NATIONAL RESEARCH & DEVELOPMENT SURVEY 2018

STATISTICAL BRIEF (PROVISIONAL REPORT)

NATIONAL SCIENCE FOUNDATION

National Science Foundation
47/5, Maitland Place
Colombo 07
Sri Lanka
www.nsf.gov.lk

PREFACE

The Statistical Brief of the National Research and Development Survey 2018 reflects the performance of R&D institutes of the country in deploying resources towards Research and Development (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 study 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
National Science Foundation
47/5, Maitland Place
Colombo 07
Sri Lanka

August 2020

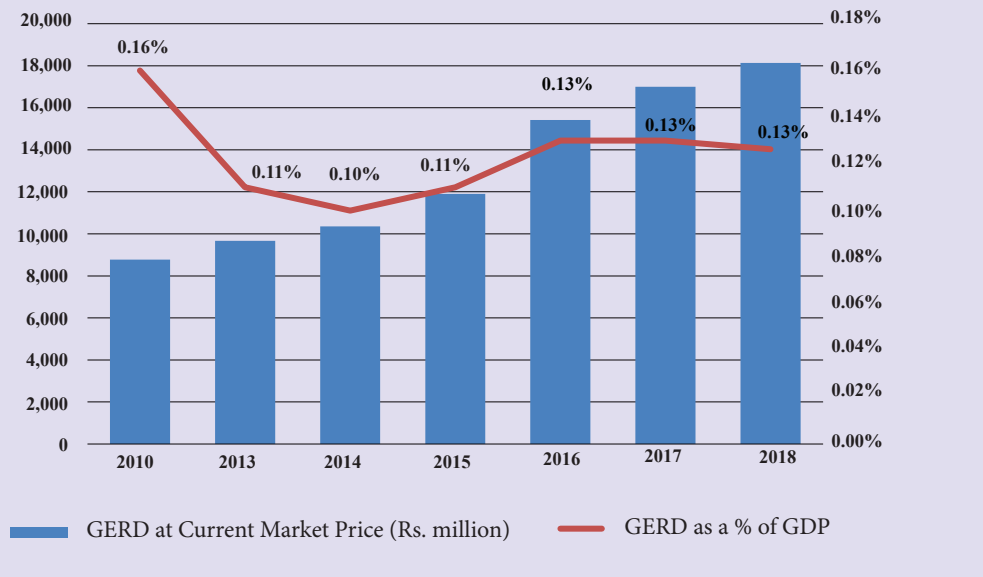
1. Financial Resources for Research and Development

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

Description		
a)	Gross Domestic Expenditure on Research and Development (GERD) at Current Market Price (Rs. million)	18,133.11
b)	GERD as a percentage of GDP (%)	0.13%
c)	GERD per Million Population (Rs. million)	836.78
d)	GERD (USD million)	111.56

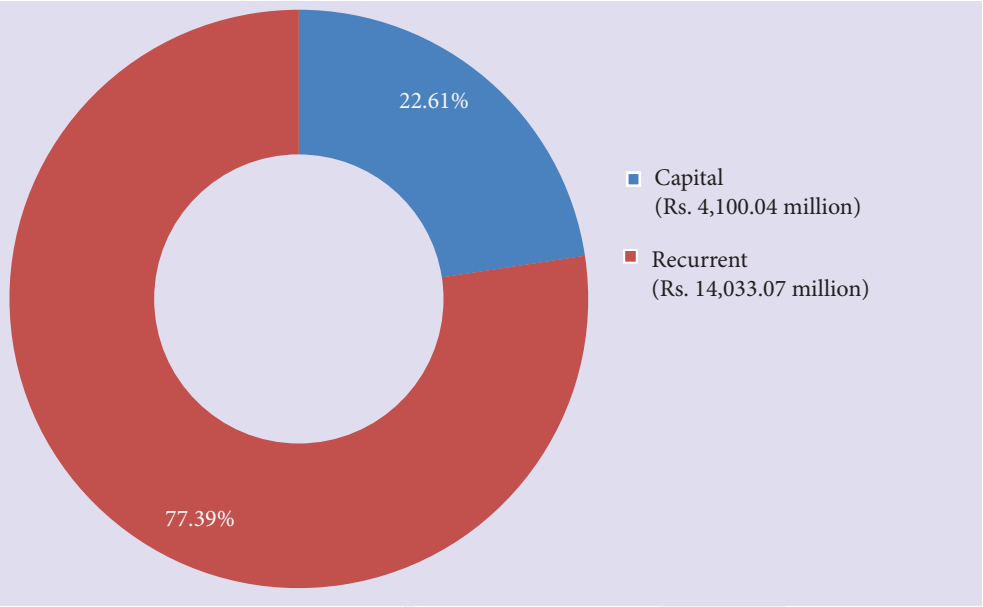
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Figure 1.1. Time Trend of GERD (2010-2018)



