

MINISTRY OF
RESEARCH
SCIENCE+
TECHNOLOGY

M⁺RST
TE MANATŌ PŌTAIAO

RESEARCH AND DEVELOPMENT
IN NEW ZEALAND
A DECADE IN REVIEW

STATISTICAL TABLES

Introduction

These tables accompany the MoRST publication “Research and Development in New Zealand: A Decade in Review”. The full report is available from www.morst.govt.nz

The order of the tables presented here approximately follows the order of the charts in the main report.

These tables should be read together with the main publication. It is important to recognise that the data used in this report has been compiled with the key objective of providing a series of data that is as consistent as possible over time. The data differs from that published in other MoRST, Statistics New Zealand and OECD publications containing R&D statistics, as that data has been compiled with a view to providing the best possible estimate of R&D at the time the surveys were undertaken. However, for international benchmarking purposes we have presented unadjusted figures in line with OECD publications.

The key differences from the data used in previous reports

- The data for the Business sector has been compiled so that it generally excludes the smallest businesses, with fewer than 10 employees.
- The data for the Business sector has been compiled as if the 2004 survey was conducted using a list-based approach (as in previous years) rather than the sampling approach based on the Statistics New Zealand Business Register.
- The data for the Government sector has been compiled in respect of CRIs only.
- The data for the Higher Education sector, which is based on universities only, has been recompiled for years prior to 2002 using the same methodology adopted in 2002 and 2004.

See the report appendix for an outline of the methodological basis for the results presented here.

A more detailed methodology is also available from www.morst.govt.nz

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Chapter 2 – An overview

R&D EXPENDITURE, BY SECTOR, 1994 – 2004 (CURRENT \$)

SECTOR	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
Business	269.0	265.3	353.5	365.3	462.7	549.7
Universities	173.6	229.9	300.7	362.6	435.8	454.8
CRIs	283.8	313.9	320.4	340.4	363.9	393.8
TOTAL	726.4	809.1	974.6	1,068.3	1,262.4	1,398.3

R&D EXPENDITURE, BY SECTOR, 1994 – 2004 (CONSTANT 1994 \$)

SECTOR	1994 (\$M)	1996 (1994 \$M)	1998 (1994 \$M)	2000 (1994 \$M)	2002 (1994 \$M)	2004 (1994 \$M)
Business	269.0	260.1	338.6	333.6	403.2	466.5
Universities	173.6	222.8	284.4	334.5	384.7	383.8
CRIs	283.8	305.0	301.0	308.5	314.6	326.9
TOTAL	726.4	788.0	924.0	976.6	1,102.5	1,177.2

R&D EXPENDITURE/GDP, BY SECTOR 1994 – 2004

SECTOR	1994 (%GDP)	1996 (%GDP)	1998 (%GDP)	2000 (%GDP)	2002 (%GDP)	2004 (%GDP)
Business	0.33	0.29	0.35	0.34	0.37	0.40
Universities	0.21	0.25	0.30	0.33	0.35	0.33
CRIs	0.35	0.34	0.32	0.31	0.29	0.29
TOTAL*	0.95					1.05
<i>GDP (\$M)</i> ⁺	<i>81,502</i>	<i>92,679</i>	<i>100,739</i>	<i>108,570</i>	<i>123,908</i>	<i>137,786</i>

* Includes an estimation for the non-CRI government sector.

⁺ Source: OECD MSTI 2005/2.

R&D TO GDP – NEW ZEALAND AND REFERENCE COUNTRIES, 1994 AND 2004

Source: OECD MSTI 2005/2.

2004 R&D	Total R&D (% GDP)	Business (% GDP)	Higher Education (% GDP)	Government (% GDP)
Sweden	3.98	2.95	0.88	0.14
Finland	3.48	2.45	0.67	0.34
Denmark	2.62	1.83	0.60	0.18
Total OECD	2.26	1.53	0.39	0.28
Norway	1.75	1.00	0.48	0.26
Australia*	1.69	0.87	0.45	0.33
Ireland	1.19	0.80	0.30	0.09
New Zealand	1.16	0.49	0.33	0.33

1994 R&D	Total R&D (% GDP)	Business (% GDP)	Higher Education (% GDP)	Government (% GDP)
Sweden	3.17	2.21	0.82	0.13
Finland	2.14	1.25	0.44	0.44
Denmark	1.72	1.00	0.39	0.31
Total OECD	2.11	1.40	0.34	0.31
Norway	1.72	0.92	0.47	0.33
Australia*	1.52	0.67	0.40	0.43
Ireland	1.17	0.79	0.25	0.12
New Zealand	1.01	0.30	0.29	0.42

Note: The 1993 and 2003 reference years from MSTI 2005/2 are used, which are comparable to New Zealand 1994 and 2004 data due to an overlap in reporting periods

* Uses 1992 and 2002 data as 1993 and 2003 data is not available.

