairs	0.146	0.117	0.364	0.770
National Development and Energy (a)	24.6	26.3	34.5	41.2
Primary Industry (a)	34.3	29.8	27.8	27.2
Productivity	19.005	17.160	29.295	38.702
Science and the Environment	162.5	173.7	200.7	236.2
Social Security	0.205	0.176	0.229	0.488
Transport (d)	11.3	12.6	10.5	11.1
Treasury	1.5	1.5	1.5	1.6
Veterans' Affairs	0.3	0.3	0.4	0.4
Total (Budget sector)	431.6	458.0	507.3	574.0
Post and Telecommunications (Telecom, Australia Post, OTC)	29.3	25.8(e)	27.1	27.8(e)
Treasury (Reserve Bank)	0.804	0.952	1.065	1.199
Health (CSL funds)	2.137	2.001	1.632	2.504
Total (including funds provided by Commonwealth Statutory Authorities)	463.8	486.8	537.1	605.5

(a) These figures include Commonwealth Government contributions to the relevant Research Trust Accounts, from Special Appropriations, and not expenditure from these Accounts.

(b) Excluding the research component of teaching-and-research activities in tertiary institutions (see page 18).

(c) Excluding R & D funded as aid to other countries.

(d) Figures for Transport are limited to Budget appropriations. See discussion under ministry heading Transport at page 39.

(e) Approximate.

The Budget sector funds shown in Table 3 were disbursed by function as shown in Table 4, whereas Table 5 shows the socio-economic objectives to which the R & D activities would be allocated in Project SCORE. Although a number of category titles in the two tables are the same, the entries will in general differ because the R & D activities of some organisations will contribute to national objectives other than the Budget function to which they have been classified. For example, the CSIRO appropriation falls within the Budget function "General and Scientific Research n.e.c.", whereas CSIRO R & D is aimed at a number of specific areas as shown in Table 7. Appendix 1 shows the distribution by socio-economic objective of Commonwealth funding of R & D in 1976-77 as derived in Project SCORE, while Appendix 2 shows the corresponding distribution for R & D performed by Commonwealth agencies using funds from all sources.

Taxation Concessions Associated with R & D

Revenue foregone by the Commonwealth as a result of taxation concessions relating to R & D expenditures may be regarded as a form of Commonwealth funding of R & D. The amounts involved are difficult to estimate accurately and no allowances for them have been included in the tables presented in this, the first Science Statement.

The Commissioner of Taxation advises that concessions in respect of expenditure on scientific research allowed under section 73A of the Income Tax Assessment Act have been estimated as amounting to about \$2m in 1979-80. In addition there is a short-run foregoing of revenue attributable to provisions for accelerated depreciation of plant used for scientific research, estimated at about \$4m for 1979-80, and the foregoing of sales tax through exemptions on certain items of scientific equipment. The cost of the latter has not been estimated.

It is argued that the total cost borne by the revenue in respect of expenditure on R & D is considerably greater than implied by the above deductions, depreciation allowances and sales tax exemptions, since much R & D expenditure is not readily distinguishable in accounts from other business expenditures which are allowed as losses or outgoings necessarily incurred in carrying on a business. As virtually all outlays by private business on R & D would be allowable outgoing for income tax purposes, the revenue could be inferred to bear 46% of the R & D costs, other than items to which investment allowance applies, in which case the figure would rise to 55%.

Table 4: Estimated Commonwealth Government Budget sector funds expended on R & D by Budget function: 1976-77 to 1979-80

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Defence	93.0	100.0	96.1	100.7
Education	62.9	70.7	76.8	83.6
Health	16.198	19.641	22.389	24.783
Social Security and Welfare	1.2	1.3	1.7	2.2
Housing	-	-	0.100	0.100
Urban and Regional Development n.e.c. and the Environment	0.636	0.250	0.924	1.976
Culture and Recreation	0.401	0.786	0.992	1.055
Economic Services -				
Transport and Communication	10.449	11.744	9.471	10.094
Water Supply and Electricity	-	-	-	-
Industry Assistance and Development	61.3	56.3	72.6	87.5
Labour and Employment	0.146	0.117	0.138	0.250
Other Economic Services	1.286	1.346	1.154	1.213
Total Economic Services	73.2	69.5	83.4	99.0
General Public Services -				
Legislative Services	-	-	-	-
Law, Order and Public Safety	2.364	2.668	2.921	3.203
Foreign Affairs and Overseas Aid	-	-	-	-
General and Scientific Research n.e.c.	173.5	184.1	212.3	247.1
Administrative Services	8.2	9.1	9.7	10.2
Total General Public Services	184.1	195.9	224.8	260.5
Not allocated to function	-	-	-	-
Total (Budget sector)	431.6	458.0	507.3	574.0

Table 5: Estimated Commonwealth Government Budget sector funds expended on R & D by socio-economic objective: 1976-77 to 1979-80

Objective category	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
National security				
Defence	96.3	103.0	99.2	103.8
Sub-total	96.3	103.0	99.2	103.8
Economic development				
Agriculture	62.7	62.862	63.9	62.393
Other primary industries	8.990	9.131	10.171	10.268
Mining	15.9	16.2	17.1	18.7
Manufacturing	39.1	42.1	57.6	66.8
Construction	3.835	4.098	4.278	4.415
Energy	12.9	15.0	23.0	30.0
Transport(a)	12.3	13.6	11.6	12.4
Communications	-	-	-	-
Economic services n.e.i.	11.0	12.1	12.3	13.4
Sub-total	166.8	175.1	200.0	218.3
Community welfare				
Environment(c)	16.3	17.7	20.9	23.0
Health	18.8	22.1	24.7	28.0
Education(d)	2.806	2.503	2.811	2.747
Welfare	0.205	0.176	0.409	0.708
Community services n.e.i.	4.0	4.3	4.5	5.3
Sub-total	42.1	46.8	53.3	59.7
Advancement of knowledge				
General advancement of knowledge	45.0	42.3	46.5	57.6
Sub-total	45.0	42.3	46.5	57.6
Total distributed by socio-economic objective	350.1	367.2	399.0	439.4
Grants to universities(c)	52.5	59.9	66.0	73.0
CSIRO (indirect)	28.9	30.9	42.3	61.6
Total (Budget sector)	431.6	458.0	507.3	574.0

For footnotes see page 10

Table 6: Estimated Commonwealth Government funds outside the Budget sector (e) expended on R & D by socio-economic objective: 1976-77 to 1979-80

Objective category	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
National security				
Defence	-	-	-	-
Sub-total	-	-	-	-
Economic development				
Agriculture	0.461	0.630	0.689	0.932
Other primary industries	0.048	0.138	0.163	0.100
Manufacturing	2.137	2.001	1.632	2.504
Construction	-	0.038	-	-
Energy	0.017	-	-	-
Transport	0.006	-	0.006	0.006
Communications	29.3	25.8(b)	27.1	27.8(b)
Sub-total	32.0	28.6	27.6	31.3
Community welfare				
Environment(c)	0.046	-	0.002	0.002
Health	0.001	-	-	-
Education(d)	0.060	-	0.014	-
Community services n.e.i.	0.074	0.067	0.056	0.073
Sub-total	0.181	0.067	0.072	0.075
Advancement of knowledge				
General advancement of knowledge	0.091	0.079	0.135	0.086
Sub-total	0.091	0.079	0.135	0.086
Total (e)	32.2	28.8	29.8	31.5

For footnotes see over page.

Footnotes to Tables 5 and 6:

- (a) Figures for Transport are primarily Budget appropriations of the Department of Transport. See page 39.
- (b) Approximate.
- (c) Includes both "Environment" and "Urban and regional planning" objectives.
- (d) R & D funded by the Minister for Education for the purpose of producing qualified researchers or for supporting normal academic activities has either not been allocated by objective (see items in category 1, page 18) or has been included in "general advancement of knowledge" (postgraduate research awards). Only research mainly directed towards education processes or education administration has been included in the "Education" objective.
- (e) Table 6 includes data for Telecom, Australia Post, the Overseas Telecommunications Commission, the Commonwealth Serum Laboratories, and the Reserve Bank only. The Commonwealth Bank which reported substantial R & D in the 1976-77 SCORE survey, provided a nil return for this Statement. The Commissions reporting to the Minister for Transport were, on the basis of nil returns to recent SCORE surveys, not included.

Appendix 3 records information, recently obtained by ASTEC, concerning Commonwealth R & D contracting.

Appendix 4 provides international comparisons including the variation over time of gross domestic expenditure on R & D in the natural sciences and engineering expressed as a percentage of GDP.

RECENT INITIATIVES

The Government has recently taken a number of initiatives in relation to R & D funding and is giving added impetus to these in 1979-80. The most significant in financial terms were changes to the Industrial Research and Development Incentives Act 1976, together with increased funding for grants under the Act, and a substantial increase in funds for energy research and development being disbursed by the Minister for National Development and Energy in the light of advice from the National Energy Research, Development and Demonstration Council (NERDDC).

In June 1978, ASTEC recommended in its Report to the Prime Minister on Science and Technology in Australia 1977-78, that:

- (a) the Project Grants Scheme under the Industrial Research and Development Incentives Act 1976 be continued and expanded, and that the maximum grant without ministerial approval be increased to \$500 000, and
- (b) grants under the Industrial Research and Development Incentives Act 1976 be tax-free; or alternatively, the contribution from the Project Grants Scheme be increased to 50 per cent of project expenditure.

The amendments to the Act, promulgated in December 1978 incorporated these recommendations, increasing the maximum rate for specific project grants from 25 per cent to 50 per cent and the maximum annual grants payable without ministerial approval to \$25 000 for commencement grants and to \$500 000 for project grants. The 1979-80 appropriation of \$31.3m represents a 32 per cent increase over 1978-79. The Senate Standing Committee on Science and the Environment, in its report on Industrial Research and Development in Australia(1), recommended further substantial increases.

NERDDC was established in May 1978 following advice from the National Energy Advisory Committee (NEAC) and from ASTEC. NERDDC has broad terms of reference to advise the Minister for National Development and Energy on the development and coordination of a national program of energy Research, Development and Demonstration (R, D & D) and to make recommendations concerning the disbursement of funds under the National Energy R, D & D Program. In 1978-79, the initial year of operation of the Program, \$4m of appropriated funds were expended. The appropriation for 1979-80 has been more than doubled to \$9m. NERDDC also advises on the disbursement of funds accruing to the Coal Research Trust Account. Expenditure from the Trust Account is estimated to be \$6m in 1979-80.

Other important initiatives include:

- the provision of an additional \$12.7m to the Commonwealth Scientific and Industrial Research Organization (CSIRO) for capital works projects, mainly the Australian National Animal Health Laboratory under construction at Geelong;

(1) Senate Standing Committee on Science and the Environment: Industrial Research and Development in Australia. A.G.P.S. (May 1979)

an additional \$9.3m provided for the Antarctic Division of the Department of Science and the Environment, mainly for capital works associated with the construction of a new base for the Antarctic Division at Kingston, Tasmania. It also allows for the continuation of the rebuilding program at the Australian Antarctic stations;

an amount of \$3.7m provided for the second year of a joint Commonwealth Government/Industry program for the commercial development of the Australian designed INTERSCAN microwave landing system, an increase of \$1.5m on the previous year.

MINISTRY ACTIVITIES

The following is a presentation of Commonwealth R & D expenditures by ministry. Expenditures⁽¹⁾ have been derived from the Appropriation Bills (No. 1 and No. 2) and Special Appropriations, showing actual expenditures for the years 1976-77, 1977-78 and 1978-79 and estimates for 1979-80. In addition to these Budget line items, most departments and agencies have submitted estimates for R & D which is not specifically identified in their accounting systems but which is covered by Commonwealth funding. These estimates are, of course, subject to some degree of uncertainty. Expenditures are shown only for those units of Government departments and agencies, and of statutory authorities responsible to a minister, where significant R & D funding has been reported.

Aboriginal Affairs

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Aboriginal Affairs				
- Aboriginal Affairs Research	0.254	0.200	0.182	0.210
Australian Institute of Aboriginal Studies (AIAS)	0.967	0.774	1.015	1.000
Applied Ecology Pty Ltd	0.422	0.617	0.697	0.734
Total (Budget sector)	1.643	1.591	1.894	1.944

Source: Department of Aboriginal Affairs, AIAS, Applied Ecology Pty Ltd.

Aboriginal Affairs Research

Most of the research work supported by the Department of Aboriginal Affairs is undertaken by outside agencies, including some Aboriginal organisations. The first aim of all such research is to assist Aboriginal communities and other agencies, such as Government departments, to tackle recognised problems hampering Aboriginal development. The Department also attempts to ensure Aboriginal interests are taken sufficiently into account in the planning and carrying out of research by other research bodies.

(1) Further explanation of the nature of the expenditures included is given at page 4. In particular it should be noted that in the case of Research Trust Funds the figures given are the Commonwealth contributions to these funds, and not the expenditures from the Funds.

Australian Institute of Aboriginal Studies

The Institute promotes Aboriginal studies, and assists cooperation among universities, museums and other institutions concerned with Aboriginal studies. Projects include a program to monitor the social impact of uranium mining in the Northern Territory.

Applied Ecology Pty Ltd

Applied Ecology Pty Ltd is a Commonwealth Government sponsored research organisation funded entirely through the Minister for Aboriginal Affairs, operating in the field of pure and applied research associated with natural resources capable of development on behalf of Aboriginal and Islander communities throughout Australia. The major R & D areas are the green turtle (currently being phased out in 1980), saltwater crocodiles, emus and tropical black-lip oysters as viable resource bases for Australian Aborigines and Islanders.

Administrative Services

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Administrative Services	-	-	-	-
Australian Federal Police scientific research	0.017	0.017	0.026	0.124
Total (Budget sector)	0.017	0.017	0.026	0.124

Source: 1977-78 to 1979-80 Budget Paper No. 2.

There are six projects currently funded within the Australian Federal Police sponsored forensic science research program 1979-80:

- Digital signal processing: speaker identification, tape recording validation and improvement of intelligibility of poor quality recordings (\$27 000, Australian National University)
- Remote sensing techniques (\$5 000, Australian Federal Police/Australian National University)
- Latent print development techniques (\$43 000, Australian National University)
- Explosives detection (\$30 000, Department of Defence)

- Forensic odontology and mass disaster victim identification (\$18 000, University of Adelaide)
- Arson and physical evidence (\$1 000, Victoria Police Forensic Science Laboratory)

During 1980-81 and 1981-82 it is proposed also to sponsor research into drugs in driving.

Attorney-General's

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Attorney-General's Department	-	-	-	-
Australian Institute of Criminology	0.904	1.030	1.037	1.120
Law Reform Commission	0.533	0.737	0.821	0.865
Criminology Research Council	0.010	0.030	0.030	0.030
Commonwealth Legal Aid Commission	-	-	0.013	0.025
Total (Budget sector)	1.447	1.797	1.901	2.040

Source: Australian Institute of Criminology; Criminology Research Council; Attorney-General's Department (for Commonwealth Legal Aid Commission figures); 1977-78 to 1979-80 Budget Paper No. 2 (for Law Reform Commission figures).

Australian Institute of Criminology

The Institute conducts criminological research, training and seminars, and provides library and information services, publishes results of research and other materials, and provides secretariat services to the Criminology Research Council.

Law Reform Commission

The Law Reform Commission was established under the Law Reform Commission Act 1973. The Commission reviews laws to which the Act applies with a view to the systematic development and reform of the law. The Commission is particularly interested in the modernisation of the law, the elimination of defects in the law, the simplification of the law and the adoption of more effective methods for the administration of the law and the dispensation of justice.

Criminology Research Council.

The Criminology Research Council provides funds for the purpose of criminological research in areas specified by the Council, and administers money in the Criminological Research Fund for such purposes and for associated services.

