



Research & Development Survey 2014 for CRIs

Research & Development Survey

For Help and Information:

- ☎ Phone: 0800 333 108
64 9 920 9108
- 📠 Fax: 09 920 9195
- ✉ Email: bus@stats.govt.nz
- ✉ Mail: Statistics New Zealand
Freepost 10007
Private Bag 92003
Auckland

Are the address details above correct? If not, use the boxes below to correct any errors.

Legal name		0001
Building / Level / Unit		0002
Street / PO Box / Rural Delivery		0003
Suburb		0004
Town / City	Postcode	0005
Attention:		0006

Please complete, sign and return this questionnaire in the envelope supplied.
Return date: 29 August 2014

Purpose of this survey

The purpose of this survey is to collect data which will be used to produce summarised statistics of research and development activities for release to Government, business and other users in the community. The statistics will be used in the development of science policy areas.

Compulsory requirement

The taking of this survey has been approved by the Minister of Statistics and the return of this questionnaire, duly filled in and signed, is a compulsory requirement under the Statistics Act 1975.

Confidentiality of information supplied

Only people authorised by the Statistics Act 1975 are allowed to see your individual information, and they must use it only for statistical purposes. Your information will be combined with similar information to prepare summary statistics.

This is a joint collection by Statistics New Zealand and the Ministry of Business, Innovation and Employment under section 9 of the Statistics Act 1975. For detailed confidentiality information read page 16.

As Government Statistician I thank you for completing this survey. Your information contributes to statistics available for business decision-making. To find out how Statistics New Zealand can help your business grow, contact our information centre on 0508 525 525.



**Liz MacPherson
Government Statistician**

Definition of R&D

6 What is Research and Development (R&D)?

Research and development comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge. Any activity classified as R&D is characterised by originality. Investigation is a primary objective.

CRI R&D: All activities which involve the creation of new scientific knowledge or the development of existing scientific knowledge.

Include:

- all Ministry of Business, Innovation and Employment (MBIE), HRC, and Marsden fund work
- supporting and maintaining research databases
- developing research skill-bases with a national benefit (eg food safety, public safety, and public health)
- technical and “commercial” work which has strong research or development component (eg TBG and other TechNZ schemes)

Don't include:

- contract work which simply involves the use of standard methods and equipment (eg chemical analysis, mechanical testing, X-ray analysis)
- contract work which simply involves the application of a standard test (eg British standard, ANSI, DOT, etc)

Further definitions of R&D are provided on page **15**.

R&D carried out internally

7 Did this organisation carry out any R&D internally in 2013 / 2014?

Include:

- subcontractors working on R&D projects carried out by this organisation.

Don't include:

- R&D projects funded by this organisation, but totally carried out by other organisations, or a subsidiary of this organisation.

1 yes → go to **8**

2 no → go to **54**

1300



Internal R&D personnel by occupation

8 Please show both the **headcount** and number of **full-time equivalents** working on R&D as at 30 June 2014.

Include:

- contract staff on the payroll
- full-time and part-time employees
- permanent, temporary and casual employees

Don't include:

- postgraduate research students not on the payroll
- self-employed persons, such as contractors, not on the payroll

Full-Time Equivalent (FTE)

R&D may be carried out by persons who work solely on R&D projects or by persons who devote only part of their time to R&D, and the balance to other activities; such as testing, quality control, and production engineering. To arrive at the total effort devoted to R&D in terms of hours worked, it is necessary to estimate FTEs of these people working part-time in R&D.

FTE = Number of persons who work solely on R&D projects + the estimate of time spent by persons working part-time on R&D.

Example calculation: If out of five employees engaged in R&D work, one works solely on R&D projects and the remaining four devote only one quarter of their working time, the FTE equals $1 + 1/4 + 1/4 + 1/4 + 1/4 = 2$ employees.

Personnel	Headcount as at 30 June 2014	Full-time equivalents as at 30 June 2014
<p>Researchers Staff engaged in the conception and / or creation of new knowledge or products. Personnel involved in the planning or management of scientific and technical aspects of R&D projects, and software developers.</p>	1401 □ □ □ □	1405 □ □ □ □ . □ □ □
<p>Technicians Staff engaged in technical tasks in support of R&D, normally under the direction and supervision of a researcher.</p>	1402 □ □ □ □	1406 □ □ □ □ . □ □ □
<p>Other supporting staff Include administrative and managerial staff working on, or directly associated with, R&D activity Don't include staff outside the R&D performing unit providing indirect support.</p> <p>For example central finance or personnel services and central support services (eg information services and cleaning)</p>	1403 □ □ □ □	1407 □ □ □ □ . □ □ □
Total	1404 □ □ □ □	1408 □ □ □ □ . □ □ □
	This is total A	This is total B



Internal R&D personnel by qualification

9 Please show the highest qualification levels of both the **headcount** and number of **full-time equivalents** recorded in question **8**.

