

## ABOUT THE DIRECTORY

### INTRODUCTION

**National Science & Technology Management Information System (NSTMIS) Division** of the Department of Science & Technology (DST) has been maintaining a computerized database on sponsored R&D projects from 1985-86 onwards. The Department has also been compiling information annually on extramural (also called sponsored) R&D projects since 1990-91 in order to exchange information on Research and Development (R&D) projects with different interest groups. This compiled information is published as an annual Directory of Extramural Research and Development projects approved for funding by various agencies during the year.

The task of collecting, compiling, analyzing and publishing the directory for the year 2006-07 was sponsored by the **Department of Science & Technology** to the **Manpower Management Centre (MMC), New Delhi**. The present directory, seventeenth in the series, gives details of 3781 sponsored R&D projects approved during the year 2006-07 by 20 Central Government Ministries/Departments/Agencies.

The following Ministries/Departments/Agencies of the Central Government have furnished the list of projects approved by them:

- All India Council for Technical Education (AICTE)
- Coal India Ltd. (CIL)
- Council of Scientific and Industrial Research (CSIR)
- Defence Research and Development Organisation (DRDO)
- Department of Atomic Energy (DAE)
- Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH)
- Department of Bio-Technology (DBT)
- Department of Coal (DOC)
- Department of Science and Technology (DST)
- Department of Scientific and Industrial Research (DSIR)
- Indian Council of Medical Research (ICMR)
- Indian Space Research Organisation (ISRO)
- Ministry of Communications & Information Technology (MOCIT)
- Ministry of Environment and Forests (MOEF)
- Ministry of New & Renewable Energy (MNRE)
- Ministry of Power (MOP)
- Ministry of Steel (MOS)
- Ministry of Water Resources (MOWR)
- Petroleum Conservation Research Association (PCRA)
- University Grants Commission (UGC)

Ministry of Earth Sciences (MOES) and Ministry of Social Justice & Empowerment (MOSJE) reported 'Nil' information. The addresses of all these agencies are given in **Annexure-1**.

### LIMITATIONS

As the listing of projects is based on the inputs received from the responding agencies, it is presumed that the information furnished by them was complete. The project cost refers to the initial approved cost of the project for the initial approved duration of the project. It is quite possible that some of the projects mentioned in this directory may not be R&D projects in the strict sense of the term. Despite these limitations, it is sincerely hoped that this directory will serve as a useful source of information for scientists, technologists, funding agencies, implementing institutions, planners and policy makers.

## ORGANISATION OF THE DIRECTORY

The projects are listed in the directory by major subject area-wise. Under each major subject area, the projects are arranged by funding agency-wise and also scheme-wise within funding agency. Under each scheme, the projects are arranged alphabetically as per the title of the project. For each project, the information included is record number, title of the project, name of the funding agency/scheme, name and address of the investigator/institute, approved cost of the project and the duration of the project. The third column of the directory gives the name of funding agency and scheme. For example, this is given as “DAE-BRNS”. Here “DAE” is the name of the funding agency i.e. Department of Atomic Energy and “BRNS” is the acronym used for the name of the scheme under which the project was approved. For explanation of abbreviations/acronym for the agencies and schemes, the readers are advised to see **Table 1 & 2** under the section “**BRIEF ANALYSIS**”. For a quick reference, Index pages on Principal Investigator and Institute etc., are provided in the directory at the end. The addresses of the funding agencies are given at **Annexure-1**. **Annexure-2** gives institute-wise extramural R&D support committed during the year 2006-07. A brief analysis on the pattern of funding during the year 2006-07 is given in the following paragraphs.

### BRIEF ANALYSIS

As shown in **Table 1**, 3781 new extramural R&D projects costing Rs. 1072.08 crores were approved by 20 responding agencies during the year 2006-07. Scheme-wise support to these extramural R&D projects by responding agencies is given in **Table 2**.

