

## **CHAPTER IX**



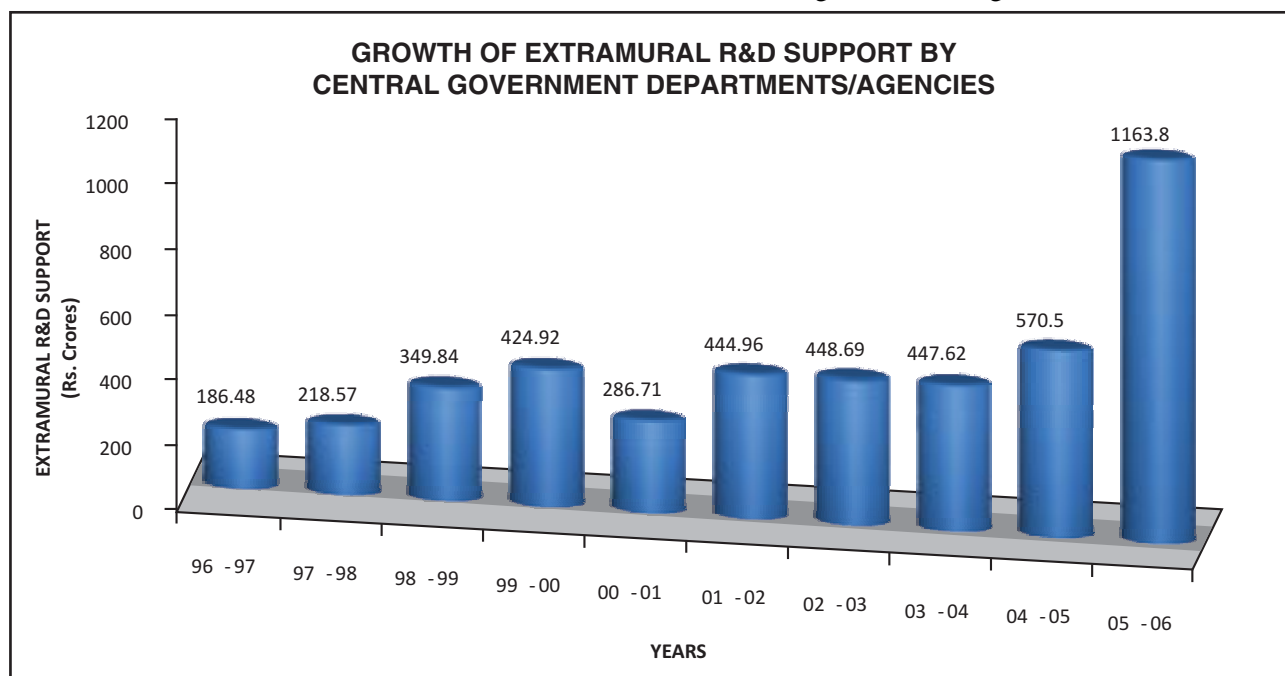
## CHAPTER IX

# EXTRAMURAL SUPPORT FOR RESEARCH AND DEVELOPMENT PROJECTS BY CENTRAL GOVERNMENT

The purpose of the extramural research and development (R&D) project funding is to build general research capability in the country and provide special encouragement to scientists to pursue a research career. The National Science and Technology Management Information System (NSTMIS) division of the Department of Science and Technology has been maintaining a database on all extramural R&D projects funded by various Central Government Departments/Agencies as a part of the Management Information System since 1985. The division also brings out annually a directory of extramural R&D projects approved by various agencies during each financial year.