Note:

- For this question, the total headcount should agree with total A in question **8**.
- The total number of full-time equivalents should agree with total B in question **8**.

Qualification	Headcount as at 30 June 2014	Full-time equivalents as at 30 June 2014
PhD	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1501	and <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1506
Bachelor degrees or equivalent, and post graduate qualifications other than PhD For example Masters degrees and post graduate diplomas.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1502	and <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1507
Technical and Trade qualifications For example NZ Certificate of Engineering or Science and NZ Trade Certificate.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1503	and <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1508
Other qualifications	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1504	and <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1509
Total	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1505 Headcount to agree with total A	and <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1510 FTE to agree with total B

10 Please check that the totals in question **9** are the same as Totals A and B in question **8**.



Current and capital expenditure on internal R&D

11 Please allocate the total expenditure on R&D carried out by this organisation during the financial year in questions **12** to **16**.

Don't include:

- R&D funded by this organisation, but carried out by other organisations. See question **54**

Note:

- if the figures are not specified in your accounts, please give a careful estimate
- subcontractors are included in question **13**
- include a proportion of all overheads in question **13**. If necessary, estimate from your total overheads in proportion to the full-time equivalents engaged in R&D

12 Wages and salaries for full-time equivalent personnel

Include:

- other employment related costs (eg overtime, ACC, and fringe benefits)
- redundancy and severance payments

Don't include:

- wages and salaries of personnel indirectly supporting R&D.

\$ 1801

13 Other current R&D expenditure

Include:

- all consumables and overheads incurred by direct and indirect support activities (eg materials, rent, and travel)
- wages and salaries of personnel indirectly supporting R&D. Include only that part of their wages and salaries that is attributable to the indirect support of R&D (eg central finance, personnel services, and cleaning)
- on site consultants and contract staff costs
- operating leasing

Don't include:

- depreciation
- wages and salaries etc (included in question **12** above)

\$ 1901

14 Capital expenditure - land and buildings

Note: If the land and buildings purchased are also used for production, please include only the portion used for R&D.

\$ 2001

15 Capital expenditure - plant, equipment, machinery, vehicles, capitalised software, and other assets

Note: If the assets purchased are also used for production, please include only the portion used for R&D.

\$ 2101

16 Total expenditure on internal R&D

\$ 2201

This is total C



Purpose of research for internal R&D

- 27** Which of the following sectors benefit from the R&D projects carried out?
Please allocate to each of the following sectors the relevant percentage of R&D expenditure (reported in total C) in the financial year.

Note: This should relate to the sector that will **ultimately** benefit from the results, not the nature of the R&D itself. For example, software specifically developed for a food processing factory, should be classified to manufacturing.

Primary industries

- 28** Plant production and plant primary products
Includes: Forestry; horticultural and industrial crops; grains and oil seeds; harvesting and packaging of plant products; environmentally sustainable plant production % 3401
- 29** Animal production and animal primary products
Includes: Fisheries (aquaculture and wild caught); livestock raising; pasture, browse and fodder crops; primary animal products (including raw wool and unprocessed or minimally processed fish and milk); environmentally sustainable animal production % 3501
- 30** Mineral resources (excluding energy)
Includes: Mineral exploration; primary mining and extraction of minerals; first-stage treatment of ores and minerals; environmentally sustainable mineral-resource activities % 3601

Industrial and infrastructure development

- 31** Energy
Includes: Energy exploration; mining and extraction of energy; preparation and production of energy; energy transformation; renewable energy; storage, distribution and supply; energy conservation and efficiency; environmentally sustainable energy activities % 3701
- 32** Manufacturing
Includes: Processed food products and beverages (incl. dairy products); wood and paper products; leather, fibre and textiles; chemical products; pharmaceuticals; ceramics, glass; metal products; machinery and equipment; electronic and communication equipment; environmentally sustainable manufacturing % 3801
- 33** Construction
Includes: Construction materials, planning, design and processes; building management and services; environmentally sustainable construction % 3901
- 34** Transport
Includes: Land, water and aerospace transport; environmentally sustainable transport % 4001
- 35** Information and communication services
Includes: Communication networks and services; computer software and services; information and media services; management of environmental impacts from information and communication services % 4101
- 36** Commercial services and tourism
Includes: Financial services; property and business support services and trade; tourism, water and waste services; environmentally sustainable commercial services and tourism % 4201



