



DEPARTMENT OF SCIENCE & TECHNOLOGY

MINISTRY OF SCIENCE & TECHNOLOGY

GOVERNMENT OF INDIA

NEW DELHI-110016 (INDIA)

S&T INDICATORS TABLES

RESEARCH AND DEVELOPMENT STATISTICS

2019-20

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Table 1
NATIONAL EXPENDITURE ON RESEARCH AND DEVELOPMENT BY SECTOR

Sector	1970-71	1975-76	1980-81	1985-86	1990-91	1995-96	2005-06	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19*
Central Sector	112.47	287.63	580.49	1654.06	3058.27	5199.79	17872.02	33095.18	34021.44	37894.46	38879.89	43094.90	46887.17	50219.42	56920.02	61745.16
State Sector	12.58	26.73	59.34	162.78	365.92	657.02	2334.60	4457.81	5137.56	5282.86	5951.15	6327.32	6447.94	6866.96	7264.81	7742.75
Private Sector	14.59	42.35	120.69	251.94	549.98	1627.07	8471.95	19337.02	23295.71	27096.51	30514.80	32538.39	36022.15	39124.71	41855.88	45562.72
Higher Education Sector							1254.01	3306.74	3506.62	3708.96	4010.05	5512.83	6095.18	6888.17	7784.33	8797.08
Total	139.64	356.71	760.52	2068.78	3974.17	7483.88	29932.58	60196.75	65961.33	73982.79	79355.89	87473.44	95452.44	103099.26	113825.03	123847.71

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. *Estimated

2. Central Sector data includes 103 R&D units of Public Sector/Joint Sector companies.
3. State Sector includes R&D expenditure of State Agricultural Universities and other State Departments/Organisations.
4. The number of R&D units in the Private Sector varies from year to year as per the DSIR recognition and estimation from other sources.
5. Private Sector industries data for the year 2005-06 onwards comprised of R&D units/firms recognised by DSIR and industries/multinational companies from CMIE database not registered with DSIR.
6. Private Sector data for the period 2015-16 to 2017-18 refers to 2504 in-house Private Sector R&D units which include 497 SIRO units.
7. Data for the year 2018-19 has been estimated by applying the rate of growth for the five-year period 2012-13 to 2017-18, sector-wise. In case of Higher Education Sector, growth rate is based on the period 2010-11 to 2015-16.
8. Higher Education Sector data is based on the DST sponsored study on quantification of resources in higher education in India (derived from AISHE database, MHRD) carried out by BHU (2018-19). Higher Education survey started since 2001-02 by DST.
9. Central Sector = Central Government Ministries/Department + Public Sector/Joint Sector industries.

Table 2

NATIONAL EXPENDITURE ON RESEARCH AND DEVELOPMENT BY INSTITUTIONAL AND INDUSTRIAL SECTORS

(Rs. Crore)

Sl. No.	Sector	2015-16	2016-17	2017-18
A	INSTITUTIONAL SECTOR			
1	Institutions under Central Government	42433.33	45513.2	51666.82
2	Institutions under State Government	6447.94	6866.96	7264.81
3	Higher Education	6095.18	6888.17	7784.33
	Total (A)	54976.45	59268.33	66715.96
B	INDUSTRY SECTOR			
4	Industry (Public)	4453.84	4706.22	5253.20
5	Industry (Private)	31709.04	34522.99	36873.49
6	Scientific and Industrial Research Organisation (SIRO)	4313.11	4601.72	4982.39
	Total (B)	40475.99	43830.93	47109.08
	GRAND TOTAL (A+B)	95452.44	103099.26	113825.03

Source : Data collected and compiled by NSTMIS, DST, GoI.

- Note :**
1. State Sector includes R&D expenditure of State Agricultural Universities and other State Departments / Organisations.
 2. Private Sector data for the period 2015-16 to 2017-18 refers to 2504 in-house Private Sector R&D units which include 497 SIRO units.
 3. Higher Education Sector data is based on the DST sponsored study on quantification of resources in higher education in India (derived from AISHE database, MHRD) carried out by BHU (2018-19).

Table 3
NATIONAL EXPENDITURE ON RESEARCH AND DEVELOPMENT
IN RELATION TO GDP

Year	R&D Expenditure current prices (Rs. Crore)	GDP current prices (Rs. Crore)	R&D % of GDP
Series: 2004-05			
1995-96	7483.88	1226725	0.6
1996-97	8913.61	1419277	0.6
1997-98	10611.34	1572394	0.7
1998-99	12473.17	1803378	0.7
1999-00	14397.60	2023130	0.7
2000-01	16198.80	2177413	0.7
2001-02	17038.15	2355845	0.7
2002-03	18088.16	2536327	0.7
2003-04	20086.34	2841503	0.7
2004-05	24117.24	3242209	0.7
2005-06	29932.58	3693369	0.8
2006-07	34238.39	4294706	0.8
2007-08	39437.77	4987090	0.8
2008-09	47353.38	5630063	0.8
2009-10	53041.30	6477827	0.8
2010-11	60196.75	7784115	0.8
Series: 2011-12			
2011-12	65961.33	8736329	0.8
2012-13	73982.79	9944013	0.7
2013-14	79355.89	11233522	0.7
2014-15	87473.44	12467959	0.7
2015-16	95452.44	13771874	0.7
2016-17	103099.26	15362386	0.7
2017-18	113825.03	17095005	0.7
2018-19*	123847.71	19010164	0.7

Source : (i) Data on R&D expenditure collected and compiled by NSTMIS, DST, Gol.
(ii) Data on GDP- Economic Survey 2018-19.

Note : 1. GDP : Gross Domestic Product.
2. R&D : Research & Development.
3. R&D/GDP ratio have been revised as per the new GDP figures.
4. * Estimated

Table 4

NATIONAL EXPENDITURE ON RESEARCH & DEVELOPMENT AT CURRENT AND CONSTANT PRICES

(Rs. Crore)

Year	National Expenditure on Research and Development	
	Current Prices	Constant Prices
Base Year: 2004-05		
1985-86	2068.78	7960.98
1990-91	3974.17	10085.15
1995-96	7483.88	11627.32
1996-97	8913.61	12873.45
1997-98	10611.34	14393.25
1998-99	12473.17	15663.93
1999-00	14397.60	17542.37
2000-01	16198.80	19042.89
2001-02	17038.15	19405.60
2002-03	18088.16	21563.84
2003-04	20086.34	21236.36
2004-05	24117.24	24117.24
2005-06	29932.58	28715.90
2006-07	34238.39	30864.41
2007-08	39437.77	33616.38
2008-09	47353.38	37145.07
2009-10	53041.30	39228.08
2010-11	60196.75	40850.18
Base Year: 2011-12		
2011-12	65961.33	65961.33
2012-13	73982.79	68544.23
2013-14	79355.89	69238.88
2014-15	87473.44	73860.67
2015-16	95452.44	78801.61
2016-17	103099.26	82535.91
2017-18	113825.03	87756.49
2018-19*	123847.71	91712.87

Source : 1. Data collected and compiled by NSTMIS, DST, GoI.
2. Economic Survey 2018-19

Table 5
PUBLIC AND PRIVATE INVESTMENT IN NATIONAL
R&D AND % SHARE IN GDP

(Rs. Crore)

Year	Public Investment in R&D	% share of Public Investment in total R&D	Private Investment in R&D	% share of Private Investment in total R&D	Total Investment in R&D
2004-05	18078.28(0.5)	75.0	6038.96(0.2)	25.0	24117.24(0.7)
2005-06	21460.63(0.6)	71.7	8471.95(0.2)	28.3	29932.58(0.8)
2006-07	23752.81(0.6)	69.4	10485.58(0.2)	30.6	34238.39(0.8)
2007-08	26511.64(0.5)	67.2	12926.14(0.3)	32.8	39437.77(0.8)
2008-09	32987.98(0.5)	69.7	14365.40(0.3)	30.3	47353.38(0.8)
2009-10	37735.75(0.6)	71.1	15305.55(0.2)	28.9	53041.30(0.8)
2010-11	40859.73(0.6)	67.9	19337.02(0.2)	32.1	60196.75(0.8)
2011-12	42665.62(0.5)	64.7	23295.71(0.3)	35.3	65961.33(0.8)
2012-13	46886.28(0.5)	63.4	27096.51(0.3)	36.6	73982.79(0.7)
2013-14	48841.09(0.4)	61.5	30514.80(0.3)	38.5	79355.89(0.7)
2014-15	54935.05(0.4)	62.8	32538.39(0.3)	37.2	87473.44(0.7)
2015-16	59430.29(0.4)	62.3	36022.15(0.3)	37.7	95452.44(0.7)
2016-17	63974.55(0.4)	62.1	39124.71(0.3)	37.9	103099.26(0.7)
2017-18	71969.15(0.5)	63.2	41855.88(0.2)	36.8	113825.03(0.7)
2018-19*	78284.99(0.5)	63.2	45562.72(0.2)	36.8	123847.71(0.7)

Source : Data collected and compiled by NSTMIS, DST, Gol.

Note : 1. *Estimated

2. Public Investments in R&D = Central Government Ministries/Department + Public Sector/joint sector industries+ State Government + Higher Education

3. Number in paranthesis indicate percentage share in GDP.

Table 6

**GOVERNMENT AND BUSINESS ENTERPRISE INVESTMENT IN
NATIONAL R&D AND % SHARE IN GDP**

(Rs. Crore)

Year	Investment in R&D by Government	%	Investment in R&D by Business Enterprises	%	Total GERD
2004-05	16820.40(0.5)	69.7	7296.84(0.2)	30.3	24117.24(0.7)
2005-06	20173.43(0.5)	67.4	9759.15(0.3)	32.6	29932.58(0.8)
2006-07	22287.40(0.5)	65.1	11950.99(0.3)	34.9	34238.39(0.8)
2007-08	24634.39(0.5)	62.5	14803.39(0.3)	37.5	39437.78(0.8)
2008-09	30530.96(0.5)	64.5	16822.42(0.3)	35.5	47353.38(0.8)
2009-10	34921.19(0.5)	65.8	18120.11(0.3)	34.2	53041.30(0.8)
2010-11	37547.92(0.5)	62.4	22648.83(0.3)	37.6	60196.75(0.8)
2011-12	38903.05(0.4)	59.0	27058.28(0.3)	41.0	65961.33(0.8)
2012-13	40568.09(0.4)	54.8	33414.70(0.3)	45.2	73982.79(0.7)
2013-14	44419.34(0.4)	56.0	34936.55(0.3)	44.0	79355.89(0.7)
2014-15	50285.41(0.4)	57.5	37188.03(0.3)	42.5	87473.44(0.7)
2015-16	54976.45(0.4)	57.6	40475.99(0.3)	42.4	95452.44(0.7)
2016-17	59268.33(0.4)	57.5	43830.93(0.3)	42.5	103099.26(0.7)
2017-18	66715.95(0.4)	58.6	47109.08(0.3)	41.4	113825.03(0.7)
2018-19*	72732.36(0.4)	58.7	51115.35(0.3)	41.3	123847.71(0.7)

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. *Estimated

2. Government Investment in R&D = Central Government Ministries/Department + State Government+ Higher Education

3. Business Enterprise/ Industry Investment in R&D= Public sector industry + Private sector industry

4. Number in paranthesis indicate percentage share in GDP.

Table 7
EXPENDITURE ON RESEARCH & DEVELOPMENT BY SELECT MAJOR SCIENTIFIC AGENCIES

(Rs. Crore)

Sl No.	Agency\ Year	1970-71	1980-81	1990-91	2000-01	2005-06	2009-10	2015-16	2016-17	2017-18
1	Council of Scientific & Industrial Research (CSIR)	21.56	69.00	249.19	864.12	1427.04	2666.44	3988.14	4013.06	4582.12
2	Defence Research & Development Organisation (DRDO)	17.55	79.70	681.00	3359.32	5283.35	8475.38	13317.12	13382.05	15195.87
3	Department of Atomic Energy (DAE)	28.72	73.48	275.54	1005.52	1752.50	3858.21	4635.95	4750.39	5208.01
4	Department of Biotechnology (DBT)	–	–	41.37	120.58	325.85	727.38	1210.25	1446.71	1771.65
5	Ministry of Electronics and Information Technology (MEITY) +	–	5.41	33.03	51.07	167.85	327.96	351.51	409.85	386.55
6	Ministry of New and Renewable Energy (MNRE)	–	4.00	16.02	12.27	9.62	26.51	23.11	32.35	34.50
7	Ministry of Earth Sciences (MES) ++	–	–	27.80	84.23	235.48	448.24	839.25	951.24	1123.58
8	Department of Science & Technology (DST)	0.84	40.64	119.82	311.46	1237.05	1986.01	2800.76	3161.54	3526.64
9	Department of Space (DOS)	–	56.02	386.22	1905.40	2667.60	4162.96	6920.01	8040.00	9130.57
10	Indian Council of Agricultural Research (ICAR)	18.37	97.45	276.25	1161.74	1717.27	2881.30	4369.75	4592.95	5355.57
11	Indian Council of Medical Research (ICMR)	2.18	9.00	44.54	149.12	331.00	583.50	918.02	1073.83	1468.70
12	Ministry of Environment, Forest and Climate Change (MoEFCC)	–	3.74	162.09	272.86	235.31	415.57	192.84	220.21	260.87
	Total	89.22	438.44	2312.87	9297.69	15389.92	26559.46	39566.71	42074.18	48044.63

Source : Data collected and compiled by NSTMIS, DST, GoI.