Capital Territory

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of the Capital Territory (DCT)				
- Conservation and Agriculture Section	0.115	0.101	0.155	0.141
- City Parks Administration	0.286	0.300	0.334	0.381
NCDC				
- Water quality research	0.190	0.126	0.093	0.050
- Air quality research	-	0.038	0.021	0.013
Total (Budget sector)	0.591	0.565	0.603	0.585

Source: DCT Conservation and Agriculture Section, NCDC; figures for City Parks Administration were obtained by pro-rating expenditure (1976-77 to 1978-79) and appropriations (1979-80) on the basis of Project SCORE. These figures were confirmed as being reasonable by the Department.

The Conservation and Agriculture Section assists in management of nature reserves and several non-urban land and water areas in the ACT, including Jervis Bay Territory.

National Capital Development Commission (NCDC)

NCDC does applied research on environmental problems including water pollution of the Murrumbidgee River and local lakes with regard to the effects of urban development and sewage management. NCDC also carries out air quality research.

Defence

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Defence				
- Defence Science and Technology Organisation Expenditures	93.0	100.0	96.1	100.7
Total (Budget sector)	93.0	100.0	96.1	100.7

Source: Department of Defence.

The Defence Science and Technology Organisation (DSTO), which is part of the Department of Defence, carries out R & D trials and evaluation at twelve establishments. It has a staff of 4 900, some 1 100 of whom are professional scientists and engineers. The functions of DSTO are: to provide scientific and technical advice on defence policy matters; to provide scientific and technical support to the Defence Force in its task of maintaining effective forces in being and for the development of the Force; to assist in the selection, acquisition and integration of defence materiel (weapons, sensors, platforms, systems); to maintain a technology base to support the Defence Force, the development of defence and defence industry; and to conceive and develop equipment suited to the defence needs of Australia. The estimated expenditure of \$100.7m in 1979-80 covers salaries, other administrative and operating expenses, machinery, plant, stores and works and services of the defence science establishments and laboratories and the Woomera range. Considerable effort is being devoted to activities such as the JINDALEE over-the-horizon radar, underwater detection and electronic warfare techniques. Joint project (U.K./Australia) trials activity at Woomera has virtually ceased.

Education

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Education				
- Commonwealth postgraduate awards	7.706	8.407	8.002	7.8
- R & D in education	1.092	0.968	1.040	1.025
- Australian Council for Educational Research	0.216	0.260	0.275	0.295
- Education review and evaluation studies	0.124	0.078	0.110	0.140
Tertiary Education Commission (TEC)				
- Research and investigation	0.153	0.068	0.179	0.100
Schools Commission				
- Special investigation	0.116	0.141	0.130	0.150
Curriculum Development Centre	0.952	0.908	1.034	0.963
Grants to universities(b)	52.5	59.9	66.0(a)	73.0(a)
Total (Budget sector)	62.9	70.7	76.8	83.5

Source: Department of Education, Tertiary Education Commission.

(a) Estimated

(b) See discussion below. The amounts which universities spend on research from their general recurrent grants and equipment grants are a matter for each institution to determine. There is, therefore, no reliable basis for projecting expenditure in advance. The amounts included for 1978-79 and 1979-80 are based on the assumption that the proportion of general recurrent grants and equipment grants expended on research in 1978 is maintained for 1979 and 1980, and take into account the level of the special research grant approved for these years.

Total expenditure on R & D in tertiary institutions, principally universities, falls into three categories. These are:

Category

- 1 Expenditure specifically earmarked for research in universities in the States Grants legislation (known as the Special Research Grant), together with other funds earmarked for research by the universities themselves from grants provided under this legislation, or, in the case of the Australian National University, from its direct appropriation. Only expenditure in Category 1 has been included in the line 'Grants to universities' in the above table.
- 2 Expenditure specifically allocated to research activities which is funded from sources other than those in Category 1 (e.g. ARGC Grants to Universities). It is assumed that the Commonwealth components of such funding have been included as extramural expenditure by the departments and authorities concerned.
- 3 Expenditure on research activities which is part of the general teaching and research expenditure of the university or college but which is not specifically identified. This activity is funded from general recurrent grants provided under the legislation referred to above. While the value of this research cannot be separately identified, an imputed value of \$105m was estimated for 1976 in the 1976-77 Project SCORE survey. This figure represents 21 per cent of total grants other than identifiable research grants in that year. If this proportion is applied to these grants in subsequent years, the imputed value of R & D in this category performed by universities would be \$120m in 1977, \$130m in 1978 and \$140m in 1979.

For colleges of advanced education the R & D reported to Project SCORE for 1976 was \$4m which represented 1 per cent of total Commonwealth grants to these bodies.

The imputed figures for R & D in Category 3 have not been included in the above table because they are large amounts based on subjective assessments, and are thus subject to some degree of uncertainty.

Because accounting in universities and colleges is on a calendar year basis, the figures included in 'Grants to universities' in the above table for 1976-77 and 1977-78 are approximations, and are based on the following actual expenditures.

	(\$ m)		
	1976	1977	1978
Identifiable research expenditure by universities from Category 1			
- from general funds	43.1	46.7	50.1
- from special research grants	3.6	4.3	4.5
- from equipment grants	1.4	5.4	8.4
Total	48.1	56.4	63.0

Research expenditure from general funds and equipment grants is not yet available for 1979 and 1980. However, for these years special research grants of \$5.5m in December 1978 cost levels have been approved, an increase of \$1m relative to the 1978 level.

Foreign Affairs

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Foreign Affairs				
- U.S.S.R./Australia Science - Technical Cooperation Agreement	0.119	0.116	0.062	0.134
Total (Budget sector)	0.119	0.116	0.062	0.134

Source: Department of Foreign Affairs.

A major part of the funding of the U.S.S.R./Australia Technical Cooperation Agreement is for the travel expenses of participating scientists. The Department of Foreign Affairs' major contribution to R & D is through the Australian aid program administered by the Australian Development Assistance Bureau (ADAB) (1).

(1) Figures for ADAB have not been included in the table. R & D funded by ADAB is performed in foreign countries for the benefit of those countries and is not included when estimating Australia's gross domestic expenditure on R & D.

Australian Development Assistance Bureau (ADAB)

The funding of R & D is a significant component of the Australian aid program, particularly in connection with bilateral aid projects, but also in connection with multilateral aid. Aid funds are used to support research in developing countries by Australian scientists (e.g. the development of cattle pastures in the Solomon Islands), to assist Asian research institutes (e.g. the Maize and Millets Research Institute Pakistan), and in one case to establish a research institute (the Centre for Animal Research and Development in Indonesia). ADAB estimates that \$30.8m is committed to the research component of Australia's bilateral aid program. More than 70 per cent of this amount is allocated to six research projects in Indonesia, the Centre for Animal Research and Development at Bogor alone accounting for two-thirds of the expenditure. Agriculture accounts for 89 per cent of the expenditure.

Health

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Health				
- National Biological Standards Laboratory	1.395	1.600	1.822	2.022
- Health Services Research and Development Grants	1.001	1.082	1.627	1.810
- National Acoustics Laboratory	0.581	0.729	0.849	1.761
- Australian Radiation Laboratory	0.690	1.055	1.205	1.452
- Ultrasonics Institute	0.525	0.632	0.580	0.600
- Commonwealth Institute of Health (formerly School of Public Health and Tropical Medicine)	0.518	0.516	0.702	0.745
- Other (a)	0.723	1.234	0.828	1.051
National Health and Medical Research Council (medical research grants)	10.295	11.714	13.175	14.000
Commonwealth Serum Laboratories (part of appropriation (b) allocated to R & D)	0.470	1.079	1.601	1.342
Total (Budget sector)	16.198	19.641	22.389	24.783

(Continued on page 21)

(Continued from page 20)

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Commonwealth Serum Laboratories (own funds from trading expended on R & D)	2.137	2.001	1.632	2.504
Total (including funds provided by Commonwealth Statutory Authorities)	18.335	21.642	24.021	27.287

Source: Department of Health, CSL.

- (a) "Other" covers R & D expenditure by the Community Health Branch, Institute of Child Health, Hospital Facilities Services Branch, Public Health Division, Therapeutics Division and the Plant Quarantine Branch.
- (b) Commonwealth Government expenditure from appropriations under Section 19(b) of the Commonwealth Serum Laboratories Act to reimburse the Commonwealth Serum Laboratories (CSL) for losses incurred in accordance with determinations made by the Minister for Health. The amounts reimbursed by the Commonwealth Government cover CSL expenditure on research directed towards developing new products, together with expenditure on specified non-research activities undertaken by CSL on behalf of the Government, to the extent that such expenditures would produce a loss in CSL trading accounts. R & D expenditure directed towards improving existing products is not subsidised by the Government. The total appropriations received by CSL in respect of the three years 1976-77 to 1978-79 were \$0.606m, \$1.239m, and \$2.088m respectively. Amounts included in the table as allocated to R & D were estimated on a pro-rata basis.

The Commonwealth Government, through the Minister for Health, expends funds on R & D in a variety of health related fields. The levels of this expenditure for the years 1976-77 to 1979-80 are shown in the above table. Set out below is a summary of those main areas of activities within the Minister's jurisdiction in which research and development expenditure is substantial.

National Biological Standards Laboratory (NBSL)

NBSL is responsible for ensuring that therapeutic goods used in human and veterinary medicine in Australia are safe and potent. R & D is directed towards defining and solving problems affecting safety and potency and in developing standards.

Health Services Research and Development Grants

The Policy and Planning Division of the Department of Health is responsible for administering Health Services Research and Development Project grants. These are awarded to assist government, universities and other organisations and individual research workers to improve, by way of research and demonstration, the techniques and practice of administration, evaluation and planning of health care in Australia and to provide information which will assist the development of health services policy.

In addition, block grants are paid to the States on a dollar for dollar basis to assist their health planning and research activities.

National Acoustics Laboratories (NAL)

NAL undertakes research and development in respect of hearing aids and their application to the needs of individuals and in respect of problems of noise as it affects individuals.

Australian Radiation Laboratory (ARL)

ARL undertakes research and development mostly in radiation physics and chemistry on topics relating to the public and occupational health implications of the uses of ionising radiations, radioactive materials, non-ionising radiation, and of uranium mining and milling and the levels of radio-activity in the Australian environment.

Ultrasonics Institute

The Ultrasonics Institute undertakes research and development in the use of ultrasonic radiation in the diagnosis and treatment of disease.

Commonwealth Institute of Health (formerly School of Public Health and Tropical Medicine)

The School provides a high level education, consultative and advisory function in the areas of public health and tropical medicine. It carries out research to further understanding of environmental health, medical entomology, nutrition, occupational health, parasitology, pathology and microbiology, preventive and social medicine, radiation biology and tropical medicine.

Other departmental activities in R & D relate to:

- Community health
- Child health
- Health facilities research and planning
- Public health
- Plant quarantine research
- Drug education

National Health and Medical Research Council (NHMRC)

The NHMRC is an independent body which advises the Minister for Health on the application of funds from the Medical Research Endowment Fund to provide assistance to Commonwealth and State Governments engaged in medical research; to universities and other institutions for the purpose of medical research and to persons engaged in medical research and in the training of persons in medical research. The NHMRC supports medical research mainly through its project and program grants, specialised units, institution grants, scholarships and fellowships. NHMRC grants form the major proportion of the total Commonwealth funds spent on medical research in Australia.

Commonwealth Serum Laboratories (CSL)

CSL is a statutory authority responsible to the Minister for Health. CSL produce, sell and maintain stocks of biological products and undertake research into the production of therapeutic biological products.

Housing and Construction

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Housing and Construction				
- Experimental Building Station	1.240	1.440	1.540	1.610
- Central Investigation Research Laboratory	0.550	0.500	0.550	0.610
Australian Housing Research Council	-	-	0.100	0.100
Total	1.790	1.940	2.190	2.320

Source: Department of Housing and Construction.

Experimental Building Station (EBS)

EBS conducts applied research into the design and construction of buildings and related engineering works including the effective and efficient use of building components and materials, structural features and behaviour of buildings, fire hazards in buildings and fire protection of buildings, functional efficiency of all buildings and codification of research information for use by the building industry through Standards and Building Regulations.

Central Investigation and Research Laboratory (CIRL)

CIRL conducts applied research directly concerned with design and construction of departmental projects including natural and processed materials, building products, processes and systems and operating and environmental conditions.

Australian Housing Research Council (AHRC)

AHRC comprises ministers of the Commonwealth Government and State and Territory Governments responsible for administering the Commonwealth/State housing agreement. The main objectives of AHRC summarised are to provide for research into housing on aspects of concern, for dissemination of research results, to foster collaborative research and the coordination of research, and where necessary to complement research conducted elsewhere.

Immigration and Ethnic Affairs

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Immigration and Ethnic Affairs (a)				
- Studies and Research	0.038	0.005	0.025	0.130
- Survey of Migrant Information Needs	-	-	0.105	0.045
- R & D into English Language Teaching	-	-	0.075	0.175
Committee on Overseas Professional Qualifications	0.108	0.112	0.113	0.120
Institute of Multicultural Affairs	-	-	0.046	0.300
Total	0.146	0.117	0.364	0.770

Source: Department of Immigration and Ethnic Affairs.

(a) Salaries of departmental officers not included.

R & D activities have been undertaken mainly within the department using general administrative funds. This covers research into immigration patterns and population trends. A recent extension of R & D activity has followed from the implementation of the recommendations of the report of the Review of Post-Arrival Programs and Services for Migrants (Galbally Report). In particular, emphasis has been placed on the development of English language studies, research into information needs, and the development of studies relating to migrant settlement.

The newly established Institute of Multicultural Affairs will conduct and commission research on cultural and settlement issues.

The activities of the Committee on Overseas Professional Qualifications, which covers the evaluation and recognition of overseas qualifications have been extended to cover a range of sub-professional occupations.

National Development and Energy

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of National Development and Energy				
- Bureau of Mineral Resources, Geology and Geophysics	12.385	12.807	12.942	13.570
- Energy research, development and demonstration program	-	-	3.998	9.057
- Coal Research Trust Account (a)	-	1.583	4.112	4.320
- Australia/FRG, Coal Liquefaction Study	-	-	0.007	0.950 (b)
- Water resources research	0.389	0.390	0.390	0.415
Australian Atomic Energy Commission (AAEC)	11.8	11.5	13.1	13.5
Less Recoveries	-	-	-	0.600
Total (Budget sector)	24.6	26.3	34.5	41.2

Source: Department of National Development and Energy.

(a) These figures represent a levy on raw coal production paid to the Coal Research Trust Account through Special Appropriations, and not actual expenditure. Additional amounts are also paid direct to the account by the Victorian and South Australian Governments. The figures for expenditure from the account are: 1977-78 \$0.830m, 1978-79 \$2.869m, 1979-80 \$6.0m (estimated).

(b) Includes \$0.6m to be provided by the Victorian, Queensland and New South Wales Governments. This amount is not included in other tables in this document.

Support for R & D within this ministry is primarily through the Bureau of Mineral Resources, Geology and Geophysics (BMR), the National Energy Research, Development and Demonstration Program (R, D & D) and the Australian Atomic Energy Commission (AAEC).

Bureau of Mineral Resources, Geology and Geophysics (BMR)

BMR is a geoscience research organisation which undertakes scientific studies aimed at an integrated, comprehensive, scientific understanding of the geology of the Australian continent, the Australian off-shore areas, and the Australian Antarctic Territory, to support the fullest development of our mineral and energy resources. The activities of BMR include detailed field and laboratory research, mineral resource assessments and the establishment of national geoscience data bases. In a recently announced government decision, the BMR is given an enhanced role in relation to the exploration for and assessment of Australian energy minerals. In 1979-80 provision for all BMR activities is \$13.6m.