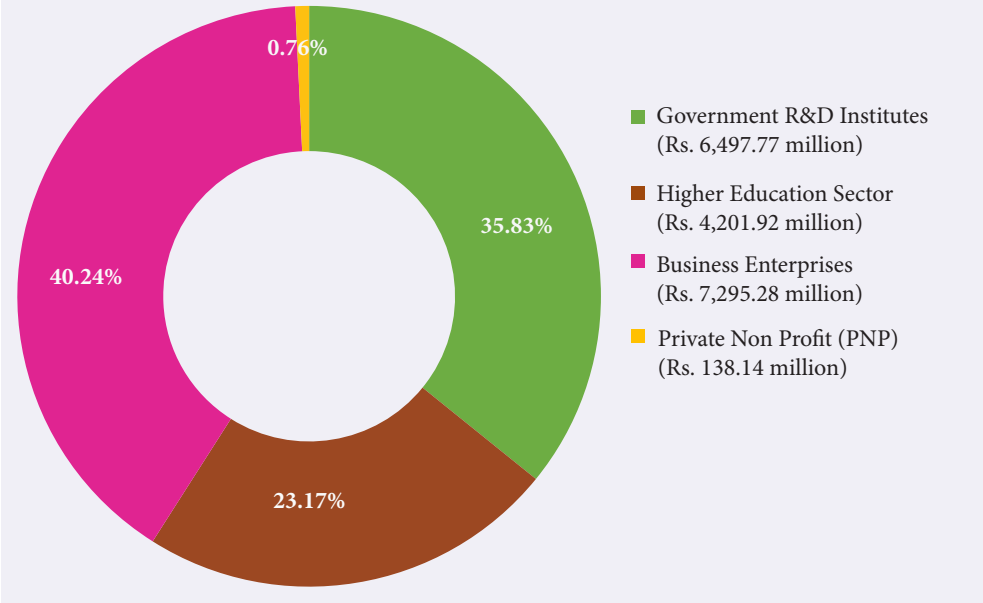
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Figure 1.2. Capital and Recurrent Expenditure on R&D



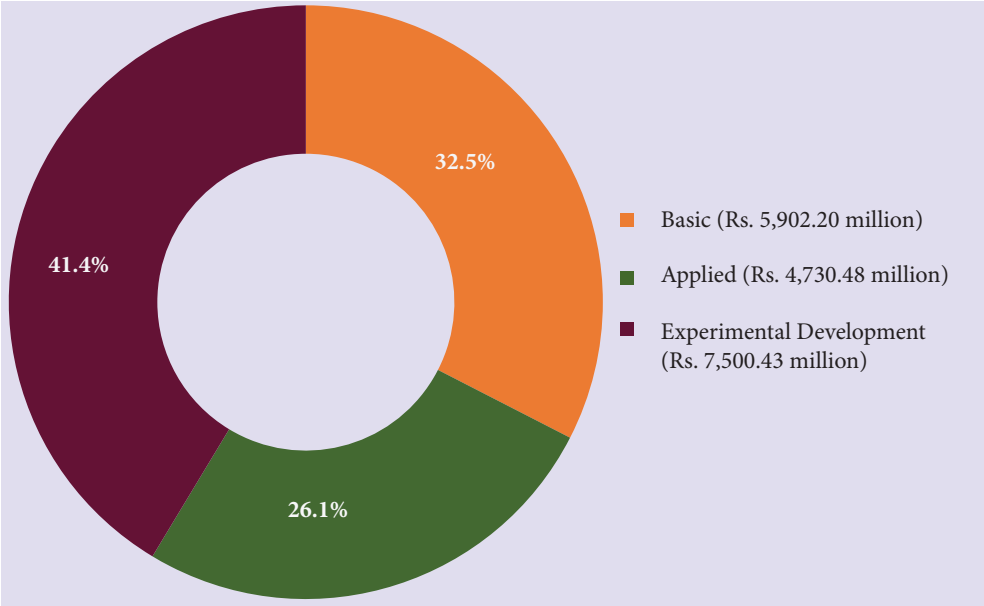
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Figure 1.3. GERD by Sectors