- Note :**
1. Not including Public Sector Research and Development Expenditure.
 2. – Department does not exist during this period.
 3. + Formerly Ministry of Communications & Information Technology
 4. ++ Formerly Department of Ocean Development
 5. Data includes both Plan & Non-Plan R&D Expenditure.

Table 8

**EXPENDITURE ON RESEARCH AND DEVELOPMENT BY CENTRAL
MINISTRIES/DEPARTMENTS OTHER THAN MAJOR SCIENTIFIC AGENCIES**

(Rs. Crore)

S.No.	Ministry/Departments	Research and Development Expenditure		
		2015-16	2016-17	2017-18
1	Agriculture, Cooperation and Farmers' Welfare	2.92	3.26	3.79
2	Animal Husbandry, Dairying and Fisheries	24.02	27.79	23.73
3	AYUSH	260.85	350.31	510.59
4	Chemicals and Petrochemicals	3.11	0.18	4.68
5	Civil Aviation	9.32	6.42	0.65
6	Coal	62.73	65.57	159.65
7	Commerce	113.13	110.95	110.56
8	Consumer Affairs	11.36	11.71	12.91
9	Culture	53.66	59.78	61.25
10	Defence Production	2088.11	2277.07	2814.25
11	Empowerment of Persons with Disabilities	1.46	1.31	1.18
12	Fertilizers	22.85	20.40	17.94
13	Finance	0.79	0.94	1.38
14	Food and Public Distribution	10.43	10.30	8.86
15	Food Processing Industries	58.92	45.93	67.31
16	Health and Family Welfare	317.59	323.00	346.58
17	Health Research	0.50	0.51	0.66
18	Heavy Industry	918.02	997.03	869.4
19	Home Affairs	45.53	13.83	19.70
20	Housing and Urban Affairs	6.65	5.94	5.89
21	Human Resource Development	434.80	552.41	632.94
22	Industrial Policy and Promotion	39.03	50.04	59.84
23	Information and Broadcasting	11.75	11.98	12.22
24	Labor and Employment	8.44	9.20	7.34
25	Micro, Small and Medium Enterprises	20.86	28.84	31.57

Table 8 Contd...

Table 8 (Contd.)
EXPENDITURE ON RESEARCH AND DEVELOPMENT BY CENTRAL
MINISTRIES/DEPARTMENTS OTHER THAN MAJOR SCIENTIFIC AGENCIES

(Rs. Crore)

S.No.	Ministry/Departments	Research and Development Expenditure		
		2015-16	2016-17	2017-18
26	Mines	92.87	126.14	110.12
27	Petroleum and Natural Gas	968.06	1072.23	1061.39
28	Pharmaceuticals	32.29	28.00	28.59
29	Power	336.25	453.69	456.15
30	Public Enterprises	0.60	0.33	0.36
31	Rural Development	60.88	56.03	63.80
32	Social Justice and Empowerment	0.09	0.08	0.05
33	Telecommunications	365.53	427.50	361.69
34	Railways	136.94	167.09	174.08
35	Road Transport and Highways	6.04	6.34	7.30
36	Shipping	3.14	1.05	1.53
37	Skill Development and Entrepreneurship	0.31	0.40	0.09
38	Statistics and Programme Implementation	177.67	189.62	206.29
39	Steel	179.97	198.13	184.83
40	Textiles	235.68	235.22	246.82
41	Water Resources, River Development and Ganga Rejuvenation	80.62	86.16	91.72
42	Public Sector under Major Scientific Agencies	92.39	86.58	70.44
43	Joint Sector including State Undertaking	24.29	25.97	25.28
	Total	7320.45	8145.26	8875.40

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. Data includes both Plan & Non-Plan R&D expenditure.
2. Departments/Ministries with no R&D expenditure are not shown in this Table.

Table 9
EXPENDITURE ON RESEARCH AND DEVELOPMENT BY STATE GOVERNMENTS

(Rs. Crore)

S.No.	State	Research and Development Expenditure		
		2015-16	2016-17	2017-18
1	Andhra Pradesh	493.69	533.43	543.49
2	Assam	276.59	289.58	455.13
3	Bihar	132.79	129.71	53.68
4	Chhattisgarh	169.99	208.57	257.99
5	Gujarat	728.01	755.44	789.52
6	Haryana	285.62	313.30	374.58
7	Himachal Pradesh	140.16	141.15	158.97
8	Jammu & Kashmir	238.17	260.58	290.68
9	Jharkhand	70.88	106.20	91.54
10	Karnataka	369.17	344.57	373.48
11	Kerala	138.90	123.82	160.41
12	Madhya Pradesh	417.93	466.98	488.51
13	Maharashtra	190.09	234.10	221.77
14	Manipur	200.19	113.19	102.00
15	Meghalaya	8.76	8.58	9.01
16	Odisha	130.97	147.26	154.85
17	Punjab	513.68	534.38	551.44
18	Rajasthan	203.55	233.11	192.56
19	Tamil Nadu	589.14	670.51	688.34
20	Telangana	269.89	284.07	276.02
21	Uttar Pradesh	371.87	448.39	471.02
22	Uttarakhand	255.53	253.98	281.41
23	West Bengal	252.36	266.10	278.41
	Total	6447.93	6867.00	7264.81

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. Research & Development Expenditure figures are based on survey response.
2. States/Union Territories with no R&D Expenditure or R&D Units are not shown in this Table.

Table 10
EXPENDITURE ON RESEARCH & DEVELOPMENT BY
COOPERATIVE RESEARCH ASSOCIATIONS

(Rs. Crore)

S.No.	Name	2015-16	2016-17	2017-18
1	Ahmedabad Textile Industry's Research Association	18.44	15.05	13.21
2	Electrical Research & Development Association	64.78	73.29	72.81
3	Indian Jute Industries Research Association	5.18	6.63	7.07
4	Indian Rubber Manufacturers Research Association	11.24	12.51	14.84
5	Man Made Textiles Research Association	3.30	3.96	4.50
6	Northern India Textile Research Association	9.81	10.28	11.20
7	Petroleum Conservation Research Association +	2.51	2.56	3.04
8	The Automotive Research Association of India	153.73	331.13	206.26
9	The Bombay Textile Research Association	7.53	6.29	5.96
10	The Sima Cotton Development & Research Association	0.18	0.16	0.14
11	The South India Textile Research Association	21.30	11.49	12.02
12	The Synthetic & Art Silk Mills' Research Association	16.88	27.77	22.82
13	Tea Research Association ++	28.78	25.37	22.89
14	Wool Research Association	5.85	6.76	6.30
	Total	349.51	533.25	403.06

Source : Data collected and compiled by NSTMIS, DST, Gol.

Note : 1. + Extramural research supported by PCRA.

2. ++ Includes data for all Tea Research Institutes

Table 11
SCIENCE & TECHNOLOGY EXPENDITURE BY TYPE OF
WORK BY CENTRAL AND STATE GOVERNMENTS & SIROS

(Rs. Crore)

Year	Central Government					State Government					Scientific and Industrial Research Organisation					Total				
	Basic Research	Applied Research	Experimental Development	Other Related S&T Activities	Total S&T	Basic Research	Applied Research	Experimental Development	Other Related S&T Activities	Total S&T	Basic Research	Applied Research	Experimental Development	Other Related S&T Activities	Total S&T	Basic Research	Applied Research	Experimental Development	Other Related S&T Activities	Total S&T
2015-16	10753.86	15461.18	16218.29	2083.38	44516.71	1254.04	3381.05	1812.85	1001.64	7449.58	1379.13	2094.11	839.86	792.15	5105.25	13387.03	20936.34	18871.00	3877.17	57071.54
2016-17	11730.44	16817.11	16965.65	2389.47	47902.67	1344.43	3582.53	1940.00	1054.06	7921.02	1420.33	2272.58	908.82	862.87	5464.60	14495.20	22672.22	19814.47	4306.40	61288.29
2017-18	13440.85	18991.71	19234.26	2640.10	54306.92	1400.86	3859.36	2004.59	1115.25	8380.06	1545.79	2440.57	996.03	872.45	5854.84	16387.50	25291.64	22234.88	4627.80	68541.82

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. R&D : Research and Development = Basic Research + Applied Research + Experimental Development.
2. S&T : Science and Technology = R&D + Other related S&T activities.

Table 12
EXPENDITURE ON RESEARCH AND DEVELOPMENT BY OBJECTIVES

(Rs. Crore)

S. No.	OBJECTIVE	Central Government			State Government			Private Sector			Public Sector			Total		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1	Defence	13317.12	13382.05	15195.87	-	-	-	197.55	303.68	227.46	1998.92	2186.89	2698.48	15513.59	15872.62	18121.81
2	Development of Agriculture, Forestry and Fishing	4401.11	4631.34	5390.82	5659.56	6002.88	6395.32	1346.87	1486.60	1515.50	10.82	7.12	10.12	11418.36	12127.94	13311.76
3	Education	559.01	575.33	636.89	729.10	798.90	808.27	552.97	596.36	654.51	-	-	-	1841.08	1970.59	2099.67
4	Energy	3273.37	3412.31	3640.02	-	-	-	2291.88	2437.38	2687.88	1398.00	1362.33	1438.26	6963.25	7212.02	7766.16
5	Environment	325.90	331.28	367.86	-	-	-	177.77	164.63	181.36	0.89	1.41	1.50	504.56	497.32	550.72
6	Exploration and Exploitation of Space	7143.97	8256.55	9340.46	-	-	-	0.65	0.37	0.35	-	-	-	7144.62	8256.92	9340.81
7	Exploration and Exploitation of the Earth	1012.20	1078.58	1207.36	-	-	-	25.73	33.45	39.28	625.66	695.44	679.31	1663.59	1807.47	1925.95
8	General Advancement of Knowledge	5507.75	6052.98	7045.76	-	-	-	556.90	523.63	582.57	2.87	1.53	1.04	6067.52	6578.14	7629.37
9	Health	3087.97	3559.26	4444.87	9.72	9.61	11.11	13132.74	15000.09	15175.97	13.25	11.32	9.75	16243.68	18580.28	19641.70
10	Industrial Production and Technology	1541.17	1586.70	1748.77	-	-	-	7331.05	7871.91	8386.12	211.14	245.80	200.20	9083.36	9704.41	10335.09
11	Political & Social Systems, Structures & Processes (including socio-economic services)	-	-	-	25.56	32.09	30.28	10.69	10.80	10.19	-	-	-	36.25	42.89	40.47
12	Transport, Telecommunication and other Infrastructures	539.45	651.64	599.88	6.50	7.78	6.01	6960.41	7284.84	8394.27	167.46	168.78	142.53	7673.82	8113.04	9142.69
13	Other Aims	1724.31	1995.19	2048.27	17.50	15.69	13.83	3098.76	3055.89	3627.57	24.84	25.60	72.02	4865.41	5092.37	5761.69
	Total	42433.33	45513.21	51666.83	6447.94	6866.95	7264.82	35683.97	38769.63	41483.03	4453.85	4706.22	5253.21	89019.09	95856.01	105667.89

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. R&D expenditure on Higher Education Sector is not included.

2. Private Sector includes Scientific and Industrial Research Organisations (SIROs).

3. Objectives Standardised as per UNESCO Classification.

4. - represent 'NIL'.

Table 13
RESEARCH AND DEVELOPMENT EXPENDITURE, ADVERTISING EXPENDITURE, NEW PLANT AND MACHINERY EXPENDITURE VERSUS SALES TURNOVER IN PUBLIC AND PRIVATE SECTOR INDUSTRIES

Year	Research and Development Expenditure		Advertising Expenditure		New Plant Machinery Expenditure		Sales Turnover		Research and Development Expenditure as % of Sales Turnover		Advertising Expenditure as % of Sales Turnover		New Plant Machinery Expenditure as % of Sales Turnover	
	(Rs. Crore)		(Rs. Crore)		(Rs. Crore)		(Rs. Crore)		(%)		(%)		(%)	
	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector	Private Sector
2015-16	4453.84	31370.87	492.96	17007.86	55646.06	86520.59	1490941.24	2136108.39	0.30	1.47	0.03	0.80	3.73	4.05
2016-17	4706.22	34167.91	591.86	16278.68	46821.70	113115.04	1598305.60	2272581.47	0.29	1.50	0.04	0.72	2.93	4.98
2017-18	5253.20	36500.65	728.73	16465.06	57635.67	71134.22	1788862.07	2471337.93	0.29	1.48	0.04	0.67	3.22	2.88

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. Data for Public Sector refers to 103 industrial R&D units.