GOVERNMENT FINANCED R&D AS A SHARE OF GDP – NEW ZEALAND AND OECD, 1994–2004

Source: OECD MSTI 2005/2.

	Government financed R&D					
	1994 (% GDP)	1996 (% GDP)	1998 (% GDP)	2000 (% GDP)	2002 (% GDP)	2004 (% GDP)
New Zealand	0.55	0.50	0.57	0.51	0.54	0.52
Total OECD	0.74	0.71	0.66	0.65	0.65	0.68

R&D AS A SHARE OF GDP – NEW ZEALAND AND ALL REPORTING OECD COUNTRIES, 2004

Source: OECD MSTI 2005/2.

COUNTRY (2004 OR MOST RECENT)	Total R&D (% GDP)	Business (% GDP)	Higher Education (% GDP)	Government (% GDP)
Sweden	3.98	2.95	0.88	0.14
Finland	3.48	2.45	0.67	0.34
Japan	3.15	2.36	0.43	0.29
Iceland	2.97	1.54	0.63	0.74
United States	2.68	1.87	0.37	0.33
Korea	2.63	2.00	0.27	0.33
Denmark	2.62	1.83	0.60	0.18
Switzerland	2.57	1.90	0.59	0.03
Germany	2.52	1.76	0.43	0.34
Total OECD	2.26	1.53	0.39	0.28
France	2.18	1.37	0.42	0.36
Austria	2.12	1.42	0.57	0.12
Canada	1.95	1.03	0.69	0.21
Belgium	1.89	1.34	0.40	0.13
United Kingdom	1.88	1.24	0.40	0.18
Netherlands	1.80	1.02	0.52	0.25
Luxembourg	1.78	1.58	0.01	0.19
Norway	1.75	1.00	0.48	0.26
Australia	1.69	0.87	0.45	0.33
Czech Republic	1.26	0.77	0.19	0.29
Ireland	1.19	0.80	0.30	0.09
Italy	1.16	0.56	0.38	0.20
New Zealand	1.16	0.49	0.33	0.33
Spain	1.05	0.57	0.32	0.16
Hungary	0.95	0.35	0.26	0.30
Portugal	0.78	0.26	0.30	0.13
Turkey	0.66	0.19	0.43	0.05
Greece	0.62	0.19	0.30	0.13
Slovak Republic	0.58	0.32	0.08	0.18
Poland	0.56	0.15	0.18	0.23
Mexico	0.39	0.12	0.12	0.15

Note: The 2003 reference year (or most recent for countries which did not report in that year) from MSTI 2005/2 are used, which is comparable to New Zealand 2004 data due to an overlap in reporting periods

SOCIO-ECONOMIC OUTCOME OF R&D IN NEW ZEALAND, BY SECTOR, 2004

SOCIO-ECONOMIC OUTCOME	Business (\$M)	Universities (\$M)	CRI (\$M)	Total R&D (\$M)
Agriculture, forestry and fishing	126.0	28.0	153.7	307.7
Industrial development	177.4	45.5	81.6	304.5
Development of infrastructure	132.3	56.1	27.2	215.6
Care of the environment	11.7	34.5	57.1	103.3
Health	72.2	97.5	9.5	179.2
Social development and services	2.3	55.7	0.7	58.7
Knowledge general	*	119.2	*	160.3
Earth and atmosphere	+	+	39.3	+
Other ^x	27.8	18.4	24.5	110.0
TOTAL	549.7	454.8	393.8	1,398.3

* Not surveyed in the Business or CRI sector.

+ Included in other.