Society

37 Health
Includes: Clinical health (organs, diseases, and abnormal conditions); health and support services; public health

□ □ □ % 4301

38 Education and training
Includes: Learner and learning; teaching and instruction; curriculum; school / institution; education and training systems

□ □ □ % 4401

39 Law, politics, and community services
Includes: Community service; government and politics; international relations; justice and law; work and institutional development

□ □ □ % 4501

40 Cultural understanding
Includes: Arts and leisure; communication, heritage, religion, and ethics; understanding past societies

□ □ □ % 4601

Other purposes

41 Economic framework
Includes: Macroeconomics and microeconomics; international trade; management, productivity, measurement standards, and calibration services

□ □ □ % 4701

42 Environment
Includes: Air, atmosphere, weather, and climate change; biosecurity; ecosystems; natural resource evaluation; policy, legislation and standards; biodiversity, land, and water management; natural hazards; environmental rehabilitation; conservation areas; soils

□ □ □ % 4801

43 Defence
Includes: Navy or maritime; army or land, air force or aeronautics; logistics; intelligence; national security (non-military); emerging defence technologies

□ □ □ % 4901

44 Other

□ □ □ % 5001

45 Total

1 0 0 %



Bioscience R&D carried out internally

46 What is bioscience?

Bioscience is the development and application of knowledge of the way plants, animals and humans function for the development of products and services.

Bioscience activities may occur in the following areas:

- agriculture feedstock and chemicals
- aquaculture, horticulture, and forestry
- human and animal therapeutics and diagnostics (including clinical trial providers)
- medical devices and equipment
- research testing and medical laboratories
- microbes
- biotechnology (see note below for the definition of biotechnology)

Note: The OECD defines biotechnology as the application of science and technology to living organisms as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services.

The OECD provides the following list of biotechnologies, which can be used as an indicative guide to biotechnology activity.

DNA - the coding: Genomics, pharmaco-genetics, gene probes, DNA sequencing / synthesis / amplification, genetic modification.

Proteins and molecules - the functional blocks: Protein / peptide sequencing / synthesis, lipid / protein glycoengineering, proteomics, hormones and growth factors, cell receptors / signalling / pheromones.

Cell and tissue culture and engineering: Cell / tissue culture, tissue engineering, hybridisation, cellular fusion, vaccine / immune stimulants, embryo manipulation.

Process biotechnologies: Bioreactors, fermentation, bioprocessing, bioleaching, biopulping, biobleaching, biodesulphurisation, bioremediation and biofiltration.

Sub-cellular organisms: Gene therapy, viral vectors.

Other: Bioinformatics, nanobiotechnologies, etc.

47 Did the R&D reported in total C include any bioscience?

1 yes → please provide an estimate of the share of internal R&D expenditure that is attributable to bioscience

% 5300

2 no

5301



Type of internal research carried out

48 Which of the following types of internal research were carried out?
Please allocate to each type the relevant percentage of R&D expenditure (reported in total C) in the financial year.

49 Pure basic research

Research to pursue new knowledge without any particular application in view.

% 5801

50 Targeted basic research

Research to produce a broad base of new knowledge likely to underpin solutions to current or future applications.

% 5702

51 Applied research

- new work undertaken to acquire knowledge for a specific practical aim
- work to determine possible uses of basic research
- work to determine new ways of achieving a predetermined objective

% 5601

52 Experimental development

Systematic work undertaken using existing knowledge for the purpose of creating new or improved materials, products, processes, and / or services.

% 5501

53 Total

1 0 0 %



External R&D funded during the financial year

54 In the last financial year, did this organisation fund any R&D carried out at other organisations?

Include:

- funding to a subsidiary of this organisation.

Don't include:

- subcontractors working on R&D projects carried out by this organisation (subcontractors are included in question **13**).

1 yes → go to **55**

2 no → go to **64**

5900

55 If this organisation paid for R&D but did not do the work itself, where did this organisation spend the money?

56 NZ private sector

Include:

- private and publicly listed organisations
- state-owned enterprises
- producer boards
- research associations

\$

6101

57 NZ central government sector

For example: departments, ministries, and crown entities.

Don't include:

- crown research institutes
- state-owned enterprises

\$

6201

58 Crown research institutes

For example: NIWA, Landcare Research, Plant & Food Research, and AgResearch.