**Table 1**  
**Agency-wise Support to Extramural R&D Projects approved during 2006-07**

S. No.	Department/Ministry/Agency	No. of Projects		Total Approved Cost	
		No.	%age	(Rs. Crores)	%age
1.	All India Council for Technical Education (AICTE)	190	5.03	16.17	1.51
2.	Coal India Ltd. (CIL)	2	0.05	1.82	0.17
3.	Council of Scientific and Industrial Research (CSIR)	253	6.69	25.71	2.40
4.	Defence Research & Development Organisation (DRDO)	196	5.18	47.05	4.39
5.	Department of Atomic Energy (DAE)	113	2.99	24.61	2.29
6.	Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homoeopathy (AYUSH)	9	0.24	1.58	0.15
7.	Department of Bio-Technology (DBT)	594	15.71	353.63	32.99
8.	Department of Coal (DOC)	2	0.05	0.87	0.08
9.	Department of Science and Technology (DST)	1192	31.53	381.59	35.59
10.	Department of Scientific and Industrial Research (DSIR)	3	0.08	5.16	0.48
11.	Indian Council of Medical Research (ICMR)	365	9.65	68.67	6.41
12.	Indian Space Research Organisation (ISRO)	31	0.82	4.44	0.41
13.	Ministry of Communications & Information Technology (MOCIT)	45	1.19	67.06	6.25
14.	Ministry of Environment and Forests (MOEF)	60	1.59	14.26	1.33
15.	Ministry of New & Renewable Energy (MNRE)	13	0.34	2.54	0.24
16.	Ministry of Power (MOP)	22	0.58	4.07	0.38
17.	Ministry of Steel (MOS)	1	0.03	6.84	0.64
18.	Ministry of Water Resources (MOWR)	23	0.61	4.37	0.41
19.	Petroleum Conservation Research Association (PCRA)	20	0.53	3.65	0.34
20.	University Grants Commission (UGC)	647	17.11	37.99	3.54
	<b>Total</b>	<b>3781</b>	<b>100</b>	<b>1072.08</b>	<b>100</b>

Note: 1. Ministry of Earth Sciences (MOES) and Ministry of Social Justice & Empowerment (MOSJE) reported 'Nil' information.  
2. Coal India Ltd. & Ministry of Steel (MOS) have been added this year for providing funds to the Steel Authority of India (SAIL) & CMPDI.

**Table 2**  
**Scheme-wise Support to Extramural R & D Projects approved during 2006-07**

<b>S. No</b>	<b>Department/Ministry/Agency -Schemes</b>	<b>Number of Projects</b>	<b>Total Approved Cost (Rs. Crores)</b>
1.	<b>All India Council for Technical Education (AICTE)</b>		
	- Research Programme (RP)	190	16.17
2.	<b>Coal India Ltd. (CIL)</b>		
	- Research & Development Board Grant (R&D)	2	1.82
3.	<b>Council of Scientific and Industrial Research (CSIR)</b>		
	- Emeritus Scientist (ES)	27	2.30
	- General Scheme (GS)	213	21.82
	- Sponsored Scheme (SS)	13	1.59
4.	<b>Defence Research and Development Organisation (DRDO)</b>		
	- Aeronautical Research & Development Board (ARDB)	44	5.28
	- Grants-in-aid Scheme(GIA)	70	24.12
	- Life Science Research Board (LSRB)	33	5.85
	- Naval Research Board (NRB)	49	11.80
5.	<b>Department of Atomic Energy (DAE)</b>		
	- Board for Research in Nuclear Sciences (BRNS)	113	24.61
6.	<b>Department of Ayurveda, Yoga &amp; Naturopathy, Unani, Siddha &amp; Homoeopathy (AYUSH)</b>		
	- Extra Mural Research (EMR)	9	1.58
7.	<b>Department of Bio-Technology (DBT)</b>		
	- Research & Development (R&D)	594	353.63
8..	<b>Department of Coal (DOC)</b>		
	- Science & Technology (S&T)	2	0.87
9.	<b>Department of Science and Technology (DST)</b>		
	- Atmospheric Sciences (AS)	10	4.49
	- Deep Continental Studies (DCS)	34	8.02
	- Drugs & Pharmaceutical Research Programme(DPRP)	21	87.58
	- Himalayan Glaciology (HG)	3	1.01
	- International Division (ID)	132	6.40
	- Instrument Development Programme (IDP)	7	0.90
	- Intensification of Research in High Priority Areas (IRHPA)	23	58.30
	- Joint Technology Programme (JTP)	5	0.82
	- Natural Resources Data Management System (NRDMS)	52	11.57
	- PAC-Earth Science (PAC-ES)	14	1.62
	- Science and Engineering Research Council – Engineering Projects (SERC EP)	89	19.35
	- Science and Engineering Research Council – Fast Track (SERC FT)	309	35.10
	- Science and Engineering Research Council- Nanomaterials Science & Technology Initiative (SERC NSTI)	25	59.11
	- Science and Engineering Research Council- Science (SERC SC)	329	65.86
	- Science and Engineering Research Council- Women Scientists (WOS)	81	11.87

