



NATIONAL
SCIENCE
FOUNDATION

Statistical Handbook on Research and Development of Sri Lanka 2018

National Science Foundation

47/5, Maitland Place

Colombo 07

Sri Lanka

www.nsf.gov.lk

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ISBN 978-955-590-138-3

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PREFACE

The Statistical Brief of the National Research and Development Survey 2018 reflects the performance of Research and Development (R&D) institutes of the country in deploying resources towards R&D activities in the year 2018. In addition to the information on financial and human resources inputs, the publication also includes few output indicators that measure the results of R&D of the country. This report carries the information gathered from the State Sector R&D Institutes, Higher Education Institutes, Business Enterprises and Private Non Profit Organizations.

The National Research and Development Survey is conducted by the National Science Foundation on a regular basis meeting the international standards stipulated by the Organization for Economic Co-operation and Development (OECD) and UNESCO Institute of Statistics (UIS). Frascati Manual (2002) of OECD and Technical Paper No.11 of UIS are the two major guidelines followed in the survey. Hence, the statistics provided in this publication is internationally comparable. The R&D statistics of this publication are aimed at policy makers, planners, researchers, scientists and technologists requiring a quantitative overview of R&D activities of the country.

We wish to thank the Heads and staff members of all respondent organizations for their invaluable co-operation, which is an essential pre-requisite for the successful completion of a national effort of this nature. Finally, we wish to record our deep appreciation for the encouragement and advice given by the Board of Management of the National Science Foundation during the survey.

Science and Technology Policy Research Division

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Colombo 07

Sri Lanka

February 2021

HIGHLIGHTS-2018

- Gross Domestic Expenditure on Research and Development (GERD) of Sri Lanka in 2018 was Rs. 18,343.92 million and it was 0.13% of GDP of the country.
- The highest expenditure on Research and Development was incurred by Business Enterprises (39.77%) followed by Government Research Institutes (35.42%), Higher Education Sector (23.46%), and Private Non-Profit Organizations (1.35%).
- Experimental Developments accounted 41.10% of GERD while Basic and Applied Research accounted 32.32% and 26.58% of GERD respectively.
- 6,250 Researchers (Head Count) were employed in domestic R&D activities and their Full-Time Equivalent value was 2,243.
- 212 patent registrations were reported in 2018 and out of them 148 patents were Non-Resident registrations.
- 1,035 of articles of Sri Lankan scientists were published in SCI Journals in 2018.

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FINANCIAL RESOURCES
FOR
RESEARCH AND DEVELOPMENT

1.1. Gross Domestic Expenditure on Research and Development (GERD) 2018

Description		
a)	GERD at Current Market Price (Rs. Million)	18,343.92
b)	GERD as a percentage of GDP (%) ¹	0.13%
c)	GERD per Million Population (Rs. Million) ²	846.51
d)	GERD (USD Million)	112.86

1- GDP of 2018 at current market price is Rs. 14,336 billion (Annual Report 2019, Central Bank of Sri Lanka)

2- Mid Year Population of 2018 is 21,670,000 (Annual Report 2019, Central Bank of Sri Lanka)

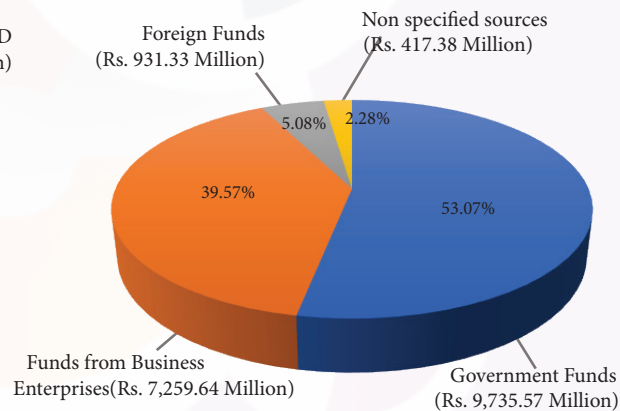
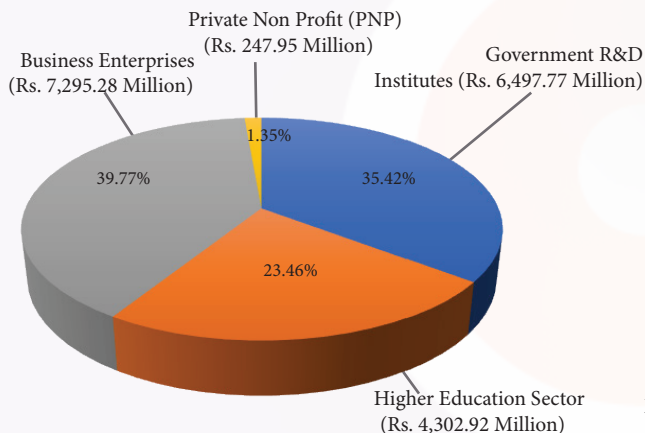
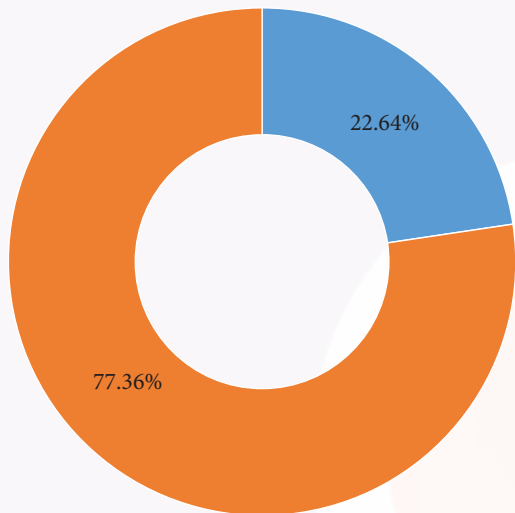


Figure 1.1. GERD by Sectors

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

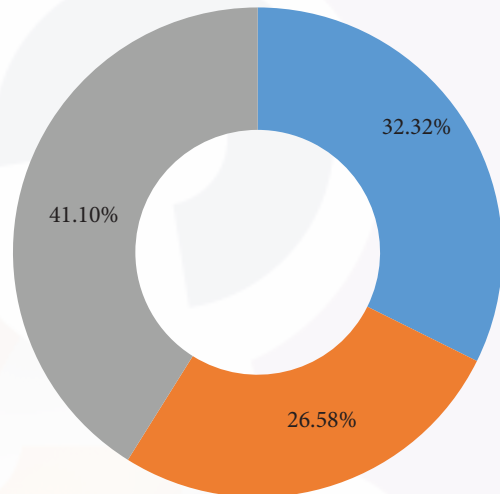
Figure 1.2. R&D Expenditure by Source of Funds



- Capital (Rs. 4,152.81 Million)
- Recurrent (Rs. 14,191.11 Million)

Figure 1.3. Capital and Recurrent Expenditure on R&D

Source: National R&D Survey of Sri Lanka, 2018 (NSF)



- Basic (Rs. 5,929.48 Million)
- Applied (Rs. 4,875.29 Million)
- Experimental Development (Rs. 7,539.15 Million)