\$

6301

59 NZ local government sector

For example: district councils, city councils, and regional councils.

\$

6401

60 NZ tertiary education sector

For example: universities and polytechnics.

\$

6501

61 Overseas organisations

Include: funds overseas organisations in the same group.

\$

6601

62 Other (please state):

6702

\$

6701

63 Total

Do not include this amount in Total C

\$

6801



External use of research outputs

64 Mark one oval for each item listed. During the last 2 financial years, were any of the following undertaken by this organisation for the external use of its R&D outputs?

Include:

- external use of products, services, processes, people, ideas and information.

Note:

- Products or services may include both physical products (eg machines, materials, tools or techniques) as well as knowledge, reports or technical services, that can be sold for financial return.

	yes	no	
sold products or services, which were delivered to market by this organisation or its subsidiaries (excluding licensing of intellectual property)	1 <input type="radio"/>	2 <input type="radio"/>	6402
sold products or services, which were delivered to market by other NZ organisations (excluding licensing of intellectual property)	1 <input type="radio"/>	2 <input type="radio"/>	6403
sold products or services, which were delivered to market by other overseas organisations (excluding licensing of intellectual property)	1 <input type="radio"/>	2 <input type="radio"/>	6404
licensed intellectual property	1 <input type="radio"/>	2 <input type="radio"/>	6405
formed a partnership or work contract which could benefit this organisation in the future	1 <input type="radio"/>	2 <input type="radio"/>	6406
gained publicity or reputation which could benefit this organisation in the future	1 <input type="radio"/>	2 <input type="radio"/>	6407
exchange of skills through staff secondments to the private sector (excluding subsidiaries)	1 <input type="radio"/>	2 <input type="radio"/>	6408
exchange of skills through staff secondments to the public sector (excluding subsidiaries)	1 <input type="radio"/>	2 <input type="radio"/>	6409
other	1 <input type="radio"/>	2 <input type="radio"/>	6410



Further definitions of R&D

R&D includes:

- Design, construction and operation of prototypes where the main objective is technical testing or to make further improvements
- Construction and operation of pilot plants not operated or intended to be operated as commercial units
- Research into, and original development (or substantial modification) of computer software such as new programming languages and new operating systems
- "Feedback R&D" directed at solving problems occurring beyond the R&D phase, for example technical problems arising during the initial production runs
- Research work in the biological, physical and social sciences, and the humanities
- Social science research includes economic, cultural, educational and sociological research

R&D excludes (except where used primarily for the support of, or as part of, R&D projects):

- General purpose or routine data collection
- Policy related studies, management studies, efficiency studies
- Routine quality control and testing
- Pre-production activities such as demonstration of commercial viability, tooling up and trial production runs
- Prospecting, exploring or drilling for minerals, petroleum or natural gas
- Cosmetic modifications or style changes to existing products
- Scientific and technical information services
- Routine computer programming, systems maintenance or software development and application
- Operational research and mathematical or statistical analysis
- Commercial, legal and administrative aspects of patenting, copyrighting or licensing activities
- Activities associated with standards compliance
- Specialised routine medical care, eg routine pathology services

Where does R&D end?

R&D ends when work is no longer experimental and pre-production begins.

If the primary objective is to make further technical improvements, then the work comes within the definition of R&D.

However, if the material, product etc. is substantially developed and the primary objective is to develop markets (i.e. market research), to do pre-production planning or to get production or control systems running smoothly, then the work is no longer R&D.

Borderline between research and studies

Research activities are usually performed in scientific units. Their aim is to produce innovative results which can be generalised or be generally utilised. The activities are often connected to other research, and financed from research funds; the results have a considerable novelty value and they are widely published.

Studies involve collecting, processing and analysing data for decision making and planning. The studies are often made by enterprises as an integral part of planning activities. The results are mainly descriptive, they are not widely published and they cannot easily be generalised or utilised for any other purpose. Income and expenditure on studies should not be included in this questionnaire.





Confidentiality of information supplied

This is a joint collection by Statistics New Zealand and the Ministry of Business Innovation and Employment under section 9 of the Statistics Act 1975. You have the right to object in writing to the Government Statistician, to the release of your individual information to the Ministry of Business Innovation and Employment. Any data released to the Ministry of Business Innovation and Employment continues to be protected by the Statistics Act (section 37) and must only be used for statistical purposes. It must not be related in any way which identifies your individual information.

Thank you for your time and effort.

The main results of all our surveys are available at www.stats.govt.nz