	- State Science & Technology Programme (SSTP)	12	1.12
	- Technology Systems Development Programme (TSD)	19	7.24
	- Utilisation of Scientific Expertise of Retired Scientists (USERS)	16	0.52
	- Young Scientists Scheme (YSS)	11	0.71
10.	<b>Department of Scientific and Industrial Research (DSIR)</b>		
	- Technology Development & Demonstration Programme (TDDP)	3	5.16
11.	<b>Indian Council of Medical Research (ICMR)</b>		
	- Ad-hoc (ADHOC)	244	34.83
	- Centre for Advanced Research (CAR)	6	5.67
	- Task Force (TF)	115	28.17
12.	<b>Indian Space Research Organisation (ISRO)</b>		
	- Research Sponsored (RESPOND)	27	3.52
	- Space Science Promotion (SSP)	4	0.92
13.	<b>Ministry of Communications &amp; Information Technology (MOCIT)</b>		
	- Research & Development (R&D)	45	67.06
14.	<b>Ministry of Environment and Forests (MOEF)</b>		
	- Biosphere Reserve (BR)	5	0.48
	- Environmental Policy Research Projects (EPRP)	4	0.26
	- Environment Research Programme (ERP)	17	1.87
	- Ecosystem Research Scheme (ERS)	10	1.58
	- Eastern & Western Ghats (EWG)	12	1.28
	- National Natural Resources Management System (NNRMS)	8	8.61
	- Wet Lands (WL)	4	0.18
15.	<b>Ministry of New &amp; Renewable Energy (MNRE)</b>		
	- Research Design & Development Project Appraisal Committee (RDPAC)	13	2.54
16.	<b>Ministry of Power (MOP)</b>		
	- Research Scheme on Power (RSP)	22	4.07
17.	<b>Ministry of Steel (MOS)</b>		
	- Steel Development Fund (SDF)	1	6.84
18.	<b>Ministry of Water Resources (MOWR)</b>		
	- Research & Development for Water Resources Management (R&D WRM)	23	4.37
19.	<b>Petroleum Conservation Research Association (PCRA)</b>		
	- Research & Development (R&D)	20	3.65
20.	<b>University Grants Commission (UGC)</b>		
	- Major Projects (MJRP)	552	37.17
	- Minor Projects (MNRP)	95	0.82
	<b>Total</b>	<b>3781</b>	<b>1072.08</b>