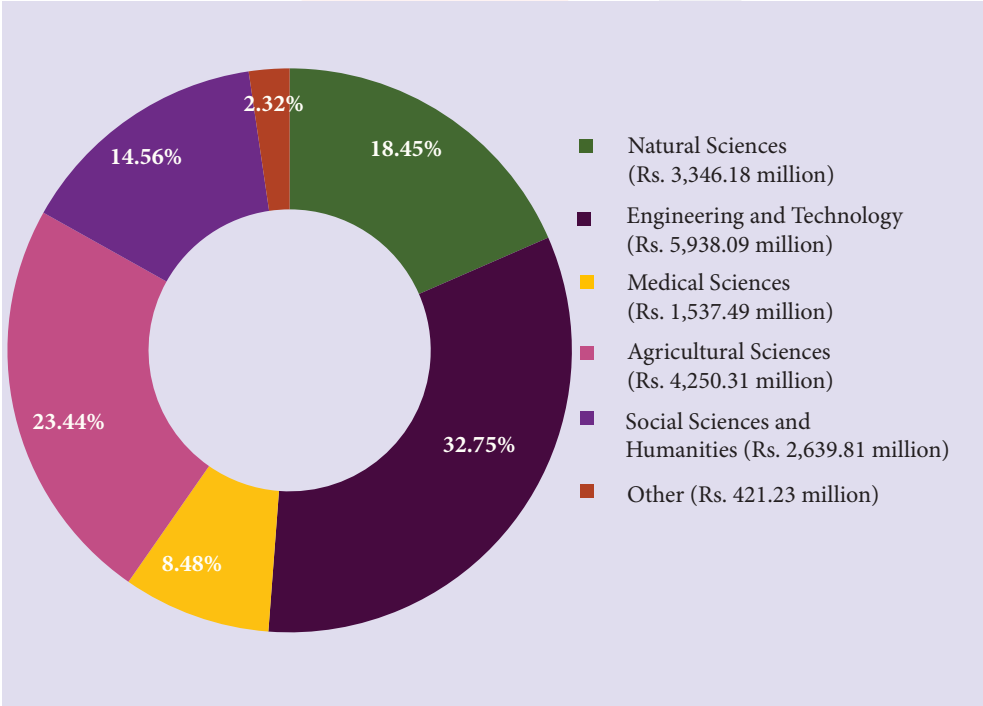
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Figure 1.4. GERD by Research Activities



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

Figure 1.5. GERD by Field of Science



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

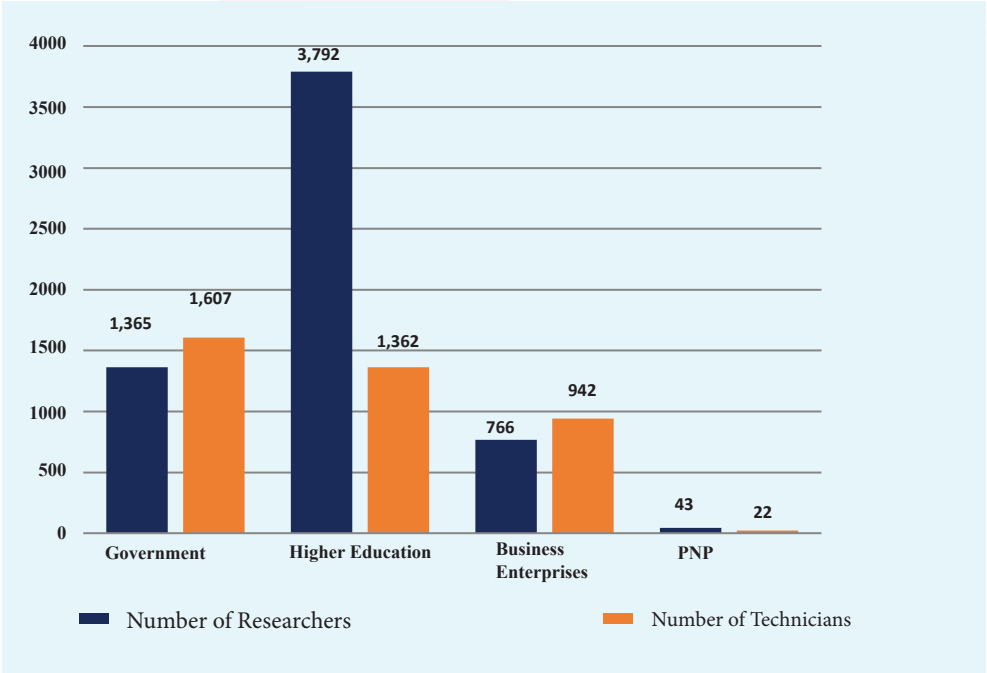
2. Human Resources for Research and Development