Figure 1.4. GERD by Research Activities

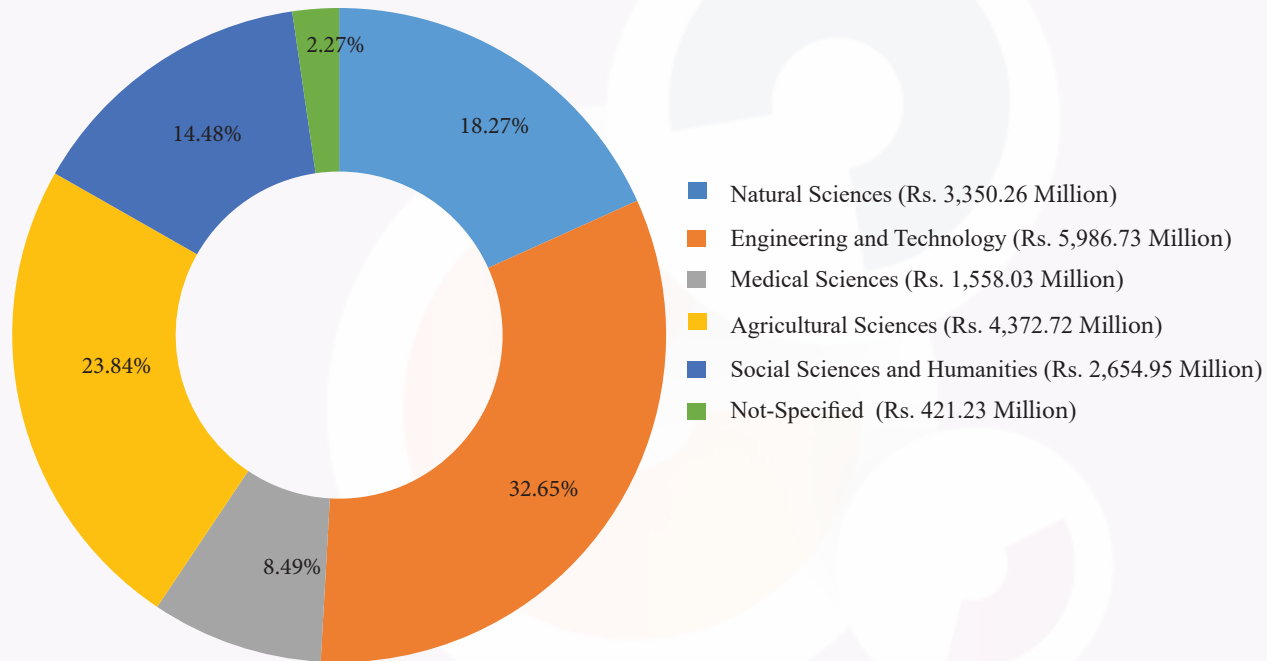


Figure 1.5. GERD by Field of Science

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

1.2. Source of Funds - Sector-wise Disaggregation

Source of Fund	Government R&D Institutes		Higher Education Sector		Business Enterprises		PNP		Total	
	Rs. Million	%	Rs. Million	%	Rs. Million	%	Rs. Million	%	Rs. Million	%
Government	5,672.52	87.30	4,031.72	93.70	28.24	0.39	3.09	1.25	9,735.57	53.07
Business Enterprises/ Private Sector	5.98	0.09	39.90	0.93	7,209.79	98.83	3.98	1.60	7,259.64	39.57
Foreign	439.51	6.76	199.95	4.64	51.91	0.71	239.96	96.78	931.33	5.08
Not-Specified	379.76	5.85	31.35	0.73	5.34	0.07	0.92	0.37	417.38	2.28
Total	6,497.77	100	4,302.92	100	7,295.28	100	247.95	100	18,343.92	100

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

1.3. R&D Expenditure - Sector-wise Disaggregation

Expenditure Description	Government R&D Institutes		Higher Education Sector		Business Enterprises		PNP	
	Rs. Million	%	Rs. Million	%	Rs. Million	%	Rs. Million	%
Capital	1,795.61	27.63	184.42	4.29	2,169.19	29.73	3.59	1.45
Recurrent	4,702.16	72.37	4,118.50	95.71	5,126.09	70.27	244.36	98.55
Basic	1,227.62	18.89	3,119.70	73.60	1,459.20	20.00	122.95	89.00
Applied	3,011.23	46.34	360.99	7.74	1,379.28	18.91	123.79	10.66
Experimental Development	2,258.92	34.76	822.22	18.66	4,456.80	61.09	1.21	0.34
Natural Sciences	1,267.45	19.51	889.46	21.07	1,188.05	16.29	5.30	2.14
Engineering and Technology	993.57	15.29	601.74	13.16	4,391.42	60.20	-	-
Medical Sciences	446.86	6.88	879.1	20.45	231.33	3.17	0.74	0.30
Agricultural Sciences	2,836.17	43.65	504.47	11.69	923.02	12.65	109.07	43.99
Social Sciences and Humanities	823.29	12.67	1,428.15	33.63	286.48	3.93	117.04	47.20
Not-Specified	130.44	2.01	-	-	274.99	3.77	15.79	6.37

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

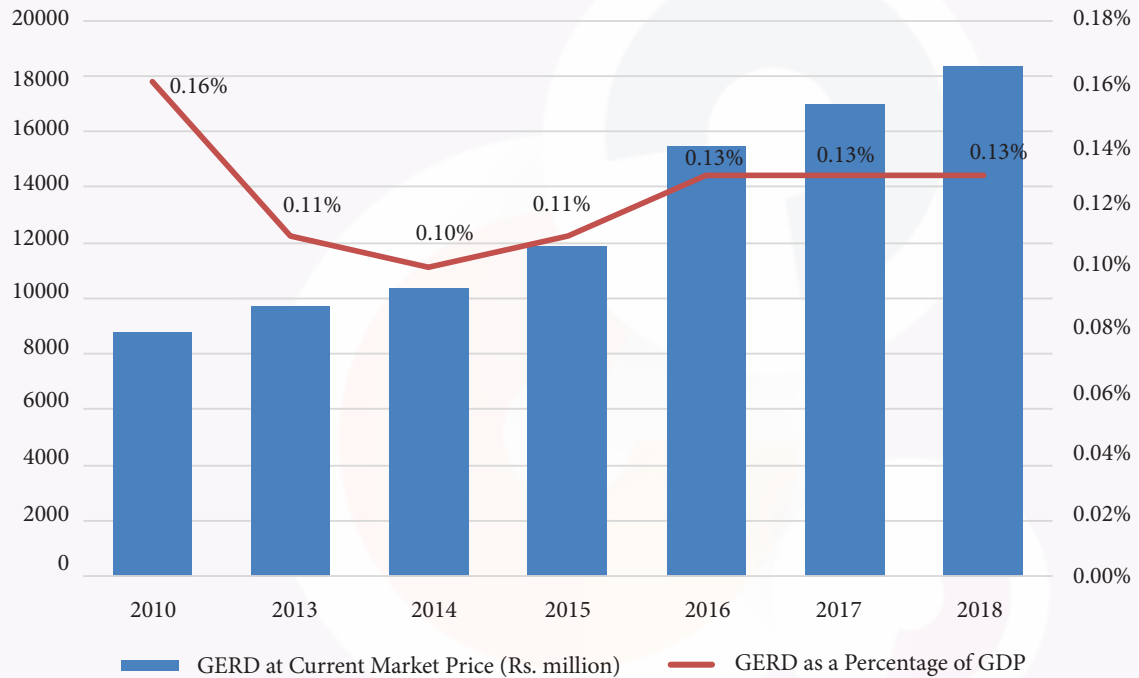


Figure 1.6. Time Trend of GERD (2010-2018)

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

1.4. Time Trend - Capital and Recurrent Expenditure on R&D

Rs. Million

Nature of Expenditure	2014	2015	2016	2017	2018
Recurrent	8,851.04	10,453.60	13,290.64	13,854.42	14,191.11
Capital	1,499.04	1,450.50	2,128.66	3,148.92	4,152.81
Total	10,350.08	11,904.10	15,419.30	17,003.34	18,343.92

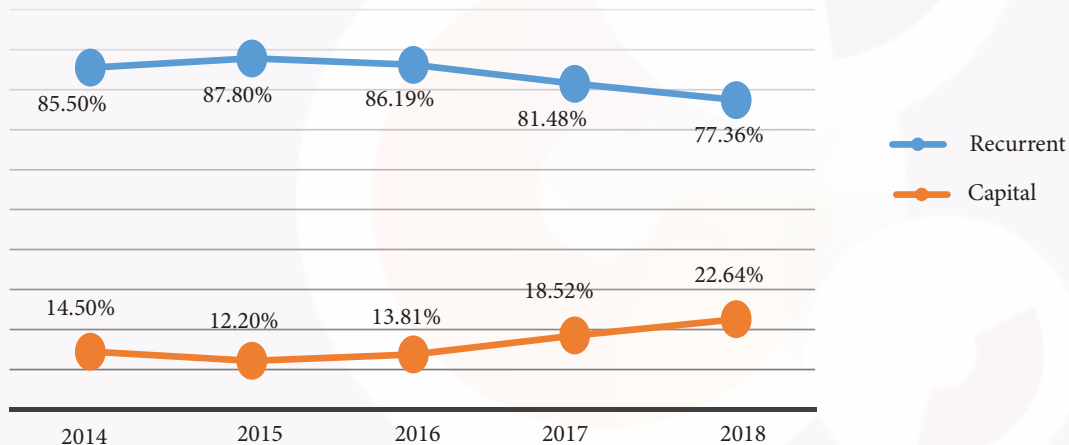


Figure 1.7. Time Trend of Capital and Recurrent R&D Expenditure

Source: National R&D Surveys of Sri Lanka, 2014, 2015, 2016, 2017 & 2018 (NSF)

1.5. Time Trend - GERD by Research Activities

Rs. Million

Research Type	2014	2015	2016	2017	2018
Basic	1,578.47	1,668.80	2,649.30	4,559.02	5,929.48
Applied	5,938.05	6,648.20	7,036.96	8,559.34	4,875.29
Experimental Development	2,833.56	3,587.10	5,733.04	3,884.98	7,539.15
Total	10,350.08	11,904.10	15,419.30	17,003.34	18,343.92

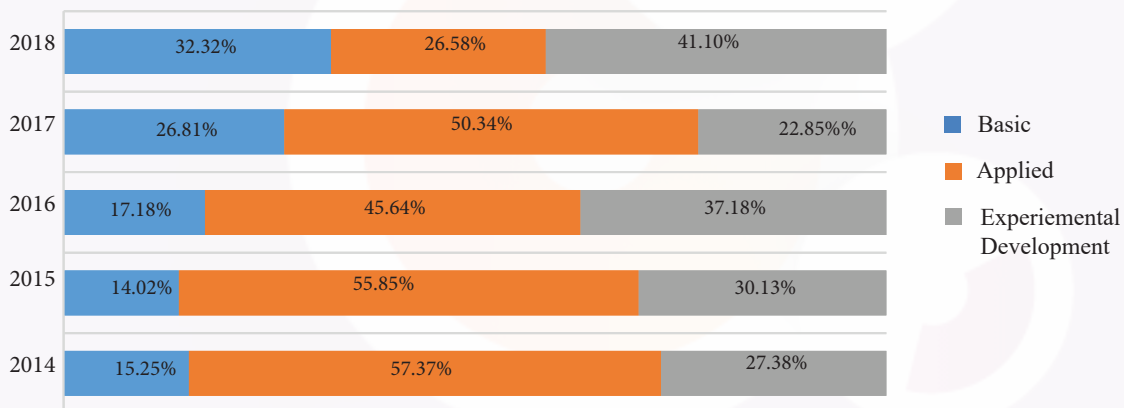


Figure 1.8. Time Trend - GERD by Research Activities

Source: National R&D Surveys of Sri Lanka, 2014, 2015, 2016, 2017 & 2018 (NSF)