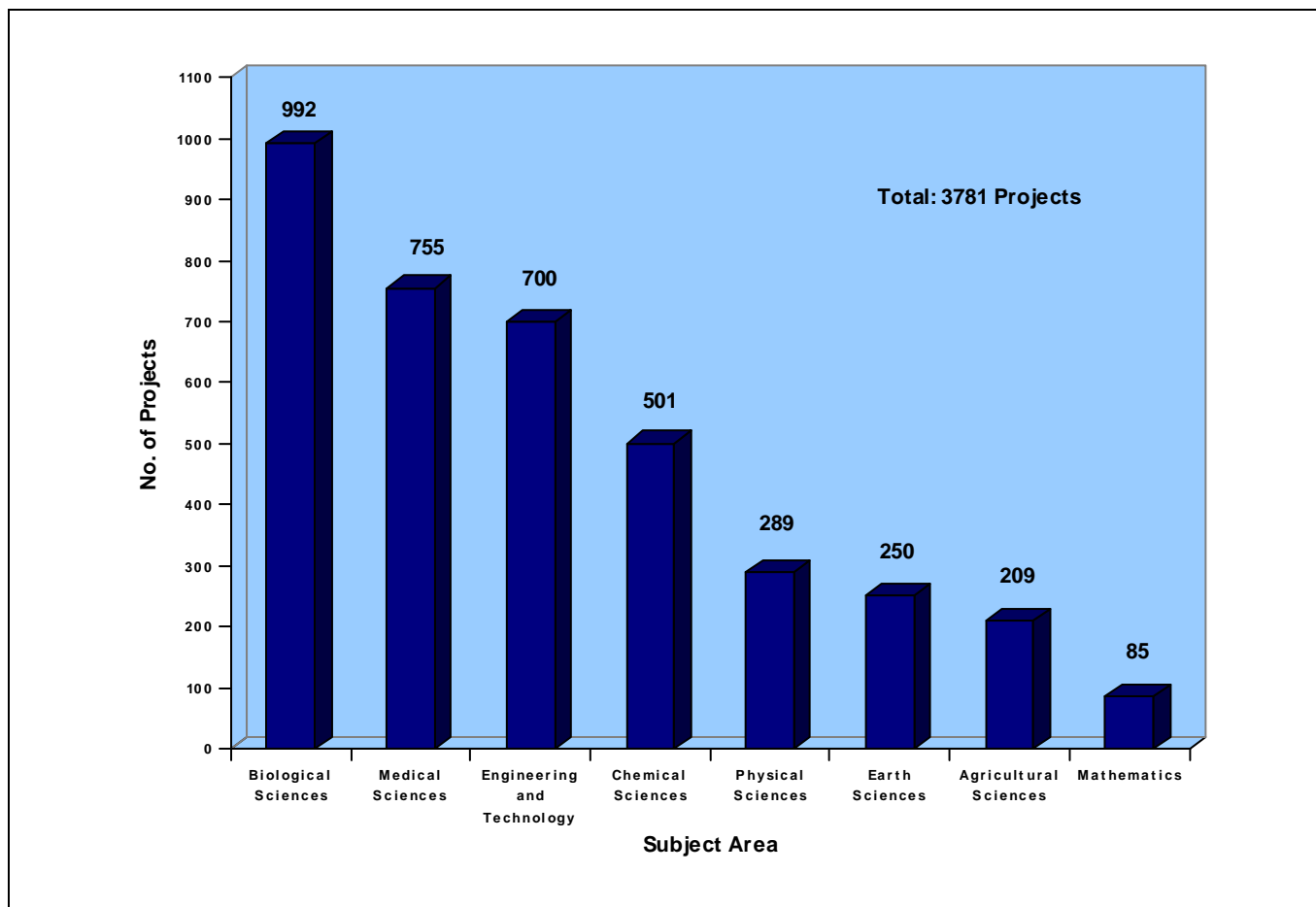
### Funding by Subject Areas

The projects are classified in eight major subject areas as under:

- |                          |                             |
|--------------------------|-----------------------------|
| a) Agricultural Sciences | e) Engineering & Technology |
| b) Biological Sciences   | f) Mathematics              |
| c) Chemical Sciences     | g) Medical Sciences         |
| d) Earth Sciences        | h) Physical Sciences        |

The classification of R&D projects has been done based on the subject area indicated by the agencies and also based on the title of the projects. Some of the projects may be multi-disciplinary in nature but have been classified into one of the subject areas mentioned above, depending on their major thrust. The following **Figure 1** shows number of extramural R&D projects approved in each subject area during the year 2006-07.