Almost all the Central S&T Departments such as Department of Atomic Energy (DAE), Petroleum Conservation Research Association (PCRA), Department of Biotechnology (DBT), Department of Coal (DOC), Ministry of Communication & Information Technology (MOCIT) formerly Ministry of Information Technology, Ministry of Earth Sciences (MES), Department of Science & Technology (DST),

Ministry of Environment and Forests (MOEF), Ministry of Water Resources (MOWR), Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homeopathy (AYUSH), Ministry of Social Justice & Empowerment (MOSJE) formerly Ministry of Welfare (MOW), All India Council for Technical Education (AICTE), Council of Scientific and Industrial Research (CSIR), Defence Research and Development Organization (DRDO), Indian Council of Agricultural Research (ICAR), Indian Council of Medical Research (ICMR), Indian Space Research Organization (ISRO), University Grants Commission (UGC) have specified schemes to sponsor R&D projects. Central Board of Irrigation and Power (CBIP), Indian Meteorological Department (IMD) and Steel Authority of India Ltd (SAIL) have not funded any Extramural Research (EMR) projects during 2003-04 to 2005-06. Central Government Departments/Agencies operate number of EMR Schemes under which they invite time bound projects from individual scientists in Universities/ Colleges, Institutes of National Importance, National Laboratories, state level institutions, Public Sector Undertakings and other registered bodies.



The extramural R&D funding by Central S&T departments/agencies has increased at a compound annual growth rate of 22.58 percent during the period 1996-97 to 2005-06. 3569 new projects costing Rs.1163.80 Crores were approved for funding by 19 responding agencies during the year 2005-06, as shown in Table 9.1. This table provides agency-wise information on number of extramural R&D projects approved and their cost during the years 2003-04, 2004-05 and 2005-06. It may be noted that the approved cost given in the tables in this chapter is the cost of the newly approved projects for the entire duration of the project period and not the actual expenditure during the year.

It may be worth mentioning here that Department of Science & Technology provided the highest extramural funding of Rs. 572.11 Crores (49.2%) followed by Ministry of Communications & Information Technology and DBT with Rs. 183.85 Crores (15.8%) and Rs. 174.73 Crores (15.0%) respectively during 2005-06. The lowest support of Rs. 0.15 Crores for extramural R&D projects was by the Department of AYUSH. The share of number of projects supported by the Department of Science &

Technology was also highest (36.3%) when compared to other sponsoring agencies.

Subject area-wise number of projects and approved cost during 2003-04, 2004-05 and 2005-06 are given in Table 9.2. Amongst the eight subject areas, Biological Sciences, Engineering & Technology, Medical Sciences and Chemical Sciences were the main recipients of R&D support during 2005-06. The Biological Sciences received maximum support in terms of number of projects (19.1%) followed by Engineering & Technology (17.9%) where as Medical Sciences received maximum financial support (32.0%) followed by Engineering & Technology (29.7%). This was followed by Earth Sciences with 9.6% of total funding. The extramural support to Mathematics was the lowest (0.6%).

The institutions receiving support from the funding agencies have been classified into five categories for convenience of analysis: Universities/Colleges, Deemed Universities, Institutes of National Importance, National Laboratories and other Institutions under State Governments, Voluntary Agencies, Registered Societies etc. (which are not covered in any of the above types).

**Table 9.1**

**AGENCY-WISE SUPPORT TO EXTRAMURAL R&D PROJECTS**

(Rs. Crores)

Agency	2003-04		2004-05		2005-06	
	Number of Projects	Approved Cost	Number of Projects	Approved Cost	Number of Projects	Approved Cost
DAE	87	16.33	104	18.23	115	19.51
Department of AYUSH	8	1.43	8	1.35	1	0.15
DBT	249	60.01	201	98.41	422	174.73
DOC	18	16.3	8	6.17	11	21.53
DOD	2	0.45	6	1.24	7	1.07
DST	706	146.36	958	251.85	1297	572.11
DSIR	9	7.44	6	2.25	9	8.39
DOSHE	121	13.13	170	23.46	NA	NA
MOCIT (formerly MIT)	59	50.37	45	49.85	42	183.85
MOEF	67	12.35	48	14.87	56	23.12
MOP	25	3.67	30	4.76	20	3.53
MOSJE (formerly MOW)	8	1.13	2	0.13	5	0.72
MOWR	25	7.66	3	0.34	41	9.79
PCRA	12	2.06	6	0.59	15	1.3
AICTE	77	6.49	46	4.69	138	9.83
CSIR	259	25.08	200	18.98	247	24.21
DRDO	93	19.52	88	20.01	137	30.37
ICAR	119	19.55	49	12.75	NA	NA
ICMR	147	26.28	128	17.02	207	57.29
ISRO	6	0.41	75	5.68	41	4.35
UGC	646	11.6	568	17.87	758	17.95
<b>Total</b>	<b>2743</b>	<b>447.61</b>	<b>2749</b>	<b>570.49</b>	<b>3569</b>	<b>1163.8</b>

N.A. - Not available.