1.6. Time Trend - GERD by Field of Science

Rs. Million

Discipline	2014	2015	2016	2017	2018
Natural Sciences	2,666.19	3,170.30	3,020.67	3,060.19	3,350.26
Engineering and Technology	2,447.55	2,991.80	4,913.90	3,432.84	5,986.73
Medical Sciences	371.85	1,019.10	930.77	1,588.50	1,558.03
Agricultural Sciences	4,077.77	3,746.10	4,349.42	6,080.86	4,372.72
Social Sciences and Humanities	603.85	647.80	1,390.84	1,561.81	2,654.95
Not Specified	182.87	329.00	813.70	1,279.14	421.23
Total	10,350.08	11,904.10	15,419.30	17,003.34	18,343.92

Source: National RDI Surveys Sri Lanka, 2014, 2015, 2016, 2017 & 2018 (NSF)

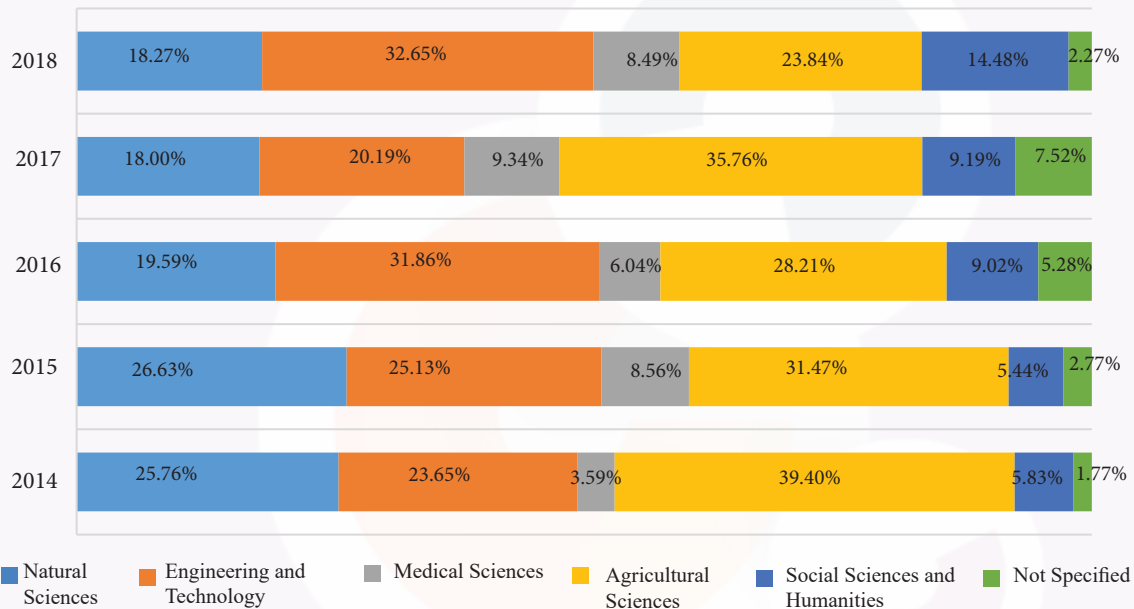


Figure 1.9. Time Trend - GERD by Field of Science

Source: National RDI Surveys Sri Lanka, 2014, 2015, 2016, 2017 & 2018 (NSF)



HUMAN RESOURCES
IN
RESEARCH AND DEVELOPMENT

2.1. Researchers and Technicians Employed in Research and Development 2018

Description		
a)	Head Count of Researchers (Number)	6,250
b)	Head Count of Technicians (Number)	4,023
c)	Human Resource for R&D (Researchers and Technicians)	10,273
d)	No of Technicians per Researcher	0.64
e)	Researchers per million population*	288.42
f)	Full time Equivalent of Researchers	2,242
g)	Researchers per million population (in full-time equivalent - FTE)*	103.47
h)	Number of Research Students	7,014

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

* Mid Year Population of 2018 is 21,670,000 (Annual Report 2018, Central Bank of Sri Lanka)

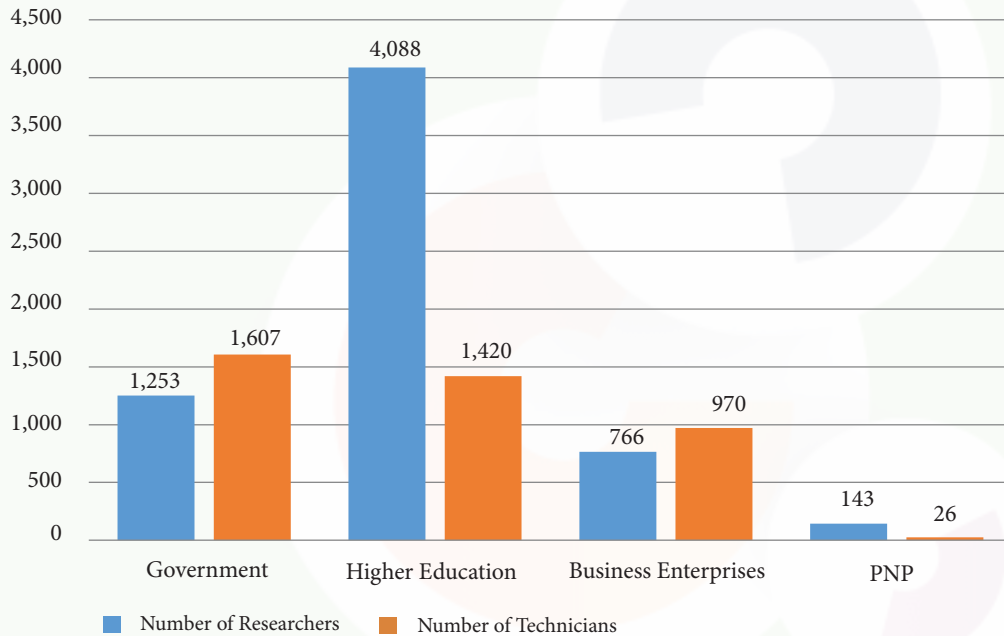


Figure 2.1. Distribution of R&D Persons by Sector

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

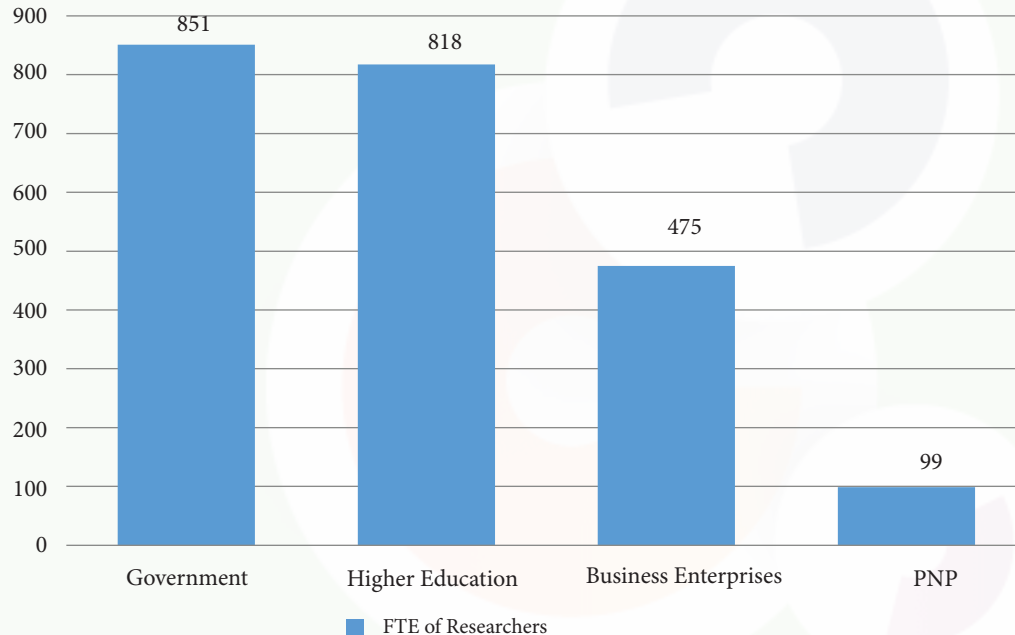


Figure 2.2. Full-time Equivalent (FTE) of Researchers by Sector

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.2. Researchers by Different Disciplines