2. Data for Private Sector refers to 2007 industrial R&D units excluding SIROs.

Table 14

**EXPENDITURE ON RESEARCH AND DEVELOPMENT BY
PUBLIC/JOINT SECTOR UNDERTAKINGS 2017-18**

Ministry/Department/State	Public/Joint Sector Undertaking	R&D Expenditure (Rs. Crore)	R&D Expenditure as % of S.T.O.
Agriculture, Cooperation and Farmers' Welfare	National Seeds Corporation Ltd.	-	-
Atomic Energy	Electronics Corporation of India Ltd.	25.76	1.84
	IREL (India) Ltd.	3.87	0.67
	Nuclear Power Corporation of India Ltd.	31.06	0.25
	Uranium Corporation of India Ltd.	1.81	0.10
Biotechnology	Bharat Immunologicals & Biologicals Corporation Ltd.	0.49	1.40
Chemicals and Petrochemicals	HIL (India) Ltd. (Formerly, Hindustan Insecticides Ltd.)	4.68	1.18
Civil Aviation	Airports Authority of India	0.65	0.01
Coal	Central Coalfields Ltd.	0.38	0
	Central Mine Planning & Design Institute Ltd.	70.74	6.13
	Coal India Ltd.	70.74	0.06
	NLC India Ltd.	15.37	0.18
	The Singareni Collieries Company Ltd.	2.42	0.01
Defence Production	BEML Ltd. (Formerly Bharat Earth Movers Ltd.)	102.04	3.09
	Bharat Dynamics Ltd.	40.22	0.88
	Bharat Electronics Ltd.	1022.39	10.14
	Garden Reach Shipbuilders & Engineers Ltd.	22.40	1.67
	Goa Shipyard Ltd.	10.09	0.69
	Hindustan Aeronautics Ltd. (Consolidated)	1520.97	8.31
	Hindustan Shipyard Ltd.	5.57	0.86
	Mazagon Dock Shipbuilders Ltd.	75.11	1.71
	Mishra Dhatu Nigam Ltd.	15.46	2.32
Empowerment of Persons with Disabilities	Artificial Limbs Manufacturing Corporation of India	0.71	0.31
Fertilizers	FCI Aravali Gypsum and Minerals India Ltd.	-	-
	Gujarat State Fertilizers & Chemicals Ltd. Fertilizer Unit	9.57	0.15
	Indian Farmers Fertiliser Cooperative Ltd., Kalol	0.06	0
	National Fertilizers Ltd.	0.25	0
	Paradeep Phosphates Ltd.	0.54	0.01
	Rashtriya Chemicals & Fertilizers Ltd.	2.78	0.04
	The Fertilizers and Chemicals Travancore Ltd.	1.14	0.06
Finance	Security Printing and Minting Corporation of India Ltd.	1.38	0.03

Table 14 (Contd.)
EXPENDITURE ON RESEARCH AND DEVELOPMENT BY
PUBLIC/JOINT SECTOR UNDERTAKINGS 2017-18

Ministry/Department/State	Public/Joint Sector Undertaking	R&D Expenditure (Rs. Crore)	R&D Expenditure as % of S.T.O.
Food and Public Distribution	Central Warehousing Corporation	0.28	0.02
Health and Family Welfare	HLL Lifecare Ltd. (HLL) (formely Hindustan Latex Ltd.)	5.87	0.55
Heavy Industry	Andrew Yule & Co. Ltd.	0.17	0.05
	Bharat Heavy Electricals Ltd.	646.66	2.32
	Bridge and Roof Company (India) Ltd.	0.10	0.50
	Heavy Engineering Corporation Ltd.	0.94	0.24
	HMT Machine Tools Ltd.	1.73	0.93
	NEPA Ltd.	1.48	1.29
	Rajasthan Electronics & Instruments Ltd.	2.36	0.97
	Sambhar Salts Ltd.	0.06	0.31
	Scooters India Ltd.	0.20	0.39
Housing and Urban Affairs	Housing and Urban Development Corporation Ltd.	1.04	0.03
Mines	Hindustan Copper Ltd.	1.58	0.10
	Mineral Exploration Corporation Ltd.	0.61	0.16
	National Aluminium Company Ltd.	27.96	0.29
Petroleum and Natural Gas	Balmer Lawrie & Company Ltd.	7.58	0.41
	Bharat Petroleum Corporation Ltd.	95.66	0.03
	Chennai Petroleum Corporation Ltd. (Madras Refineries Ltd.)	11.51	0.03
	Engineers India Ltd.	14.35	0.80
	Gail (India) Ltd.	28.88	0.05
	Hindustan Petroleum Corporation Ltd.	232.78	0.10
	Indian Oil Corporation Ltd.	3.09	0
	Oil & Natural Gas Corporation Ltd.	605.87	0.71
	Oil India Ltd.	58.63	0.55
Pharmaceuticals	Hindustan Antibiotics Ltd.	1.40	4.44
	Karnataka Antibiotics & Pharmaceuticals Ltd.	1.27	0.36
Power	National Thermal Power Corporation Ltd.	129.68	0.16
	NHPC Ltd.	5.52	0.08
	North Eastern Electric Power Corporation Ltd.	0.27	0.02
	Power Grid Corporation Ltd.	59.76	0.19
	THDC India Ltd.	4.82	0.22
Public Enterprises	Hindustan Newsprint Ltd.	0.36	0.14
Scientific and Industrial Research	Central Electronics Ltd.	7.45	3.37

Table 14 (Contd.)
EXPENDITURE ON RESEARCH AND DEVELOPMENT BY
PUBLIC/JOINT SECTOR UNDERTAKINGS 2017-18

Ministry/Department/State	Public/Joint Sector Undertaking	R&D Expenditure (Rs. Crore)	R&D Expenditure as % of S.T.O.
Shipping	Cochin Shipyard Ltd.	0.22	0.01
	Kamarajar Port Ltd.	1.30	0.21
Steel	KIOCL Ltd.	0.31	0.02
	MECON Ltd.	0.71	0.16
	MOIL Ltd. (Formely Manganese Ore India Ltd.)	9.64	0.73
	NMDC (Formerly National Mineral Development Corporation)	25.67	0.22
	Rashtriya Ispat Nigam Ltd.	20.06	0.12
	Research & Development Centre for Iron & Steel (RDCIS), SAIL	118.93	0.20
	Steel Authority of India Ltd. Alloy Steel Plant	9.52	1.47
Telecommunications	Indian Telephone Industries	22.76	1.34
Textiles	National Textile Corporation (Tamil Nadu and Pondicherry) Ltd.	0.28	0.05
Gujarat	Gujarat Alkalies & Chemicals Ltd.	2.15	0.09
	Gujarat Insecticides Ltd.	1.50	0.55
	Gujarat Narmada Valley Fertilizers and Chemicals Ltd.	1.72	0.03
Haryana	Haryana Leather Chemicals Ltd.	0.61	1.73
	Haryana State Electronics Development Corporation Ltd.	3.74	6.44
Karnataka	Hutti Gold Mines Co. Ltd.	0.04	0.01
	Karnataka Soaps & Detergents Ltd.	0.65	0.13
Kerala	Keltron Component Complex Ltd.	0.11	0.18
	Kerala Electrical & Allied Engg. Co. Ltd.	0.04	0.04
	Kerala Minerals & Metals Ltd.	1.40	0.19
	Travancore Titanium Products Ltd	1.70	0.98
Maharashtra	Haffkine Bio-Pharmaceutical Corporation Ltd.	0.07	0.04
	Maharashtra State Seeds Corporation Ltd.	0.59	0.11
Tamil Nadu	Tamil Nadu Co-Operative Sugar Federation Ltd.	0.58	74.44
	Tamil Nadu Newsprint & Papers Ltd.	9.31	0.28
Uttar Pradesh	Pradeshik Cooperative Dairy Federation Ltd.	0.05	0
West Bengal	Webel Mediatronics Ltd.	0.19	1.33
	Webfil Ltd.	0.83	1.99
	Total	5253.25	0.29

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. R&D : Research and Development.
2. S.T.O. : Sales Turnover.
3. - represents 'NIL'.

Table 15

EXPENDITURE ON RESEARCH AND DEVELOPMENT BY INDUSTRY GROUPS
FOR PUBLIC SECTOR

Sl. No.	Industry Group	No. of R&D Units	R&D Expenditure					
			(Rs. Crore)			as % of S.T.O.		
			2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1	Agricultural Machinery	2	0.76	1.23	0.59	0.06	0.08	0.04
2	Bio-technology	1	0.12	0.12	0.07	0.05	0.05	0.04
3	Boilers & Steam Generating Plants	1	129.68	162.28	129.68	0.18	0.21	0.16
4	Chemicals (other than fertilizers)	9	17.54	13.15	15.64	0.19	0.13	0.13
5	Consultancy Services	4	42.97	41.66	90.52	0.86	0.86	1.64
6	Defence Industries	18	2021.49	2199.00	2712.22	9.05	9.15	9.99
7	Drugs & Pharmaceuticals	3	2.09	2.85	3.15	0.44	0.55	0.75
8	Earth Moving Machinery	1	66.61	78.07	102.05	1.95	2.75	3.09
9	Electricals & Electronics	10	95.66	94.97	102.30	0.30	0.25	0.25
10	Fertilizers	7	19.86	17.13	14.34	0.03	0.04	0.03
11	Food Processing Industries	1	0.05	0.05	0.05	0.00	0.00	0.00
12	Fuels	13	1023.25	1123.63	1163.99	0.09	0.09	0.08
13	Industrial Equipment	3	2.09	1.23	2.41	0.15	0.09	0.17
14	Industrial Machinery	1	749.10	648.86	646.64	2.99	2.62	2.32
15	Machine Tools	1	1.65	1.93	1.73	0.74	0.95	0.93
16	Medical & Surgical Appliances	2	11.69	9.02	6.57	0.95	0.70	0.50
17	Metallurgical Industries	10	198.04	246.81	208.64	0.27	0.30	0.21
18	Paper & Pulp	3	9.72	10.94	11.15	0.30	0.29	0.30
19	Scientific Instruments	1	4.21	3.57	3.74	8.72	6.91	6.44
20	Soaps, Cosmetics, Toilet Preparations	1	0.54	0.48	0.65	0.15	0.12	0.13
21	Sugar	1	0.68	0.67	0.57	57.63	64.42	74.03
22	Telecommunications	1	33.61	33.25	22.76	2.68	2.06	1.34
23	Textiles (Dyed, Printed, Processed)	1	0.39	0.46	0.28	0.06	0.07	0.05
24	Transportation	2	9.59	6.65	0.85	0.09	0.06	0.01
25	Miscellaneous Industries	6	12.49	8.28	12.66	0.10	0.06	0.09
	Total	103	4453.88	4706.29	5253.25	0.30	0.29	0.29

Source : Data collected and compiled by NSTMIS, DST, Gol.

Note : 1. S.T.O : Sales Turnover.

2. R&D : Research and Development.

3. R&D intensity in Sugar industry is very high due to low Sales Turnover

Table 16

**EXPENDITURE ON RESEARCH AND DEVELOPMENT BY
INDUSTRY GROUPS FOR PRIVATE SECTOR**

S.No.	Industry Group	No. of R&D Units	R&D Expenditure					
			(Rs. Crore)			as % of S.T.O.		
			2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1	Agricultural Machinery	98	697.03	777.57	831.69	1.66	1.73	1.73
2	Bio-technology	163	1052.67	1075.28	1071.30	4.52	5.57	5.55
3	Boilers & Steam Generating Plants	6	50.66	51.07	68.21	0.84	0.94	1.24
4	Cement & Gypsum Products	18	77.74	74.71	94.44	0.11	0.10	0.11
5	Ceramics	16	36.39	38.23	48.19	0.28	0.29	0.36
6	Chemicals (other than fertilizers)	224	2437.86	2813.85	3004.56	1.50	1.67	1.60
7	Commercial, Office, Household Equipment	13	132.75	152.74	170.46	0.52	0.55	0.59
8	Consultancy Services	9	27.66	28.74	26.35	5.04	4.65	3.79
9	Defence Industries	23	112.58	117.86	140.25	3.43	2.91	3.66
10	Drugs & Pharmaceuticals	313	8832.96	10294.44	10159.11	4.59	5.21	4.96
11	Dyestuffs	14	14.07	15.30	30.11	0.25	0.25	0.49
12	Earth Moving Machinery	12	53.13	94.30	149.41	0.51	0.48	0.69
13	Electricals & Electronics	215	1737.60	1768.45	1935.47	0.62	0.60	0.61
14	Fermentation Industries	5	12.37	11.42	13.04	0.05	0.04	0.05
15	Fertilizers	16	37.79	38.38	44.03	0.18	0.20	0.20
16	Food Processing Industries	90	248.00	280.92	245.86	0.31	0.35	0.32
17	Fuels	10	39.91	45.10	51.32	0.27	0.30	0.28
18	Glass	2	0.11	0.13	0.21	0.05	0.06	0.08
19	Glue & Gelatine	2	18.14	5.28	5.83	3.36	0.93	0.93
20	Industrial Equipment	66	362.82	402.92	470.49	0.93	1.00	1.14
21	Industrial Machinery	63	186.27	171.39	201.52	1.34	1.37	1.49
22	Information Technology	34	3209.52	3210.62	3625.17	2.75	2.45	2.58
23	Leather, Leather goods & Pickers	8	18.30	18.85	18.03	0.30	0.31	0.27
24	Machine Tools	24	121.41	125.68	142.16	0.97	0.93	0.93
25	Math Surveying & Drawing Instruments	1	1.57	1.60	2.07	5.55	5.15	6.47
26	Medical & Surgical Appliances	35	983.20	1176.57	1277.97	16.71	18.97	19.89
27	Metallurgical Industries	58	173.00	216.09	263.90	0.08	0.08	0.08
28	Miscellaneous Mechanical Engineering Industries	76	2599.43	2766.83	3122.67	3.02	2.97	3.11

Table 16 (Contd.)
EXPENDITURE ON RESEARCH AND DEVELOPMENT BY
INDUSTRY GROUPS FOR PRIVATE SECTOR

S.No.	Industry Group	No. of R&D Units	R&D Expenditure					
			(Rs. Crore)			as % of S.T.O.		
			2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
29	Paper & Pulp	16	21.25	32.22	51.57	0.16	0.27	0.39
30	Prime Movers	4	106.38	153.70	151.10	2.00	2.74	2.66
31	Rubber Goods	37	472.95	707.26	647.50	0.75	1.27	1.11
32	Scientific Instruments	13	13.13	13.77	16.15	3.03	2.85	3.35
33	Soaps, Cosmetics, Toilet Preparations	13	278.17	308.91	283.26	0.39	0.41	0.32
34	Sugar	11	93.63	87.58	97.99	0.69	0.63	0.68
35	Telecommunications	13	179.13	187.76	202.90	7.65	7.68	9.33
36	Textiles (Dyed, Printed, Processed)	51	228.43	242.80	262.20	0.38	0.41	0.42
37	Timber Products	1	0.21	0.37	0.53	0.23	0.42	0.59
38	Transportation	100	6096.48	6061.18	6848.96	1.87	1.72	1.79
39	Vegetable Oil & Vanaspati	2	1.62	1.41	2.27	0.08	0.07	0.10
40	Miscellaneous Industries	132	604.68	596.79	722.49	0.66	0.61	0.68
	Total	2007	31371.00	34168.07	36500.74	1.47	1.50	1.48

Source : Data collected and compiled by NSTMIS, DST, Gol.