Table 9.2

**DISTRIBUTION OF EXTRAMURAL R&D PROJECTS BY BROAD SUBJECT AREAS** (Rs. Crores)

Subject	2003-04		2004-05		2005-06	
	Number of Projects	Approved Cost	Number of Projects	Approved Cost	Number of Projects	Approved Cost
Agriculture	274	44.53	222	64.76	262	65.19
Engineering & Technology	531	124.35	549	153.54	639	345.55
Medical Sciences	286	55.56	344	126.6	565	372.84
Biological Sciences	662	67.73	567	63.29	682	83.72
Chemical Sciences	522	83.09	473	82.2	516	83.64
Earth Sciences	146	32.78	271	48.36	469	111.19
Mathematics	77	2.63	73	3.23	94	6.71
Physical Sciences	245	36.95	250	28.52	342	94.96
<b>Total</b>	<b>2743</b>	<b>447.62</b>	<b>2749</b>	<b>570.5</b>	<b>3569</b>	<b>1163.8</b>

The pattern of extramural R&D funding during 2003-04, 2004-05 and 2005-06 based on the above classification is given in Table 9.3. The number of R&D projects supported to academic sector (comprising Universities/Colleges, Deemed Universities and Institutes of National Importance) has hovered around 72.0% of the total projects during 2003-06 period.

The national laboratories and the institutions in the 'Others' category accounted for about 17.0% and 11.0% of the projects respectively during the same period. The extramural R&D funding support to the academic sector, however, was not comparable with its share of number of projects. It accounted for 50.0% of the total funding during 2005-06.

Table 9.3

**DISTRIBUTION OF EXTRAMURAL R&D PROJECTS BY TYPES OF INSTITUTES** (Rs. Crores)

Institute Type	2003-04		2004-05		2005-06	
	Number of Projects	Approved Cost	Number of Projects	Approved Cost	Number of Projects	Approved Cost
Universities/Colleges	1399	134.29	1347	188.26	1927	267.67
Deemed Universities	192	44.76	248	39.93	214	116.38
Institutes of National Importance	357	71.62	412	85.58	428	197.85
National Laboratories	494	125.33	467	17.86	607	349.14
Others	301	71.62	275	79.87	393	232.76
<b>Total</b>	<b>2743</b>	<b>447.62</b>	<b>2749</b>	<b>570.5</b>	<b>3569</b>	<b>1163.8</b>