Table 2.1. Reserchers and Technicians Employed in Research and Development 2018

Description		
a)	Head Count of Researchers (Number)	5,966
b)	Head Count of R&D Technicians (Number)	3,933
c)	Human Resource for R&D (Researchers and Technicians)	9,899
d)	No of Technicians per Researcher	0.66
e)	Full-time Equivalent of Researchers	2,178

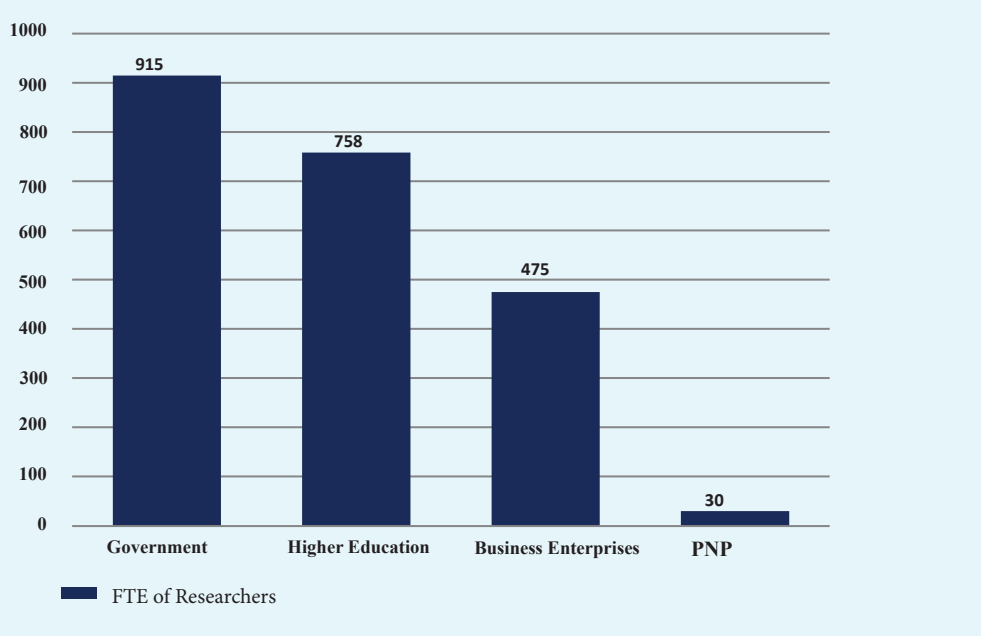
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

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



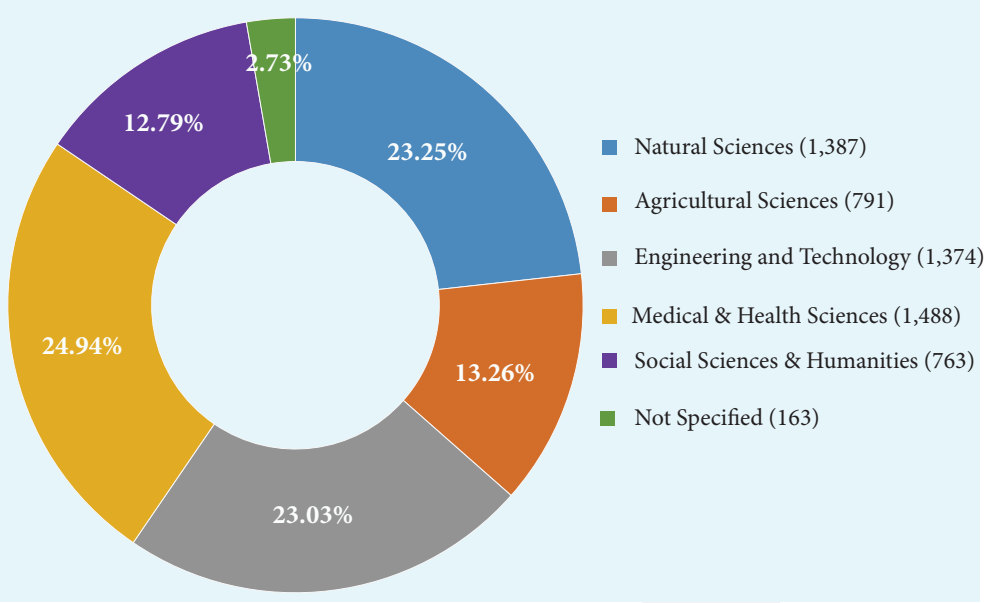
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Table 2.2. Researchers by Field of Science