Note : 1. S.T.O : Sales Turnover.

2. R&D : Research and Development.

Table 17
RESEARCH AND DEVELOPMENT EXPENDITURE BY
MULTINATIONAL ENTERPRISES

(Rs. Crore)

Type of Multinational Enterprises	No. of R&D Units	2015-16	2016-17	2017-18
Private Sector- India	261	11981.27	13358.2	13162.74
Private Sector- Foreign	146	5351.96	5266.52	6089.04
Public Sector	5	1063.88	1089.57	1110.84
Total	412	18397.11	19714.29	20362.62

Source : Data collected and compiled by NSTMIS, DST, Gol.

Table 18

NATIONAL EXPENDITURE ON R&D BY ECONOMIC ACTIVITY

(Rs. Crore)

Sl. No.	Economic Activity	NIC Code	Research & Development Expenditure		
			2015-16	2016-17	2017-18
1	Agriculture, Forestry and Fishing	1	9158.72	9618.42	10734.75
2	Mining and Quarrying	5	194.05	212.88	279.82
3	Manufacture of Food Products	10	311.87	354.32	330.17
4	Manufacture of Beverages	11	19.44	21.24	25.65
5	Manufacture of Tobacco Products	12	20.38	18.91	17.39
6	Manufacture of Textiles	13	280.40	283.53	304.43
7	Manufacture of Wearing Apparel	14	34.79	33.95	38.51
8	Manufacture of Leather and Related Products	15	134.40	137.16	143.96
9	Manufacture of Wood and of Products of Wood & Cork, except Furniture	16	4.63	5.83	6.80
10	Manufacture of Paper and Paper Products	17	181.94	194.44	214.62
11	Manufacture of Coke and Refined Petroleum Products	19	826.50	969.29	959.09
12	Manufacture of Chemicals and Chemical Products	20	3354.15	3870.04	3970.88
13	Manufacture of Basic Pharmaceutical Products and Pharmaceutical Preparations	21	8628.65	10039.44	10105.92
14	Manufacture of Rubber and Plastic Products	22	610.88	841.73	792.11
15	Manufacture of Other Non-Metallic Mineral Products	23	41.86	43.17	47.15
16	Manufacture of Basic Metals	24	93.44	162.24	152.86
17	Manufacture of Fabricated Metal Products, except Machinery and Equipment	25	99.49	113.04	136.83
18	Manufacture of Computer, Electronic and other Optical Products	26	1633.55	1760.09	1983.94
19	Manufacture of Electrical Equipment	27	1140.80	1308.47	1358.62
20	Manufacture of Machinery and Equipment NEC	28	1895.20	1938.63	2014.05
21	Manufacture of Motor Vehicles, Trailers and Semi-Trailers	29	8083.99	8176.04	9207.98
22	Manufacture of Other Transport Equipment	30	437.62	568.62	648.28
23	Other Manufacturing	32	1773.95	1605.49	1968.27
24	Repair and Installation of Machinery and Equipment	33	2.17	2.43	19.19
25	Electricity, Gas, Steam and Air Conditioning Supply	35	139.48	87.48	131.70
26	Water Supply, Sewerage, Waste Management and Remediation activities	36	12.97	16.35	16.28
27	Construction	41	94.54	131.26	211.54
28	Transportation and Storage	49	157.67	91.49	122.43

Table 18 Contd...

Table 18 (Contd.)
NATIONAL EXPENDITURE ON R&D BY ECONOMIC ACTIVITY

(Rs. Crore)

Sl. No.	Economic Activity	NIC Code	Research & Development Expenditure		
			2015-16	2016-17	2017-18
29	Professional, Scientific and Technical Activities	69	35598.44	37960.86	42554.88
30	Public Administration and Defence, Compulsory Social Security	84	622.25	697.79	953.37
31	Education	85	3789.62	4102.06	4328.20
32	Human Health and Social Work Activities	86	4150.07	4682.29	5344.17
33	Service Sector	90	2740.55	2642.15	3202.29
34	Others	91	2750.65	3165.07	3341.79
	Total		89019.11	95856.20	105667.92

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : 1. National R&D Expenditure by Economic Activity comprises of Central Government, State Government, Private, Public Sector, Scientific and Industrial Research Organisations (SIROs).
2. Break-up of Higher Education Sector by economic activity is not available.

Table 19

GOVERNMENT EXPENDITURE ON R&D BY ECONOMIC ACTIVITY

(Rs. Crore)

Sl.No.	Economic Activity	NIC Code	Research & Development Expenditure			
			Units	2015-16	2016-17	2017-18
1	Agriculture, Forestry and Fishing	1	160	8279.42	8666.08	9747.76
2	Mining and Quarrying	5	4	111.95	127.97	138.81
3	Manufacture of Food Products	10	2	13.99	16.78	25.76
4	Manufacture of Textiles	13	8	126.77	111.41	123.38
5	Manufacture of Leather and Related Products	15	1	101.29	116.43	124.6
6	Manufacture of Wood and of Products of Wood & Cork, except Furniture	16	1	4.42	5.46	6.27
7	Manufacture of Paper and Paper Products	17	1	10.22	10.95	13.11
8	Manufacture of Coke and Refined Petroleum Products	19	1	2.51	2.56	3.04
9	Manufacture of Chemicals and Chemical Products	20	1	91.30	93.14	76.70
10	Manufacture of Basic Pharmaceutical Products and Pharmaceutical Preparations	21	2	0.29	0.32	0.35
11	Manufacture of Rubber and Plastic Products	22	2	42.46	43.32	48.11
12	Manufacture of Basic Metals	24	2	11.93	10.47	14.85
13	Manufacture of Electrical Equipment	27	1	158.76	249.65	256.10
14	Other Manufacturing	32	1	0.01	0.01	0.01
15	Construction	41	1	27.80	37.54	45.00
16	Transportation and Storage	49	1	5.51	6.38	3.91
17	Professional, Scientific and Technical Activities	69	103	33522.66	35800.86	40322.29
18	Education	85	49	3191.79	3453.48	3637.67
19	Human Health and Social Work Activities	86	49	1500.89	1837.84	2257.97
20	Service Sector	90	14	349.20	301.09	324.61
21	Others	91	39	1328.19	1488.62	1761.34
	Total		443	48881.36	52380.36	58931.64

Source : Data collected and compiled by NSTMIS, DST, GoI.

Note : Government includes Major Scientific Agencies, Central Ministries/Departments and State Governments.

Table 20

INDUSTRIAL SECTOR EXPENDITURE ON R&D BY ECONOMIC ACTIVITY

(Rs. Crore)

Sl.No.	Economic Activity	NIC Code	No.of R&D Units	Research & Development Expenditure		
				2015-16	2016-17	2017-18
1	Agriculture, Forestry and Fishing	1	225	879.30	952.34	986.99
2	Mining and Quarrying	5	18	82.10	84.91	141.01
3	Manufacture of Food Products	10	82	297.88	337.54	304.41
4	Manufacture of Beverages	11	6	19.44	21.24	25.65
5	Manufacture of Tobacco Products	12	5	20.38	18.91	17.39
6	Manufacture of Textiles	13	51	153.63	172.12	181.05
7	Manufacture of Wearing Apparel	14	2	34.79	33.95	38.51
8	Manufacture of Leather and Related Products	15	8	33.11	20.73	19.36
9	Manufacture of Wood and of Products of Wood & Cork, except Furniture	16	1	0.21	0.37	0.53
10	Manufacture of Paper and Paper Products	17	21	171.72	183.49	201.51
11	Manufacture of Coke and Refined Petroleum Products	19	8	823.99	966.73	956.05
12	Manufacture of Chemicals and Chemical Products	20	245	3262.85	3776.90	3894.18
13	Manufacture of Basic Pharmaceutical Products and Pharmaceutical Preparations	21	298	8628.36	10039.12	10105.57
14	Manufacture of Rubber and Plastic Products	22	58	568.42	798.41	744.00
15	Manufacture of Other Non-Metallic Mineral Products	23	7	41.86	43.17	47.15
16	Manufacture of Basic Metals	24	24	81.51	151.77	138.01
17	Manufacture of Fabricated Metal Products, except Machinery and Equipment	25	34	99.49	113.04	136.83
18	Manufacture of Computer, Electronic and other Optical Products	26	63	1633.55	1760.09	1983.94
19	Manufacture of Electrical Equipment	27	135	982.04	1058.82	1102.52
20	Manufacture of Machinery and Equipment n.e.c	28	165	1895.20	1938.63	2014.05
21	Manufacture of Motor Vehicles, Trailers and Semi-Trailers	29	64	8083.99	8176.04	9207.98
22	Manufacture of Other Transport Equipment	30	41	437.62	568.62	648.28
23	Other Manufacturing	32	273	1773.94	1605.48	1968.26
24	Repair and Installation of Machinery and Equipment	33	2	2.17	2.43	19.19
25	Electricity, Gas, Steam and Air Conditioning Supply	35	12	139.48	87.48	131.70
26	Water Supply, Sewerage, Waste Management and Remediation activities	36	12	12.97	16.35	16.28

Table 20 Contd...

Table 20 (Contd.)
INDUSTRIAL SECTOR EXPENDITURE ON R&D BY ECONOMIC ACTIVITY

(Rs. Crore)

Sl.No.	Economic Activity	NIC Code	No.of R&D Units	Research & Development Expenditure		
				2015-16	2016-17	2017-18
27	Construction	41	20	66.74	93.72	166.54
28	Transportation and Storage	49	13	152.16	85.11	118.52
29	Professional, Scientific and Technical Activities	69	170	2075.78	2160.00	2232.59
30	Public Administration and Defence, Compulsory Social Security	84	22	622.25	697.79	953.37
31	Education	85	106	597.83	648.58	690.53
32	Human Health and Social Work Activities	86	197	2649.18	2844.45	3086.20
33	Service Sector	90	43	2391.35	2341.06	2877.68
34	Others	91	176	1422.46	1676.45	1580.45
	Total		2607	40137.75	43475.84	46736.28

Source : Data collected and compiled by NSTMIS, DST, Gol.

Note : Industrial Sector comprises of Private Sector (2007), Public Sector (103) and Scientific and Industrial Research Organisations (497).

Table 21

**FULL TIME EQUIVALENT OF MANPOWER EMPLOYED IN R&D
ESTABLISHMENTS AS ON 01.04.2018**

(Number)

	Name of Establishment	Personnel Engaged in			Total (1+2+3)
		R&D Activities (1)	Auxiliary Activities (2)	Administrative Activities (3)	
1.	INSTITUTIONAL SECTOR				
	A. GOVERNMENT INSTITUTIONS				
	a. Major Scientific Agencies	53891	34149	34125	122165
	b. Central Government Ministries / Departments	8790	11495	10144	30429
	c. State Governments/UT	16376	9828	22590	48794
	Total Government Institutions (A=a+b+c)	79057	55472	66859	201388
	B. HIGHER EDUCATION SECTOR	124702	–	–	124702
	TOTAL INSTITUTIONAL SECTOR (1= A+B)	203759	55472	66859	326090
2.	INDUSTRIAL SECTOR				
	a. Public Sector including Joint Sector	9291	1480	1264	12035
	b. Private Sector	107003	23741	24745	155489
	c. Scientific and Industrial Research Organisation (SIRO)	21765	18131	19459	59355
	Private Sector + SIRO (b+c)	128768	41872	44204	214844
	TOTAL INDUSTRIAL SECTOR (2= a+b+c)	138059	43352	45468	226879
	Total (1+2)	341818	98824	112327	552969

Source : Data collected and compiled by NSTMIS, DST, GoI.