^x Includes energy, earth and atmosphere (except CRI sector), space and defence

TYPE OF RESEARCH IN NEW ZEALAND, BY SECTOR, 2004

TYPE OF RESEARCH	Business (\$M)	Universities (\$M)	CRI (\$M)	Total R&D (\$M)
<i>Pure Basic</i>	*	128.7	36.3	*
<i>Targeted Basic</i>	*	160.8	159.8	*
Basic	35.9	289.4	196.1	521.4
Applied	199.6	137.6	164.7	501.9
Experimental	314.2	27.8	33.0	375.0
TOTAL	549.7	454.8	393.8	1,398.3

* Data not collected

SOURCE OF FUNDS FOR R&D IN NEW ZEALAND, BY SECTOR, 2004

SOURCE OF FUNDS	Business (\$M)	Universities (\$M)	CRIs (\$M)	Total R&D (\$M)
Own Funds	359.8	113.5	30.1	503.4
Government	54.5	290.8	265.6	610.8
Business Sector	42.7	16.3	77.2	136.2
Overseas	82.8	9.7	18.3	110.9
Tertiary & Other	9.9	24.5	2.5	37.0
TOTAL	549.7	454.8	393.8	1,398.3

HUMAN RESOURCE INPUT INTO R&D, BY SECTOR, 1994 - 2004

SECTOR	1994 (FTEs)	1996 (FTEs)	1998 (FTEs)	2000 (FTEs)	2002 (FTEs)	2004 (FTEs)
Business	2,726	2,877	3,043	3,464	3,549	4,685
University - post-grads	4,020	5,020	5,485	5,532	6,139	6,885
University - staff	1,883	2,460*	3,037	3,000	3,627	4,637
CRIs	3,295	3,388	3,179	2,968	3,025	2,890
TOTAL R&D PERSONNEL	11,924	13,745*	14,744	14,964	16,340	19,096

* Estimated (data not collected)

RESEARCH INTENSITY, BY SECTOR, 2004

INTENSITY	Business	Universities	CRIs
All firms, staff-only	16%	26%	61%
<i>Scientific Research firms</i>	<i>79%</i>		
<i>Including post-grads</i>		<i>47%</i>	

Chapter 3 – Business R&D

R&D EXPENDITURE BY INDUSTRY, 1994 – 2004

INDUSTRY	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
Manufacturing	121.5	122.2	156.4	165.5	182.3	212.7
Primary	10.4	14.6	23.6	20.4	14.5	14.7
Scientific Research	66.8	69.6	77.2	79.5	140.9	188.3
Other Services	70.2	59.0	96.2	99.8	125.0	134.0
ALL INDUSTRIES	269.0	265.3	353.5	365.3	462.7	549.7

MANUFACTURING INDUSTRY R&D EXPENDITURE, BY INDUSTRY SUB-DIVISION, 1994 – 2004

MANUFACTURING SUB-DIVISION	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
Machinery & Equipment Manufacturing	37.4	35.1	86.1	90.6	98.7	130.6
Food, Beverage & Tobacco	26.6	28.9	31.6	33.8	29.5	30.5
Petroleum, Coal, Chemical & Associated Product Manufacturing	19.6	20.4	23.6	17.5	38.0	19.3
Other Manufacturing	37.9	37.8	15.2	23.7	16.2	32.3
TOTAL MANUFACTURING R&D	121.5	122.2	156.4	165.5	182.3	212.7

OTHER SERVICES INDUSTRY R&D EXPENDITURE, BY INDUSTRY SUB-DIVISION, 1994–2004

OTHER SERVICES SUB-DIVISION	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
Property & Business Services (excl. Scientific Research)	34.4	28.4	37.8	46.5	77.2	94.0
Other Services	35.8	30.6	58.4	53.3	47.8	39.9
TOTAL OTHER SERVICES R&D	70.2	59.0	96.2	99.8	125.0	134.0

R&D EXPENDITURE, BY SIZE OF FIRM, 1994 - 2004

FIRM SIZE (EMPLOYEES)	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
10-20	20.6	25.1	21.3	26.5	41.1	48.5
20-50	17.7	44.6	48.4	49.3	75.4	107.0
50-100	51.0	30.2	38.7	62.5	44.7	74.3
100+	176.7	162.4	241.8	223.7	287.3	312.4

PROPORTION OF FIRMS PERFORMING R&D, BY SIZE OF FIRM, 2004

FIRM SIZE (EMPLOYEES)	Total Firms in New Zealand 2004	Firms performing R&D 2004	Percent firms performing R&D
10-20	13,885	122	0.88%
20-50	7,939	148	1.87%
50-100	2,240	156	6.96%
100+	1,774	135	7.61%

NUMBER OF FIRMS PERFORMING R&D, BY SIZE OF FIRM, 1994 - 2004

FIRM SIZE (EMPLOYEES)	1994	1996	1998	2000	2002	2004
10-20	87	109	81	110	119	122
20-50	110	110	136	132	133	148
50-100	88	64	60	80	76	156
100+	166	169	165	150	126	135