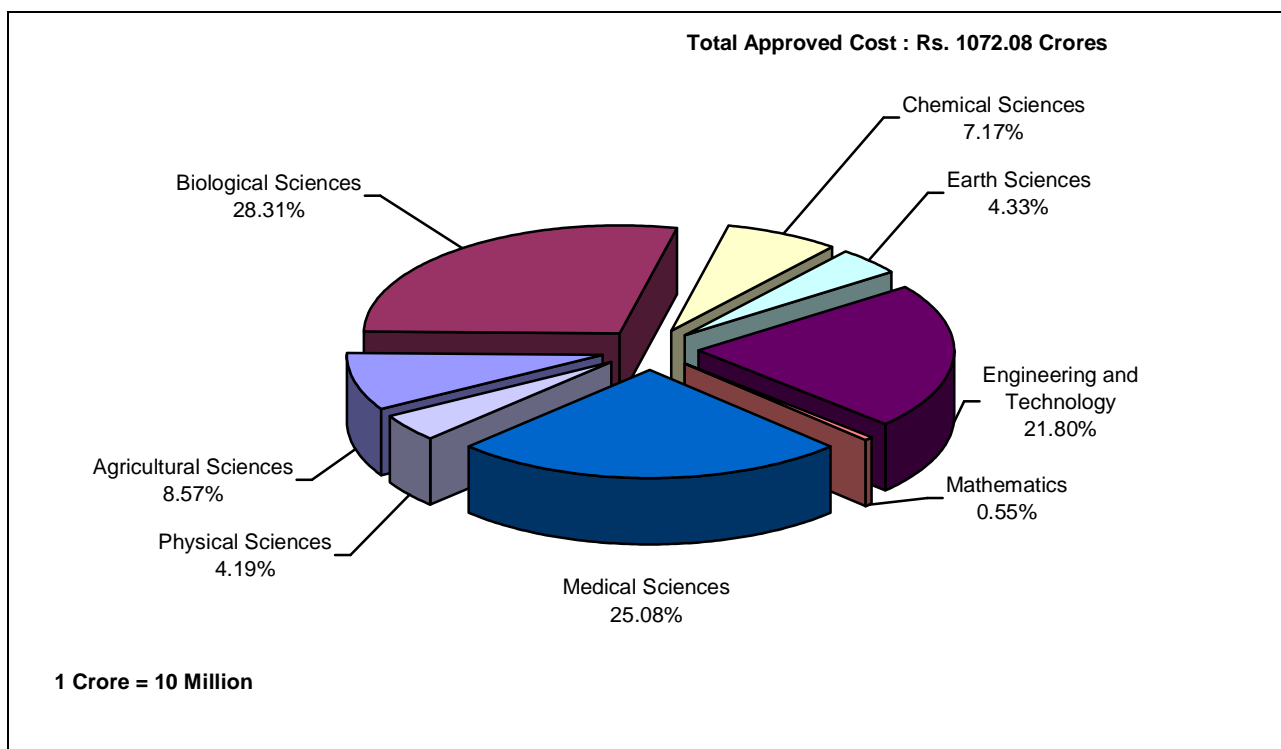
**SUBJECT AREA WISE NUMBER OF R&D PROJECTS APPROVED  
DURING 2006-07**



**Figure 1**

**Figure 2** shows subject area-wise pattern of funding during the year 2006-07. **Biological Sciences** area received maximum financial support of 28.31 per cent followed by **Medical Sciences** 25.08 per cent. **Engineering & Technology** area received financial support of 21.80 per cent followed by **Agricultural Sciences** at 8.57 per cent. Projects in the area of **Chemical Sciences** and **Earth Sciences** received financial support of 7.17 per cent and 4.33 per cent respectively. **Physical Sciences** area got financial support of 4.19 per cent and the least financial support received was by **Mathematics** 0.55 per cent.