Discipline	Male	Female	Total
Natural Sciences	804	658	1,462
Agricultural Sciences	790	380	1,170
Engineering and Technology	679	449	1,128
Medical Sciences	659	813	1,472
Social Sciences and Humanities	434	424	858
Not Specified	103	57	160
Total	3,469	2,781	6,250

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

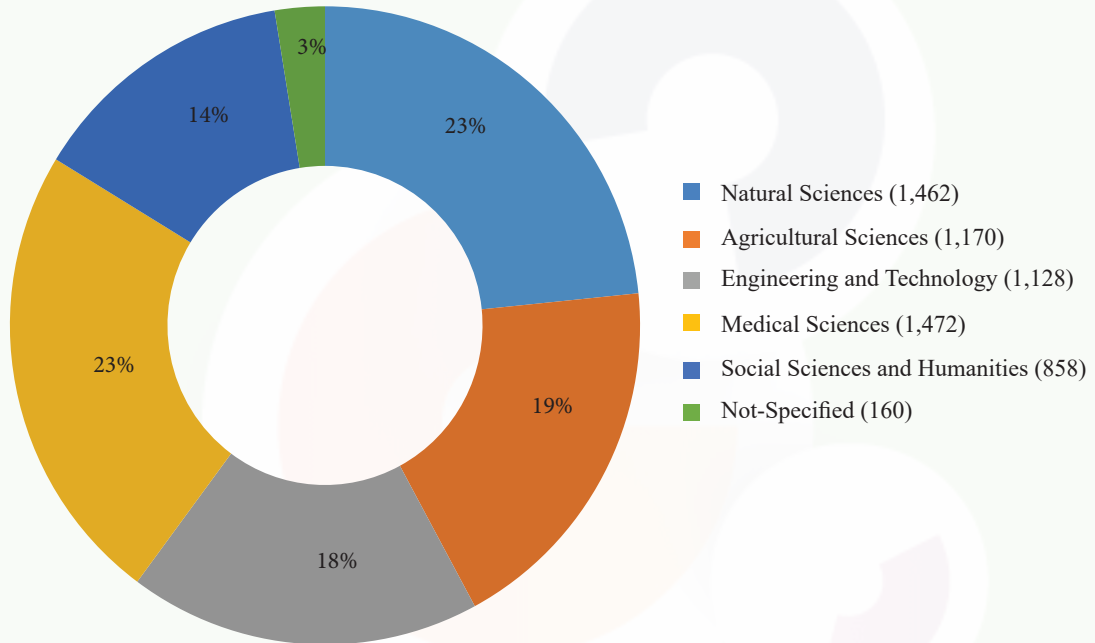


Figure 2.3. Distribution of Researchers by Different Disciplines

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.3. Researchers by Educational Qualifications

Educational Qualifications	Male	Female	Total
Doctoral or Equivalent	1,249	833	2,082
MPhil	241	229	470
Masters or Equivalent	1,058	934	1,992
Bachelors + Postgraduate Diploma (PGD)	186	93	279
Bachelors or Equivalent	627	650	1,277
Not Specified	108	42	150
Total	3,469	2,781	6,250

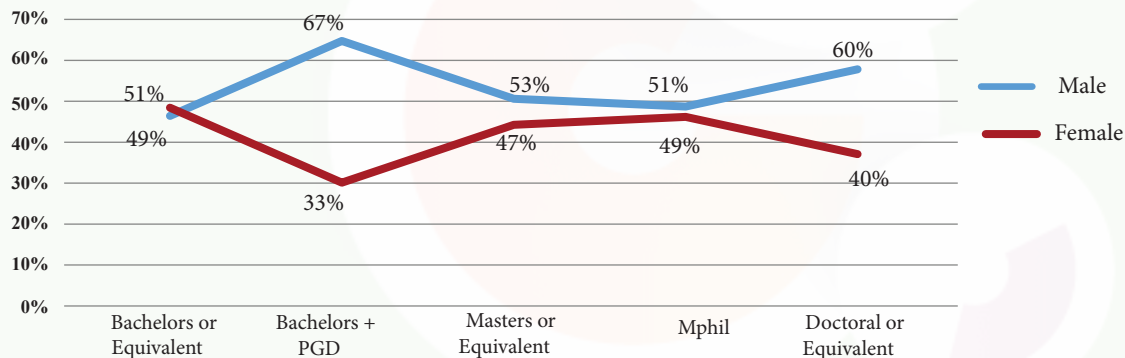


Figure 2.4. Researchers by Educational Qualifications and Gender

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.4. Researchers by (Head Count) Age and Gender

Age Group	Male	Female	Total
21 - 30	439	405	844
31 - 40	984	1,037	2,021
41 - 50	1,067	745	1,812
51 - 60	805	500	1,305
Above 60	174	94	268
Total	3,469	2,781	6,250

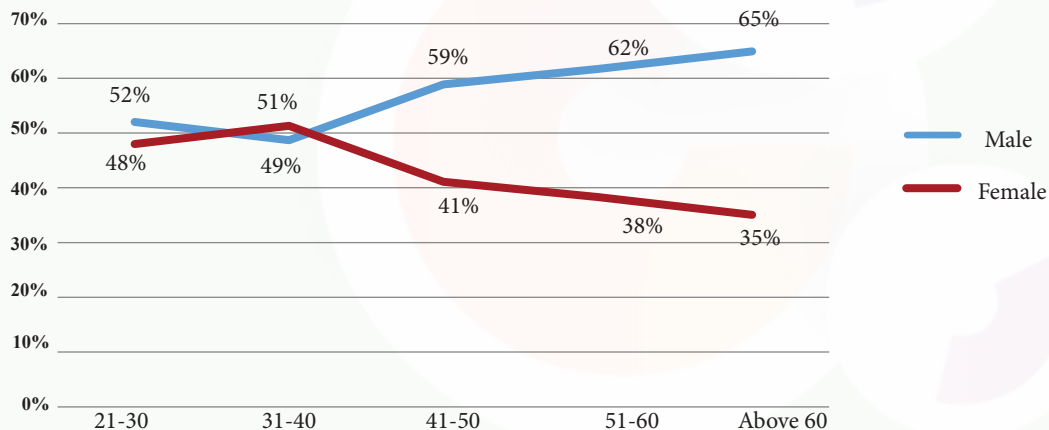


Figure 2.5. Age and Gender-wise Proportion of Researchers

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.5. R&D Persons - Sector-wise Disaggregation

Description	Government		Higher Education		Business Enterprises		PNP		Total		
	M	F	M	F	M	F	M	F	M	F	Total
Head Count of Researchers	631	622	2,144	1,944	605	161	89	54	3,469	2,781	6,250
Head Count of Technicians	818	789	910	510	701	269	5	21	2,434	1,589	4,023
Full-time Equivalent (FTE) of Researchers	429	422	429	389	375	100	61	37	1,294	948	2,242
Researchers by different disciplines											
Natural Sciences	134	134	520	459	110	45	40	20	804	658	1,462
Agricultural Sciences	160	73	271	248	356	59	3	0	790	380	1,170
Engineering and Technology	40	82	583	339	56	28	0	0	679	449	1,128
Medical Sciences	227	243	420	568	4	0	8	2	659	813	1,472
Social Sciences and Humanities	51	72	348	329	7	0	28	23	434	424	858
Not Specified	19	18	2	1	72	29	10	9	103	57	160
Total	631	622	2,144	1,944	605	161	89	54	3,469	2,781	6,250

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.6. R&D Persons - Sector-wise Disaggregation

Description	Government		Higher Education		Business Enterprises		PNP		Total		Total
	M	F	M	F	M	F	M	F	M	F	
Doctoral or Equivalent	87	74	1,096	736	21	2	45	21	1,249	833	2,082
Mphil	40	41	185	186	12	1	4	1	241	229	470
Masters or Equivalent	262	260	600	605	169	50	27	19	1,058	934	1,992
Bachelors + PGD	73	47	8	11	95	26	10	9	186	93	279
Bachelors or Equivalent	158	190	245	396	224	62	0	2	627	650	1,277
Not Specified	11	10	10	10	84	20	3	2	108	42	150
Total	631	622	2,144	1,944	605	161	89	54	3,469	2,781	6,250
Researchers by Age											
21 - 30	83	77	144	230	201	87	11	11	439	405	844
31 - 40	181	237	557	735	221	46	25	19	984	1,037	2,021
41 - 50	198	197	729	517	115	16	25	15	1,067	745	1,812
51 - 60	161	109	556	376	67	9	21	6	805	500	1,305
Above 60	8	2	158	86	1	3	7	3	174	94	268
Total	631	622	2,144	1,944	605	161	89	54	3,469	2,781	6,250