AVERAGE R&D SEND OF FIRMS, BY SIZE OF FIRM, 1994 - 2004

FIRM SIZE (EMPLOYEES)	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
10-20	0.22	0.21	0.31	0.28	0.35	0.39
20-50	0.16	0.41	0.41	0.44	0.58	0.70
50-100	0.60	0.50	0.84	1.00	0.57	0.52
100+	1.26	1.12	1.78	1.81	2.32	2.51

AVERAGE R&D SPEND OF FIRMS, BY INDUSTRY, 1994 – 2004

INDUSTRY	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
Manufacturing	0.41	0.43	0.65	0.63	0.65	0.65
Primary	0.48	0.54	1.00	0.80	0.75	0.54
Scientific Research	2.35	2.44	3.41	3.71	4.02	3.92
Other Services	0.78	0.52	1.00	1.04	0.90	0.84

CONTRIBUTION OF LARGEST R&D PERFORMING FIRMS, BY INDUSTRY, 2004

CONTRIBUTION OF FIRMS RANKED:	Manufacturing (\$M)	Primary (\$M)	Scientific Research (\$M)	Other Services (\$M)	All Industries (\$M)
1-5	67.6	10.5	108.0	50.3	134.0
6-10	21.8	0.9	29.9	13.1	62.6
11-15	17.7	0.6	14.5	10.2	38.8
16-20	10.6	0.3	7.8	7.6	25.8
21+	95.0	2.4	28.1	52.8	
20-25					21.1
26-30					18.5
31-35					15.2
36-40					12.9
41-45					11.3
46-50					9.3
51+					200.4
Total	212.7	14.7	188.3	134.0	549.7

SOURCE OF FUNDS FOR BUSINESS SECTOR R&D, 2004

SOURCE OF FUNDS	Manufacturing (\$M)	Primary (\$M)	Scientific Research (\$M)	Other Services (\$M)	All Industries (\$M)
Own Funds	190.0	11	91.2	67.1	359.8
Business Sector	2.4	3	23.3	14.1	42.7
Government	7.6	0.4	35.1	11.4	54.5
Overseas	12.0	0	30.0	40.8	82.8
Tertiary & Other	0.7	0	8.7	0.6	9.9
TOTAL	212.7	15	188.3	134.0	549.7

BUSINESS R&D BY TYPE OF RESEARCH, BY INDUSTRY, 2004

TYPE OF RESEARCH	Manufacturing (\$M)	Primary (\$M)	Scientific Research (\$M)	Other Services (\$M)	All Industries (\$M)
Basic	5.3	1.0	24.7	4.8	35.9
Applied	40.3	7.5	110.8	41.0	199.6
Experimental	167.0	6.2	52.8	88.2	314.2
TOTAL	212.7	14.7	188.3	134.0	549.7

BUSINESS R&D BY SOCIO-ECONOMIC OBJECTIVE, 1994 AND 2004

SOCIO-ECONOMIC OBJECTIVE	1994 (\$M)	2004 (\$M)
Agriculture, forestry and fishing	27.6	126.0
Industrial development	160.4	177.4
Development of infrastructure	54.4	132.3
Care of the environment	5.0	11.7
Health	12.6	72.2
Social development and services	2.2	2.3
Other*	7.0	27.8
TOTAL	269.0	549.7

* Includes energy, earth and atmosphere, space, defence and knowledge general

BUSINESS R&D BY TYPE OF EXPENDITURE, 1994 – 2004

TYPE OF EXPENDITURE	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
Wages and Salaries	138.0	131.3	169.5	189.3	215.1	277.0
Other Current	90.4	107.4	155.4	147.8	190.0	229.1
Capital	40.6	26.7	28.7	28.2	57.6	43.5
TOTAL	269.0	265.3	353.5	365.3	462.7	549.7

PERSON YEARS EFFORT ON BUSINESS R&D BY TYPE OF PERSONNEL, 1994 – 2004

TYPE OF PERSONNEL	1994 (FTEs)	1996 (FTEs)	1998 (FTEs)	2000 (FTEs)	2002 (FTEs)	2004 (FTEs)
Researchers	1,438	1,569	1,748	2,213	2,096	3,007
Technicians	907	858	860	899	989	1,031
Support Staff	381	449	435	352	465	647
TOTAL R&D PERSONNEL	2,726	2,877	3,043	3,464	3,549	4,685