- Note :**
1. Data for Industrial Sector refers to 2607 in-house R&D units including 2007 Private Sector industries, 103 Public Sector industries and 497 SIRO units.
 2. R&D : Research and Development.
 3. - Not available
 4. Data includes Part Time (FTE) of manpower employed in R&D establishments.

Table 22

**FULL TIME EQUIVALENT OF WOMEN EMPLOYED IN R&D
ESTABLISHMENTS AS ON 01.04.2018**

(Number)

	Name of Establishment	Personnel Engaged in			Total (1+2+3)
		R&D Activities (1)	Auxilliary Activities (2)	Administrative Activities (3)	
1	INSTITUTIONAL SECTOR				
	A. GOVERNMENT INSTITUTIONS				
	a. Major Scientific Agencies	10138	5789	7081	23008
	b. Central Government Ministries / Departments	2073	3659	2376	8108
	c. State Governments/UT	3957	2250	6072	12279
	Total Government Institutions (A=a+b+c)	16168	11698	15529	40457
	B. HIGHER EDUCATION SECTOR	16211	-	-	16211
	TOTAL INSTITUTIONAL SECTOR (1= A+B)				
2	INDUSTRIAL SECTOR				
	a. Public Sector including Joint Sector	1527	157	273	1957
	b. Private Sector	15011	2815	2525	20351
	c. Scientific and Industrial Research Organisation (SIRO)	7830	7790	6777	22397
	Private + SIRO (b+c)	22841	10605	9302	42748
	TOTAL INDUSTRIAL SECTOR (2= a+b+c)	24368	10762	9575	44705
	Total (1+2)	56747 (16.6%)	22460 (22.7%)	25104 (22.3)	104311 (18.8%)

Source : Data collected and compiled by NSTMIS, DST, Gol.

Note : 1. Data for Industrial Sector refers to 2607 in-house R&D units including 2007 Private Sector industries, 103 Public Sector industries and 497 SIRO units.

2. R&D : Research and Development.

3. - Not available

Table 23**FIELD OF SPECIALIZATION OF FULL TIME PERSONNEL EMPLOYED IN R&D
AS ON 01.04.2018****(Number)**

Field of Specialization	Male	Female	Transgender	Total
Agricultural Sciences	20010	5823	0	25833
Engineering Technology	103944	17587	0	121531
Medical Sciences	24255	7888	0	32143
Natural Sciences	24860	7232	0	32092
Social Sciences	3510	2006	1	5517
Total	176579	40536	1	217116

Source : Data collected and compiled by NSTMIS, DST, Gol.

Note : Data analysed is based on the Survey response. Data includes all sectors except Higher Education. In case of Higher Education, field of specialization of full time personnel employed in R&D is not available.

Table 24
UNIVERSITIES/COLLEGES AND THEIR ENROLMENT
FROM 1976-77 TO 2018-19

(Number)

Year	Universities	Institutions/Deemed to be Universities	Colleges	Total Enrolment
1976-77	105	9	4317	2431563
1977-78	108	9	4375	2564972
1978-79	108	10	4460	2618228
1979-80	112	10	4558	2648579
1980-81	116	12	4722	2752437
1981-82	120	12	4880	2952066
1982-83	125	14	5039	3133093
1983-84	126	14	5246	3307649
1984-85	132	16	5590	3404096
1985-86	136	17	5816	3605029
1986-87	143	21	6040	3757158
1987-88	144	22	6685	4020159
1988-89	145	27	6773	4285489
1989-90	149	28	7145	4602680
1990-91	150	29	7346	4924868
1991-92	155	31	7761	5265886
1992-93	159	31	7993	5534966
1993-94	163	34	8441	5817249
1994-95	168	36	9019	6113929
1995-96	171	37	9252	6574005
1996-97	172	38	9940	6842598
1997-98	182	39	10678	7260418
1998-99	182	40	11397	7705520
1999-00	189	42	11865	8050607
2000-01	193	47	12806	8399443
2001-02	196	52	15437	8964680
2002-03	200	81	16206	9516773
2003-04	213	89	16742	10201981
2004-05	229	96	18080	11038543
2005-06	241	101	19327	12043050
2006-07	249	109	21170	13163054

Table 24 Contd...

Table 24 (Contd.)
UNIVERSITIES/COLLEGES AND THEIR ENROLMENT
FROM 1976-77 TO 2018-19

(Number)

Year	Universities	Institutions/Deemed to be Universities	Colleges	Total Enrolment
2007-08	272	103	23206	14400381
2008-09	300	128	25951	15768417
2009-10	363	130	31812	17243352
2010-11	621	131	32974	27499749
2011-12	642	128	34852	29184331
2012-13	667	127	35525	30152417
2013-14	723	127	36634	32336234
2014-15	760	122	38498	34211637
2015-16	799	122	39071	34584781
2016-17	864	122	40026	35705905
2017-18	903	123	39050	36642378
2018-19	993	124	39931	37399388

Source : UGC Annual Reports and AISHE, MHRD Survey Reports.

Note : 1. Series revised from 2010-11 as per the various AISHE, MHRD survey reports.

2. The number of Universities since 2010-11 onwards also include Institutions of National Importance.

3. Figures of students enrolment pertain to regular/distance mode courses in universities and colleges including Standalone Institutions such as polytechnics, Institutes under central ministries, Nursing Institutes, Teacher training Institutes etc awarding diploma and certificate.

Table 25
FACULTY- WISE ENROLMENT IN HIGHER EDUCATION FROM 2001-02 TO 2018-19

(Thousand)

Course of Study / Discipline	2001-02		2005-06		2010-11		2014-15		2015-16		2016-17		2017-18		2018-19	
	Enrolment	% of total	Enrolment	% of total	Enrolment	% of total	Enrolment	% of total	Enrolment	% of total	Enrolment	% of total	Enrolment	% of total	Enrolment	% of total
A. Science and Technology																
Science	1739.1	19.4	2255.2	20.5	1801.0	11.1	4608.9	15.1	4930.7	15.7	5350.1	16.5	5509.3	16.8	5357.3	16.3
Engineering/ Technology	618.6	6.9	795.1	7.2	3024.0	18.7	5515.8	18.0	5472.0	17.4	5322.1	16.4	5194.5	15.9	5024.7	15.3
Medicine	277.9	3.1	348.5	3.2	433.3	2.7	932.6	3.1	1035.3	3.3	1123.7	3.5	1251.8	3.8	1363.9	4.2
Agriculture	89.6	1.0	64.0	0.6	95.0	0.6	194.5	0.6	215.3	0.7	265.6	0.8	270.7	0.8	290.3	0.9
Veterinary Science	17.9	0.2	16.5	0.2	1.1	0.0	14.4	0.0	16.1	0.1	18.7	0.1	22.5	0.1	23.8	0.1
Total (A)	2743.2	30.6	3479.3	31.5	5354.4	33.0	11266.3	36.9	11669.3	37.2	12080.2	37.3	12248.8	37.5	12059.8	36.8
B. Other Discipline																
	6221.5	69.4	7548.7	68.5	10856.8	67.0	19297.4	63.1	19695.1	62.8	20325.2	62.7	20447.3	62.5	20712.1	63.2
Total (A+B)	8964.7	100.0	11028.0	100.0	16211.2	100.0	30563.7	100.0	31364.4	100.0	32405.5	100.0	32696.1	100.0	32771.9	100.0

Source : University Grants Commission (UGC), Annual Reports and AISHE, MHRD Survey reports

Note : Figures for 2010-11 onwards are taken from AISHE, MHRD Survey Reports and pertains only to UG, PG, M.Phil and Ph.D disciplines based on the actual survey response which also excludes courses conducted by standalone institutions. Hence, the total of faculty-wise figures will not match with the overall enrolment figures.

Table 26

FACULTY-WISE ENROLMENT OF WOMEN IN HIGHER EDUCATION FROM 2001-02 TO 2018-19

(Thousand)

Year	Science & Technology Disciplines						
	Science	Engg.	Med.	Agri.	Vety. Sc.	Other Discipline	Total
	(1)	(2)	(3)	(4)	(5)	(5)	
2001-02	699.4	131.8	123.0	9.1	3.2	2547.9	3514.4
	(40.2)	(21.3)	(44.3)	(10.2)	(17.8)	(41.0)	(39.2)
2005-06	901.3	185.9	162.6	10.8	3.6	3202.6	4466.8
	(40.0)	(23.4)	(46.7)	(16.9)	(21.8)	(42.4)	(40.5)
2010-11	853.0	916.4	225.6	24.9	0.5	5051.3	7071.7
	(47.36)	(30.3)	(52.0)	(26.2)	(43.6)	(46.5)	(43.6)
2011-12	1183.7	1274.0	360.3	25.4	4.2	6126.2	8974.0
	(49.2)	(32.0)	(59.0)	(26.6)	(30.8)	(49.0)	(45.7)
2012-13	1458.0	1465.3	405.7	36.3	4.7	7484.1	10854.2
	(49.1)	(31.8)	(58.6)	(26.7)	(33.2)	(50.2)	(46.5)
2013-14	1796.8	1682.3	489.9	48.6	4.8	8687.9	12710.4
	(48.4)	(31.8)	(59.3)	(29.6)	(34.9)	(50.6)	(46.8)
2014-15	2207.2	1747.0	552.8	51.3	5.0	9865.7	14429.1
	(47.9)	(31.7)	(59.2)	(26.4)	(34.5)	(51.1)	(47.2)
2015-16	2388.0	1718.0	619.3	59.3	5.8	10119.3	14909.8
	(48.4)	(31.4)	(59.8)	(27.6)	(36.2)	(51.4)	(47.5)
2016-17	2622.1	1673.6	678.1	75.5	6.9	10563.5	15619.6
	(49.0)	(31.4)	(60.3)	(28.4)	(37.1)	(52.0)	(48.2)
2017-18	2757.0	1642.2	758.0	78.9	8.4	10617.9	15862.4
	(50.0)	(31.6)	(60.5)	(29.2)	(37.6)	(51.9)	(48.5)
2018-19	2804.8	1600.7	823.1	89.1	9.2	10933.3	16260.3
	(52.4)	(31.9)	(60.3)	(30.7)	(38.7)	(52.8)	(49.6)

Source : University Grants Commission (UGC), Annual Reports and AISHE, MHRD Survey reports

Note : 1. Figure in paranthesis indicates % share of women enrolled against total enrolment by discipline in respective year.

2. Agri.: Agriculture; Vety. Sc.: Veterinary Sciences; Engg.: Engineering and Technology; Med.: Medicine

3. Figures for 2010-11 onwards are taken from AISHE, MHRD Survey Reports and pertains only to UG, PG, M.Phil and Ph.D disciplines based on the actual survey response which also excludes courses conducted by standalone institutions. Hence, the total of faculty-wise figures will not match with the overall enrolment figures.

Table 27
PUBLIC EXPENDITURE ON EDUCATION AND
GROSS DOMESTIC PRODUCT (GDP)

(Rs. Crore)

Year	GDP at Current price (at Factor cost)	Total Expenditure on Education by Education & other Departments	Expenditure on Education by Education & other Departments as % of GDP
1951-52	10080	64.46	0.64
1960-61	16220	239.56	1.48
1970-71	42222	892.36	2.11
1980-81	130178	3884.20	2.98
1990-91	510964	19615.85	3.84
2000-01	1991982	82486.48	4.14
2005-06	3390503	113228.71	3.34
2006-07	3953276	137383.99	3.48
2007-08	4582086	155797.27	3.40
2008-09	5303567	189068.84	3.56
2009-10	6108903	241256.02	3.95
2010-11	7248860	293478.23	4.05
2011-12	8736039	333930.38	3.82
2012-13	9946636	368132.87	3.70
2013-14(RE)	11236635	433640.59	3.86
2014-15(BE)	12433749	502929.34	4.04

Source : Education Statistics at a Glance, 2016, MHRD, Gol (website: <http://mhrd.gov.in/statist>)

Note : 1. RE: Revised Estimate, BE: Budget Estimate
2. GDP Base Year has been revised since 2004-05

Table 28

DOCTORATE DEGREES AWARDED FACULTY-WISE, 2010-11 TO 2017-18

(Number)

Faculty	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Science	5271	6334	6641	7018	7617	7636	8914	10055
Engineering/Technology	1682	2173	2119	2533	4340	5470	5289	7659
Medicine	601	638	756	819	1395	1021	1422	1606
Agriculture	586	677	738	871	1690	1350	4465	4748
Veterinary Science	162	189	204	241	204	283	298	406
Total S&T- (A)	8302	10011	10458	11482	15246	15760	20388	24474
Others- (B)	7791	9850	9817	11367	12081	11911	14012	16339
Total (A+B)	16093	19861	20275	22849	27327	27671	34400	40813
Faculty	% in Science & Technology (S&T) Disciplines							
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Science	63.5	63.3	63.5	61.1	50.0	48.5	43.7	41.1
Engineering/Technology	20.3	21.7	20.3	22.1	28.5	34.7	25.9	31.3
Medicine	7.3	6.4	7.2	7.1	9.1	6.5	7.0	6.6
Agriculture	7.1	6.8	7.1	7.6	11.1	8.6	21.9	19.4
Veterinary Science	2.0	1.9	2.0	2.1	1.3	1.8	1.5	1.7
Total (S&T) - A	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Source : University Grants Commission (UGC), Annual Reports and AISHE, MHRD Survey reports

Note : Engineering/Technology includes IT & Computer; Science includes Fisheries Science, Marine Science/Oceanography; Others includes Arts, Commerce, Law, Education, Library & Information Science; Music, Performing/Visual Arts, Journalism & Mass Communication, Physical Education & Social Work etc.