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

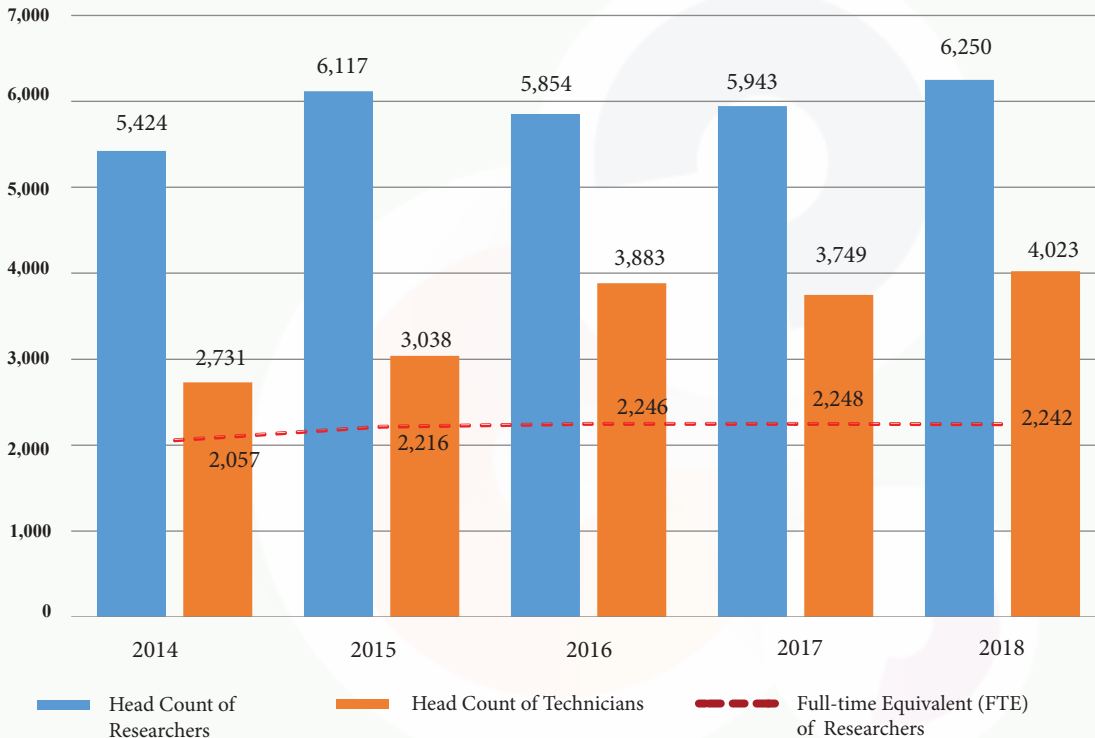


Figure 2.5. Time Trend of R&D Persons

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.7. Researchers by Different Disciplines (2014-2018)

Field of Science	Head Count of Researchers				
	2014	2015	2016	2017	2018
Natural Sciences	1,629	1,897	1,399	1,385	1,462
Agricultural Sciences	1,289	1,423	1,387	1,239	1,170
Engineering and Technology	1,047	1,286	1,115	1,128	1,128
Medical Sciences	794	776	1,175	1,320	1,472
Social Sciences and Humanities	408	471	745	703	858
Not Specified	257	264	33	168	160
Total	5,424	6,117	5,854	5,943	6,250

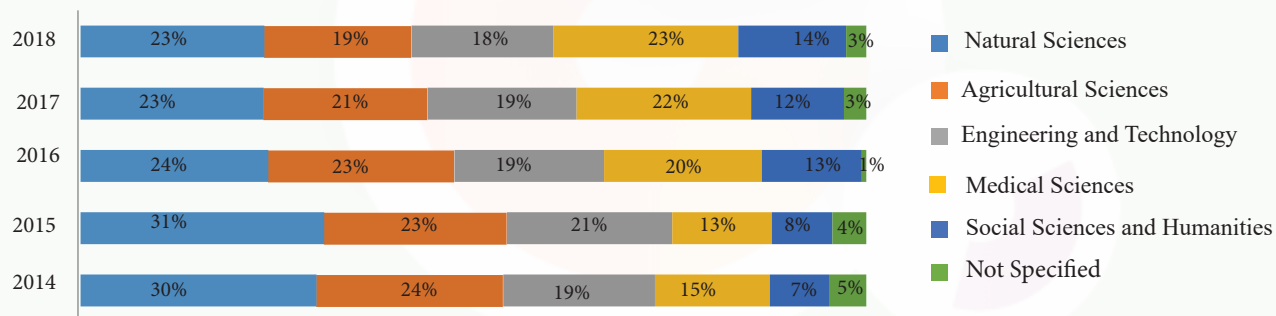


Figure 2.6. Researchers by Different Disciplines - Time Trend

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.8. Time Trend of Researchers by Educational Qualifications

Educational Qualifications	Number of Researchers				
	2014	2015	2016	2017	2018
Doctoral or Equivalent	899	944	1,898	1,971	2,082
MPhil	237	266	409	426	470
Masters or Equivalent	863	1,249	1,842	1,955	1,992
Bachelors + PGD	1,365	1,656	234	244	279
Bachelors or Equivalent	1,945	1,727	1,349	1,236	1,277
Not Specified	115	275	122	111	150
Total	5,424	6,117	5,854	5,943	6,250

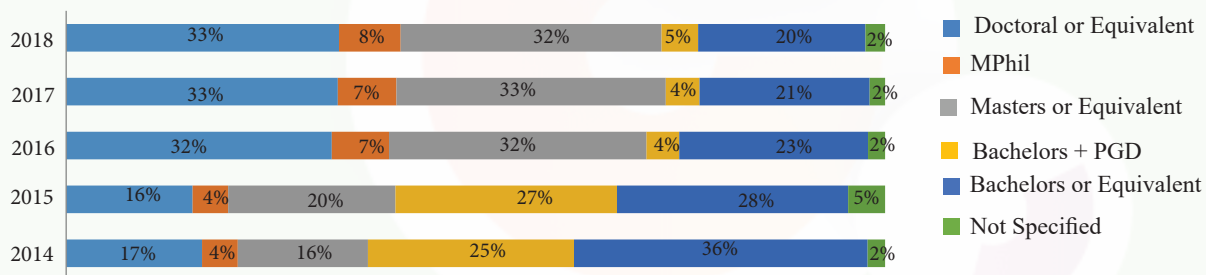


Figure 2.7. Researchers by Educational Qualifications - Time Trend

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.9. Time Trend of Researchers by Age

Age Group	Number of Researchers				
	2014	2015	2016	2017	2018
21 - 30	737	903	676	776	844
31 - 40	1,107	1,143	1,871	1,907	2,021
41 - 50	1,170	1,686	1,737	1,734	1,812
51 - 60	606	1,323	1,267	1,266	1,305
Above 60	163	755	303	260	268
Not Specified	1,641	307	-	-	-
Total	5,424	6,117	5,854	5,943	6,250

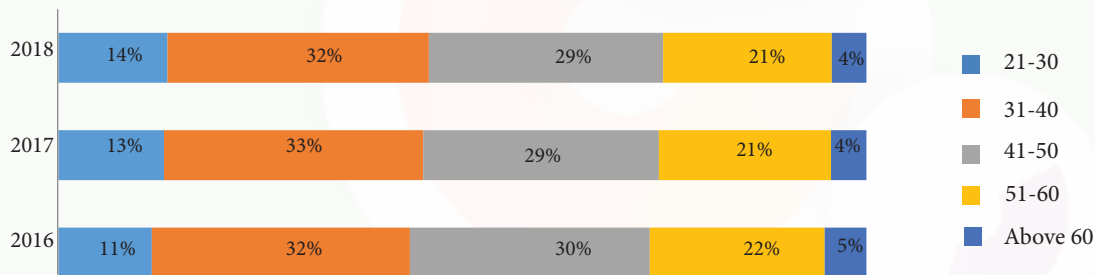


Figure 2.8. Time Trend of Researchers by Age

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.10. Number of Research Students in Universities 2018

Student Category	Male	Female	Total
PhD Research Students	658	456	1,114
MPhil Research Students	1,486	1,260	2,746
Total Research Students	2,144	1,716	3,860

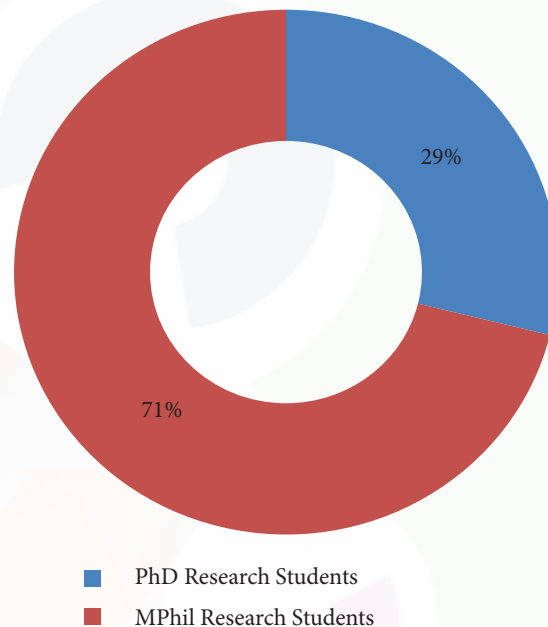


Figure 2.9. Types of Research Students

Source: National R&D Survey of Sri Lanka, 2018 (NSF)