National Energy Research, Development and Demonstration Program

In addition to the ongoing energy R & D activities of Government organisations such as CSIRO, AAEC and BMR, funds are provided under the National Energy R,D & D Program to stimulate additional energy R,D & D. Grants are approved by the Minister for National Development and Energy on advice from the National Energy R,D & D Council. The budget provisions for this purpose have been increased by \$5m to \$9.06m in 1979-80. The Program covers the whole energy spectrum including R,D & D relating to the mining of energy minerals. Coal research under the National Energy R,D & D Program is also financed from the proceeds of a levy on raw coal production; expenditure in 1979-80 is estimated at \$6m.

Water Research Program

Funds are provided by the Department to support a program of water research recommended by the Australian Water Resources Council. The program is intended to stimulate additional water research while complementing water research being carried out by Commonwealth and State Government organisations and tertiary institutions. Individual project grants are approved by the Minister for National Development and Energy. The budget provision for the program in 1979-80 is \$0.415m.

Australian Atomic Energy Commission (AAEC)

AAEC is a statutory body whose functions include research and investigations into matters associated with uranium and atomic energy and the production and sale of radio-isotopes. AAEC's current program emphasises nuclear power, safety and the environment, uranium and nuclear fuel, radio-isotopes and radiation, and international relations. The total provision for the Commission for 1979-80 is \$25.2m. It is estimated that \$13.5m of this appropriation will be directed towards research related activities, and the bulk of the remainder to radio-isotope production, service work to outside organisations, and assessment studies.

Australia/FRG Coal Liquefaction Study

Funds of \$0.95m, including a contribution of \$0.6m from the Victorian, New South Wales and Queensland Governments, are provided in 1979-80 toward the cost of a joint study with the Federal Republic of Germany of the feasibility of establishing a coal liquefaction plant in Australia.

Post and Telecommunications

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Postal and Telecommunications Department	-	-	-	-
Total (Budget sector)	-	-	-	-
Telecom Australia	28.4(a)(b)	25.0(c)	26.3(a)	27.0(c)
Australia Post	0.3	0.4	0.5(a)	0.5
Overseas Telecommunications Commission (Australia) (OTC)	0.6(a)	0.4(c)	0.3(a)	0.3(c)
Total (including funds provided by Commonwealth Statutory Authorities)	29.3	25.8(c)	27.1	27.8(c)

Source: Telecom Australia, Australia Post, OTC.

(a) Project SCORE estimates

(b) Includes a once only expenditure of \$4m for buildings, for which no counterpart exists in other Telecom expenditure figures quoted

(c) Approximate.

Research performed by Telecom is not funded through Government appropriations. Telecom meets from revenue all of its operating costs and at present meets nearly 70 per cent of its total capital expenditure from internal sources. The balance is raised by way of public loan raisings. The manpower effort devoted to R & D by Telecom has remained approximately constant over the four years.

R & D on telecommunications services and systems is performed by Telecom Australia with a view to developing its independent competence to evaluate world trends stemming from advances in telecommunications technology. It does this principally to select the right technology for Australia's telecommunications network, to specify the systems it buys from industry to develop the Australian network in accordance with its statutory responsibilities, and to solve technical problems arising in the operation and maintenance of the network. By virtue of the capital intensive nature of most telecommunications R & D, most major developments in telecommunications technology occur overseas. Due to resource considerations, Telecom does not seek, through its R & D, to develop and design major new telecommunications systems.

Telecom's R & D activities cover the whole spectrum of telecommunications services and the terminal, switching and transmission systems which make up the Australian telecommunications network over which these services are provided.

The principal objective of R & D within Australia Post is the evaluation and application of new and improved postal service equipment.

Australia Post's R & D program is funded from trading revenues and constitutes applied laboratory research into new forms of mail handling equipment designed by Australia Post, adaptation to the Australian postal service of equipment designed by other postal administrations or other industries, and materials testing. The R & D program provides for:

- . an assessment of commercially available machines and permits the identification of desirable modifications for Australian application prior to manufacture and/or delivery;
- . the development of conveyors, chutes, weighing devices, voice actuated devices, and other mail handling and processing equipment to meet Australian postal requirements. Commercial products are not always available in a form suitable for mail applications and custom design and development is sometimes necessary;
- . the development of manual and mechanised letter sorting machines appropriate to a decentralised network. An engineering model of a manual sorting machine is currently undergoing field application. The satisfactory performance and acceptance of this equipment into service will result in a significant reduction in mail processing costs in Queensland;
- . the testing of a variety of materials under consideration for introduction into operational services, including paper for stamps, textiles for mail bags and the chemical composition and suitability of cancelling inks;
- . the development of mail handling equipment associated with the introduction of improved methods of containerising mail, including mail article trays, mobile trolleys and lifting devices, storage racks, containers and unit load devices;
- . the investigation into, and application of means to ensure efficient use of energy resources.

Australia Post meets from revenue all of its operating expenses and has in the last four years since establishment met all its capital expenditure requirements from internal sources.

The Overseas Telecommunications Commission (Australia) is responsible for the establishment, maintenance, operation and development of all public telecommunications services between Australia and other countries, between Australia and its external territories and with ships at sea. Its R & D activities and supported projects, which encompass radio, submarine cable and satellite technologies are funded from trading revenues.

Primary Industry

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Primary Industry				
Bureau of Agricultural Economics	4.559	5.026	5.323	5.497
Australian Agricultural Council Sponsored Projects	-	-	-	0.200
Plague Locust Commission(a)	0.024	0.048	0.045	0.042
Bureau of Animal Health(a)	0.233	0.433	0.561	0.660
Fisheries Division(a)	0.385	0.421	0.464	0.557
Statutory Rural Industry Research Schemes				
Commonwealth and Industry Contributions (b)				
Chicken Meat Research Act 1969	0.386	0.363	0.352	0.418
Dairying Research Act 1972	0.857	0.882	0.944	0.872
Dried Fruits Research Act 1971	0.099	0.134	0.122	0.140
Fishing Industry Research Act 1969 (Commonwealth contribution)	0.479	0.521	0.746	0.850
Meat Research Act 1960	5.888	6.095	6.469	6.598
Oilseeds Research Act 1977	-	0.078	0.416	0.620
Pig Industry Research Act 1971	0.407	0.526	0.580	0.578
Wheat Research Act 1957	3.281	2.986	4.253	4.600
Tobacco Industry Act 1955 (Industry contribution)	0.346	0.367	0.393	0.404
Tobacco Research (Commonwealth contribution)	0.373	0.367	0.367	0.404
Wool Industry Act 1972 (Industry contribution payment to Wool Research Trust Account)	15.565*	9.997	1.932	5.000
Wool Research (Commonwealth contribution)	n.a.	6.900	3.100	5.000
Commonwealth Contribution only				
Fisheries Survey and Development	0.200	0.050	0.400	0.400
Poultry Industry Trust Fund(a)	0.100	0.100	0.123	0.150
Non-Statutory Rural Research and Extension Schemes				
Lucerne Aphid - assistance to State programs	-	-	0.307	0.143
Barley (S.A./Vic and W.A. Schemes)	0.137	0.140	0.142	0.142
Commonwealth Extension Services Grant				
	9.904	9.982	9.985	5.000

(Table continues on page 30)

(continued from page 29)

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Commonwealth Special Research Grant	0.259	0.200	0.223	0.243
Forestry Research Grants (scholarship)	0.080	0.055	0.041	0.038
Industry Research Associations				
Australian Wine Research Institute - grant	0.065	0.068	0.100	0.115
Total (including industry contributions to Statutory Rural Research Schemes)	43.627	45.739	37.388	38.671
Industry contributions to Statutory Rural Research Schemes (c)	9.3	15.9	9.556	11.43
Total (Budget sector)	34.3	29.8	27.8	27.2

Source: Department of Primary Industry, except as indicated in footnotes.

- (a) Estimated research component; Plague Locust Commission figures estimated on the basis of Project SCORE; poultry industry contribution excluded.
- (b) See discussion below for basis of industry contributions.
- (c) These figures were obtained by subtracting from the total contributions to Statutory Rural Industry Research Schemes the net Commonwealth Government contribution obtained as follows:
- For 1979-80, by using an estimate of \$14.05m provided by the Department of Primary Industry;
- For 1978-79, from the Statement prepared by the Minister for Finance annexed to the Report of the Auditor-General for that year;
- For 1976-77 and 1977-78, by estimated the Commonwealth contribution, where not separately identified, at half the total industry and Commonwealth contribution.

Rural research is supported in a number of ways under the control of the Minister for Primary Industry.

Within the Department of Primary Industry R & D is undertaken by some Divisions and Bureaux. The major group, the Bureau of Agricultural Economics undertakes continuous economic research into the rural sector of Australia through data collection, analysis, interpretation and evaluation. Fields of analytical economic research within the Bureau include commodity market analysis (demand, supply and prices); economic evaluation of development projects; economic analysis of rural costs, prices and incomes; agricultural marketing; adaptability of rural industry to technical innovation, productivity, growth and adjustment; and the economic effects of current and prospective rural policies. It has also assumed the responsibility for economic research relating to forestry, forest harvesting and the delivery of forest products to the mill door.

The largest contribution to R & D however is through the various statutory and non-statutory industry-specific research schemes which mostly involve Commonwealth contributions on a matching basis with industry.

A wide range of rural research work is funded through the jointly funded Commonwealth/Industry rural research schemes. As a general rule research committees, which are established under the legislation and include industry representation, have the task of recommending annual programs of research for the approval of the Minister for Primary Industry. The programs are mainly directed towards R & D concerned with increasing productive efficiency in the industries concerned and may also provide for training and for dissemination of information. Of the schemes, wool research is the most heavily supported. The Australia Wool Corporation has the role of coordinating these activities as well as itself participating in a range of projects.

It should be noted that figures for the statutory research schemes in the table are based on budget figures and do not necessarily reflect accurately the final approved research programs recorded against the trust funds.

With the exception of Wool, Tobacco and Fishing, the appropriations shown in the table for the statutory research schemes represent the industry contributions plus the Commonwealth contribution to match expenditure from the fund in that year. Industry contributions are collected by way of levies and charges and recorded as Revenue. Appropriations for these amounts are credited to the individual research trust accounts, as are appropriations to cover half research expenditure. The trust accounts are charged with research expenditure.

Because legislation for wool and tobacco funds differs from that for the other trust accounts, the Commonwealth share is separately identified in the Budget with the producers' contribution to the funds appearing as a special appropriation under the Department of Primary Industry. The Fishing Industry Research Act provides for the Commonwealth to match collections by each State. The funds collected by the States are held by them.

As a guide, the approximate net Commonwealth contribution to R & D, in respect of statutory schemes involving industry contributions in 1979-80, is currently expected to be in the order of \$14.05m.

The Commonwealth Council for Rural Research and Extension, established in December 1978, provides for a review of the entire range of rural research and extension in Australia. The Council will advise the Minister for Primary Industry on priority areas for research, taking into account the complex of Commonwealth, State and tertiary institutions' interests.

The government has approved the establishment of a statutory honey research scheme and intends to introduce legislation in 1980.

Productivity

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Productivity				
- Industrial Research and Development Incentives Act	15.400	13.649	23.749	31.350
- Interscan	0.414	0.531	2.200	3.702
- Production development	3.191	2.920	3.056	3.000
- Pilot programs for industrial R & D	-	-	0.250	0.650
- Pritchard steam engine	-	0.060	0.040	-
Total (Budget sector)	19.005	17.160	29.295	38.702

Source: Department of Productivity.

Industrial Research and Development

The Industrial Research and Development Incentives Act 1976 was amended in 1978 to provide for increased and more effective assistance for research and development activities by industry. Two types of grants are available under the Act: commencement grants and project grants.

Commencement grants are intended to encourage small and medium sized companies to undertake industrial research and development and provide support of up to 50 per cent of 'eligible' company R & D expenditure subject to an annual ceiling of \$25 000. Project grants provide support of up to 50 per cent of company expenditure on approved R & D projects assessed to have high technical and commercial merit. The annual limit on project grant payments to any company, or group of related companies, is \$500 000.

Since 1978-79, funds have also been made available for the support of major industrial research projects which are considered to be in the public interest, and for pilot programs in the areas of technology transfer and the commercial exploitation of inventions.

The overall outlays on the above programs are estimated to increase from \$24m in 1978-79 to \$32m in 1979-80.

Development of INTERSCAN

An amount of \$3.7m has been provided for the second year of a joint Commonwealth/industry program for the commercial development of the Australia-designed INTERSCAN microwave landing system. Commonwealth expenditure under the program relates to a three-year design/engineering phase. The Australian Industry Development Corporation has formed a company (Interscan Australia Pty Ltd) to provide a vehicle for a consortium of Australian firms to undertake the production/development phase, which is intended to be funded entirely by industry.

Production development

Provision has been made for expenditure of \$3m in 1979-80 for the development of defence equipment within the production divisions of the Department of Productivity. These divisions are responsible for the production of munitions and aircraft and guided weapons.

Science and the Environment

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Science and the Environment				
- Antarctic Division(a)	6.5	8.6	12.2	21.5
- Australian Government Analytical Laboratories	0.131	0.138	0.142	0.177
- Research grants	12.173	11.000	12.141	12.800
- Bureau of Meteorology	1.286	1.346	1.154	1.213
- Environmental investigations (formerly EHOD)	0.446	-	-	-
- Other research	0.746	0.761	0.783	1.372
Australian Institute of Marine Science	7.970	3.699	2.726	3.140
Supervising Scientist (Alligator River)	-	0.086	0.810	1.913
Anglo Australian Telescope Board (AATB)	0.830	0.850	1.040	1.100
Great Barrier Reef Marine Park Authority	-	0.016	0.167	0.340

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	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Australian National Parks and Wildlife Service (ANPWS)	-	0.369	0.336	0.193
Commonwealth Scientific and Industrial Research Organization (CSIRO) (a)	132.4	146.8	169.2	192.6
Total (Budget sector)	162.5	173.7	200.7	236.3

Source: Australian Government Analytical Laboratories, Bureau of Meteorology, CSIRO, 1977-78 to 1979-80 Budget Paper Nos 1, 2, 3 and 4.

(a) Includes expenditures for these agencies from Department of Housing and Construction and Department of Administrative Services.

Funding from within the Ministry represents the Commonwealth's major contribution to its own performance of R & D, primarily through the CSIRO but also through operational units of the Department of Science and the Environment such as the Antarctic Division and the Bureau of Meteorology.

Antarctic Division

The Antarctic Division of the Department of Science and the Environment administers, organises and provides logistic support for the Australian National Antarctic Research Expeditions which operate from three stations in the Antarctic region and one on Macquarie Island. The stations support scientific research programs in upper atmosphere physics, cosmic ray physics, glaciology, biology, medical science, geology and geophysics. A total amount of \$21.5m is being provided for the Division in 1979-80, compared to \$12.2m in 1978-79. The increase mainly reflects the construction of a new base for the Antarctic Division at Kingston, Tasmania, and increased charter rates for the hire of ships and aircraft. It also allows for continuation of the rebuilding program at the stations. An amount of \$100 000 is included for the completion of a design study for an Australian owned Antarctic ship.

Australian Government Analytical Laboratories

The Australian Government Analytical Laboratories provide client departments and organisations with a range of services including chemical, microbiological and physical testing of a wide variety of imported goods, and goods locally manufactured for export and local use.

Support for these services is provided by a research and development program which is coordinated by a national committee chaired by the Australian Government Analyst. Research and development activities include pure and applied research (chemical), method development and validation, preparation and supervision of interlaboratory collaborative studies, development of instrumental techniques, development of automated procedures, and the preparation and distribution of reference standards for use in routine analytical work.

Australian Research Grants Committee (ARGC)

ARGC provides assistance, through the Australian Research Grants Scheme, for research projects by individuals in the physical, chemical, biological and earth sciences, in engineering and applied sciences and in the humanities and social sciences.

Bureau of Meteorology

The Bureau of Meteorology undertakes research in support of its national and international responsibilities for provision of meteorological services and its role as national meteorological authority for Australia. The total provision for the Bureau for 1979-80 is \$40.8m of which about \$1.2m is in support of research, development and investigations.