Table 29
DOCTORAL DEGREE AWARDED BY SELECT
COUNTRY AND FIELD, 2016 (OR MOST RECENT YEAR)

(Number)

SI No.	Country	All fields	All S&E	Physical/ Biological Sciences	Mathematics/ Computer Sciences	Agricultural Sciences	Engineering	Social and Behavioural Sciences	Non-S&E
		(1)=2+8	(2)=3+4+5+6+7	(3)	(4)	(5)	(6)	(7)	(8)
1	United States	69,525	39,710	16,466	1,951	1,003	10,582	9,708	29,815
2	China (2015)	53,778	34,440	10,978	0.0	2,549	18,729	2,184	19,338
3	India (2018)	40,813	24,474	11,661	#	5,154	7,659	@	16,339
4	Germany	29,303	15,871	8,382	1,021	898	3,710	1,860	13,432
5	United Kingdom	27,366	15,757	7,763	1,136	334	3,965	2,559	11,609
6	Russia	27,212	14,376	3,781	1,860	1,045	5,222	2,468	12,836
7	Brazil	20,605	10,469	3,143	332	2,389	3,061	1,544	10,136
8	France	13,016	9,564	5,788	630	0.0	1,757	1,389	3,452
9	Spain	14,694	8,373	4,706	775	248	1,141	1,503	6,321
10	Japan	15,804	7,391	2,316	0.0	881	3,440	754	8,413
11	South Korea	13,882	6,557	1,861	154	286	3,519	737	7,325
12	Italy	9,803	5,656	2,346	477	499	1,796	538	4,147
13	Canada	7,768	5,556	2,083	251	248	1,632	1,341	2,212
14	Australia	9,089	5,285	1,988	346	406	1,502	1,043	3,804
15	Turkey	6,052	3,004	1,207	34	210	1,088	465	3,048
16	Mexico	9,268	2,654	792	65	233	716	848	6,614
17	Switzerland	3,935	2,441	1,253	120	122	627	319	1,494
18	Sweden	3,533	2,188	745	177	81	927	258	1,345
19	Taiwan	3,623	2,128	556	51	89	1,244	188	1,495
20	South Africa	2,536	1,313	616	51	121	221	304	1,223
21	Israel	1,570	1,151	680	62	23	176	210	419
22	Romania	2,260	1,070	237	53	134	417	229	1,190

Source : 1. Science and Engineering Indicators 2020, NSF,USA
2. Data for India taken from- UGC Annual Report 2017-18 and AISHE,MHRD Survey reports

Note : 1. S&E-Science and Engineering, Non-S&E includes Arts,Commerce, Law,Education etc
2. India- Physical and Biological Sciences includes Science & Medicine; Agricultural Sciences includes Veterinary Science
3. #- Mathematics/Computer Sciences merged in physical/biological sciences ; @- merged with Non-S&E
4. Figure in bracket represent data year for China and India. For other countries data year is 2016.
5. Countries are ranked based on the Doctoral degrees in S&E field.

Table 30
TOP 15 REGIONS, COUNTRIES, OR ECONOMIES OF ORIGIN OF U.S.
DOCTORATE RECIPIENTS ON TEMPORARY VISAS, BY FIELD: 2000–17

Region, country, or economy	All fields	All S&E fields	Engineering	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Mathematics	Medical and other health sciences	Physical sciences	Psychology	Social sciences	Non-S&E
All regions, countries, or economies of origin (212 regions, countries, or economies) ^b	246,126(100)	210,053	72,416	7,886	34,142	13,785	4,732	11,889	7,750	28,671	4,186	24,596	36,073
Top 15 regions, countries, or economies of origin	186,134(76)	161,769	59,915	5,201	26,962	10,701	3,395	8,896	5,688	21,678	2,955	16,378	24,365
China ^b	71,864(29)	66,690	24,714	1,748	11,879	4,962	1,623	4,874	1,492	10,923	598	3,877	5,174
India	31,069(13)	29,050	12,222	775	5,933	2,399	343	756	1,396	3,432	274	1,520	2,019
South Korea	23,697(10)	18,160	7,476	584	2,132	941	272	851	663	1,804	454	2,983	5,537
Taiwan	12,036(5)	9,127	3,253	250	1,823	419	143	368	713	937	258	963	2,909
Canada	8,178(3)	5,765	955	168	1,219	220	200	282	322	671	664	1,064	2,413
Turkey	7,959(3)	6,629	2,814	226	590	451	78	338	50	662	144	1,276	1,330
Thailand	4,928(2)	4,261	1,665	359	496	212	36	137	469	366	32	489	667
Iran	4,522(2)	4,345	3,113	43	179	307	49	132	37	324	20	141	177
Japan	4,011(2)	2,991	443	76	433	82	83	94	164	335	179	1,102	1,020
Mexico	3,700(2)	3,131	831	402	440	114	110	190	73	287	36	648	569
Germany	3,523(1)	2,746	474	70	447	169	123	213	63	469	134	584	777
Brazil	2,828(1)	2,352	420	307	444	137	81	126	149	113	46	529	476
Russia	2,827(1)	2,496	382	16	342	136	77	279	17	863	44	340	331
Italy	2,582(1)	1,998	502	44	208	98	83	151	22	314	38	538	584
Colombia	2,410(1)	2,028	651	133	397	54	94	105	58	178	34	324	382

Source : Science and Engineering Indicators 2020, National Science Foundation, special tabulations (2018) of the 2017 Survey of Earned Doctorates (SED).

Note : 1. ^a Excludes cases with unknown region, country, or economy of origin.

2. ^b China includes Hong Kong

3. Data include temporary residents and non-U.S. citizens with unknown visa status. Rank is based on total number of doctorates.

4. Figures in parenthesis represents percentage

Table 31
RESEARCHERS PER MILLION INHABITANTS (FTE)
FOR SELECT COUNTRIES, 2017

SI No	Country	Reseachers Per Million People	Population in Million	Number of Researchers
1	Australia	4539	24.58	100414
2	Brazil	888	207.83	179989
3	Canada	4264	36.73	155128
4	China	1225	1421.02	1740442
5	Denmark	7899	5.73	45277
6	Finland	6722	5.51	37047
7	France	4450	64.84	288579
8	Germany	5003	82.66	413542
9	Hungary	2922	9.73	28426
10	India	255	1338.68	341818
11	Israel	8342	8.24	63521
12	Italy	2245	60.67	136204
13	Japan	5304	126.99	676292
14	Malaysia	2397	31.10	73537
15	Mexico	252	124.78	29921
16	Netherlands	5011	17.02	85300
17	New Zealand	4052	4.70	18700
18	Norway	6489	5.30	34367
19	Pakistan	336	207.91	69769
20	Philippines	106	105.17	10791
21	Republic of Korea	7498	51.10	383100
22	Russian Federation	2822	145.53	410617
23	Singapore	6636	5.71	36666
24	South Africa	492	57.01	27656
25	Spain	2855	46.65	133195
26	Sri Lanka	106	21.13	2216
27	Sweden	7597	9.90	75247
28	Switzerland	5272	8.46	43740
29	United Kingdom	4341	66.73	289674
30	United States of America	4245	325.15	1371290
31	Venezuela	300	29.40	8963
	World	1198	7510.99	9042285

Source : UNESCO & World Bank website accessed March, 2020 ; India-R&D Statistics 2019-20, DST, Gol.

Note : S&T Indicator- Reference years:

1. Researcher per Million People : 2016-Canada, Malaysia, South Africa, USA, Venezuela
2015- New Zealand, Sri Lanka, Switzerland; Philipines; 2014- Brazil, Singapore; 2013-Mexico, 2012- Israel;
2010- Australia
2. Researchers (FTE) : 2016- Canada, Malaysia, South Africa, USA, Venezuela;
2015- New Zealand, Philippines, Switzerland, Sri Lanka;
2014- Singapore, Brazil; 2013- Mexico; 2012-Israel; 2010-Australia
3. Population : Japan, USA & World data from World Bank ; other countries data-UNESCO

Table 32
R&D EXPENDITURE PER CAPITA AND GDP FOR
SELECT COUNTRIES, 2017 (IN PPP US\$)

SI No.	Country	R&D Expenditure (billion current PPP \$)	R&D Exp. as % of GDP	Per capita R&D (current PPP \$)	Per capita GDP (current PPP \$)	R&D per Researcher, FTE ('000 current PPP \$)
1	Australia	21.2	1.9	883.8	49653.7	205
2	Brazil	41.1	1.3	197.9	15662.2	234
3	Canada	27.2	1.6	746.7	46723.3	178
4	China	499.1	2.1	351.2	16782.2	287
5	Denmark	9.6	3.1	1670.5	54356.5	211
6	Finland	7.0	2.8	1277.1	46349.0	190
7	France	64.7	2.2	997.4	44255.9	224
8	Germany	131.3	3.0	1588.9	52574.3	318
9	Hungary	3.8	1.3	390.7	28798.6	134
10	India	63.2	0.7	47.2	7169.0	185
11	Israel	15.4	4.5	1867.0	38867.8	164
12	Italy	33.5	1.4	552.8	40981.3	246
13	Japan	170.9	3.2	1340.4	41959.0	253
14	Malaysia	12.4	1.4	404.9	30004.1	169
15	Mexico	11.3	0.5	91.3	19432.2	344
16	Netherlands	18.6	2.0	1090.6	54503.1	218
17	New Zealand	2.1	1.2	460.2	40438.6	114
18	Norway	6.9	2.1	1307.1	62182.8	201
19	Pakistan	2.6	0.2	12.4	5249.2	37
20	Philippines	1.2	0.2	12.0	8340.3	114
21	Republic of Korea	91.0	4.6	1780.5	38824.1	237
22	Russian Fed.	41.9	1.1	287.7	25766.9	102
23	Singapore	11.1	2.2	1965.0	96552.6	276
24	South Africa	6.1	0.8	108.5	13464.2	220
25	Spain	21.9	1.2	469.8	39037.4	165
26	Sri Lanka	0.3	0.1	12.9	12878.6	122
27	Sweden	17.2	3.3	1736.7	51404.8	229
28	Switzerland	17.9	3.4	2152.0	66299.6	408
29	United Kingdom	49.3	1.7	739.5	44896.3	170
30	USA	543.2	2.8	1671.1	59927.9	376
31	Venezuela	1.8	0.3	61.0	12640.7	224
	World	2192.4	1.7	290.5	17117.2	242

Source : UNESCO & World Bank website accessed March, 2020 ; India-R&D Statistics 2019-20, DST, Gol.

Note : S&T Indicator- Reference years:

- R&D Exp.(billion current PPP): 2016- Malaysia, Mexico, Singapore, South Africa; 2015-Australia, New Zealand, Sri Lanka, Switzerland, Philippines; 2014- Venezuela
- R&D Exp/GDP(%): 2016- Malaysia, Mexico, Singapore, South Africa; 2015- Australia, Philippines, New Zealand, Sri Lanka, Switzerland; 2014- Venezuela
- Per capita R&D ('curr PPP \$) : 2016- Malaysia, Mexico, Singapore, South Africa; 2015- Australia, New Zealand, Philippines, Sri Lanka, Switzerland ; 2014-Venezuela
- R&D per Researcher, FTE ('000 curr PPP \$) : 2016- Canada, Malaysia, South Africa, USA; 2015- New Zealand, Philippines, Sri Lanka, Switzerland; 2014-Brazil, Singapore, Venezuela; 2013- Mexico; 2012- Israel; 2010-Australia
- Per Capita GDP : Venezuela and World data from World Bank

Table 33

SCIENCE AND ENGINEERING (S&E) ARTICLES IN ALL FIELDS, FOR REGIONS, COUNTRIES, OR ECONOMIES (NSF): 2008 AND 2018

(Number)

Rank	Region, country, or economy	2008	2018	Average annual growth rate, 2008–18 (%)
1	China	249,049	528,263	7.81
2	United States	393,979	422,808	0.71
3	India	48,998	135,788	10.73
4	Germany	91,904	104,396	1.28
5	Japan	108,241	98,793	-0.91
6	United Kingdom	91,358	97,681	0.67
7	Russia	31,798	81,579	9.88
8	Italy	56,157	71,240	2.41
9	South Korea	44,094	66,376	4.17
10	France	66,460	66,352	-0.02
11	Brazil	35,490	60,148	5.42
12	Canada	53,296	59,968	1.19
13	Spain	44,191	54,537	2.13
14	Australia	37,174	53,610	3.73
15	Iran	17,034	48,306	10.99
16	European Union	528,938	622,125	1.64
	World	1,755,850	2,555,959	3.83

Source : National Science Foundation (NSF); Science-Metrix; Elsevier, Scopus abstract and citation database, accessed June 2019. Science and Engineering Indicators 2020