2.11. Research Students by Different Disciplines

Field of Science	Male	Female	Total
Natural Sciences	328	419	747
Agricultural Sciences	128	184	312
Engineering and Technology	205	140	345
Medical Sciences	104	47	151
Social Sciences and Humanities	1,436	869	2,305
Total	1,716	2,144	3,860

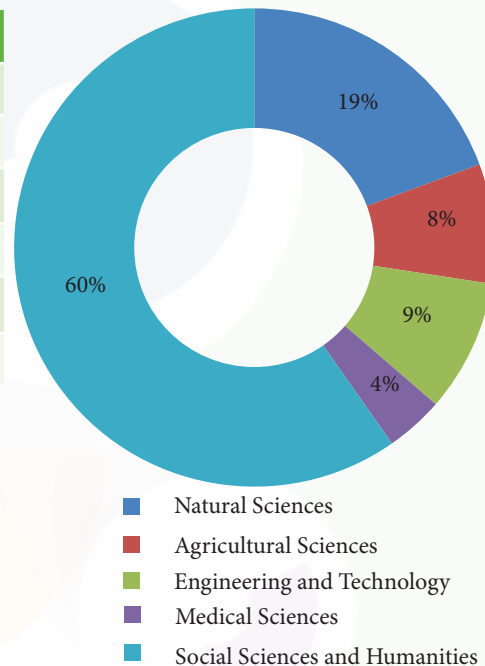


Figure 2.10. Research Students by Different Disciplines

Source: National R&D Survey of Sri Lanka, 2018 (NSF)



PERFORMANCE & OUTPUT
INDICATORS OF
RESEARCH AND DEVELOPMENT

3.1. Patents, Industrial Designs and SCI Journal Publications in 2018

Description		
A)	Number of Patent Registrations (Resident)	64
B)	Number of Patent Registrations (Non-Resident)	148
C)	Total Number of Patent Registrations (a+b)	212
D)	Number of Industrial Designs Awarded (Resident)	85
E)	Number of Industrial Designs Awarded (Non-Resident)	38
F)	Total Number of Industrial Designs Awarded (d+e)	123
G)	Publications by Sri Lankan Scientists in SCI Journals**	1,035

Source: National Intellectual Property Office (NIPO), Sri Lanka

**Adopted from the Scopus (extended) and Science Citation Index (SCI)

3.2. Patent Registrations according to International Patent Classification (IPC)

Description		Number
Section	IPC Category	
A	Human Necessities	42
B	Performing Operations, Transporting	4
C	Chemistry, Metallurgy	45
D	Textiles, Paper	5
E	Fixed Constructions	4
F	Mechanical Engineering, Lighting, Heating, Weapons	7
H	Electricity	4
Not Specified		101
Total		212

Source: National Intellectual Property Office (NIPO), Sri Lanka

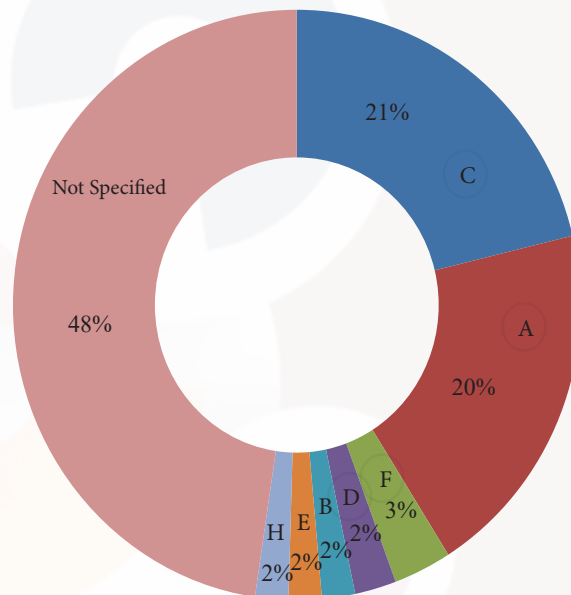


Figure 3.1. Major Patent Types

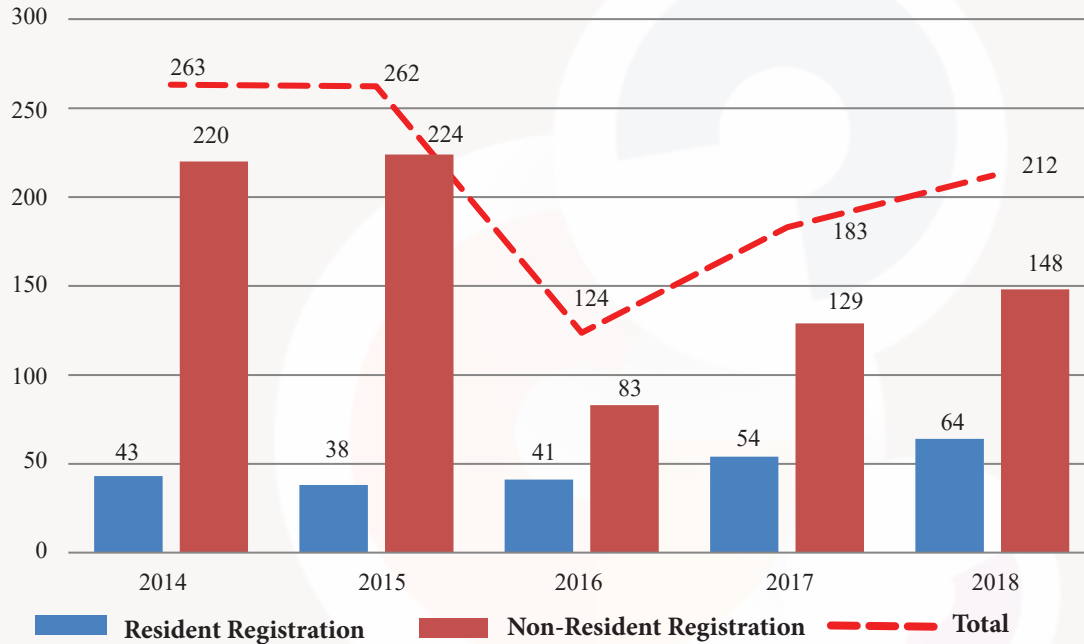


Figure 3.2. Time Trend of Patent Registrations

Source: National Intellectual Property Office (NIPO), Sri Lanka

3.3. Industrial Designs according to Locarno Classification

Description		Number of Industrial Designs
Class	Category of Locarno Classification	
2	Articles of clothing and haberdashery	2
3	Travel goods, cases, parasols and personal belongings, not elsewhere specified	1
6	Furnishing	13
7	Household goods, not elsewhere specified	11
9	Packages and containers for the transport or handling of goods	26
11	Articles of adornment	1
12	Means of transport or hoisting	17
13	Equipment for production, distribution or transformation of electricity	2
15	Machines, not elsewhere specified	9
20	Sales and advertising equipment, signs	1
21	Games, toys, tents and sports goods	19
22	Arms, pyrotechnic articles, articles for hunting, fishing and pest killing	2
23	Fluid distribution equipment, sanitary, heating, ventilation and air-conditioning equipment, solid fuel	5
25	Building units and construction elements	12
Not Specified		2
Total		123