## SUBJECT AREA-WISE R&D SUPPORT DURING 2006-07



**Figure 2**

**Table 3** gives combined information about the subject area-wise distribution of Extramural R&D projects and their approved cost.

**Table 3**  
**Subject Area-Wise Distribution of Extramural R&D Projects and their Approved Cost**  
**During 2006-07**

Subject Area	Number of Projects	Total Approved Cost (Rs. Crores)
Agriculture Sciences	209	91.91
Engineering & Technology	700	233.66
Medical Sciences	755	268.88
<b>NATURAL SCIENCES:</b>		
Biological Sciences	992	303.54
Chemical Sciences	501	76.84
Earth Sciences	250	46.40
Mathematics	85	5.92
Physical Sciences	289	44.93
<b>Total</b>	<b>3781</b>	<b>1072.08</b>

## Funding by Types of Institutions

The institutions have been classified into five categories such as:

- A. Universities/Colleges
- B. Deemed Universities
- C. Institutes of National Importance
  - Indian Institute of Technology, All India Institute of Medical Sciences, Indian Statistical Institute, P.G. Institute of Medical Education & Research and Sree Chitra Tirunal Institute for Medical Sciences & Technology
- D. National Research Laboratories
  - Laboratories under CSIR, ICAR, ICMR, DRDO and autonomous institutions under Central Government Ministries/Departments, Central Public Sector Undertakings
- E. Others
  - Institutions which are not covered under A, B, C & D above.

The distribution of Extramural R&D Projects by Types of Institutes with their approved cost is indicated in **Table 4**. The number given in Column 2 in this Table refers to unique institutes where 3781 projects have been given for implementation.

**Table 4**  
**Distribution of Extramural R&D Projects by Types of Institutes and their Approved Cost During 2006-07**

				(Rs. Crores)
Types of Institutes	Number of Institutes	Number of Projects	Total Approved Cost	Percentage of Total Approved Cost
(1)	(2)	(3)	(4)	(5)
Universities/Colleges	423	1853	300.18	28
Deemed Universities	36	302	85.77	8
Institutes of National Importance	12	529	182.25	17
National Laboratories	151	643	332.35	31
Others	238	454	171.53	16
<b>Total:</b>	<b>860</b>	<b>3781</b>	<b>1072.08</b>	<b>100</b>

The gender-wise distribution of Principal Investigators who took up 3781 Extramural R&D Projects is shown in **Table 5**.