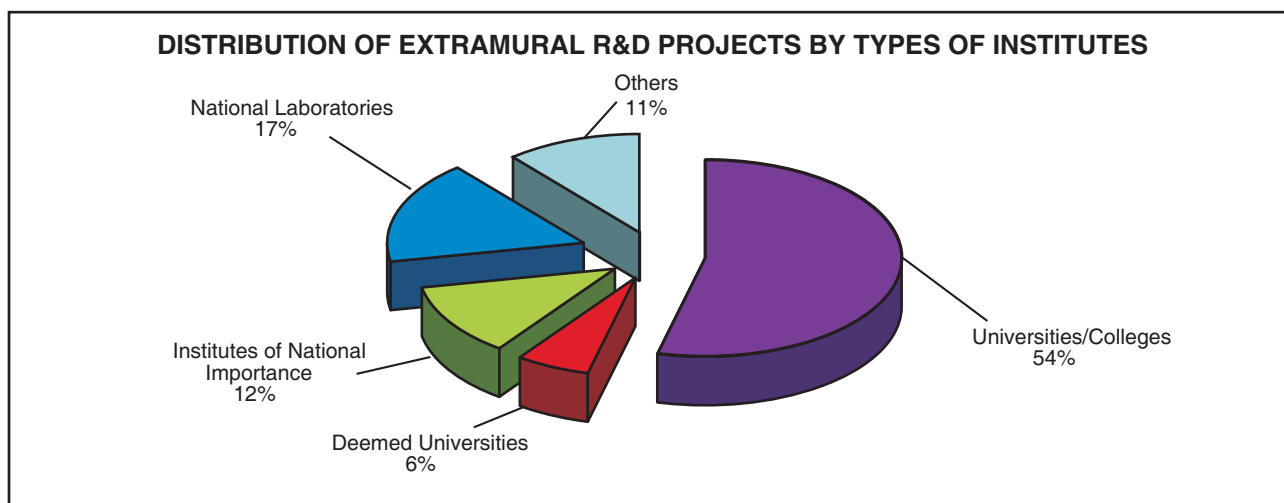


Table 9.4

## STATE-WISE SUPPORT TO EXTRAMURAL R&amp;D PROJECTS

(Rs. Crores)

State	2003-04		2004-05		2005-06	
	Number of Projects	Approved Cost	Number of Projects	Approved Cost	Number of Projects	Approved Cost
Andaman & Nicobar	4	0.71	3	0.44	1	0.07
Andhra Pradesh	141	32.17	188	56.9	209	139.33
Arunachal Pradesh	11	0.82	14	1.93	9	0.57
Assam	61	7.51	70	7.06	185	17.24
Bihar	9	1.42	7	0.51	6	0.58
Chandigarh	51	9.38	41	11.76	60	15.71
Chhattisgarh	13	1.72	9	0.69	20	2.09
Delhi	238	63.07	313	93.64	359	129.79
Goa	21	0.97	19	1.63	18	2.7
Gujarat	72	7.11	69	22.63	107	34.35
Haryana	50	3.89	28	7.09	44	7.91
Himachal Pradesh	33	4.61	34	4.05	40	7.32
Jammu & Kashmir	24	3.62	13	1.41	15	3.36
Jharkhand	37	17.16	20	5.21	40	10.81
Karnataka	232	55.4	258	62.53	326	150.9
Kerala	98	15.94	103	17.77	124	28.11
Madhya Pradesh	40	6.58	46	8.37	111	9.41
Maharashtra	473	48.73	363	57.55	448	191.21
Manipur	15	0.9	14	1.12	36	2.27
Meghalaya	6	0.51	6	0.53	16	2.23
Mizoram	5	0.56	1	0.06	4	0.94
Nagaland	5	0.36	1	0.04	5	0.62
Orissa	42	7.8	35	3.46	35	12.08
Pondicherry	18	5.51	17	2.27	59	15.36
Punjab	69	8.12	54	6.15	13	1.67
Rajasthan	48	6.27	48	9.69	97	13.97
Sikkim	1	0.05	2	0.37	2	0.1
Tamil Nadu	234	43.07	289	48.06	372	116.41
Tripura	5	1.12	4	0.32	14	0.38
Uttar Pradesh	338	35.29	314	62.67	337	111.04
Uttarakhand	99	16.32	113	14.8	117	41.87
West Bengal	250	40.96	253	59.81	340	93.42

Note: States and Union Territories not receiving EMR support are not shown in this table.

In addition to extramural mode, R&D projects are also carried out by the National Laboratories, Universities/Colleges, Public and Private Sector Industries and other research organizations out of the annual grants received by them or their own funds. This is known as in-house or intramural R&D.

The expenditure on intramural projects constitutes the major component of the national R&D expenditure. The total national R&D expenditure reported in this document comprises both intramural and extramural R&D projects. Share of extramural R&D expenditure in national R&D expenditure for 2005-06 was 4.0%.

**To sum up, the salient features are as under:**

- ❖ The extramural R&D support has reached a level of Rs.1163.80 Crores in 2005-06.
- ❖ The Department of Science & Technology (DST) (49.2%) and the Ministry of Communications & Information Technology (MOCIT) (15.8%) were the two departments playing a major role in extramural R&D funding.
- ❖ R&D support to the academic sector through extramural projects was 50.0% during 2005-06.
- ❖ Support to National Laboratories was of the order of 30.0% during 2005-06.
- ❖ The share of extramural R&D funding in total National R&D expenditure for 2005-06 was 4.0%.