Source: National Intellectual Property Office (NIPO), Sri Lanka

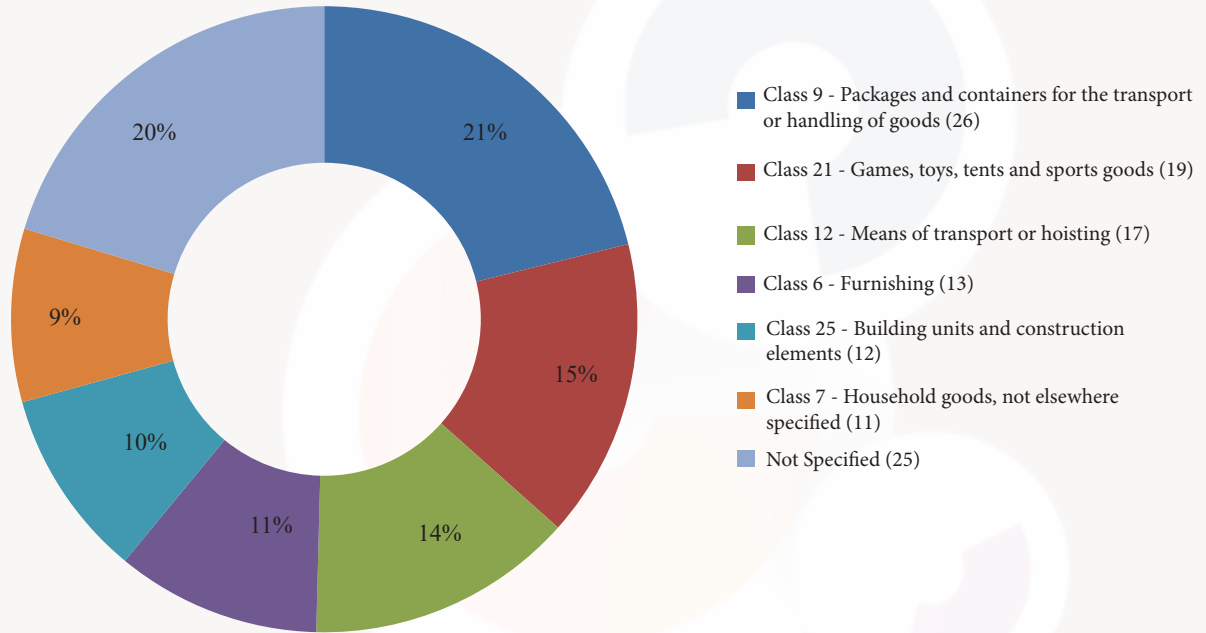


Figure 3.3. Major Industrial Design Types

Source: National Intellectual Property Office (NIPO), Sri Lanka

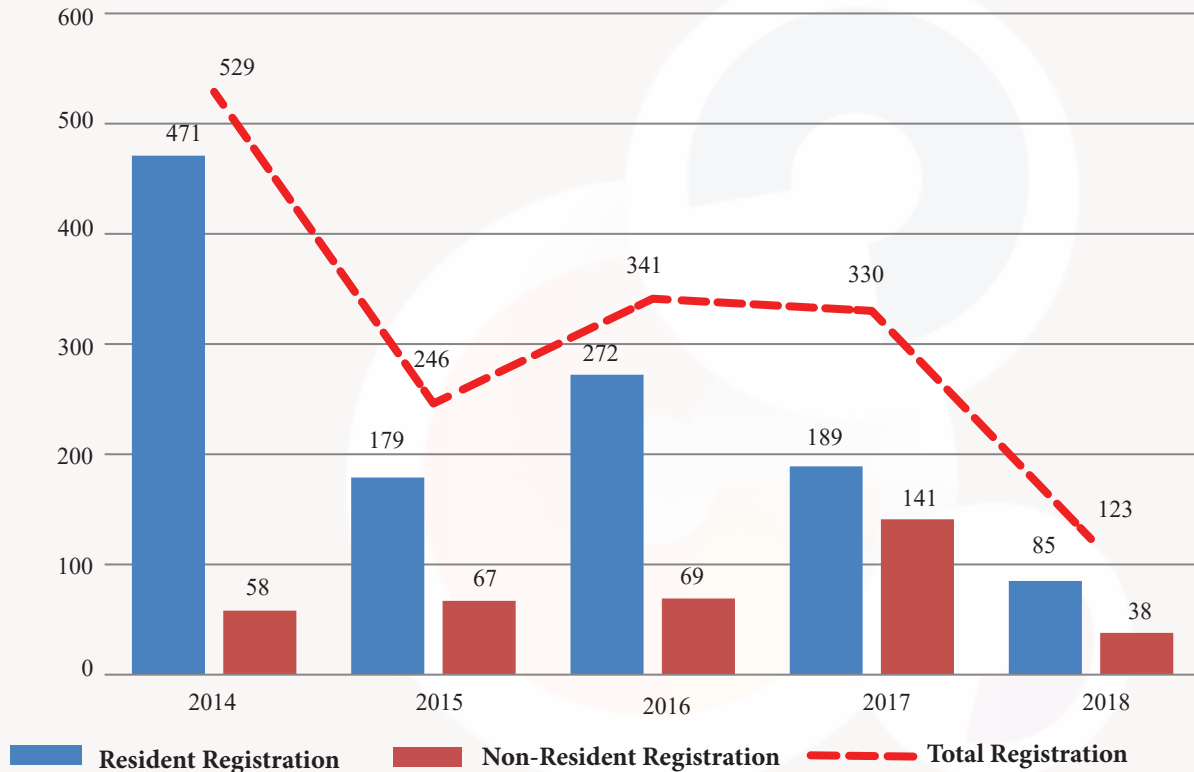


Figure 3.4. Time Trend of Industrial Designs Registration

Source: National Intellectual Property Office (NIPO), Sri Lanka

3.4. Sector-wise Innovations

Innovation Type		Government R&D Institutes	Business Enterprises	Higher Education Sector	Total
a	Development of New Products/Services/Processes	97	1,499	42	1,638
b	Existing Products/Services/Processes Significantly Improved	86	2,645	15	2,746
c	New Plant Varieties/Hybrids Developed	24	75	1	100
d	Import Substitutes Developed	18	189	3	210
e	Designs/Prototypes Developed	21	284	14	319

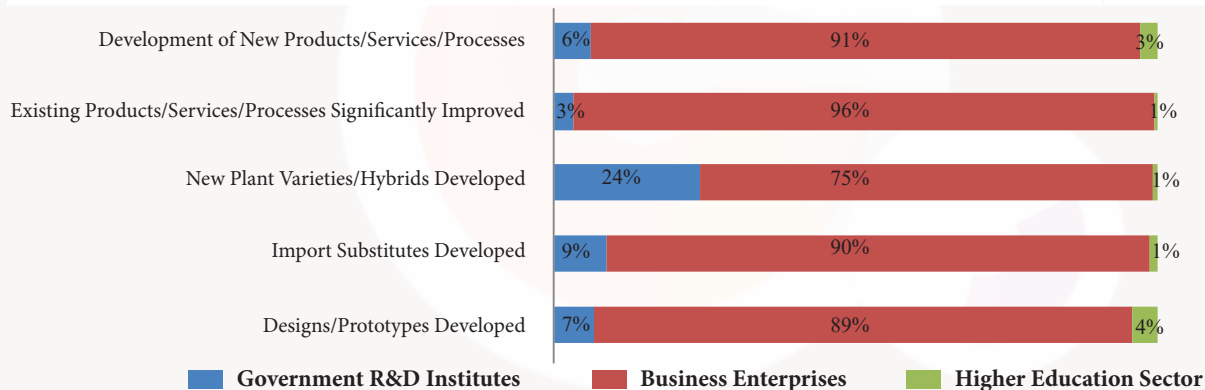


Figure 3.5. Sector-wise Contribution to Innovation

Source: National Research and Development Survey of Sri Lanka 2018

3.5. Commercialization of Innovations by Sectors

Innovation Type		Government R&D Institutes	Business Enterprises	Higher Education Sector	Total
a	Commercialization of New Products/Services/ Processes	32	1,058	16	1,106
b	Commercialization of Improved Existing Products/Services/Processes	26	1,252	11	1,289
c	Commercialization of New Plant Varieties/ Hybrids	42	39	0	81
d	Commercialization of Import Substitutes	4	63	4	71
e	Commercialization of Designs/Prototypes	10	94	1	105

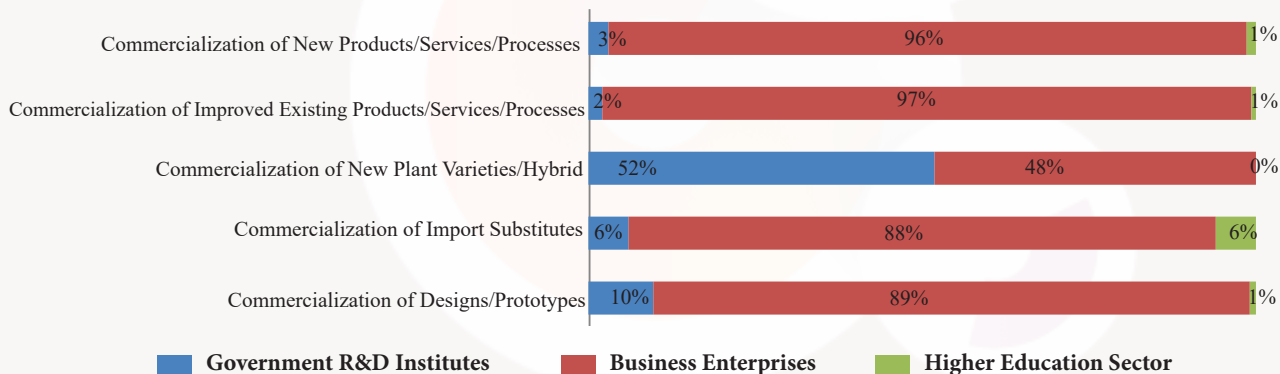


Figure 3.6. Sector-wise Innovation Commercialization

Source: National Research and Development Survey of Sri Lanka 2018

3.6. Publications of Sri Lankan Scientists in SCI Journals

Field of Science	Total Number of Publications	With Foreign Co-authorship	
		Number	%
Natural Sciences	319	216	68%
Engineering and Technology	227	176	78%
Medical Sciences	319	205	64%
Agricultural Sciences	105	73	70%
Social Sciences and Humanities	65	42	65%
Total	1,035	712	69%

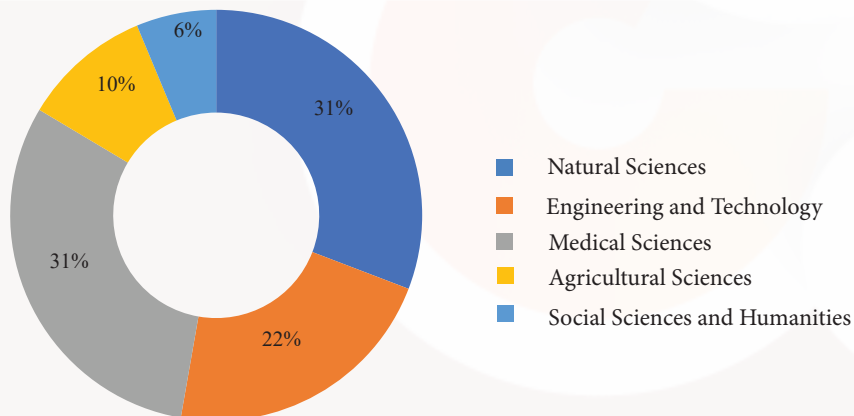


Figure 3.7. SCI Journal Publications of Sri Lankan Authors by Field of Science

Source: Adopted from the Scopus (extended) and Science Citation Index (SCI)