Note : 1 The countries or economies are ranked based on the 2018 total.
 2 Article counts refer to publications from peer-reviewed journals and conference proceedings in S&E and indexed in Scopus.
 3 Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) of the author(s) listed in the article. Articles are credited on a fractional-count basis

Table 34
SCIENTIFIC RESEARCH PUBLICATION TREND
(SCOPUS DATABASE), 2011-2016

(Number)

Sl No.	Country	2011	2012	2013	2014	2015	2016	% of World Share 2016	Rank 2016	2011-2016 CAGR
1	USA	525,626	538,357	548,182	557,395	552,803	546,548	21.8	1	0.8%
2	China	382,648	399,833	440,356	475,780	443,892	469,441	18.7	2	4.2%
3	UK	143,318	149,165	155,373	158,951	160,891	162,005	6.5	3	2.5%
4	Germany	140,260	147,978	150,139	154,975	153,289	154,809	6.2	4	2.0%
5	India	90,864	99,974	106,957	121,516	128,021	136,238	5.4	5	8.4%
6	Japan	123,653	123,689	124,893	121,401	115,060	115,541	4.6	6	-1.3%
7	France	100,330	104,144	107,387	108,758	106,737	106,557	4.2	7	1.2%
8	Italy	79,978	85,938	91,502	95,315	96,785	97,665	3.9	8	4.1%
9	Canada	81,766	85,724	87,691	90,134	89,640	89,806	3.6	9	1.9%
10	Australia	64,522	68,560	75,037	79,699	80,699	81,862	3.3	10	4.9%
11	Spain	71,428	75,959	78,030	81,044	79,309	80,253	3.2	11	2.4%
12	Korea	64,163	68,324	71,787	75,408	77,443	77,215	3.1	12	3.8%
13	Russia	42,075	42,662	47,137	55,949	64,769	75,595	3.0	13	12.4%
14	Brazil	51,609	56,863	59,748	63,396	64,220	67,012	2.7	14	5.4%
15	Netherlands	45,404	48,960	50,033	51,250	50,973	51,619	2.1	15	2.6%
16	Iran	38,472	39,677	40,563	43,009	42,820	49,500	2.0	16	5.2%
17	Polland	31,310	34,213	36,816	39,293	40,313	41,806	1.7	17	6.0%
18	Turkey	32,686	33,838	36,548	37,175	39,314	41,405	1.6	18	4.8%
19	Switzerland	33,828	36,387	37,931	39,427	39,792	39,938	1.6	19	3.4%
20	Taiwan	41,657	41,518	41,998	40,110	36,183	34,770	1.4	20	-3.5%
	World	2,287,619	2,366,688	2,458,422	2,549,937	2,491,007	2,511,702	100.0		1.9%

Source : NSTMIS, DST Commissioned Study, Elsevier (SCOPUS), 2019

Note : India retains the 5th position globally in research publications during 2017 and 2018 as per Advanced Trends, Elsevier (SCOPUS), 2019

Table 35

**TOP 10 COUNTRIES, SCIENTIFIC RESEARCH PUBLICATION ADVANCED
TREND (SCOPUS DATABASE), 2017-2018**

Sl No.	Country	Number of Publications 2017	Rank 2017	Number of Publications 2018	Rank 2018
1	USA	681,318	1	685,639	1
2	China	536,970	2	605,797	2
3	UK	209,849	3	212,696	3
4	Germany	179,230	4	179,914	4
5	India	154,306	5	171,879	5
6	Japan	131,385	6	132,135	6
7	France	123,044	7	121,265	7
8	Italy	118,173	8	120,507	8
9	Canada	108,304	9	111,640	9
10	Australia	101,758	10	106,044	10

Source : NSTMIS, DST Commissioned Study, Elsevier (SCOPUS), 2019

Table 36

INDIA'S PUBLICATION OUTPUT AND SHARE IN WORLD BY FIELD OF SCIENCE (SCOPUS DATABASE), 2011-16

(Number)

Field of Science	2011-2016	World	% Share in World Output
Agricultural & Biological Sciences	59,127	1,182,998	5.0
Biochemistry, Genetics & Molecular Biology	86,456	1,773,237	4.9
Chemical Engineering	45,976	671,451	6.8
Chemistry	91,605	1,289,921	7.1
Computer Science	115,263	1,862,957	6.2
Earth & Planetary Sciences	25,808	676,953	3.8
Energy	27,835	513,134	5.4
Engineering	155,556	3,132,574	5.0
Environmental Science	40,458	763,564	5.3
Immunology & Microbiology	17,746	408,455	4.3
Materials Science	84,969	1,519,868	5.6
Mathematics	45,377	1,025,437	4.4
Medicine	117,056	3,765,625	3.1
Pharmacology, Toxicology & Pharmaceutics	64,254	486,266	13.2
Physics & Astronomy	94,683	1,817,569	5.2
Veterinary	8,809	119,836	7.4
All fields	683,570	14,665,375	4.7

Source: NSTMIS, DST Commissioned Study, 2019, Elsevier, SCOPUS Database

Table 37
SCIENTIFIC PUBLICATION OUTPUT TREND BY
SELECT COUNTRIES (SCI DATABASE), 2011-16

(Number)

SI No.	Country	2011	2012	2013	2014	2015	2016	% Share of World 2016	CAGR 2011-16
1	USA	367,493	380,423	394,642	401,761	407,638	411,363	26.2	2.3
2	China	162,968	188,460	222,401	256,655	287,702	312,983	20.0	13.9
3	United Kingdom	101,502	106,209	112,833	113,058	118,878	122,764	7.8	3.9
4	Germany	96,501	100,733	104,714	105,658	108,863	110,928	7.1	2.8
5	Japan	77,777	78,548	80,171	78,648	77,943	79,010	5.0	0.3
6	France	67,878	70,195	73,171	73,166	75,272	76,197	4.9	2.3
7	Canada	59,477	62,406	65,372	66,713	68,503	69,374	4.4	3.1
8	Italy	55,823	59,312	64,075	65,541	67,672	69,332	4.4	4.4
9	Australia	45,645	49,691	55,139	58,764	62,713	64,904	4.1	7.3
10	India	47,081	49,607	54,529	59,311	61,825	64,267	4.1	6.4
11	Spain	50,886	54,493	57,056	57,982	58,856	59,425	3.8	3.2
12	South Korea	45,723	49,898	52,340	55,210	58,260	58,930	3.8	5.2
13	Brazil	36,019	38,523	40,127	41,622	43,517	45,781	2.9	4.9
14	Netherlands	34,068	36,734	38,643	39,238	40,274	41,343	2.6	3.9
15	Russia	29,193	28,562	29,906	31,030	35,309	35,505	2.3	4.0
16	Switzerland	24,805	26,588	28,179	29,138	30,256	31,559	2.0	4.9
17	Turkey	24,047	25,695	26,888	27,518	29,056	30,710	2.0	5.0
18	Sweden	21,691	23,507	25,177	26,210	27,298	28,479	1.8	5.6
19	Taiwan	27,335	27,756	28,274	27,764	26,650	25,979	1.7	-1.0
20	Saudi Arabia	5,885	7,701	9,546	11,910	13,704	14,699	0.9	20.1
21	Mexico	10,572	11,414	12,200	12,789	13,749	14,457	0.9	6.5
22	South Africa	9,521	10,287	11,030	12,184	13,057	13,932	0.9	7.9
23	Argentina	8,176	8,555	8,831	8,868	9,265	9,170	0.6	2.3
24	Indonesia	1,218	1,422	1,651	1,776	1,966	2,258	0.1	13.1
	World	1,308,375	1,376,849	1,453,771	1,498,240	1,546,276	1,568,706	100.0	3.7

Source : NSTMIS, DST Commissioned Study 2019, Clarivate, Web of Science-SCI database

Table 38
TOP 10 COUNTRIES, SCIENTIFIC PUBLICATION
OUTPUT ADVANCED TREND (SCI DATABASE), 2017-2018

Sl No.	Country	Number of Publications 2017	Rank 2017	Number of Publications 2018	Rank 2018
1	USA	457,149	1	432,788	1
2	China	342,901	2	384,888	2
3	United Kingdom	143,662	3	135,331	3
4	Germany	121,625	4	117,208	4
5	Japan	84,523	5	82,199	5
6	France	82,103	6	77,618	6
7	Canada	77,543	7	75,173	7
8	Italy	76,084	8	74,779	8
9	Australia	73,909	9	72,483	9
10	India	73,529	10	73,813	10

Source : NSTMIS, DST Commissioned Study 2019, Clarivate, Web of Science-SCI database

Table 39

**INDIA'S PUBLICATION OUTPUT AND SHARE IN WORLD BY
FIELD OF SCIENCE (SCI DATABASE), 2011-16**

(Number)

Field of Science	India	World	% Share in World Output 2011-16
Agricultural Sciences	15,941	241,321	6.6
Biology & Biochemistry	21,130	428,325	4.9
Chemistry	71,493	997,167	7.2
Clinical Medicine	32,251	1,589,211	2.0
Computer Science	7,929	213,756	3.7
Economics & Business	1,529	153,282	1.0
Engineering	34,092	719,308	4.7
Environment/Ecology	10,041	276,180	3.6
Geosciences	10,080	260,977	3.9
Immunology	4,251	149,583	2.8
Materials Science	29,677	475,887	6.2
Mathematics	7,061	247,761	2.8
Microbiology	5,692	122,461	4.6
Molecular Biology & Genetics	6,747	274,568	2.5
Multidisciplinary	675	11,997	5.6
Neuroscience & Behavior	4,327	300,772	1.4
Pharmacology & Toxicology	14,533	228,905	6.3
Physics	32,942	638,020	5.2
Plant & Animal Science	14,626	422,353	3.5
Psychiatry/Psychology	1,431	237,399	0.6
Social Sciences, General	5,304	521,050	1.0
Space Science	3,969	85,559	4.6
ALL FIELDS	336,620	8,752,217	3.8

Source : NSTMIS, DST Commissioned Study 2019, Clarivate, Web of Science-SCI database

Table 40
PATENTS APPLICATIONS FROM PERSONS IN INDIA AND
ABROAD, 2000-01 TO 2017-18

	2000-01	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
India	2179	4521	5314	6040	6161	7044	8312	8921	9911	10941	12071	13066	13219	15550
Foreigners Resident abroad	6324	19984	23626	29178	30651	27243	31088	34276	33763	32010	30692	33838	32225	32304
Total	8503	24505	28940	35218	36812	34287	39400	43197	43674	42951	42763	46904	45444	47854

Source : Annual Reports of the Controller General of Patents, Designs and Trade Marks.

Note : Foreigners Resident Abroad includes Ordinary, Convention & National Phase Applications under PCT since 2000-01 onwards.

Table 41
PATENTS APPLICATIONS FILED IN INDIA BY
FOREIGN COUNTRIES, 2000-01 TO 2017-18

Sl. No.	Country	2000-01	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1.	U.S.A.	2271	8048	8389	10653	10978	9154	10405	10600	10295	10113	9702	11815	10883	18179
2.	Germany	829	1736	2329	2908	3323	3111	3653	4174	4096	3553	3089	2965	2818	2773
3.	U.K.	359	796	933	1091	1178	972	965	1187	1075	1085	1059	1165	1008	1138
4.	France	309	1022	1226	1522	1671	1394	1609	1670	1666	1535	1469	1263	1214	1184
5.	Japan	787	1555	1887	2453	2962	3040	4117	5349	6284	5566	5425	4835	4275	4487
6.	Switzerland	338	927	1330	1647	1685	1579	1651	1671	1683	1756	1549	1385	1467	1268
7.	Italy	86	377	576	686	656	560	608	712	651	622	583	612	551	577
8.	Russia	23	34	45	37	63	45	55	71	85	73	90	93	67	93
9.	Netherlands	202	837	1108	1332	1544	1316	1336	1670	1203	1384	1323	1498	1359	1387
10.	Others	1120	4652	5803	6849	6591	6072	6689	7172	6725	6323	6403	8207	8583	1218
	Total #	6324	19984	23626	29178	30651	27243	31088	34276	33763	32010	30692	33838	32225	32304

Source : Annual Reports of the Controller General of Patents, Designs and Trade Marks.

Note : # Includes Ordinary, Convention & National Phase Applications under PCT.

Table 42

**PATENTS APPLICATIONS FILED BY DIFFERENT STATES IN INDIA,
2012-13 TO 2017-18**

(Number)

Sl No.	State/Union Territory	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	Andhra Pradesh	879	892	563	275	271	276
2	Delhi	930	1023	1131	1154	1066	1432
3	Gujarat	658	548	585	529	633	712
4	Haryana	289	288	343	395	444	449
5	Karnataka	1208	1670	2134	2020	1815	2022
6	Maharashtra	2690	2955	3267	3699	3595	3820
7	Tamil Nadu	1223	1452	1423	1756	2018	2742
8	Bihar	47	35	35	28	27	63
9	Telangana	#	#	462	795	805	823
10	Kerala	259	316	263	280	276	312
11	Punjab	109	89	97	192	207	247
12	Madhya Pradesh	112	96	101	159	141	191
13	Rajasthan	78	106	149	150	181	189
14	Uttar Pradesh	482	478	665	655	637	721
15	West Bengal	442	564	406	454	480	538
	Grand Total	9911	10931	12071	13066	13219	15550

Source : Annual Reports of the Controller General of Patents, Designs and Trade Marks.