Discipline	Male	Female	Total
Natural Sciences	754	633	1,387
Agricultural Sciences	459	332	791
Engineering & Technology	936	438	1,374
Medical & Health Sciences	656	832	1,488
Social Sciences & Humanities	393	370	763
Not specified	102	61	163
Total	3,300	2,666	5,966

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

Figure 2.3. Distribution of Researchers by Field of Science



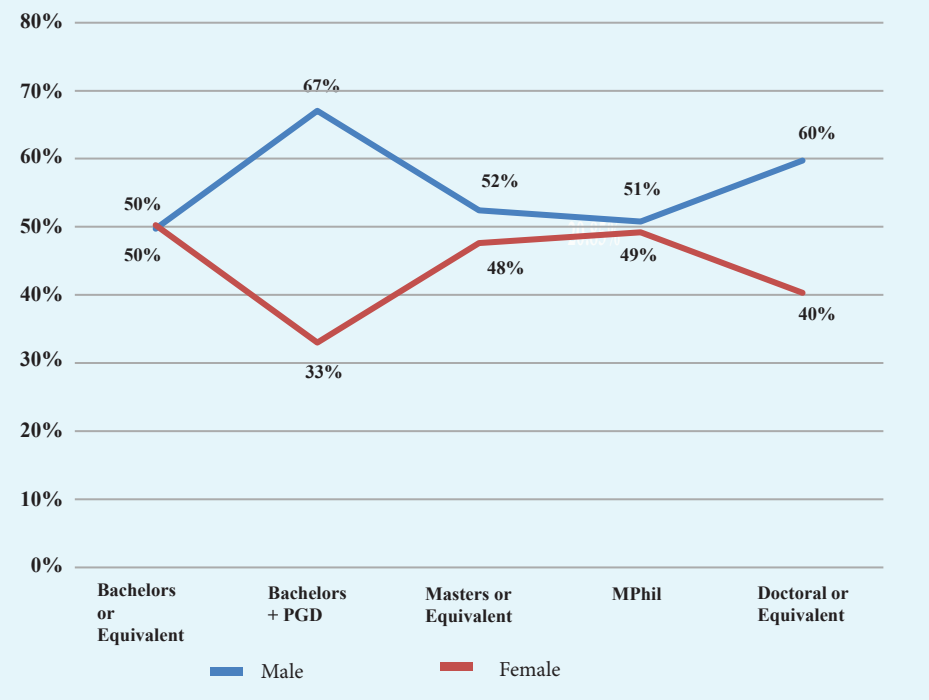
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Table 2.3. Educational Qualifications of Researchers

Educational Qualification	Male	Female	Total
Doctoral or Equivalent	1,171	790	1,961
MPhil	227	220	447
Masters or Equivalent	997	906	1,903
Bachelors + PGD	183	90	273
Bachelors or Equivalent	621	628	1,249
Non Specified	101	32	133
Total	3,300	2,666	5,966