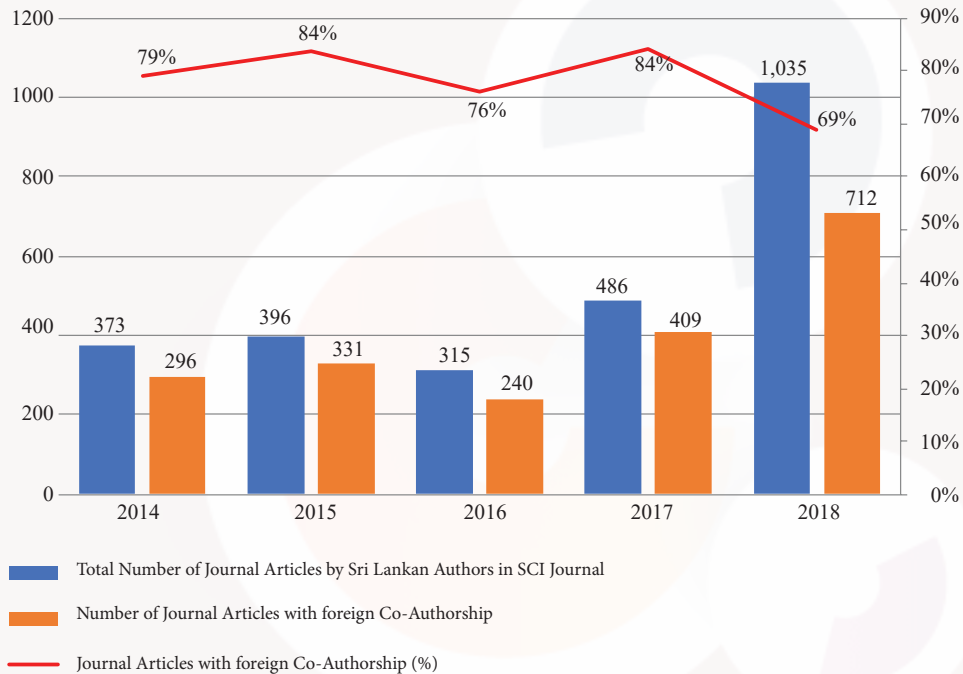


Figure 3.8. SCI Journal Publications - Time Trend

Source: Adopted from the Scopus and Science Citation Index

* Figures on 2018 are based on Scopus (extended)

3.7. Publications of Sri Lankan Scientists in SCI Journals by Field of Science (2014-2018)

Field of Science	2014		2015		2016		2017		2018	
	Total Number	With foreign Co-authorship (%)	Total Number	With foreign Co-authorship (%)	Total Number	With foreign Co-authorship (%)	Total Number	With foreign Co-authorship (%)	Total Number	With foreign Co-authorship (%)
Natural Sciences	95	79	102	84	120	88	167	92	319	68
Engineering and Technology	80	86	76	80	52	71	95	81	227	78
Medical Sciences	118	69	126	84	92	71	126	79	319	64
Agricultural Sciences	71	93	80	89	46	65	79	76	105	70
Social Sciences and Humanities	9	56	12	58	5	40	19	100	65	65
Total	373	79	396	84	315	76	486	84	1,035	69

Source: Adopted from Scopus and Science Citation Index

* Figures of 2018 are based on Scopus (extended)

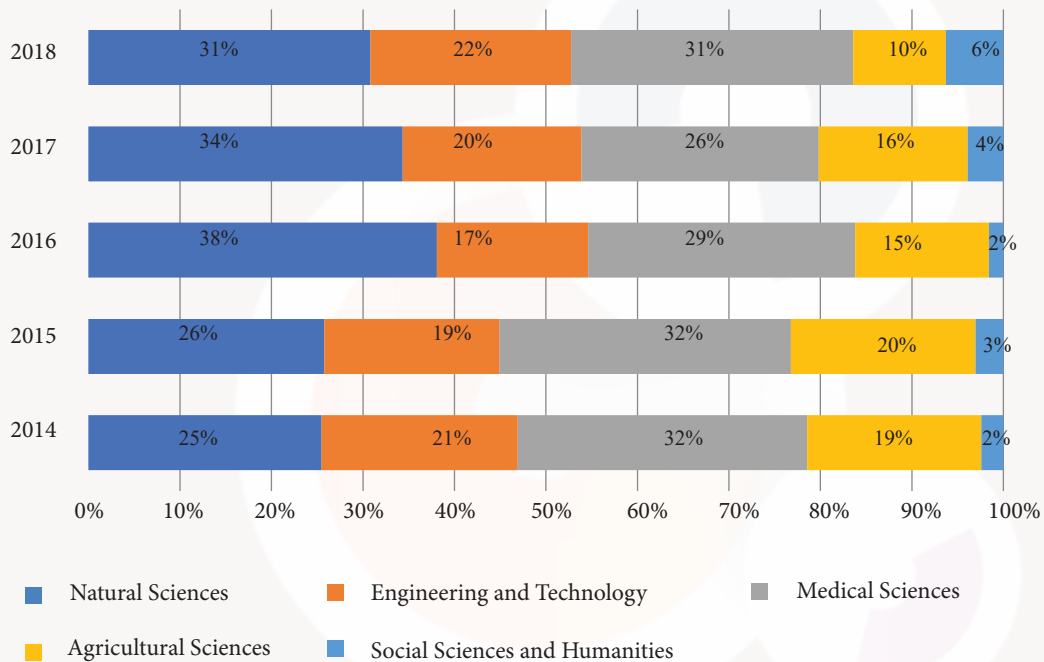


Figure 3.9. Articles in SCI Publications by Field of Science (2014-2018)

Source: Adopted from Scopus and Science Citation Index

* Figures of 2018 are based on Scopus (extended)

DEFINITIONS AND TECHNICAL NOTES

The definitions and terminology used in the National R&D Survey 2018 and in this Statistical Hand Book are based on the guidelines provided by UNESCO and OECD.

1. Research and Development (R&D)

R&D comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge including the knowledge of humanity, culture and society, and the use of this stock of knowledge to device new applications.

The term R&D covers three activities:

- a) Basic research: The experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations, phenomena and observed facts, without any particular application or use in view.
- b) Applied research: The original investigations undertaken in order to acquire new knowledge. However, it is directed primarily towards a specific practical aim or objective.
- c) Experimental development: The systematic work, drawing on existing knowledge gained from research and practical experience that is directed to produce new materials, products and devices; to install new processes, systems and services; or to improve substantially those already produced or installed.

2. Sectors

This survey covers four major institutional categories that conduct Research & Development:

- i. Government Organizations that conduct R&D – Full coverage.
- ii. Higher Education Institutes - All State Universities under University Grant Commission .
- iii. Business Enterprises – 166 institutions were selected for the survey considering degree of their R&D activity and proportion of their contribution to national economy. All major industries that conduct R&D were included in the sample
- iv. Private Non Profit Institutions (PNP) – All institutions that were involved in the activities related to R&D were covered in the survey

3. R&D Expenditure

All expenditure for R&D performed within a sector of the economy, including:

- a) Recurrent expenditure (labor cost, non-capital purchases of materials, supplies for R&D equipment, water, fuel, gas, electricity, library materials etc.).
- b) Capital expenditure (reported in full for the period when they took place and should not register as element of depreciation).

4. Human Resources in Research and Development

Researchers : Professionals engaged in the conception or creation of new knowledge, products, processes, methods, systems and also in the management of the projects concerned (OECD, 2002).

Technicians and equivalent staff : Persons whose main tasks require technical knowledge and experience in one or more fields of engineering, physical and life sciences (technicians) or social sciences and humanities (equivalent staff). They participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, normally under the supervision of researchers (OECD, 2002).

Head count : Reflects the total number of persons employed in R&D, independently from their dedication. This figure is used for analyzing the characteristics of the R&D workforce, with respect to age, gender, research specialization, etc.

Full Time Equivalent (FTE) : One person per year. (e.g. If a person normally spends 30% of his/her time on R&D and the rest on other activities such as teaching, administration and counseling, the FTE is then counted as 0.3. Similarly, if a full time R&D worker is employed at an R&D unit for only a six month period, the FTE is calculated as 0.5).

Reference:

OECD. (2002). Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development. Paris, France: OECD Publications Service.

UNESCO. (2014). TECHNICAL PAPER NO. 11. Guide to Conducting an R&D Survey: For countries starting to measure research and experimental development. Montreal, Quebec, Canada: UNESCO Institute for Statistics.