Australian Institute of Marine Science (AIMS)

AIMS was established to carry out research in marine science, both directly and in cooperation with other institutions. An amount of \$3.1m has been provided to the Institute in 1979-80, compared with \$2.7m in 1978-79. The increase relates mainly to the full-year cost of operation of the new 24 metre research vessel (\$0.4m), for repairs and maintenance of buildings and plant (\$0.3m) and for final construction costs of the Institute's laboratory complex near Townsville (\$0.2m); increases have been partly offset by non-recurring payments made in 1978-79 for the research vessel (\$0.3m).

Office of the Supervising Scientist for the Alligator Rivers Region

The Office of the Supervising Scientist was established to coordinate environment protection from the effects of uranium mining in the Alligator Rivers Region, following decisions resulting from the Ranger Uranium Environmental Enquiry. Research and monitoring activities are important functions of the office.

Anglo-Australian Telescope Board

This item provides for the Commonwealth Government's contribution to the operational costs of the Anglo-Australian 3.9 metre telescope and its associated research facilities. The total cost of operations in 1979-80, which is to be shared equally with the U.K. Government, is estimated at \$2.2m.

Great Barrier Reef Marine Park Authority (GBRMPA)

GBRMPA is responsible for the establishment, control, care and development of the Great Barrier Reef Marine Park within the Great Barrier Reef Region. The Authority is also responsible for carrying out

research relevant to the Marine Park, either by itself, or in cooperation with other organisations or individuals.

Other agencies and schemes

The Ministry is responsible for funding or performing a range of other research activities. In the environmental area, this includes research carried out in support of the activities of the Australian National Parks and Wildlife Service.

Other schemes in support of research include the Queen Elizabeth II Fellowships Scheme, the Queen's Fellowship Scheme, and scientific and technical cooperation with the U.S.A., the Federal Republic of Germany and India under the bilateral science agreements administered by the Department.

Commonwealth Scientific and Industrial Research Organization

CSIRO is an independent statutory body responsible for carrying out a comprehensive program of scientific research in support of industry, community and national interests and objectives, and appropriate international obligations of the Commonwealth. It also has responsibilities in the application of research results, overseas scientific liaison, research training and funding, research association support, maintenance of measurement standards, and publication and dissemination of scientific information. The Organization's research covers the whole spectrum of national interest research in the physical and biological sciences, with the exception of defence, nuclear power and clinical medical research. The research is conducted in the CSIRO Institutes of Animal and Food Sciences, Biological Resources, Industrial Technology and Physical Sciences. An independent advisory council comprising senior representatives of industry, government, tertiary education and community interests, advises CSIRO on priorities, and it is assisted in this task by committees in each State.

CSIRO's overall budget (1) of \$192.6m for 1979-80 included \$155.6m directly appropriated to the Organization for operating and capital support, \$36.7m appropriated to the Department of Housing and Construction for repair and maintenance of assets and civil works, and \$0.3m to the Department of Administrative Services for the acquisition of sites and buildings.

Within CSIRO's direct appropriation of \$155.6m, \$9.6m has been provided to cover the cost of the transfer of the Metrology Group from the Defence Materials Research Laboratory to CSIRO; an allocation for the apprenticeship training scheme; additional funds for fisheries research within the Australian Fishing Zone; funds to meet the modification of the Fokker F27 cloud-seeding aircraft; additional funds for servicing new accommodation; and meeting the increased cost of salaries and operating expenses related to the Australian National Animal Health Laboratory (ANAH).

(1) CSIRO Appropriation Funds only. In addition to the expenditures shown here, CSIRO performed R & D funded from other sources through the Specific Research Account to the value of \$24.2m, \$21.4m and \$18.4m in 1976-77, 1977-78 and 1978-79 respectively.

Of the \$36.7m appropriated to the Department of Housing and Construction \$4.3m was for repairs and maintenance of plant and buildings and \$32.4m for civil works. Of this, \$20m was provided for ANAH, \$11.5m for work in progress and \$0.9m for new work.

Expenditure from CSIRO Appropriation Funds was distributed as follows:

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
A. Direct research expenditure				
RURAL INDUSTRIES				
1. Crops and pastures	18.277	20.752	22.600	22.195
2. Livestock	10.787	12.620	14.370	13.974
3. Forestry	3.774	4.190	4.265	4.388
4. Fisheries	4.046	3.867	4.232	4.011
Sub-total	36.884	41.429	45.467	44.568
MINERALS ENERGY & WATER RESOURCES				
1. Minerals	6.795	7.042	7.819	9.020
2. Energy	4.784	5.613	6.079	7.293
3. Water	2.949	3.113	2.935	3.035
Sub-total	14.528	15.768	16.833	19.348
MANUFACTURING INDUSTRIES				
1. Food processing	5.736	6.121	6.542	6.664
2. Textiles	0.771	2.199	4.344	4.795
3. Forest products	2.286	2.270	2.174	2.316
4. Metal products	2.872	3.353	3.288	1.904
5. Other manufacturing	3.595	4.010	4.313	4.604
6. Standards	6.543	7.788	7.990	8.324
Sub-total	21.803	25.741	28.651	28.607

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
COMMUNITY SERVICES				
1. Tertiary industries	6.969	7.790	7.968	8.788
2. Transport	0.467	0.503	0.787	0.814
3. Construction	2.019	2.131	2.065	2.071
4. Environment	14.754	16.077	18.094	18.982
5. Public health	2.667	3.058	3.290	3.989
6. Astronomy	3.375	3.415	3.786	3.861
	30.251	32.974	35.990	38.505
Total A.	103.466	115.912	126.941	131.028
B. Indirect Research Expenditure				
Overhead	14.8	16.8	16.0	21.5
Capital	2.5	2.8	3.1	3.1
Department of Housing and Construction	10.4	10.5	22.9	36.7
Department of Administrative Services	1.2	0.8	0.3	0.3
Total B.	28.9	30.9	42.3	61.6
Total	132.4	146.8	169.2	192.6

Social Security

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Social Security				
- Grants for welfare research	0.119	0.070	0.108	0.322
- Grants for research on rehabilitation and services for the handicapped	0.086	0.106	0.121	0.166
Total (Budget sector)	0.205	0.176	0.229	0.488

Source: Department of Social Security.

In 1979-80 the Department of Social Security is expected to provide grants amounting to \$488 000 to universities and other bodies for research carried out on behalf of the Department into aspects of social welfare including rehabilitation and services for the handicapped.

The major items to be funded include \$300 000 to maintain the Social Welfare Research Centre in the University of New South Wales and \$96 000 for ongoing applied research by Monash and Macquarie Universities into mild mental retardation.

Transport

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Transport				
- Transport Planning and Research (Financial Assistance) Act	8.000 (a)	8.924 (a)	6.404	6.917
- Railway research	-	-	0.500	-
- Transport research	0.900	0.528	0.438	0.440
- Road safety promotion and research	0.641	0.595	0.735	0.780
Bureau of Transport Economics	1.549	2.292	2.129	2.737
Australian Road Research Board (Department of Housing and Construction contribution) (b)	0.259	0.259	0.259	0.259
Total (Budget sector)	11.349	12.598	10.465	11.133

Source: 1977-78 to 1979-80 Budget Papers Nos 2 and 3.

(a) Transport (Planning and Research) Act 1974.

(b) The bulk of Commonwealth funding for the Australian Road Research Board is provided under the Transport Planning and Research (Financial Assistance) Act.

These figures represent total expenditures from budget appropriations identified as containing significant R & D. For this first Science Statement the Department of Transport has not identified the R & D components of these expenditures, nor estimated the R & D expenditures of other areas of the Department. Discussion suggests that approximately 30% of the expenditures under the Transport Planning and Research (Financial Assistance) Act could be considered as supporting R & D, while the R & D components of the expenditures for "Road safety promotion and research" and the Bureau of Transport Economics would be something less than half of the respective totals. On the other hand,

according to recent Project SCORE surveys several areas of the Department carry out R & D which is not covered by the above appropriations, particularly in the areas of air transport ground facilities, flight safety and marine navigation, together totalling in the region of \$1m per annum.

Transport planning and research

The Commonwealth is providing \$6.9m in 1979-80 under a dollar for dollar cost sharing arrangement with the States, for an approved program of land transport planning and research projects. The total program to be supported under these arrangements is estimated at \$13.8m.

Bureau of Transport Economics (BTE)

\$2.7m is provided in 1979-80 for BTE, which conducts research into the economics and operations of all modes of transport.

Treasury

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of the Treasury	-	-	-	-
Australian Bureau of Statistics	1.5	1.5	1.5	1.6
Total (Budget sector)	1.5	1.5	1.5	1.6
Reserve Bank of Australia	0.804	0.952	1.065	1.199
Total (including funds provided by Commonwealth Statutory Authorities)	2.3	2.5	2.6	2.8

Source: Reserve Bank of Australia figures from Reserve Bank, ABS figures estimated on the basis of Project SCORE 1976-77.

The Australian Bureau of Statistics (ABS)

ABS is the central statistical organisation for Australia. It provides statistical services for government and private sectors. The objectives of the ABS are to coordinate the collection, compilation and dissemination of official social, demographic and economic statistics. The ABS is responsible for the monitoring of statistical compatibility, utilisation, standards, the avoidance of duplication and the provision of advice and assistance to official bodies.

The Reserve Bank of Australia

The Reserve Bank provides grants for research and development from its Rural Credits Development Fund and Economic and Financial Research Fund.

Veterans' Affairs

	(\$ m)			
	1976-77	1977-78	1978-79	1979-80
Department of Veterans' Affairs	0.3	0.3	0.4	0.4
Total	0.3	0.3	0.4	0.4

Source: figures were obtained by pro-rating Commonwealth Government funding of 'Repatriation Hospitals and Other Institutions' on the basis of Project SCORE 1976-77. These figures were confirmed by the Department as being reasonable estimates.

Funding by the Department was for research carried out in Repatriation Hospitals and other Institutions.

OBJECTIVES OF COMMONWEALTH RESEARCH FUNDING

Table 7 allocates the estimates of R & D expenditure funded from within each ministry for 1979-80 to socio-economic objective classes as used in Project SCORE, while Appendix 5 gives comparable expenditures for the years 1976-77, 1977-78 and 1978-79.

Total Commonwealth funding of R & D in each objective class from within the Budget sector is shown in Table 5, and from outside the Budget sector in Table 6.

TABLE 7 : ESTIMATED COMMONWEALTH GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1979-80

Minister, Department, Organisation(a)	Current Prices (\$ m)										
	Defence	Economic Development									
		Agricul- ture	Other Prim Industry	Mining	Manu- facturing	Construc- tion	Energy	Transport	Commun- ication	Other	Sub- Total
Aboriginal Affairs											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Australian Institute of	-	-	-	-	-	-	-	-	-	-	-
Aboriginal Studies	-	-	-	-	-	-	-	-	-	-	-
Applied Ecology Ltd	-	0.734	-	-	-	-	-	-	-	-	0.734
Administrative Services											
Australian Federal Police	-	-	-	-	-	-	-	-	-	-	-
Attorney-General											
Aust Institute of Criminology	-	-	-	-	-	-	-	-	-	-	-
Law Reform Commission	-	-	-	-	-	-	-	-	-	-	-
Criminology Research Council(b)	-	-	-	-	-	-	-	-	-	-	-
Commonwealth Legal Aid Comm.	-	-	-	-	-	-	-	-	-	-	-
Capital Territory											
Dept of	-	-	-	-	-	-	-	-	-	-	-
NCDC	-	-	-	-	-	-	-	-	-	-	-
Defence	100.7	-	-	-	-	-	-	-	-	-	-
Dept of	-	-	-	-	-	-	-	-	-	-	-
Education											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Tertiary Education Commission	-	-	-	-	-	-	-	-	-	-	-
Schools Commission	-	-	-	-	-	-	-	-	-	-	-
Curriculum Development Centre	-	-	-	-	-	-	-	-	-	-	-
Grants to Universities	-	Not disaggregated									
Foreign Affairs											
Dept of(c)	-	-	-	-	-	-	-	-	-	-	-
Health											
Dept of	-	0.058	-	-	-	-	-	-	-	-	0.058
NHMRC Research Grants	-	-	-	-	-	-	-	-	-	-	-
CSL	-	-	-	-	3.846	-	-	-	-	-	3.846
Housing and Construction											
Dept of	-	-	-	-	-	2.220	-	-	-	-	2.220
Aust Housing Research Council(b)	-	-	-	-	-	0.100	-	-	-	-	0.100
Immigration and Ethnic Affairs											
Dept of	-	-	-	-	-	-	-	-	-	-	-
National Development and Energy											
Dept of	-	-	-	9.187	-	-	-	-	-	-	9.187
- BMR(d)	-	-	-	-	-	-	-	-	-	-	-
- National Energy RD & D	-	-	-	-	-	-	13.377	-	-	-	13.377
grants(e)(f)	-	-	-	-	-	-	0.350	-	-	-	0.350
- Coal Liquefaction(g)	-	-	-	-	-	-	-	-	-	-	-
- Water Resources Research	-	-	-	-	-	-	-	-	-	0.415	0.415
AAEC	-	-	-	0.5	1.1	-	9.0	0.1	-	0.9	11.6
Post and Telecommunications											
Telecom Australia	-	-	-	-	-	-	-	-	27.0	-	27.0
Australia Post	-	-	-	-	-	-	-	-	0.5	-	0.5
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	-	0.3	-	0.3
Primary Industry											
Dept of	-	5.497	-	-	-	-	-	-	-	-	5.497
- BAE	-	0.902	0.557	-	-	-	-	-	-	-	1.459
- Other	-	19.00	1.288	-	-	-	-	-	-	-	20.29
Rural Research Schemes(h)	-	-	-	-	-	-	-	-	-	-	-
Productivity											
Dept of	-	-	-	-	31.350	-	-	-	-	-	31.350
- IR & D grants	-	-	-	-	4.352	-	-	-	-	-	4.352
- Other	3.000	-	-	-	-	-	-	-	-	-	-
Science and the Environment											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- Research Grants(i)	-	-	-	-	-	-	-	-	-	-	-
- Antarctic Division	-	-	-	-	-	-	-	-	-	-	-
- Bureau of Meteorology(j)	0.061	0.036	0.024	0.024	0.024	0.024	0.012	0.305	-	0.036	0.485
- Other	-	-	-	-	-	-	-	-	-	0.177	0.177
CSIRO (direct)	-	36.169	8.399	9.020	28.607	2.071	7.293	0.814	-	11.823	104.196
CSIRO (indirect)	-	Not disaggregated									
AIMS	-	-	-	-	-	-	-	-	-	-	-
Supervising Scientist	-	-	-	-	-	-	-	-	-	-	-
AATB	-	-	-	-	-	-	-	-	-	-	-
GBRMPA	-	-	-	-	-	-	-	-	-	-	-
ANPWS	-	-	-	-	-	-	-	-	-	-	-
Social Security											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Transport											
Dept of(k)	-	-	-	-	-	-	-	8.396	-	-	8.396
BTE	-	-	-	-	-	-	-	2.737	-	-	2.737
Treasury											
ABS(e)	-	-	-	-	-	-	-	-	-	-	-
Reserve Bank	-	0.932	0.100	-	-	-	-	0.006	-	-	1.038
Veterans' Affairs											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Total disaggregated	103.8	63.33	10.368	18.7	69.3	4.415	30.0	12.4	27.8	13.4	249.7

TABLE 7 (continued) ESTIMATED COMMONWEALTH GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1979-80

Current Prices (\$ m)