PERSON YEARS EXPENDED ON BUSINESS R&D, BY INDUSTRY, 1994 – 2004

INDUSTRY	1994 (FTEs)	1996 (FTEs)	1998 (FTEs)	2000 (FTEs)	2002 (FTEs)	2004 (FTEs)
Manufacturing	1,264	1,341	1,472	1,655	1,659	2,195
Primary	146	235	157	240	125	77
Scientific Research	752	814	819	671	961	1,201
Other Services	564	487	594	898	804	1,213
TOTAL R&D PERSONNEL	2,726	2,877	3,043	3,464	3,549	4,685

R&D INTENSITY (PERCENTAGE OF STAFF PERFORMING R&D) DISTRIBUTION, BY SIZE OF FIRM, 2004

R&D INTENSITY	Firm size (employees)			
	10–20	20–50	50–100	100+
<10%	38%	64%	90%	85%
10–25%	28%	18%	5%	7%
25–50%	18%	10%	4%	4%
50–100%	16%	8%	1%	4%
<i>Average Intensity</i>	<i>25%</i>	<i>16%</i>	<i>6%</i>	<i>7%</i>

R&D INTENSITY (PERCENTAGE OF STAFF PERFORMING R&D), BY INDUSTRY, 2004

	Manufacturing	Primary	Scientific Research	Other Services
R&D Intensity	7%	5%	79%	20%

Chapter 4 – University R&D

EXPENDITURE ON R&D BY UNIVERSITY, 2004

UNIVERSITY	R&D Expenditure (\$M)
Auckland	124.4
Otago	106.3
Massey	73.1
Victoria	41.9
Waikato	38.4
Canterbury	29.5
Auckland University of Technology	21.8
Lincoln University	19.2
TOTAL	454.8

UNIVERSITY SECTOR R&D, BY SOCIO-ECONOMIC OBJECTIVE, BY UNIVERSITY 2004 (AND TOTAL 1994)

UNIVERSITY	Agriculture, forestry and fishing (\$M)	Industrial development (\$M)	Development of infrastructure (\$M)	Care of the environment (\$M)	Health (\$M)	Social development and services (\$M)	Knowledge general (\$M)	Other* (\$M)	Total R&D (\$M)
AUT	0.4	0.5	5.9	0.1	6.3	3.6	4.7	0.3	21.8
Massey	9.5	13.9	11.0	1.5	6.6	5.8	23.4	1.5	73.1
Auckland	1.5	14.8	12.8	16.5	35.2	16.3	24.8	2.6	124.4
Lincoln	9.6	1.5	2.1	3.5	0.2	0.2	1.7	0.4	19.2
Otago	3.8	5.0	8.8	6.3	43.5	5.2	26.5	7.3	106.3
Canterbury	2.2	5.5	4.0	2.7	2.2	0.3	10.1	2.5	29.5
Victoria	0.4	2.0	3.0	2.0	3.1	12.6	17.9	0.8	41.9
Waikato	0.5	2.3	8.5	2.0	0.4	11.7	10.1	3.0	38.4
2004 TOTAL	28.0	45.5	56.1	34.5	97.5	55.7	119.2	18.4	454.8
<i>1994 TOTAL</i>	<i>16.5</i>	<i>18.6</i>	<i>9.7</i>	<i>9.1</i>	<i>38.9</i>	<i>36.8</i>	<i>37.4</i>	<i>6.6</i>	<i>173.6</i>

* Energy, earth and atmosphere, space, defence and other

UNIVERSITY PERSONNEL IN R&D, 1994 – 2004

TYPE OF PERSONNEL	1994 (FTEs)	1996 (FTEs)	1998 (FTEs)	2000 (FTEs)	2002 (FTEs)	2004 (FTEs)
Researchers	1,173	1,431*	1,689	1,643	2,516	2,816
Technicians	497	606*	714	630	496	723
Support Staff	213	424*	635	727	615	1,098
Post-graduates	4,020	5,020	5,485	5,532	6,139	6,885
TOTAL R&D PERSONNEL	5,903	7,480*	8,522	8,532	9,766	11,522

* Estimated (data not collected)

RESEARCH INTENSITY, BY UNIVERSITY, 2004

UNIVERSITY	R&D Staff (FTEs)	Total Staff (FTEs)	R&D Intensity
Auckland	1,434	4,221	34%
Otago	1,302	3,259	40%
Massey	527	2,890	18%
Victoria	348	1,500	23%
Waikato	334	1,795	19%
Canterbury	343	1,518	23%
AUT	203	1,740	12%
Lincoln	147	613	24%
TOTAL	4,637	17,536	26%