Note : #- State of Telangana was formed in the year 2014 and data prior to 2014 are covered under Andhra Pradesh.

Table 43
PATENTS FILED AND SEALED IN INDIA, 1976-77 TO 2017-18

Year	No. of applications made	No. of applications brought forward from preceding year	Total No. of applications to be examined	No. of applications examined	No. of applications deemed to have been abandoned filling of complete specifications	Total No. of complete specifications notified as accepted the year	No. of applications deemed to have been abandoned non-acceptance of Complete Specifications	No. of patents sealed		No. of patents in force	
								Indian	Foreign	Indian	Foreign
1	2	3	4	5	6	7	8	9	10	11	12
1976-77	3104	3876	6980	3612	295	2840	533	928	1964	2746	19780
1977-78	2870	3067	5937	2369	378	2507	577	657	1857	3065	19795
1978-79	2932	3190	6122	1266	283	2070	498	281	499	2469	13966
1979-80	2980	4573	7533	1498	304	1210	429	516	1657	2786	14474
1980-81	2954	5751	8705	2301	325	1007	372	349	670	2757	14448
1981-82	2989	6079	9068	2984	274	1191	422	421	936	3038	14892
1982-83	3085	5810	8895	3165	310	1580	734	405	822	3329	15291
1983-84	3145	5420	8565	3043	295	1447	774	340	980	3523	15726
1984-85	3319	5227	8546	2270	224	3267	710	263	1206	3008	13162
1985-86	3526	6052	9578	2490	214	1495	824	451	1500	2549	10844
1986-87	3489	6874	10363	4846	267	1706	729	532	1594	2004	10059
1987-88	3457	5250	8707	3582	158	2966	912	588	1516	2150	10115
1988-89	3598	4967	8565	3650	166	2386	1049	795	2585	2584	11015
1989-90	3661	4746	8407	3333	225	1760	984	519	1371	2468	10941
1990-91	3764	4849	8613	2185	183	2170	878	379	1112	2238	8210
1991-92	3552	6255	9807	2431	213	2060	789	551	1125	1206	9093
1992-93	3467	7163	10630	2347	289	1600	567	251	1021	1034	8997

Table 43 Contd..

Table 43 (Contd.)
PATENTS FILED AND SEALED IN INDIA, 1976-77 TO 2017-18

Year	No. of applications made	No. of applications brought forward from preceding year	Total No. of applications to be examined	No. of applications examined	No. of applications deemed to have been abandoned filling of complete specifications	Total No. of complete specifications notified as accepted the year	No. of applications deemed to have been abandoned non-acceptance of Complete Specifications	No. of patents sealed		No. of patents in force	
								Indian	Foreign	Indian	Foreign
1	2	3	4	5	6	7	8	9	10	11	12
1993-94	3869	7994	11863	2590	224	1250	686	442	1304	1995	7281
1994-95	5330	9049	14379	2745	130	1590	765	476	1283	1923	7052
1995-96	7036	11504	18540	2862	204	1400	972	415	1118	2098	6694
1996-97	8562	15474	24036	3042	375	2049	675	293	614	2003	7202
1997-98	10155	20619	30774	2688	59	2580	803	619	1225	2047	6882
1998-99	8954	28027	36981	2931	820	1600	804	645	1155	2088	6691
1999-00	4824	33230	38054	2824	362	1310	195	557	1324	2200	6458
2000-01	8503	34968	43471	4264	89	1950	460	399	919	1495	6530
2001-02	10592	39118	49710	5104	325	1669	1031	654	937	1578	6742
2002-03	11466	44281	55747	9538	290	2780	1633	494	885	1479	6519
2003-04	12613	NIL	12362	10709	933	2805	1695	945	1524	2075	4331
2004-05	17466	NA	19001	14813	267	3307	775	764	1147	2200	4657
2005-06	24505	NA	21926	11569	414	NA	894	1396	2924	4486	11933
2006-07	28940	NA	20645	14119	694	NA	1121	1907	5632	3473	13593
2007-08	35218	NA	22146	11751	1066	NA	479	3173	12088	7966	21722
2008-09	36812	NA	30595	10296	888	NA	1075	2541	13520	6158	24664
2009-10	34287	NA	28653	6069	2720	NA	5171	1725	4443	6781	30553
2010-11	39400	NA	31493	11208	185	NA	5186	1273	6236	7301	32293

Table 43 Contd...

Table 43 (Contd.)
PATENTS FILED AND SEALED IN INDIA, 1976-77 TO 2017-18

Year	No. of applications made	No. of applications brought forward from preceding year	Total No. of applications to be examined	No. of applications examined	No. of applications deemed to have been abandoned filling of complete specifications	Total No. of complete specifications notified as accepted the year	No. of applications deemed to have been abandoned non-acceptance of Complete Specifications	No. of patents sealed		No. of patents in force	
								Indian	Foreign	Indian	Foreign
1	2	3	4	5	6	7	8	9	10	11	12
2011-12	43197	NA	33811	NA	698	NA	3800	699	3682	7545	32444
2012-13	43674	NA	36247	NA	361	NA	4559	716	3410	8303	35612
2013-14	42951	NA	37474	NA	224	NA	6418	634	3592	7464	35168
2014-15	42763	NA	34958	NA	12	NA	6970	684	5294	7561	35695
2015-16	46904	NA	35960	NA	1226	NA	12782	918	5408	7306	37218
2016-17	45444	NA	38578	NA	4357	NA	10408	1315	8532	7660	41105
2017-18	47854	NA	37208	NA	184	NA	24992	1937	11108	8830	47934

Source : Annual Reports of the Controller General of Patents, Design and Trade Marks

Table 44

**TOP INDIAN APPLICANTS FOR PATENTS FROM SCIENTIFIC
RESEARCH AND DEVELOPMENT ORGANISATIONS, 2013-14 TO 2017-18**

(Number)

Name of Scientific and Research & Development Organizations.	2013-14	2014-15	2015-16	2016-17	2017-18
Council of Scientific & Industrial Research	267	315	323	230	176
Defence Research & Development Organisation	116	98	85	58	126
Indian Council of Agricultural Research	71	68	63	41	37
Indian Space Research Organisation	#	#	25	13	14
GSP Crop Science Pvt Ltd.	#	23	#	#	9
Samsung R&D Institute India- Bangalore Private Ltd.	#	#	271	#	#
Hetero Research Foundation	17	22	40	23	#
G. H. R. Labs and Research Centre/ G.H. Raison College of Engineering	26	31	33	50	#
Allinov Research & Development Private Limited	#	#	#	20	#
MSN Research & Development Centre	#	#	#	19	#
L&T Technology Services Limited	#	#	#	18	#
Sandip Institute of Technology and Research Centre	#	#	21	#	#
Centre for Development of Advanced Computing (C-DAC)	17	#	20	#	#
Sun Pharma Advanced Research Company Limited	#	#	19	14	#
Department of Biotechnology	34	23	#	#	#
Department of Electronics and Information Technology (DEITY)	#	18	#	#	#
Jubliant Life Sciences Limited	29	13	#	#	#
Rotary Wing Research and Design Centre, HAL	#	22	#	#	#
Indian Council of Medical Research	14	#	#	#	#

Source : Annual Reports of the Controller General of Patents, Design and Trade Marks (various issues)

Note : 1. # During the period under reference these organisations did not fall among top patentees
2. The figures are arranged in the descending order by the reference year 2017-18

Table 45

TOP INDIAN APPLICANTS FOR PATENTS FROM INSTITUTES AND UNIVERSITIES, 2013-14 TO 2017-18

(Number)

Name of Institutes/Universities	2013-14	2014-15	2015-16	2016-17	2017-18
Indian Institute of Technology (Collective)	342	337	391	400	540
Amity University	92	43	99	106	119
SRM University	#	#	#	#	81
Bharath University	37	#	65	45	66
Shoolini University of Biotechnology and Management Sciences	#	#	22	#	62
Chandigarh Group of Colleges	#	#	#	45	58
Indian Institute of Science	32	46	46	54	58
G.H. Rasoni College of Engineering / G.H. R.Labs and Research Centre	24	#	33	49	56
C.H.R Labs and Research Centre	#	#	#	#	56
Sandip Institute of Engineering and Management	#	#	#	#	46
KCG College of Technology	#	#	#	#	40
Veltechhigh/Multitech DR. RR& Dr.SR (college and University	#	#	#	50	#
Chitkara university	#	#	46	29	#
Saveetha School Of Engineering, Saveetha University	74	#	33	#	#
Janardan Rai Nagar Rajasthan Vidyapeeth (Deemed) University	#	53	22	#	#
Veltech Dr. RR & Dr. Sr Technical University	#	#	20	#	#
Siddaganga Institute of Technology an Institution of Sree Siddaganga Education Society	24	19	17	#	#
National Institute of Pharmaceutical Education and Research (NIPER)	#	#	15	#	#
Dr.M.G.R Educational and Research Institute	#	#	15	#	#
King George's Medical University	#	#	14	#	#
Sandeep Foundation	#	33	#	#	#
Hindustan Institute of Technology and Science	#	31	#	28	#
National Institute of Science (Collective)	#	#	#	26	#
Sal institute of Technology and Research	#	22	#	#	#
Karpagam University	#	18	#	#	#
Shree Chitra	20	#	#	#	#
University of Calcutta	15	#	#	#	#
Sastra University	13	#	#	#	#
Rajaram Bapu Institute of Technology	13	#	#	#	#

Source : Annual Reports of the Controller General of Patents, Design and Trade Marks (various issues)

Note : 1. # During the period under reference these organisations did not fall among top patentees
2. The figures are arranged in the descending order by the reference year 2017-18

Table 46

TOP FOREIGN RESIDENT APPLICANTS IN INDIA, 2013-14 TO 2017-18

(Number)

Name of Organisation	2013-14	2014-15	2015-16	2016-17	2017-18
Qualcomm Incorporated	1062	1214	1884	1840	960
Koninklijke Philips N.V.	839	805	949	557	520
Philips Lighting Holding B.V.	#	#	#	307	217
Google LLC	#	#	#	#	184
Mitsubishi Electric Corporation	#	#	#	218	176
General Electric Company	260	276	446	520	142
Diamler AG	#	#	#	#	134
Telefonaktiebolaget L M Ericsson (Publ)	386	449	407	470	128
Huawei Technologies Co.Ltd.	#	#	648	625	120
Honda Motor Co. Ltd.	#	280	268	#	110
Samsung Electronics Co. Ltd.	371	379	905	706	#
Microsoft Technology Licensing LLC	#	#	362	589	#
Toyota Jidosha Kabushikikaisha	#	#	304	#	#
BASF SE	304	297	302	216	#
Siemens AKTI	249	277	#	#	#
JFE Steel Corpn	#	230	#	#	#
Sony Corpn	263	218	#	#	#
Robert Bosch Gmbh	375	#	#	#	#
Alcatel Lucent	222	#	#	#	#

Source : Annual Reports of the Controller General of Patents, Design and Trade Marks (various issues)

Note : 1. # During the period under reference these organisations did not fall among top patentees
2. The figures are arranged in the descending order by the reference year 2017-18

Table 47
YEAR-WISE PROGRESS OF EXPENDITURE OF SELECT CENTRAL SCIENTIFIC DEPARTMENTS

Sl No	Agency	2009-10	2010--11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-2018#	2018-19	2019-20*	2020-21#
1	DST	2038.30	2279.93	2511.66	2514.91	2600.84	2889.84	3644.29	4217.08	4595.73	4912.54	5480.93	6301.53
2	DSIR/CSIR	2697.31	2982.68	3214.70	2945.66	3159.54	3393.53	4020.98	4030.48	4618.83	4548.78	4883.24	5385.00
3	DBT	906.66	1144.86	1208.44	1282.84	1291.32	1346.97	1554.27	1895.50	2331.42	2379.10	2381.10	2786.76
4	DOS	4162.95	4482.23	3784.27	4856.28	5168.96	5798.81	6920.01	7988.87	9127.16	11188.37	13139.26	13479.47
5	DAE (R&D Sector)	1619.27	1817.09	2193.87	2639.98	2842.30	2683.08	4891.13	5073.79	5786.35	5715.54	6502.80	6973.78
6	MoES	1079.83	1094.53	1170.27	1172.40	1243.30	1293.87	1292.45	1361.28	1541.47	1726.10	1809.70	2070.00
	Total	12504.32	13801.32	14083.21	15412.07	16306.26	17406.10	22323.13	24567.00	28000.96	30470.43	34197.03	36996.54

Source : Demands for Grants of Central Government, Expenditure Budget, GoI (Various years)

Note : 1. Expenditure includes plan + non- plan figures

2. *Revised Estimates(RE) ; # Budget Estimate(BE)

3. DST- Deptt. of Science & Technology.

4. DSIR/CSIR- Deptt. of Scientific & Industrial Research/ Council of Scientific and Industrial Research.

5. DBT- Deptt. of Biotechnology

6. DOS- Deptt. of Space.

7. DAE- Deptt. of Atomic Energy

8. MoES- Ministry of Earth Sciences formerly Deptt. of Ocean Development

(Rs. Crore)



DEPARTMENT OF SCIENCE & TECHNOLOGY
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