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

Figure 2.4. Researchers by Educational Qualification and Gender



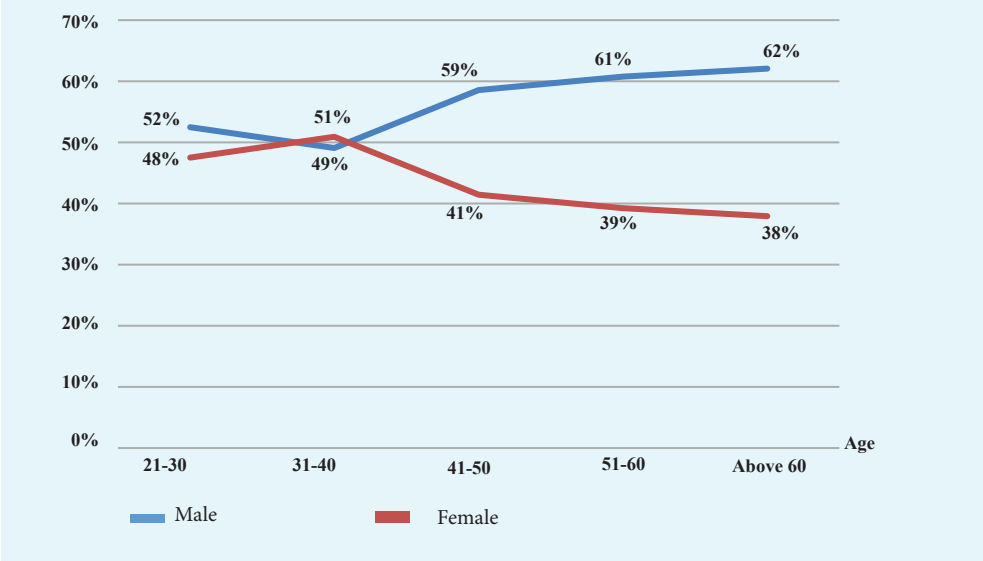
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Table 2.4. Researchers by Age and Gender

Age group	Male	Female	Total
21-30	432	391	823
31-40	932	967	1,899
41-50	1,025	725	1,750
51-60	767	495	1,262
Above 60	144	88	232
Total	3,300	2,666	5,966

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

Figure 2.6. Age and Gender-wise Propotion of Researchers



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

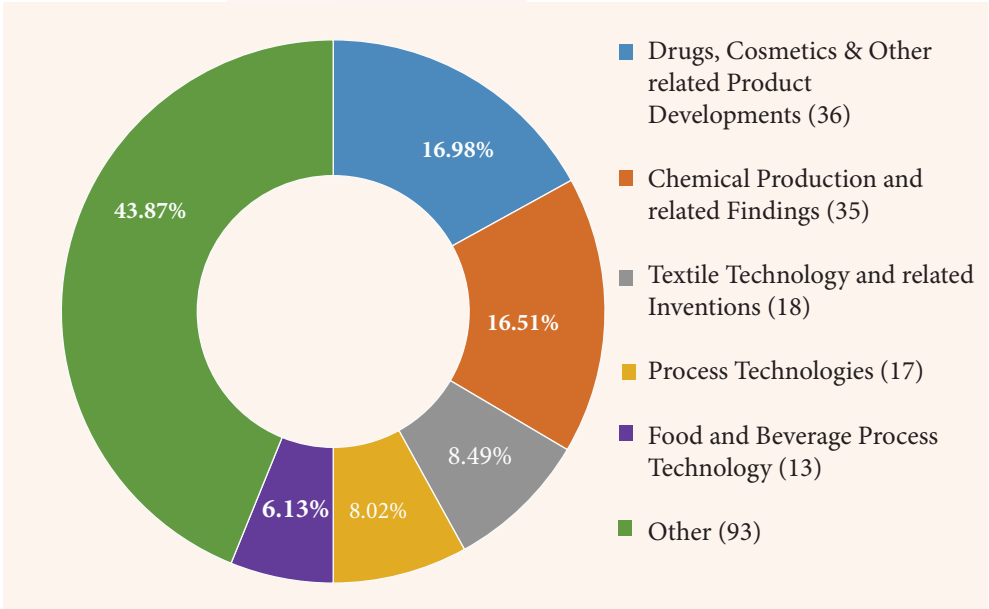
3. Research and Development Outputs in 2018

Table 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)*	86
e)	Number of Industrial Designs Awarded (Non-Resident)*	38
f)	Total Number of Industrial Designs Awarded (d+e)*	124