Chapter 5 – Crown Research Institute R&D

SHARE OF TOTAL CRI R&D, 2004

	2004 (\$M)
CRI	
AgResearch	89.2
HortResearch	56.4
Landcare Research	50.3
GNS Science	43.6
IRL	42.9
NIWA	40.6
Crop & Food Research	37.7
Scion	28.6
ESR	4.5
TOTAL	393.8

CRI SECTOR R&D EXPENDITURE, BY TYPE OF EXPENDITURE, 1994 – 2004

TYPE OF EXPENDITURE	1994 (\$M)	1996 (\$M)	1998 (\$M)	2000 (\$M)	2002 (\$M)	2004 (\$M)
Wages & Salaries	134.2	153.6	149.6	151.8	149.7	156.6
Other Current	114.0	126.0	139.8	149.7	182.5	199.5
Capital	35.6	34.3	31.0	38.9	31.7	37.7
TOTAL	283.8	313.9	320.4	340.4	363.9	393.8

TYPE OF RESEARCH PERFORMED BY CRIS, 2004

CRI	Pure Basic (\$M)	Targeted Basic (\$M)	Applied (\$M)	Experimental (\$M)	Total R&D (\$M)
AgResearch	1.8	53.5	31.2	2.7	89.2
HortResearch	0	22.5	22.5	11.3	56.4
Landcare Research	5.0	15.1	25.1	5.0	50.3
GNS Science	26.1	12.2	3.0	2.2	43.6
IRL	2.1	10.7	29.2	0.9	42.9
NIWA	0	22.3	13.4	4.9	40.6
Crop & Food Research	0.4	18.5	15.1	3.8	37.7
Scion	0.4	3.5	22.8	1.9	28.6
ESR	0.4	1.3	2.2	0.4	4.5
TOTAL	36.3	159.8	164.7	33.0	393.8

CRI SECTOR R&D, BY SOCIO-ECONOMIC OBJECTIVE, 1994 AND 2004

	Agriculture, forestry and fishing	Industrial development	Development of infrastructure	Care of the environment	Health	Social development and services	Earth and atmosphere	Other*	total
CRI	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)
AgResearch	53.5	9.8	1.8	17.8	4.5	0	1.8	0	89.2
IRL	0	30.9	2.1	0	1.7	0	0.4	0	35.2
ESR	0.2	0	0	1.3	2.7	0.2	0	7.7	12.2
GNS Science	0	2.6	4.8	2.2	0	0	25.3	0	34.9
Landcare Research	18.6	0	13.1	7.5	0	0.5	6.5	8.7	55.0
NIWA	6.1	0	4.9	20.3	0	0	5.3	4.0	40.5
Scion	16.6	8.9	0.6	2.3	0.3	0	0	4.1	32.7
Crop & Food Research	13.6	18.1	0	5.7	0.4	0	0	0	37.7
HortResearch	45.1	11.3	0	0	0	0	0	0	56.4
2004	153.7	81.6	27.2	57.1	9.5	0.7	39.3	24.5	393.8
1994	126.2	64.3	3.9	49.9	1.9	1.3	20.4	15.9	283.8

* Defence, space, general knowledge and other

CRI RESEARCH PERSONNEL, BY TYPE OF RESEARCHER, 1994 - 2004

TYPE OF PERSONNEL	1994 (FTEs)	1996 (FTEs)	1998 (FTEs)	2000 (FTEs)	2002 (FTEs)	2004 (FTEs)
Researchers	1,316	1,208	1,410	1,371	1,516	1,453
Technicians	1,266	1,325	1,042	980	976	1,050
Support Staff	713	854	727	618	532	387
TOTAL R&D PERSONNEL	3,295	3,388	3,179	2,968	3,025	2,890

RESEARCH INTENSITY, BY CRI, 2004

CRI	R&D Personnel (FTEs)	Total Staff (FTEs)	R&D Intensity
AgResearch	687	1,179	58%
HortResearch	435	572	76%
Landcare Research	313	420	74%
GNS Science	274	304	90%
IRL	269	445	60%
NIWA	245	642	38%
Crop & Food Research	335	420	80%
Scion	276	364	76%
ESR	56	362	15%
TOTAL	2,890	4,709	61%

EXPENDITURE ON R&D AND TOTAL REVENUE BY CRI, 2004

CRI	R&D Expenditure (\$M)	Total Revenue (\$M)
AgResearch	89.2	133.6
HortResearch	56.4	58.4
Landcare Research	50.3	45.1
GNS Science	43.6	39.4
IRL	42.9	57.3
NIWA	40.6	84.6
Crop & Food Research	37.7	39.7
Scion	28.6	39.0
ESR	4.5	36.9
TOTAL	393.8	534.0