Minister, Department, Organisation	Community Welfare						Advancement of Knowledge	TOTAL
	Environment	Health	Education	Welfare	Other	Sub- Total		
<u>Aboriginal Affairs</u>								
Dept of	-	0.041	0.010	-	0.159	0.210	-	0.210
Australian Institute of	-	-	0.064	-	-	0.064	0.936	1.000
Aboriginal Studies	-	-	-	-	-	-	-	0.734
Applied Ecology Ltd	-	-	-	-	-	-	-	-
<u>Administrative Services</u>								
Australian Federal Police	-	-	-	-	0.124	0.124	-	0.124
<u>Attorney-General</u>								
Aust Institute of Criminology	-	-	-	-	1.120	1.120	-	1.120
Law Reform Commission	-	-	-	-	0.865	0.865	-	0.865
Criminology Research Council	-	-	-	-	0.030	0.030	-	0.030
Commonwealth Legal Aid Comm.	-	-	-	-	0.025	0.025	-	0.025
<u>Capital Territory</u>								
Dept of	0.141	-	-	-	0.381	0.522	-	0.522
NDC	0.063	-	-	-	-	0.063	-	0.063
<u>Defence</u>								
Dept of	-	-	-	-	-	-	-	100.7
<u>Education</u>								
Dept of	-	-	1.460	-	-	1.460	7.800	9.260
Tertiary Education Commission	-	-	0.100	-	-	0.100	-	0.100
Schools Commission	-	-	0.150	-	-	0.150	-	0.150
Curriculum Development Centre	-	-	0.963	-	-	0.963	-	0.963
Grants to universities	-	Not disaggregated				-	-	-
<u>Foreign Affairs</u>								
Dept of	-	-	-	-	-	-	0.134	0.134
<u>Health</u>								
Dept of	-	9.329	-	-	-	9.329	0.054	9.441
NHMRC Research Grants	-	14.000	-	-	-	14.000	-	14.000
CSL	-	-	-	-	-	-	-	3.846
<u>Housing and Construction</u>								
Dept of	-	-	-	-	-	-	-	2.220
Aust Housing Research Council	-	-	-	-	-	-	-	0.100
<u>Immigration and Ethnic Affairs</u>								
Dept of	-	-	-	0.220	0.550	0.770	-	0.770
<u>National Development and Energy</u>								
Dept of								
- BMR	-	-	-	-	-	-	4.383	13.570
- National Energy RD & D grants	-	-	-	-	-	-	-	13.377
- Coal Liquefaction	-	-	-	-	-	-	-	0.350
- Water Resources Research	-	-	-	-	-	-	-	0.415
AAEC	1.3	0.2	-	-	-	1.5	0.4	13.5
<u>Post and Telecommunications</u>								
Telecom Australia	-	-	-	-	-	-	-	27.
Australia Post	-	-	-	-	-	-	-	0.5
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	0.3
<u>Primary Industry</u>								
Dept of								
- BAE	-	-	-	-	-	-	-	5.497
- Other	-	-	-	-	-	-	-	1.459
Rural Research Schemes	-	-	-	-	-	-	-	20.29
<u>Productivity</u>								
Dept of								
- IR & D grants	-	-	-	-	-	-	-	31.350
- Other	-	-	-	-	-	-	-	7.352
<u>Science and the Environment</u>								
Dept of								
- Research Grants	-	-	-	-	-	-	12.8	12.8
- Antarctic Division	-	-	-	-	-	-	21.5	21.5
- Bureau of Meteorology	0.060	0.024	-	-	0.462	0.546	0.121	1.213
- Other	-	-	-	-	-	-	1.372	1.549
CSIRO (direct)	18.982	3.989	-	-	-	22.971	3.861	131.028
CSIRO (indirect)	-	Not disaggregated				-	-	-
AIMS	-	-	-	-	-	-	3.140	3.140
Supervising Scientist	1.913	-	-	-	-	1.913	-	1.913
AATB	-	-	-	-	-	-	1.100	1.100
GBRMPA	0.340	-	-	-	-	0.340	-	0.340
ANPWS	0.193	-	-	-	-	0.193	-	0.193
<u>Social Security</u>								
Dept of	-	-	-	0.488	-	0.488	-	0.488
<u>Transport</u>								
Dept of	-	-	-	-	-	-	-	8.396
BTE	-	-	-	-	-	-	-	2.737
<u>Treasury</u>								
ABS	-	-	-	-	1.6	1.6	-	1.6
Reserve Bank	0.002	-	-	-	0.073	0.075	0.086	1.199
<u>Veterans' Affairs</u>								
Dept of	-	0.4	-	-	-	0.4	-	0.4
Total disaggregated	23.0	28.0	2.747	0.708	5.4	59.8	57.7	470.9
Grants to universities								73.0
CSIRO (indirect)								61.6
TOTAL								605.5

- (a) See page 77 for acronyms and abbreviations.
- (b) Commonwealth grant for research.
- (c) Not including ADAB - see page 20.
- (d) Pro-rata dissection of Appropriation on basis of Project SCORE 1976-77 data.
- (e) Some may be assigned to other socio-economic objectives.
- (f) These figures include a levy on raw coal production paid to the Coal Research Trust Account through Special Appropriations, and not actual expenditure - see page 25.
- (g) In 1979-80 a further \$0.6m will be provided by Victorian, Queensland and New South Wales Governments.
- (h) May include industry levy as well as Commonwealth contribution - see page 30.
- (i) Includes grants administered by the Australian Research Grants Committee and grants for special research projects.
- (j) Includes Bureau's contribution to the ANMRC.
- (k) Includes Australian Road Research Board component - see footnote (b) page 39.

COMMONWEALTH FUNDING OF RESEARCH AND DEVELOPMENT:
PROJECT SCORE, 1976-77

In 1976-77, funding of R & D by Commonwealth agencies was directed towards socio-economic objective classes as follows (a):

Objective Category	(\$ m)		
	Sector of Performance		
	Commonwealth	Other	Total
National Security			
Defence	80.378	0.072	80.450
Sub-total	80.378	0.072	80.450
Economic development			
Agriculture	44.163	19.418	63.581
Other primary industries	9.807	1.645	11.452
Mining (prospecting)			
Energy sources	3.096	0.192	3.288
Other	9.019	0.492	9.511
Mining (extraction)			
Energy sources	0.809	0.198	1.007
Other	2.549	0.387	2.936
Manufacturing	26.822	13.657	40.479
Construction	5.797	1.277	7.074
Energy	13.351	3.661	17.012
Transport	2.593	4.259	6.852
Communications	29.004	0.804	29.808
Economic Services n.e.i.	15.762	6.909	22.671
Sub-total	162.772	52.899	215.671
Community welfare			
Urban and regional planning	2.849	1.336	4.185
Environment	9.657	3.256	12.913
Health	6.212	23.159	29.371
Education	0.021	5.731	5.752
Welfare	0.643	1.046	1.689
Community services n.e.i.	1.357	2.974	4.331
Sub-total	20.739	37.502	58.241

Advancement of knowledge			
Earth, ocean and atmosphere n.e.i.	21.832	7.905	29.737
General advancement of knowledge	22.533	104.235	126.768
Sub-total	44.365	112.140	156.505
	308.252	202.613	510.865

(a) Project SCORE 1976-77.

Care should be taken in comparing the above statistical results from Project SCORE with the estimated Commonwealth Government expenditures contained in this Statement. The different bases for the estimates are noted in the Introduction to this Statement.

The following table shows the Commonwealth funding of research performed in sectors other than the Commonwealth Government Sector (Project SCORE 1976-77):

Objective Category	(\$ m)				
	Sector of Performance (other than Commonwealth)				
	State Government	Higher Education	Private Non-Profit	Private Enterprise	Total Other Sectors
National security					
Defence	-	0.072	-		0.072
Sub-total	-	0.072	-		0.072
Economic development					
Agriculture	9.073	10.345	-		19.418
Other primary industries	0.529	1.116	-		1.645
Mining (prospecting)					
Energy sources	0.035	0.157	-		0.192
Other	0.059	0.433	-		0.492
Mining (extraction)					
Energy sources	-	0.198	-		0.198
Other	0.027	0.360	-		0.387
Manufacturing	0.101	5.159	-	8.397	13.657
Construction	0.079	1.198	-		1.277
Energy	0.018	3.643	-		3.661
Transport	3.048	1.211	-		4.259
Communications	-	0.804	-		0.804
Economic services n.e.i.	0.854	6.055	-		6.909
Sub-total	13.823	30.679	-	8.397	52.899

Community welfare					
Urban and regional planning	0.055	1.281	-		1.336
Environment	0.266	2.990	-		3.256
Health	0.706	18.443	4.010		23.159
Education	0.108	5.121	0.502		5.731
Welfare	0.081	0.955	0.010		1.046
Community services n.e.i.	0.040	2.889	0.045		2.974
Sub-total	1.256	31.679	4.567	-	37.502
Advancement of knowledge					
Earth, ocean and atmosphere n.e.i.	0.108	7.791	0.006		7.905
General advancement of knowledge	0.214	104.021	-		104.235
Sub-total	0.322	111.812	0.006	-	112.140
Total	15.401	174.243	4.572	8.397	202.613

APPENDIX 2

TOTAL INTRAMURAL R & D EXPENDITURES OF COMMONWEALTH GOVERNMENT AGENCIES BY SOCIO-ECONOMIC OBJECTIVE AND BY PERFORMING ORGANISATION: PROJECT SCORE 1976-77 (a)

OBJECTIVE	EXPENDITURE (\$000)	ORGANISATION (%)
<u>General</u>	15 228	CSIRO (83) AATB (9)
<u>Advancement of</u>		Antarctic Division (4) AAEC (3)
<u>Knowledge</u>		ANMRC (1)
<u>Agriculture</u>		
Animal	16 380	CSIRO (95) Northern Territory (5)
Plant	15 440	CSIRO (99) Northern Territory (1)
Other	12 083	CSIRO (100)
<u>Total</u>	43 903	
<u>Forestry</u>	5 065	CSIRO (100)
<u>Fisheries</u>	4 825	CSIRO (98) Primary Industry (2)
<u>Mining</u>		
Prospecting		
Petroleum	3 094	BMR (100)
Prospecting		
Metallic		
minerals (other		
than uranium)	9 058	BMR (51) CSIRO (43) AAEC (6)
Extraction Coal	791	CSIRO (100)
Extraction		
Uranium	130	AAEC (100)
Extraction		
Metallic (other		
than uranium)	3 038	CSIRO (100)
<u>Total</u>	16 111	
<u>Manufacturing</u>		
Food	7 217	CSIRO (100)
Textiles	6 898	CSIRO (91) Australian Wool Corporation (9)
Paper	1 371	CSIRO (100)
Printing	56	Note Issue (100)
Fertilizers	236	British Phosphate Commission (100)
Agricultural		
Chemicals	1 620	CSIRO (100)
Plastic		
materials	1 075	CSIRO (90) AAEC (10)

(a) Includes Funds from all sources

OBJECTIVE	EXPENDITURE (\$000)	ORGANISATION (%)
Inorganic		
Chemicals	369	AAEC (100)
Pharmaceuticals	3 399	CSL (84)
		AAEC (13) Fawns & McAllan (1)
		Rotary Tableting (2)
Non-Ferrous		
Basic Metal		
Products	2 036	CSIRO (100)
Aircraft	524	CSIRO (100)
Agricultural		
Machinery	268	CSIRO (100)
Photographic,		
Professional &		
Scientific		
Equipment	54	AAEC (100)
Other	2 049	CSIRO (100)
<u>Total</u>	27 172	
<u>Energy</u>		
Coal	3 583	CSIRO (82) Joint Coal Board (18)
Nuclear	8 070	AAEC (100)
Solar	592	CSIRO (81) AAEC (15) EHCD (4)
Wind	81	CSIRO (100)
Other		
Carriers	12	Snowy Mountains Engineering Corporation (100)
Other	1102	CSIRO (100)
<u>Total</u>	13 440	
<u>Transport</u>		
Transport Air	1 262	Transport (100)
Transport Sea	145	Transport (100)
Road Other	371	BTE (67) CSIRO (25)
		Productivity (8)
Rail	155	AAEC (100)
Intermodal		
Materials		
Handling	80	Productivity (100)
Other	580	BTE (96) ABS (4)
<u>Total</u>	2 593	
<u>Communications</u>		
Telecommunication		
& Broadcasting	28 915	Telecom (98) OTC (1.1)
		ABC (.3) Ionospheric Prediction (.2)
		ABT (.1) Postal Commission (.3)
		Postal Commission (100)
Post	97	PSB (100)
Other	2	
<u>Total</u>	29 014	

OBJECTIVE	EXPENDITURE (\$000)	ORGANISATION (%)
<u>Construction</u>	6 017	CSIRO (64.6) Construction (33.8) ABS (1.1) EHCD (.5)
<u>Finance</u>	2 326	Commonwealth Banking (96) ABS (4)
<u>Health-Medical</u>		
Neoplasms	38	Veterans' Affairs (100)
Endocrine		
Nutritional & Metabolic		
Diseases	33	Veterans' Affairs (100)
Blood	10	Veterans' Affairs (100)
Mental	13	Veterans' Affairs (100)
Diseases of Nervous System & Sense Organs	583	Health (98) ABS (2)
Circulatory	36	Veterans' Affairs (76) Capital Territory Health Commission (24)
Respiratory	127	Joint Coal Board (50) Veterans Affairs (50)
Genito-Urinary	33	Veterans' Affairs (100)
Musculoskeletal & Connective Tissue		
Diseases	9	Veterans' Affairs (100)
Other	2 767	CSIRO (65) Health (35)
<u>Total</u>	3 649	
<u>Health-Public</u>		
Health Services	1 196	Health (82) ABS (11) Veterans' Affairs (7)
Environmental		
Health	648	Health (77) AAEC (23)
Occupational		
Health	495	Joint Coal Board (89) Health (11)
Health Public Other	1 183	CSIRO (100)
<u>Total</u>	3 522	
<u>Water</u>	1 330	CSIRO (96) Snowy Mountains Engineering Corporation (4)
<u>Waste Disposal & Recycling</u>		
Sewage	122	CSIRO (78) EHCD (22)
Waste Other	1 856	CSIRO (84) AAEC (13) EHCD (3)
<u>Total</u>	1 978	

OBJECTIVE	EXPENDITURE (\$000)	ORGANISATION (%)
<u>Environment</u>		
Atmospheric		
Pollution	1 119	CSIRO (100)
Water Pollution	1 094	AAEC (64) CSIRO (36)
Environmental		
Impact		
Prediction		
Techniques	413	CSIRO (100)
Flora-Fauna	4074	CSIRO (98) DCT (2)
Reclamation & Rehabilitation of		
Ecosystems	1 700	CSIRO (91) EHCD (9)
Environmental		
Protection	1 329	CSIRO (90) AWD Corp. (6) EHCD (4)
<u>Total</u>	9 729	
<u>Information</u>		
ADP Systems	3 006	CSIRO (98) ABS (2)
Information		
Indexing and Retrieval Systems	6	ABS (100)
General		
Methodology		
Statistical	386	ABS (100)
<u>Total</u>	3 398	
<u>Housing</u>	492	EHCD (91) AHRC (9)
<u>Urban and Regional Planning</u>	2 375	CSIRO (72) NCDC (19) EHCD (7) ABS (2)
<u>Education</u>	21	ABS (100)
<u>Economy</u>		
Economy	6 600	BAE (77) IAC (8) ABS (8) Reserve Bank (3) EHCD (2) Treasury (1) Industry & Commerce (1)
Productivity	247	Productivity (91) ABS (9)
<u>Total</u>	6 847	
<u>Welfare</u>		
Unemployment	23	ABS (100)
Aboriginal	422	Applied Ecology Ltd (100)
Migrant	59	Social Security (100)
Other	139	Social Security (79) ABS (21)
<u>Total</u>	643	

OBJECTIVE	EXPENDITURE (\$000)	ORGANISATION (%)
<u>Administration</u>	183	PSB (100)
<u>Law & Order</u>		
Law Reform	474	Law Reform Commission (100)
Law Enforcement	268	Australian Institute of Criminology (100)
Corrective Services	10	ABS (100)
<u>Total</u>	752	
<u>Recreation</u>		
Parks	286	DCT (100)
Recreation Other	1	ABS (100)
<u>Total</u>	287	
<u>International</u>	135	Foreign Affairs (100)
<u>Earth</u>		
Geology	2 312	BMR (100)
Geophysics	1 203	BMR (100)
Hydrology	1 051	CSIRO (74) AAEC (26)
Earth Other	1 897	CSIRO (74) Antarctic Division (26)
<u>Total</u>	6 463	
<u>Ocean</u>		
Coastal & Ocean Engineering	44	CSIRO (100)
Biological Marine Science	9 137	AIMS (87) CSIRO (13)
Ocean Other	343	CSIRO (100)
<u>Total</u>	9 524	
<u>Atmosphere</u>		
Meteorology	1 745	Bureau of Meteorology (79) CSIRO (21)
Atmospheric Physics	2 516	CSIRO (59) Antarctic Division (24) Space Projects (17)
Atmosphere Other	1 603	CSIRO (100)
<u>Total</u>	5 864	
<u>Remote Sensing</u>	192	CSIRO (100)
<u>Defence</u>	87 578	Defence (97) Productivity (3)
<u>R & D Other</u>	8 282	CSIRO (94) Immigration & Ethnic Affairs (6)

COMMONWEALTH R & D CONTRACTING

To obtain the current picture of government contracting of R & D, the Australian Science and Technology Council (ASTEC) sought during 1979 information on scientifically and technologically-oriented R & D contracted out by 19 government departments and agencies to determine amounts, areas of placement, purposes, motivations and procedures used. Commonwealth R & D to the value of \$32.0m was reported as having been contracted out. Of this, \$19.1m was placed with manufacturing and other industries, with the remainder going to academics, consulting firms, the State governments and non-profit research organisations. The amount placed with industry included dedicated funds: \$3.45m by the Department of Productivity under Section 39 of the Industrial Research and Development Incentives Act (IRDIA), and \$2.37m for energy research provided through the National Energy Research, Development and Demonstration Council (NERDDC). If these special funds are subtracted only \$13.3m was contracted to industry. Table 8 gives the major expenditures by source and Table 9 gives purposes and areas of placement of R & D contracts.