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

Figure 3.1. Sector-wise Patent Distribution



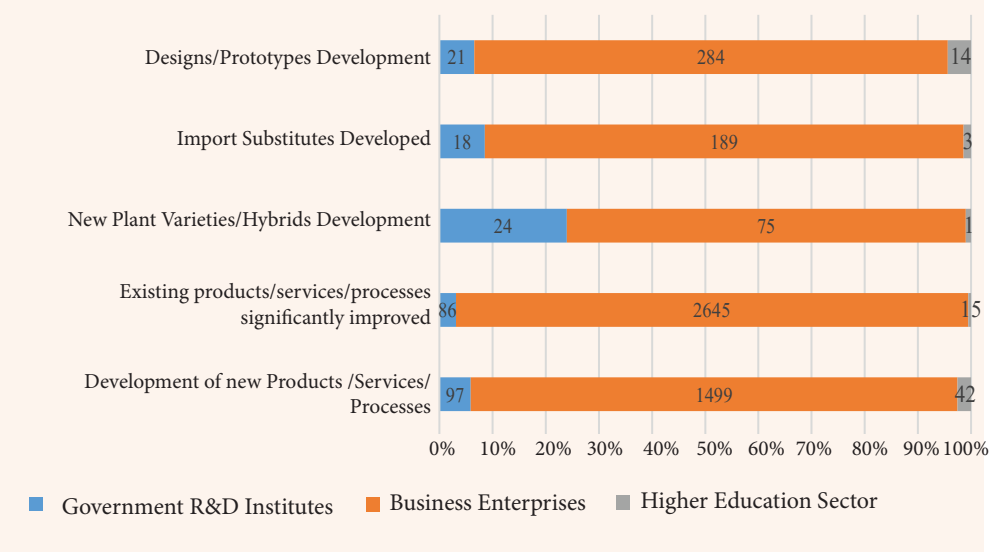
Source: National Intellectual Property Office (NIPO), Sri Lanka

Table 3.2. Innovations

Innovation Type		Developed	Commercialized
a)	Development of New Products/ Services/Processes	1,638	1,106
b)	Existing Products/Services/Processes Significantly Improved	2,746	1,289
c)	New Plant Varieties/Hybrids Developed	100	81
d)	Import Substitutes Developed	210	71
e)	Designs/Prototypes Developed	319	105

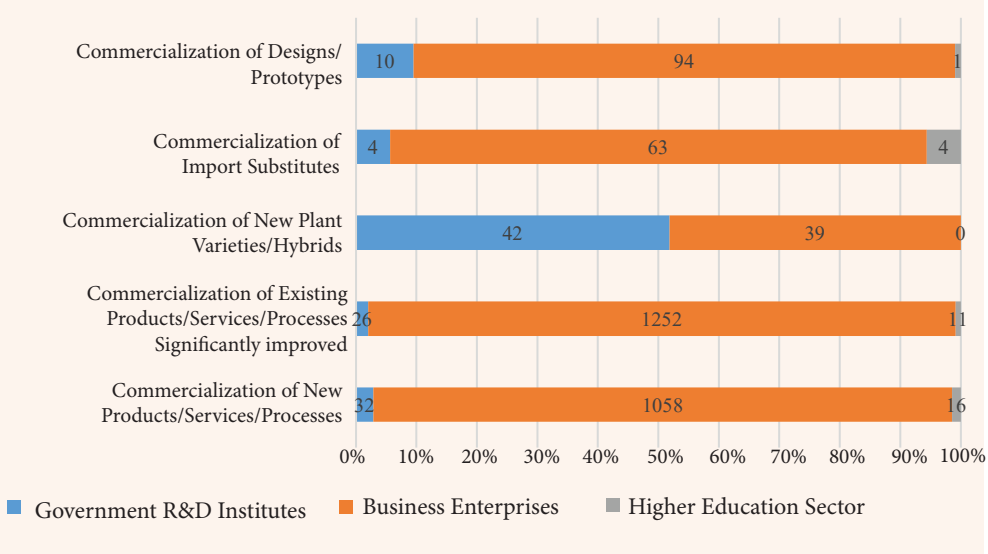
Source: National R&D Survey of Sri Lanka, 2018 (NSF)

Figure 3.3. Introduction of Innovations by Sectors



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

Figure 3.4. Commercialization of Innovations by Sectors



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

DEFINITIONS AND TECHNICAL NOTES

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

1. Research and Experimental 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 (OECD, 2002).

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 (OECD, 2002).

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 (OECD, 2002).

2. Sectors

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

i. Government Organizations that conduct R&D – Full coverage.

ii. Higher Education Institutes - Full coverage.

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) Current cost (labor cost, non-capital purchases of materials, supplies of 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.

National Science Foundation
47/5, Maitland Place
Colombo 07
Sri Lanka.
www.nsf.gov.lk
Tel/Fax : 0112675841