Chapter 6 – Government financing of R&D

GOVERNMENT FINANCED R&D, BY SECTOR 2005/06 (EXCLUDES VOTES RS&T AND EDUCATION)

GOVERNMENT SECTOR	R&D Financed (\$M)
Central Government Departments	32.9
Crown Entities	13.1
Local Authorities & District Health Boards	4.7
TOTAL GOVERNMENT	50.7

SOCIO-ECONOMIC OUTCOME OF RESEARCH* FUNDED 2005/06 (EXCLUDES VOTES RS&T AND EDUCATION)

SOCIO-ECONOMIC OUTCOME	Central Government (%)	Crown Entities (%)	Local Authorities & Health Boards (%)	Total Research (%)
Agriculture, Forestry and Fishing	47%	6%	4%	35%
Development of Infrastructure	7%	37%	2%	11%
Industrial Development	0%	0%	0%	0%
Energy	5%	0%	0%	3%
Environment	5%	7%	87%	16%
Health	10%	29%	6%	12%
Social	21%	4%	0%	16%
Earth and Atmosphere	1%	17%	1%	4%
Defence	4%	0%	1%	3%

* Includes routine data collection, monitoring and operational research

PROPORTION OF RESEARCH* CONTRACTED OUT BY PROVIDER TYPE, BY SECTOR 2005/06 (EXCLUDES VOTES RS&T AND EDUCATION)

GOVERNMENT SECTOR	CRI (\$M)	Private (\$M)	Tertiary (\$M)	Central & Local Government (\$M)	Overseas & Other (\$M)	Total (\$M)
Central Government Departments	46.0	23.4	8.1	1.7	2.7	82.0
Crown Entities	10.5	7.7	3.5	1.3	0.2	23.1
Local Authorities & DHBs ⁺	5.6	2.0	1.9	0.0	0.0	9.5
TOTAL	62.1	33.2	13.5	3.0	2.9	114.7

* Includes routine data collection, monitoring and operational research

⁺ District Health Boards

Chapter 7 – Biotechnology in New Zealand

BIOTECHNOLOGY R&D PERFORMED BY SECTOR, 2004

SECTOR	Biotechnology R&D (\$M)	Other R&D (\$M)	Total R&D (\$M)
Business	127.6	422.1	549.7
CRI	135.7	258.1	393.8
University	85.7	369.1	454.8
TOTAL	349.0	1,049.3	1,398.3

Chapter 8 – People in science and technology

NEW ZEALAND'S STOCK OF UNIVERSITY-LEVEL HRST, 2001

	HRST (number of people)
Scientists and engineers with university qualifications	42,588
Human resources with RS&T qualifications and in RS&T occupations	153,945
Human resources in RS&T by qualification	292,086
Human resources in RS&T by occupation	436,365
Human resources in RS&T	574,506

NUMBER OF PEOPLE WITH UNIVERSITY-LEVEL QUALIFICATIONS, 1996 AND 2001

YEAR	Bachelors	Higher level
1996	149,898	74,343
2001	199,932	92,154

CHANGES IN UNIVERSITY QUALIFIED PEOPLE, 1996–2001

	Change (number of people)
Number of new graduates	88,000
Estimated deaths	-7,000
Inferred change by migration	-13,000
Measured change	68,000

AGE STRUCTURE OF UNIVERSITY HRSTQ COMPARED WITH THE GENERAL POPULATION, 2001

AGE	University HRSTQ (number of people)	General population (number of people)
15–19	330	265,281
20–29	72,477	486,684
30–39	82,467	576,741
40–49	68,901	537,405
50–59	40,134	418,434
60–69	15,660	282,480
70–79	8,865	212,763
80 plus	3,255	109,746

GENDER DISTRIBUTION OF UNIVERSITY-LEVEL HRSTQ, 1996 AND 2001

GENDER	1996	2001
Male	125,163	147,867
Female	99,078	144,219

ETHNICITY PROFILE OF UNIVERSITY LEVEL HRSTQ, 2001

ETHNICITY	Share of all specifications ¹ (%)
European	80.4
Māori	4.4
Pacific Peoples	1.5
Asian	12.3
Other	1.4
Not Specified	0.6

Note: People are able to specify more than one ethnicity

FELD OF STUDY DISTRIBUTION FOR UNIVERSITY-LEVEL HRSTQ, 2001

FIELD OF STUDY	University HRSTQ (number of people)
Social Sciences	123,045
Humanities	39,774
Natural Sciences	46,632
Agricultural Sciences	7,647
Medical Sciences	30,498
Engineering and Technology	24,036
Other Fields	5,634
Not Specified	14,823

SHARE OF PEOPLE WITH UNIVERSITY LEVEL QUALIFICATION, BY REGION, 2001.