Table 8: Major reported R & D contracts (mainly 1978-79)

Department or Agency	(\$ m)	
	Total Contracted Out	Contracted to Industry
CSIRO	1.76	0.10
Defence	10.5	9.5
Primary Industry	0.5	0.12
AAEC	0.7	0.15
Telecom	0.2	0.13
Bureau of Mineral Resources	0.4	0.3
Transport	1.3(a)	1.3(a)
Science and the Environment	1.04	0.56
Other	2.1(a)	1.1(a)
Sub-total	18.5	13.3
NERDDC (National Development)	10.0	2.37
Productivity under Section 39 of IRDIA	3.45	3.45
Total	32.0	19.1

(a) Approximate

Table 9: Placement and Type of Contracting

Placement Type	Academics	Consulting Firms	(\$ m)		Other	Total
			Manufacturing Companies	Other Industry		
Consultant Studies (a)	0.44	0.21	0.05	0.06	0.18	0.93
Curiosity-motivated research (b)	0.48				0.03	0.51
Mission-oriented research (c)	2.37	0.48	3.84	0.34	2.41	9.44
Product and Process Development (d)	1.16	0.99	10.63	0.80	1.38	14.96
Demonstrations Pilot Production (e)	0.15	0.09	1.99	0.001	0.99	3.23
Technical Services (f)	0.008	0.83	0.96	0.40	0.32	2.51
Other	0.007				0.41	0.42
Total	4.60	2.60	17.47	1.60	5.72	32.0

- (a) Consultant Studies are descriptive reports, usually relating to policy or operational responsibilities. For example, a report on aquatic weeds, or on the potential of solar energy to produce heat in industrial applications.
- (b) Curiosity-Motivated Research is research which is undertaken purely for its own intrinsic interest, with no conceived practical end-use. For example, astronomical studies.
- (c) Mission-Oriented Research is research designed to meet a practical objective; it can be long or short-term, basic or applied. For example, nitrogen-fixing in plants, earthquake prediction, or effects of radiation on semiconductor devices.

- (d) Product and Process Development is the stage in which a prototype is fabricated and tested, or a process is provisionally specified. For example, fabrication of the laser strain-gauge, the oil-from-coal rig at BHP Melbourne Research Laboratories, or specifying the process for producing ultra-pure semiconductor materials.
- (e) Demonstrations, Pilot Production is the proving stage prior to commercial application, for example the solar water-heating facility used by Coca-Cola in Queanbeyan, the Sirotherm water-treatment facility in WA, or the production of a quantity of lasers, solar cells, etc. for life testing, efficiency measurements, cost evaluation, etc.
- (f) Technical Services relate to the performance of routine measurements or analyses, for example, chemical analyses, or mechanical strength tests.

APPENDIX 4

INTERNATIONAL COMPARISONS (1)

Figure 1 shows the 1975 distribution of R & D expenditure by sector of performance for OECD member countries, ranked according to gross domestic expenditure on R & D in the natural sciences and engineering (GERDN) expressed as a percentage of GDP. Figure 2 shows the variation over time of GERDN expressed as a percentage of GDP for these countries. It can be seen that in comparison with other OECD member countries, Australia's position on this scale has been close to the median over the period 1968 to 1976, but that between 1973 and 1976 our position deteriorated. This was the result of a sharp decline in business enterprise sector R & D in Australia, a decline in strong contrast with the stabilisation or increase in privately funded business enterprise R & D which occurred over the years prior to 1976 in almost all other OECD member countries.

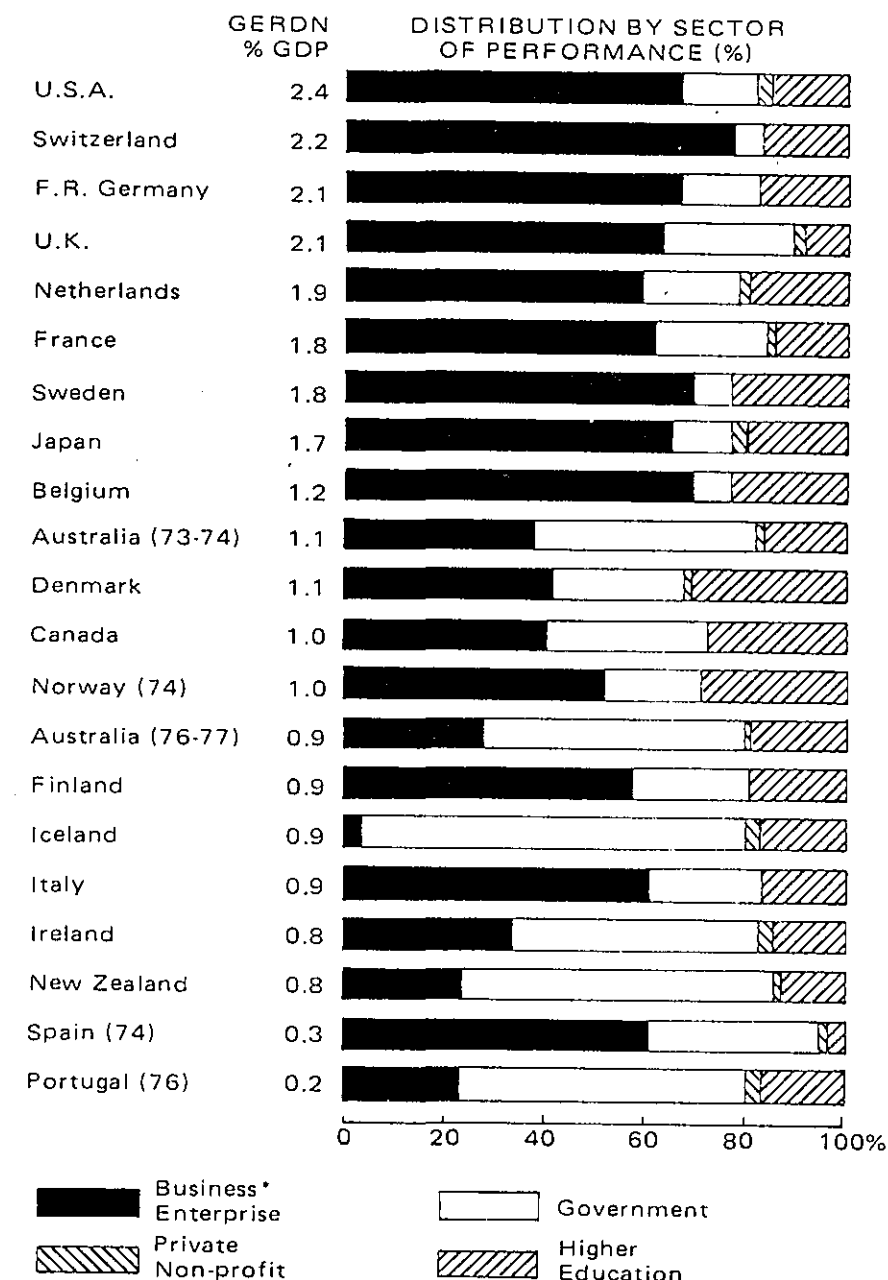
Figure 1 demonstrates that the OECD member countries which devote a higher than average percentage of their GDP to R & D all perform the greater part of their R & D in the business enterprise sector.

Australian research and development is characterised by the predominance of the government sector, both as a source of funds and as a performer of research. According to an OECD review of Australia's science policy the four countries which are similar to Australia in this regard, (Spain, Greece, Portugal and Ireland) possess quite different economic structures from that of Australia. That review was based on the position in 1968. Since then the Commonwealth Government element has increased: it now supplies 64% of the funds and performs 39% of the research, compared with 46% and 34% respectively in 1968-69.

(1) International comparisons are subject to a number of caveats arising from differences in R & D survey practice in the various countries. For OECD member countries the proposed standard practice is set out in the "Frascati Manual": The Measurement of Scientific and Technical Activities, OECD Paris 1976, but most of these countries differ from the proposed standard in some areas. Readers should refer to the publications of the OECD Science and Technology Indicators Unit for details. Source documents for this section were:

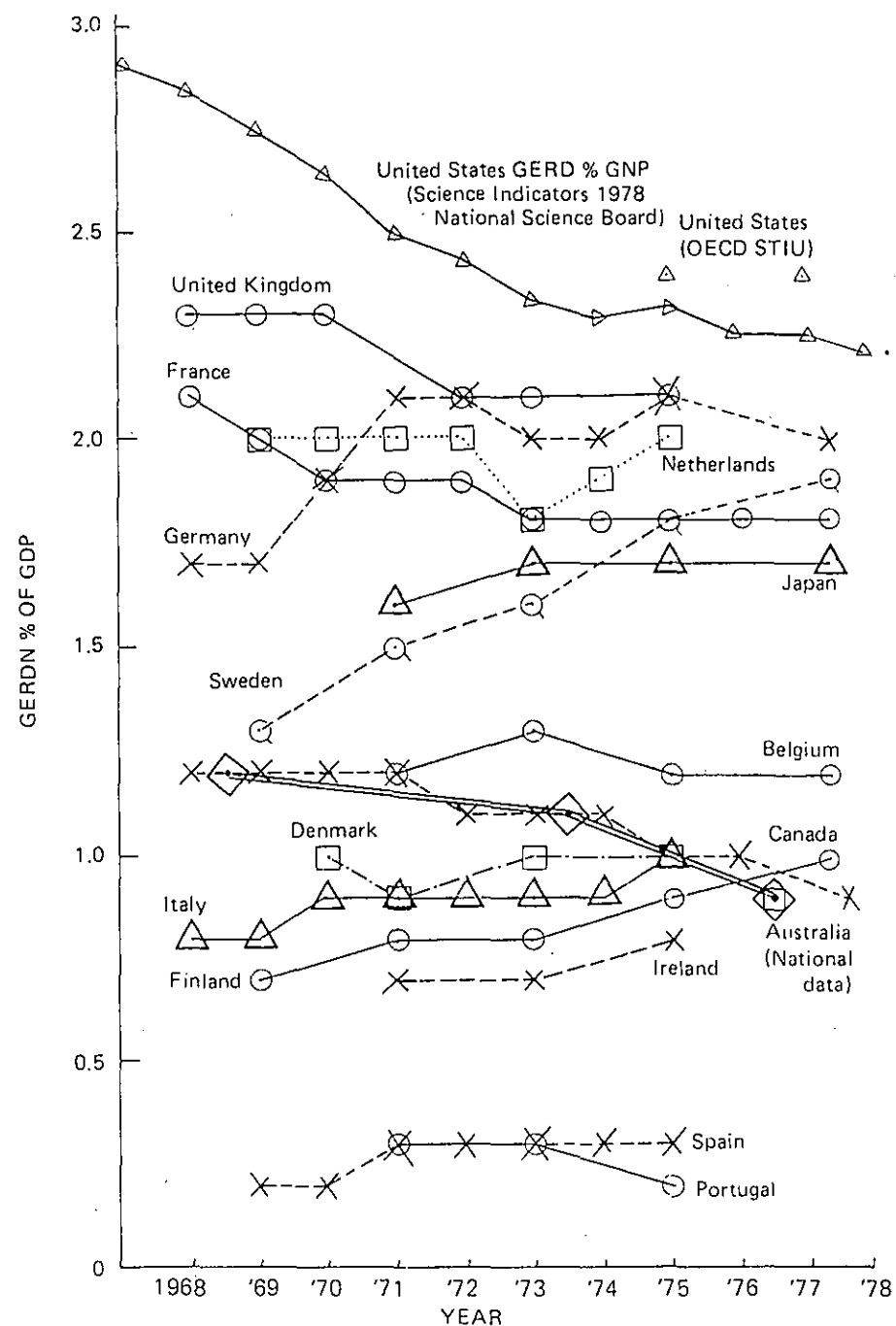
- International Statistical Year, 1975; International Survey of the Resources devoted to R & D by OECD Member Countries; Organisation for Economic Cooperation and Development, DSTI/SPR/79.5, Paris, March 1979.
- Science Resources Newsletter, Nos 3 and 4, Winter 1978-79 and Spring 1979; OECD/DSTI Science and Technology Indicators Unit, Paris.

Fig. 1. R & D expenditure in the natural sciences and engineering by country — 1975 or nearest year



* Includes government trading enterprises.
GERDN — Gross domestic expenditure on R & D in the natural sciences and engineering.

Fig. 2. Expenditure on R & D in the natural sciences and engineering (GERDN) in OECD member countries as percentage of GDP — by year



Source: OECD Science and Technology Indicators Unit except where indicated.

Table 10 ranks Australia relative to other OECD member countries in terms of R & D expenditure in the social sciences and humanities expressed as a percentage of GDP.