REGION	Share of employed people with university level qualifications (%)
Wellington	16.3
Auckland	12.6
Otago	10.6
New Zealand	10.0
Canterbury	9.5
Nelson	8.5
Waikato	7.7
Manawatu-Wanganui	7.7
Tasman	6.3
Bay of Plenty	6.0
Hawke's Bay	5.9
Marlborough	5.5
Taranaki	5.4
Gisborne	5.2
Southland	5.1
Northland	5.1
West Coast	4.4

EMPLOYMENT STATUS OF HRSTQ COMPARED WITH THE ADULT POPULATION, 2001

EMPLOYMENT STATUS	University HRSTQ (%)	Total Population (%)
Total employed	81	62
Unemployed	3	5
Not in the labour force	16	33

OCCUPATIONAL GROUPING OF UNIVERSITY QUALIFIED PEOPLE, 2001

OCCUPATION	University HRSTQ (number of people)
Specialist Managers	27,993
Professionals 1	42,582
Professionals 2	83,370
Non-HRSTO employed	81,576

PERCENTAGE CHANGE IN UNIVERSITY QUALIFIED PEOPLE BY OCCUPATION, 1996–2001

OCCUPATION	Change (%)
Specialist Managers	49
Professionals 1	46
Professionals 2	31
Non-HRSTO Employed	22

COUNTRY OF BIRTH OF UNIVERSITY QUALIFIED EMPLOYED PEOPLE, 1996 AND 2001

PLACE OF BIRTH	1996	2001
Born Overseas	49,404	71,664
Born in New Zealand	127,950	163,383

Chapter 9 – Migration of skilled people

NET PERMANENT AND LONG-TERM MIGRATION OF NEW ZEALAND, 1992–2004

	1992 (000s)	1993 (000s)	1994 (000s)	1995 (000s)	1996 (000s)	1997 (000s)	1998 (000s)
Scientists and engineers	-387	467	1,520	2,540	3,561	1,863	736
University level occupations	-420	1,350	3,111	4,677	6,338	3,800	754
Total population	3,591	8,702	16,815	22,729	29,506	16,770	452

TABLE CONTINUED

	1999 (000s)	2000 (000s)	2001 (000s)	2002 (000s)	2003 (000s)	2004 (000s)	2005 (000s)
Scientists and engineers	-173	-339	-381	480	1214	1046	1039
University level occupations	-1,403	-1,642	-2,934	1,085	2,944	2,029	1,824
Total population	-11,369	-9,760	-4,391	36,203	41,154	19,294	6,618

SHARE OF MIGRANTS WITH UNIVERSITY LEVEL OCCUPATIONS, 1992–2004

YEAR	Arrivals (%)	Departures (%)
1992	28.4	30.6
1993	34.6	31.2
1994	37.8	31.5
1995	39.0	29.6
1996	40.1	30.0
1997	40.6	32.2
1998	40.4	32.3
1999	37.3	31.0
2000	35.7	30.2
2001	35.4	32.7
2002	39.2	37.6
2003	40.3	37.4
2004	37.9	34.9
2005	42.0	37.0

MIGRATION OF PEOPLE BY OCCUPATION LEVEL, YEAR ENDING JUNE 2005

REGION/COUNTRY	University level occupations		All other occupations	
	Arrivals	Departures	Arrivals	Departures
Polynesia	400	-59	1,074	-398
Ireland	298	-127	530	-374
Western Europe	476	-133	728	-486
Asia	1,755	-1,153	1,716	-873
Northern America	818	-705	1,178	-921
United Kingdom	4,937	-3,268	5,558	-3,817
Australia	1,892	-3,507	4,142	-9,360

NET INFLOW OF PEOPLE WITH UNIVERSITY LEVEL OCCUPATIONS BY AGE BAND, JULY 2000-JUNE 2005

AGE	New Zealand nationals	Other nationalities
20 - 29 Years	-9,395	8,863
30 - 39 Years	-1,499	11,059
40 - 49 Years	-2,521	5,926
50 - 59 Years	-1,567	1,846
Over 60 years	-109	451