Table 10: R & D expenditure in the social sciences and humanities as percentage of GDP in OECD member countries - 1975

Japan	0.23	Australia (76-77)	0.09
Netherlands	0.18	Belgium	0.09
Norway	0.14	Canada	0.09
F.R. Germany	0.12	Sweden	0.09
Australia (73-74)	0.11	Italy	0.07
Finland	0.11	France	0.04

APPENDIX 5

TABLES OF ESTIMATED COMMONWEALTH GOVERNMENT
FUNDS EXPENDED ON R & D BY
ORGANISATION AND BY SOCIO-ECONOMIC
OBJECTIVE 1976-77 TO 1978-79

For Footnotes, see page 46

ESTIMATED COMMONWEALTH GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1976-77

Current Prices (\$ m)

Minister, Department, Organisation(a)	Defence	Economic Development									Sub- Total
		Agricul- ture	Other Prim Industry	Mining	Manu- facturing	Construc- tion	Energy	Transport	Commun- ication	Other	
<u>Aboriginal Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Australian Institute of Aboriginal Studies	-	-	-	-	-	-	-	-	-	-	-
Applied Ecology Ltd	-	0.422	-	-	-	-	-	-	-	-	0.422
<u>Administrative Services</u>											
Australian Federal Police	-	-	-	-	-	-	-	-	-	-	-
<u>Attorney-General</u>											
Aust Institute of Criminology	-	-	-	-	-	-	-	-	-	-	-
Law Reform Commission	-	-	-	-	-	-	-	-	-	-	-
Criminology Research Council(b)	-	-	-	-	-	-	-	-	-	-	-
Commonwealth Legal Aid Comm.	-	-	-	-	-	-	-	-	-	-	-
<u>Capital Territory</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
NCDC	-	-	-	-	-	-	-	-	-	-	-
<u>Defence</u>											
Dept of	93.0	-	-	-	-	-	-	-	-	-	-
<u>Education</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Tertiary Education Commission	-	-	-	-	-	-	-	-	-	-	-
Schools Commission	-	-	-	-	-	-	-	-	-	-	-
Curriculum Development Centre	-	-	-	-	-	-	-	-	-	-	-
Grants to Universities	-	Not disaggregated									-
<u>Foreign Affairs</u>											
Dept of(c)	-	-	-	-	-	-	-	-	-	-	-
<u>Health</u>											
Dept of	-	0.040	-	-	-	-	-	-	-	-	0.040
NHMRC Research Grants	-	-	-	-	-	-	-	-	-	-	-
CSL	-	-	-	-	2.607	-	-	-	-	-	2.607
<u>Housing and Construction</u>											
Dept of	-	-	-	-	-	1.790	-	-	-	-	1.790
Aust Housing Research Council(b)	-	-	-	-	-	-	-	-	-	-	-
<u>Immigration and Ethnic Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<u>National Development and Energy</u>											
Dept of	-	-	-	8.385	-	-	-	-	-	-	8.385
- BMR(d)	-	-	-	-	-	-	-	-	-	-	-
- National Energy RD & D grants(e)(f)	-	-	-	-	-	-	-	-	-	-	-
- Coal Liquefaction	-	-	-	-	-	-	-	-	-	-	-
- Water Resources Research	-	-	-	-	-	-	-	-	-	0.389	0.389
AAEC	-	-	-	0.7	1.0	-	8.1	0.2	-	0.5	10.5
<u>Post and Telecommunications</u>											
Telecom Australia	-	-	-	-	-	-	-	-	28.4	-	28.4
Australia Post	-	-	-	-	-	-	-	-	0.3	-	0.3
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	-	0.6	-	0.6
<u>Primary Industry</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- BAE	-	4.559	-	-	-	-	-	-	-	-	4.559
- Other	-	0.257	0.385	-	-	-	-	-	-	-	0.642
Rural Research Schemes(h)	-	28.4	0.759	-	-	-	-	-	-	-	29.1
<u>Productivity</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- IR & D grants	-	-	-	-	15.400	-	-	-	-	-	15.400
- Other	3.191	-	-	-	0.414	-	-	-	-	-	0.414
<u>Science and the Environment</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- Research Grants(i)	-	-	-	-	-	-	-	-	-	-	-
- Antarctic Division	-	-	-	-	-	-	-	-	-	-	-
- Bureau of Meteorology(j)	0.064	0.039	0.026	0.026	0.026	0.026	0.013	0.321	-	0.039	0.516
- Other	-	-	-	-	-	-	-	-	-	0.131	0.131
CSIRO (direct)	-	29.064	7.820	6.795	21.803	2.019	4.784	0.467	-	9.918	82.670
CSIRO (indirect)	-	Not disaggregated									-
AIMS	-	-	-	-	-	-	-	-	-	-	-
Supervising Scientist	-	-	-	-	-	-	-	-	-	-	-
AATB	-	-	-	-	-	-	-	-	-	-	-
GBRMPA	-	-	-	-	-	-	-	-	-	-	-
ANPWS	-	-	-	-	-	-	-	-	-	-	-
<u>Social Security</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<u>Transport</u>											
Dept. of(k)	-	-	-	-	-	-	-	9.800	-	-	9.800
BTE	-	-	-	-	-	-	-	1.549	-	-	1.549
<u>Treasury</u>											
ABS(e)	-	-	-	-	-	-	-	-	-	-	-
Reserve Bank	-	0.461	0.048	-	-	-	0.017	0.006	-	-	0.532
<u>Veterans' Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Total disaggregated	96.3	63.2	9.038	15.9	41.3	3.835	12.9	12.3	29.3	11.0	198.8

ESTIMATED GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1976-77 - continued

Current Prices (\$ m)

Minister, Department, Organisation	Community Welfare						Advancement of Knowledge	TOTAL
	Environment	Health	Education	Welfare	Other	Sub- Total		
<u>Aboriginal Affairs</u>								
Dept of	-	0.108	0.056	-	0.090	0.254	-	0.254
Australian Institute of	-	-	-	-	-	-	-	-
Aboriginal Studies	-	-	0.097	-	-	0.097	0.870	0.967
Applied Ecology Ltd	-	-	-	-	-	-	-	0.422
<u>Administrative Services</u>								
Australian Federal Police	-	-	-	-	0.017	0.017	-	0.017
<u>Attorney-General</u>								
Aust Institute of Criminology	-	-	-	-	0.904	0.904	-	0.904
Law Reform Commission	-	-	-	-	0.533	0.533	-	0.533
Criminology Research Council	-	-	-	-	0.010	0.010	-	0.010
Commonwealth Legal Aid Comm.	-	-	-	-	-	-	-	-
<u>Capital Territory</u>								
Dept of	0.115	-	-	-	0.286	0.401	-	0.401
NCDC	0.190	-	-	-	-	0.190	-	0.190
<u>Defence</u>								
Dept of	-	-	-	-	-	-	-	93.0
<u>Education</u>								
Dept of	-	-	1.432	-	-	1.432	7.706	9.138
Tertiary Education Commission	-	-	0.153	-	-	0.153	-	0.153
Schools Commission	-	-	0.116	-	-	0.116	-	0.116
Curriculum Development Centre	-	-	0.952	-	-	0.952	-	0.952
Grants to universities	-	-	Not disaggregated			-	-	-
<u>Foreign Affairs</u>								
Dept of	-	-	-	-	-	-	0.119	0.119
<u>Health</u>								
Dept of	-	5.348	-	-	-	5.348	0.045	5.433
NHMRC Research Grants	-	10.295	-	-	-	10.295	-	10.295
CSL	-	-	-	-	-	-	-	2.607
<u>Housing and Construction</u>								
Dept of	-	-	-	-	-	-	-	1.790
Aust Housing Research Council	-	-	-	-	-	-	-	-
<u>Immigration and Ethnic Affairs</u>								
Dept of	-	-	-	-	0.146	0.146	-	0.146
<u>National Development and Energy</u>								
Dept of	-	-	-	-	-	-	4.000	12.385
- BMR	-	-	-	-	-	-	-	-
- National Energy RD & D grants	-	-	-	-	-	-	-	-
- Coal Liquefaction	-	-	-	-	-	-	-	-
- Water Resources Research	-	-	-	-	-	-	-	0.389
AAEC	0.7	0.1	-	-	-	0.8	0.5	11.8
<u>Post and Telecommunications</u>								
Telecom Australia	-	-	-	-	-	-	-	28.4
Australia Post	-	-	-	-	-	-	-	0.3
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	0.6
<u>Primary Industry</u>								
Dept of	-	-	-	-	-	-	-	4.559
- BAE	-	-	-	-	-	-	-	0.642
- Other	-	-	-	-	-	-	-	29.1
Rural Research Schemes	-	-	-	-	-	-	-	-
<u>Productivity</u>								
Dept of	-	-	-	-	-	-	-	15.400
- IR & D grants	-	-	-	-	-	-	-	3.605
- Other	-	-	-	-	-	-	-	-
<u>Science and the Environment</u>								
Dept of	-	-	-	-	-	-	12.173	12.173
- Research Grants	-	-	-	-	-	-	6.5	6.5
- Antarctic Division	-	-	-	-	-	-	0.128	1.286
- Bureau of Meteorology	0.064	0.026	-	-	0.488	0.578	0.746	1.323
- Other	0.446	-	-	-	-	0.446	3.375	103.466
CSIRO (direct)	14.754	2.667	-	-	-	17.421	-	-
CSIRO (indirect)	-	Not disaggregated			-	-	-	-
AIMS	-	-	-	-	-	-	7.970	7.970
Supervising Scientist	-	-	-	-	-	-	-	-
AATB	-	-	-	-	-	-	0.830	0.830
GBRMPA	-	-	-	-	-	-	-	-
ANPWS	-	-	-	-	-	-	-	-
<u>Social Security</u>								
Dept of	-	-	-	0.205	-	0.205	-	0.205
<u>Transport</u>								
Dept of	-	-	-	-	-	-	-	9.800
BTE	-	-	-	-	-	-	-	1.549
<u>Treasury</u>								
ABS	-	-	-	-	1.5	1.5	-	1.5
Reserve Bank	0.046	0.001	0.060	-	0.074	0.181	0.091	0.804
<u>Veterans' Affairs</u>								
Dept of	-	0.3	-	-	-	0.3	-	0.3
Total disaggregated	16.3	18.8	2.866	0.205	4.0	42.3	45.1	382.4
Grants to universities								52.5
CSIRO (indirect)								28.9
TOTAL								463.8

ESTIMATED GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1977-78

Current Prices (\$ m)

Minister, Department, Organisation(a)	Defence	Economic Development									Sub- Total
		Agricul- ture	Other Prim Industry	Mining	Manu- facturing	Construc- tion	Energy	Transport	Commun- ication	Other	
<u>Aboriginal Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Australian Institute of Aboriginal Studies	-	-	-	-	-	-	-	-	-	-	-
Applied Ecology Ltd	-	0.617	-	-	-	-	-	-	-	-	0.617
<u>Administrative Services</u>											
Australian Federal Police	-	-	-	-	-	-	-	-	-	-	-
<u>Attorney-General</u>											
Aust Institute of Criminology	-	-	-	-	-	-	-	-	-	-	-
Law Reform Commission	-	-	-	-	-	-	-	-	-	-	-
Criminology Research Council(b)	-	-	-	-	-	-	-	-	-	-	-
Commonwealth Legal Aid Comm.	-	-	-	-	-	-	-	-	-	-	-
<u>Capital Territory</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
NCDC	-	-	-	-	-	-	-	-	-	-	-
<u>Defence</u>											
Dept of	100.0	-	-	-	-	-	-	-	-	-	-
<u>Education</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Tertiary Education Commission	-	-	-	-	-	-	-	-	-	-	-
Schools Commission	-	-	-	-	-	-	-	-	-	-	-
Curriculum Development Centre	-	-	-	-	-	-	-	-	-	-	-
Grants to Universities	-	Not disaggregated									-
<u>Foreign Affairs</u>											
Dept of(c)	-	-	-	-	-	-	-	-	-	-	-
<u>Health</u>											
Dept of	-	0.041	-	-	-	-	-	-	-	-	0.041
NHMRC Research Grants	-	-	-	-	-	-	-	-	-	-	-
CSL(b)	-	-	-	-	3.080	-	-	-	-	-	3.080
<u>Housing and Construction</u>											
Dept of	-	-	-	-	-	1.940	-	-	-	-	1.940
Aust Housing Research Council(b)	-	-	-	-	-	-	-	-	-	-	-
<u>Immigration and Ethnic Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<u>National Development and Energy</u>											
Dept of	-	-	-	8.670	-	-	-	-	-	-	8.670
- BMR(d)	-	-	-	-	-	-	-	-	-	-	-
- National Energy RD & D grants(e)(f)	-	-	-	-	-	-	1.583	-	-	-	1.583
- Coal Liquefaction	-	-	-	-	-	-	-	-	-	-	-
- Water Resources Research	-	-	-	-	-	-	-	-	-	0.390	0.390
AAEC	-	-	-	0.5	1.0	-	7.8	0.2	-	0.6	10.1
<u>Post and Telecommunications</u>											
Telecom Australia	-	-	-	-	-	-	-	-	25.0	-	25.0
Australia Post	-	-	-	-	-	-	-	-	0.4	-	0.4
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	-	0.4	-	0.4
<u>Primary Industry</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- BAE	-	5.026	-	-	-	-	-	-	-	-	5.026
- Other	-	0.481	0.421	-	-	-	-	-	-	-	0.902
Rural Research Schemes(h)	-	23.3	0.626	-	-	-	-	-	-	-	23.9
<u>Productivity</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- IR & D grants	-	-	-	-	13.649	-	-	-	-	-	13.649
- Other	2.920	-	-	-	0.591	-	-	-	-	-	0.591
<u>Science and the Environment</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- Research grants(i)	-	-	-	-	-	-	-	-	-	-	-
- Antarctic Division	-	-	-	-	-	-	-	-	-	-	-
- Bureau of Meteorology(j)	0.067	0.040	0.027	0.027	0.027	0.027	0.013	0.337	-	0.040	0.538
- Other	-	-	-	-	-	-	-	-	-	0.138	0.138
CSIRO (direct)	-	33.372	8.057	7.042	25.741	2.131	5.613	0.503	-	10.903	93.362
CSIRO (indirect)	-	Not disaggregated									-
AIMS	-	-	-	-	-	-	-	-	-	-	-
Supervising Scientist	-	-	-	-	-	-	-	-	-	-	-
AATB	-	-	-	-	-	-	-	-	-	-	-
GBRMPA	-	-	-	-	-	-	-	-	-	-	-
ANPWS	-	-	-	-	-	-	-	-	-	-	-
<u>Social Security</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<u>Transport</u>											
Dept. of(k)	-	-	-	-	-	-	-	10.306	-	-	10.306
- BTE	-	-	-	-	-	-	-	2.292	-	-	2.292
<u>Treasury</u>											
ABS(e)	-	-	-	-	-	-	-	-	-	-	-
Reserve Bank	-	0.630	0.138	-	-	0.038	-	-	-	-	0.806
<u>Veterans' Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Total disaggregated	103.0	63.5	9.269	16.2	44.1	4.136	15.0	13.6	25.8	12.1	203.7

ESTIMATED GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1977-78 - continued

Current Prices (\$ m)

Minister, Department, Organisation	Community Welfare						Advancement of Knowledge	TOTAL
	Environment	Health	Education	Welfare	Other	Sub- Total		
<u>Aboriginal Affairs</u>								
Dept of	-	0.085	0.011	-	0.104	0.200	-	0.200
Australian Institute of	-	-	-	-	-	-	-	-
Aboriginal Studies	-	-	0.069	-	-	0.069	0.705	0.774
Applied Ecology Ltd	-	-	-	-	-	-	-	0.617
<u>Administrative Services</u>								
Australian Federal Police	-	-	-	-	0.017	0.017	-	0.017
<u>Attorney-General</u>								
Aust Institute of Criminology	-	-	-	-	1.030	1.030	-	1.030
Law Reform Commission	-	-	-	-	0.737	0.737	-	0.737
Criminology Research Council	-	-	-	-	0.030	0.030	-	0.030
Commonwealth Legal Aid Comm.	-	-	-	-	-	-	-	-
<u>Capital Territory</u>								
Dept of	0.101	-	-	-	0.300	0.401	-	0.401
NCDC	0.164	-	-	-	-	0.164	-	0.164
<u>Defence</u>								
Dept of	-	-	-	-	-	-	-	100.0
<u>Education</u>								
Dept of	-	-	1.306	-	-	1.306	8.407	9.713
Tertiary Education Commission	-	-	0.068	-	-	0.068	-	0.068
Schools Commission	-	-	0.141	-	-	0.141	-	0.141
Curriculum Development Centre	-	-	0.908	-	-	0.908	-	0.908
Grants to universities	-	-	Not disaggregated			-	-	-
<u>Foreign Affairs</u>								
Dept of	-	-	-	-	-	-	0.116	0.116
<u>Health</u>								
Dept of	-	6.756	-	-	-	6.756	0.051	6.848
NHMRC Research Grants	-	11.714	-	-	-	11.714	-	11.714
CSL	-	-	-	-	-	-	-	3.080
<u>Housing and Construction</u>								
Dept of	-	-	-	-	-	-	-	1.940
Aust Housing Research Council	-	-	-	-	-	-	-	-
<u>Immigration and Ethnic Affairs</u>								
Dept of	-	-	-	-	0.117	0.117	-	0.117
<u>National Development and Energy</u>								
Dept of	-	-	-	-	-	-	4.137	12.807
- BMR	-	-	-	-	-	-	-	1.583
- National Energy RD & D grants	-	-	-	-	-	-	-	-
- Coal Liquefaction	-	-	-	-	-	-	-	0.390
- Water Resources Research	-	-	-	-	-	-	-	11.5
AAEC	0.8	0.2	-	-	-	1.0	0.4	-
<u>Post and Telecommunications</u>								
Telecom Australia	-	-	-	-	-	-	-	25.0
Australia Post	-	-	-	-	-	-	-	0.4
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	0.4
<u>Primary Industry</u>								
Dept of	-	-	-	-	-	-	-	5.026
- BAE	-	-	-	-	-	-	-	0.902
- Other	-	-	-	-	-	-	-	23.9
Rural Research Schemes	-	-	-	-	-	-	-	-
<u>Productivity</u>								
Dept of	-	-	-	-	-	-	-	13.649
- IR & D grants	-	-	-	-	-	-	-	3.511
- Other	-	-	-	-	-	-	-	-
<u>Science and the Environment</u>								
Dept of	-	-	-	-	-	-	11.000	11.000
- Research Grants	-	-	-	-	-	-	8.6	8.6
- Antarctic Division	-	-	-	-	-	-	0.136	1.346
- Bureau of Meteorology	0.067	0.027	-	-	0.511	0.605	0.761	0.899
- Other	-	-	-	-	-	-	3.415	115.912
CSIRO (direct)	16.077	3.058	-	-	-	19.135	-	-
CSIRO (indirect)	-	Not disaggregated			-	-	-	-
AIMS	-	-	-	-	-	-	3.699	3.699
Supervising Scientist	0.086	-	-	-	-	0.086	-	0.086
AATB	-	-	-	-	-	-	0.850	0.850
GBRMPA	0.016	-	-	-	-	0.016	-	0.016
ANPWS	0.369	-	-	-	-	0.369	-	0.369
<u>Social Security</u>								
Dept of	-	-	-	0.176	-	0.176	-	0.176
<u>Transport</u>								
Dept of	-	-	-	-	-	-	-	10.306
BTE	-	-	-	-	-	-	-	2.292
<u>Treasury</u>								
ABS	-	-	-	-	1.5	1.5	-	1.5
Reserve Bank	-	-	-	-	0.067	0.067	0.079	0.952
<u>Veterans' Affairs</u>								
Dept of	-	0.3	-	-	-	0.3	-	0.3
Total disaggregated	17.7	22.1	2.503	0.176	4.4	46.9	42.4	396.0
Grants to universities								59.9
CSIRO (indirect)								30.9
TOTAL								486.8

ESTIMATED COMMONWEALTH GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1978-79

Current Prices (\$ m)

Minister, Department,	Economic Development										
Organisation (a)	Defence	Agricul- ture	Other Prim Industry	Mining	Manu- facturing	Construc- tion	Energy	Transport	Commun- ication	Other	Sub- Total
<hr/>											
<u>Aboriginal Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Australian Institute of											
Aboriginal Studies	-	-	-	-	-	-	-	-	-	-	-
Applied Ecology Ltd	-	0.697	-	-	-	-	-	-	-	-	0.697
<u>Administrative Services</u>											
Australian Federal Police	-	-	-	-	-	-	-	-	-	-	-
<u>Attorney-General</u>											
Aust Institute of Criminology	-	-	-	-	-	-	-	-	-	-	-
Law Reform Commission	-	-	-	-	-	-	-	-	-	-	-
Criminology Research Council(b)	-	-	-	-	-	-	-	-	-	-	-
Commonwealth Legal Aid Comm.	-	-	-	-	-	-	-	-	-	-	-
<u>Capital Territory</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
NCDC	-	-	-	-	-	-	-	-	-	-	-
<u>Defence</u>											
Dept of	96.1	-	-	-	-	-	-	-	-	-	-
<u>Education</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
Tertiary Education Commission	-	-	-	-	-	-	-	-	-	-	-
Schools Commission	-	-	-	-	-	-	-	-	-	-	-
Curriculum Development Centre	-	-	-	-	-	-	-	-	-	-	-
Grants to Universities	-	Not disaggregated									-
<u>Foreign Affairs(c)</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<u>Health</u>											
Dept of	-	0.043	-	-	-	-	-	-	-	-	0.043
NHMRC Research Grants	-	-	-	-	-	-	-	-	-	-	-
CSL	-	-	-	-	3.233	-	-	-	-	-	3.233
<u>Housing and Construction</u>											
Dept of	-	-	-	-	-	2.090	-	-	-	-	2.090
Aust Housing Research Council(b)	-	-	-	-	-	0.100	-	-	-	-	0.100
<u>Immigration and Ethnic Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<hr/>											
<u>National Development and Energy</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- BMR(d)	-	-	-	8.762	-	-	-	-	-	-	8.762
- National Energy RD & D	-	-	-	-	-	-	-	-	-	-	-
grants(e)(f)	-	-	-	-	-	-	8.110	-	-	-	8.110
- Coal Liquefaction	-	-	-	-	-	-	0.007	-	-	-	0.007
- Water Resources Research	-	-	-	-	-	-	-	-	-	0.390	0.390
AAEC	-	-	-	0.5	1.1	-	8.8	0.1	-	0.8	11.3
<u>Post and Telecommunications</u>											
Telecom Australia	-	-	-	-	-	-	-	-	26.3	-	26.3
Australia Post	-	-	-	-	-	-	-	-	0.5	-	0.5
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	-	0.3	-	0.3
<u>Primary Industry</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- BAE	-	5.323	-	-	-	-	-	-	-	-	5.323
- Other	-	0.606	0.464	-	-	-	-	-	-	-	1.070
Rural Research Schemes(h)	-	20.252	1.187	-	-	-	-	-	-	-	21.439
<u>Productivity</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- IR & D grants	-	-	-	-	23.749	-	-	-	-	-	23.749
- Other	3.056	-	-	-	2.490	-	-	-	-	-	2.490
<u>Science and the Environment</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
- Research Grants(i)	-	-	-	-	-	-	-	-	-	-	-
- Antarctic Division	-	-	-	-	-	-	-	-	-	-	-
- Bureau of Meteorology(j)	0.058	0.035	0.023	0.023	0.023	0.023	0.012	0.288	-	0.035	0.462
- Other	-	-	-	-	-	-	-	-	-	0.142	0.142
CSIRO (direct)	-	36.970	8.497	7.819	28.651	2.065	6.079	0.787	-	10.903	101.771
CSIRO (indirect)	-	Not disaggregated									-
AIMS	-	-	-	-	-	-	-	-	-	-	-
Supervising Scientist	-	-	-	-	-	-	-	-	-	-	-
AATB	-	-	-	-	-	-	-	-	-	-	-
GBRMFA	-	-	-	-	-	-	-	-	-	-	-
ANPWS	-	-	-	-	-	-	-	-	-	-	-
<u>Social Security</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<u>Transport</u>											
Dept. of	-	-	-	-	-	-	-	8.336	-	-	8.336
BTE(k)	-	-	-	-	-	-	-	2.129	-	-	2.129
<u>Treasury</u>											
ABS(e)	-	-	-	-	-	-	-	-	-	-	-
Reserve Bank	-	0.689	0.163	-	-	-	-	0.006	-	-	0.858
<u>Veterans' Affairs</u>											
Dept of	-	-	-	-	-	-	-	-	-	-	-
<hr/>											
Total disaggregated	99.2	64.615	10.334	17.1	59.2	4.278	23.0	11.6	27.1	12.3	229.6

ESTIMATED GOVERNMENT FUNDS EXPENDED ON R & D BY ORGANISATION AND BY SOCIO-ECONOMIC OBJECTIVE, 1978-79 - continued

Current Prices (\$ m)

Minister, Department, Organisation	Community Welfare						Advancement of Knowledge	TOTAL
	Environment	Health	Education	Welfare	Other	Sub- Total		
<u>Aboriginal Affairs</u>								
Dept of	-	0.085	0.002	-	0.095	0.182	-	0.182
Australian Institute of Aboriginal Studies	-	-	0.041	-	-	0.041	0.974	1.015
Applied Ecology Ltd	-	-	-	-	-	-	-	0.697
<u>Administrative Services</u>								
Australian Federal Police	-	-	-	-	0.026	0.026	-	0.026
<u>Attorney-General</u>								
Aust Institute of Criminology	-	-	-	-	1.037	1.037	-	1.037
Law Reform Commission	-	-	-	-	0.821	0.821	-	0.821
Criminology Research Council	-	-	-	-	0.030	0.030	-	0.030
Commonwealth Legal Aid Comm.	-	-	-	-	0.013	0.013	-	0.013
<u>Capital Territory</u>								
Dept of	0.155	-	-	-	0.334	0.489	-	0.489
NCDC	0.114	-	-	-	-	0.114	-	0.114
<u>Defence</u>								
Dept of	-	-	-	-	-	-	-	96.1
<u>Education</u>								
Dept of	-	-	1.425	-	-	1.425	8.002	9.427
Tertiary Education Commission	-	-	0.179	-	-	0.179	-	0.179
Schools Commission	-	-	0.130	-	-	0.130	-	0.130
Curriculum Development Centre	-	-	1.034	-	-	1.034	-	1.034
Grants to Universities	-	-	Not disaggregated			-	-	-
<u>Foreign Affairs</u>								
Dept of	-	-	-	-	-	-	0.062	0.062
<u>Health</u>								
Dept of	-	7.515	-	-	-	7.515	0.055	7.613
NHMRC Research grants	-	13.175	-	-	-	13.175	-	13.175
CSL	-	-	-	-	-	-	-	3.233
<u>Housing and Construction</u>								
Dept of	-	-	-	-	-	-	-	2.090
Aust Housing Research Council	-	-	-	-	-	-	-	0.100
<u>Immigration and Ethnic Affairs</u>								
Dept of	-	-	-	0.180	0.184	0.364	-	0.364
<u>National Development and Energy</u>								
Dept of								
- BMR	-	-	-	-	-	-	4.180	12.942
- National Energy RD & D grants	-	-	-	-	-	-	-	8.110
- Coal Liquefaction	-	-	-	-	-	-	-	0.007
- Water Resources Research	-	-	-	-	-	-	-	0.390
AAEC	1.2	0.2	-	-	-	1.4	0.4	13.1
<u>Post and Telecommunications</u>								
Telecom Australia	-	-	-	-	-	-	-	26.3
Australia Post	-	-	-	-	-	-	-	0.5
Overseas Telecommunication Comm.	-	-	-	-	-	-	-	0.3
<u>Primary Industry</u>								
Dept of								
- BAE	-	-	-	-	-	-	-	5.323
- Other	-	-	-	-	-	-	-	1.070
Rural Research Schemes	-	-	-	-	-	-	-	21.439
<u>Productivity</u>								
Dept of								
- IR & D grants	-	-	-	-	-	-	-	23.749
- Other	-	-	-	-	-	-	-	5.546
<u>Science and the Environment</u>								
Dept of								
- Research Grants	-	-	-	-	-	-	12.141	12.141
- Antarctic Division	-	-	-	-	-	-	12.2	12.2
- Bureau of Meteorology	-	-	-	-	-	-	0.114	1.154
- Other	0.058	0.023	-	-	0.439	0.520	0.783	0.925
CSIRO (direct)	18.094	3.290	-	-	-	21.384	3.786	126.941
CSIRO (indirect)	-	-	Not disaggregated			-	-	-
AIMS	-	-	-	-	-	-	2.726	2.726
Supervising Scientist	0.810	-	-	-	-	0.810	-	0.810
AATB	-	-	-	-	-	-	1.040	1.040
GBRMPA	0.167	-	-	-	-	0.167	-	0.167
ANPWS	0.336	-	-	-	-	0.336	-	0.336
<u>Social Security</u>								
Dept of	-	-	-	0.229	-	0.229	-	0.229
<u>Transport</u>								
Dept of	-	-	-	-	-	-	-	8.336
BTE	-	-	-	-	-	-	-	2.129
<u>Treasury</u>								
ABS	-	-	-	-	1.5	1.5	-	1.5
Reserve Bank	0.002	-	0.014	-	0.056	0.072	0.135	1.065
<u>Veterans' Affairs</u>								
Dept of	-	0.4	-	-	-	0.4	-	0.4
Total disaggregated	20.9	24.7	2.825	0.409	4.5	53.4	46.6	428.8
Grants to universities								66.0
CSIRO (indirect)								42.3
TOTAL								537.1

Bibliography

In addition to the information provided directly by agencies of the Commonwealth Government the following documents are principal references:

Project SCORE, 1968-69, 1973-74 and 1976-77 (in publication)

Budget Papers	1. Budget Speech and Statements
1977-78 to 1979-80	2. Appropriation Bill No. 1
	3. Appropriation Bill No. 2
	4. Estimates of receipts and Summary of Estimated Expenditure
	5. National Income and Expenditure

Annual Reports -	Government Departments and Agencies
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Acronyms and Abbreviations

AAEC	Australian Atomic Energy Commission
AATB	Anglo-Australian Telescope Board
ABC	Australian Broadcasting Commission
ABS	Australian Bureau of Statistics
ABT	Australian Broadcasting Tribunal
ADAB	Australian Development Assistance Bureau
ADP	Automatic Data Processing
AGPS	Australian Government Publishing Service
AHRC	Australian Housing Research Council
AIAS	Australian Institute of Aboriginal Studies
AIMS	Australian Institute of Marine Science
ANAH	Australian National Animal Health Laboratory
ANMRC	Australian Numerical Meteorology Research Centre
ANPWS	Australian National Parks and Wildlife Service
ARL	Australian Radiation Laboratory
ASTEC	Australian Science and Technology Council
AWD Corp.	Albury-Wodonga Development Corporation
BAE	Bureau of Agricultural Economics
BHP	The Broken Hill Proprietary Company Ltd
BMR	Bureau of Mineral Resources, Geology and Geophysics
BTE	Bureau of Transport Economics
CIRL	Central Investigation and Research Laboratory
CSIRO	Commonwealth Scientific and Industrial Research Organization
CSL	Commonwealth Serum Laboratories
DCT	Department of the Capital Territory
DSTO	Defence Science and Technology Organisation
DPI	Department of Primary Industry
EBS	Experimental Building Station
EHCD	Department of Environment, Housing and Community Development
FRG	Federal Republic of Germany
GBRMPA	Great Barrier Reef Marine Park Authority
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditure on Research and Development
GERDN	Gross Domestic Expenditure on Research and Development in the Natural Sciences and Engineering

IAC	Industries Assistance Commission
IR & D	Industrial Research and Development
IRDIA	Industrial Research and Development Incentives Act
n.a.	not available
NAL	National Acoustics Laboratory
NBSL	National Biological Standards Laboratory
NEAC	National Energy Advisory Committee
n.e.c.	Not elsewhere classified
n.e.i.	Not elsewhere included
NERDCC	National Energy Research, Development and Demonstration Council
NHMRC	National Health and Medical Research Council
OECD	Organisation for Economic Cooperation and Development
OTC	Overseas Telecommunications Commission (Australia)
PSB	Public Service Board
R & D	Research and Development
R,D & D	Research, Development and Demonstration
SA	South Australia
S & T	Science and Technology
SCORE	Survey and Comparison of Research Expenditures
(Australia)	
TEC	Tertiary Education Commission
UK	United Kingdom
Vic	Victoria
WA	Western Australia

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