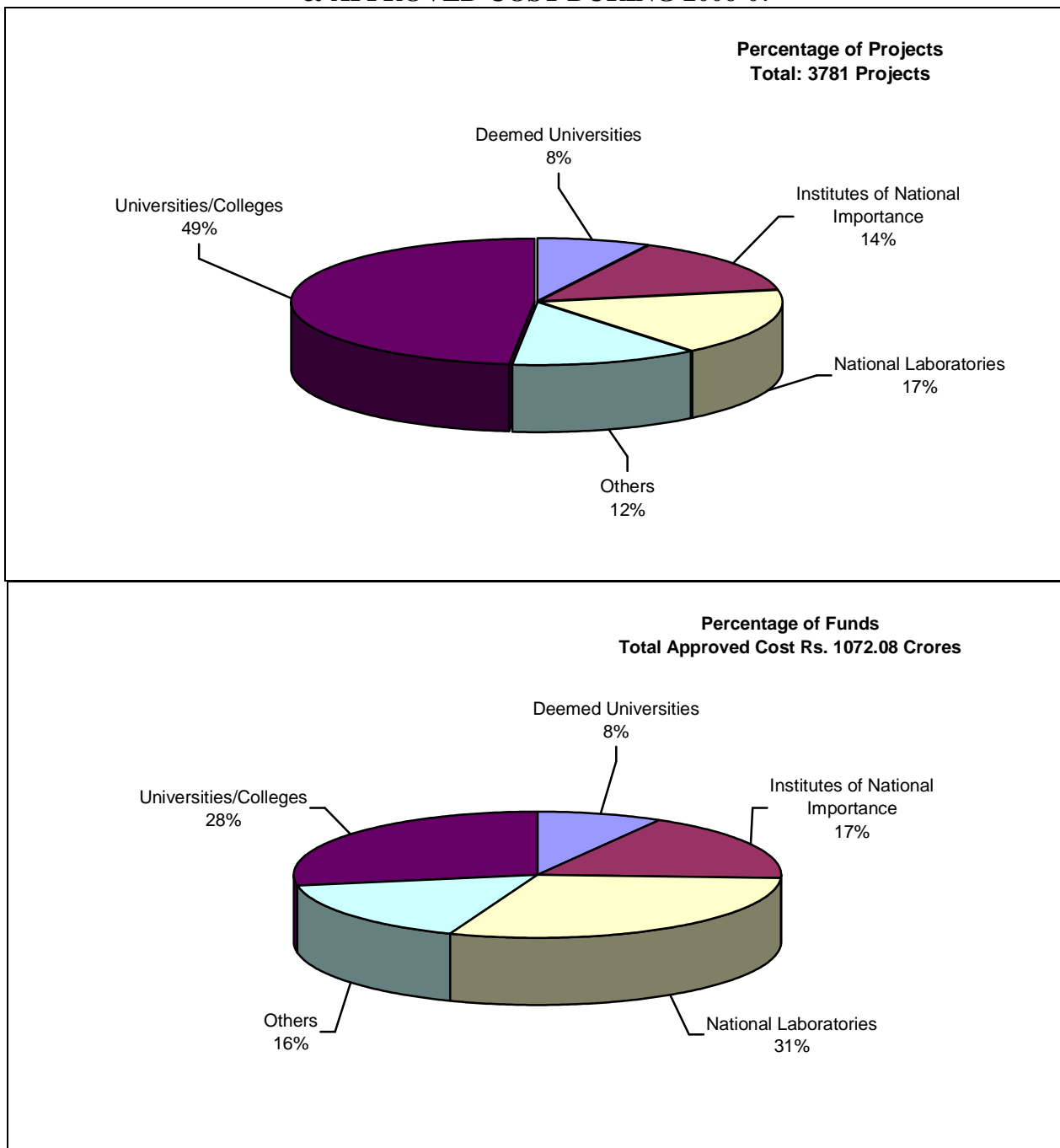
**Table 5**  
**Gender-wise Distribution of Principal Investigators During 2006-07**

Gender	Number of PIs	Percentage	Number of Projects	Percentage
Male	2545	76.29	2970	78.55
Female	784	23.50	804	21.26
Heads*	7	0.21	7	0.19
<b>Total</b>	<b>3336</b>	<b>100</b>	<b>3781</b>	<b>100</b>

\*Projects approved to Heads of Organisations & Institutions, their gender information is not available.

**Figure 3** hereunder shows the percentage distribution of number of projects and its approved cost by types of institutions during the year 2006-07. The maximum number i.e. 49% of the projects were sanctioned to Universities/Colleges with financial support of 28%. National Laboratories received 17% of the projects with financial support of 31%. Institutes of National Importance got 14% of projects with financial support of 17%. 8% of the total projects were given to Deemed Universities and 12% to Others category with financial support of 8% and 16% respectively. The total financial support to academic sector i.e. to A, B & C was 53%.

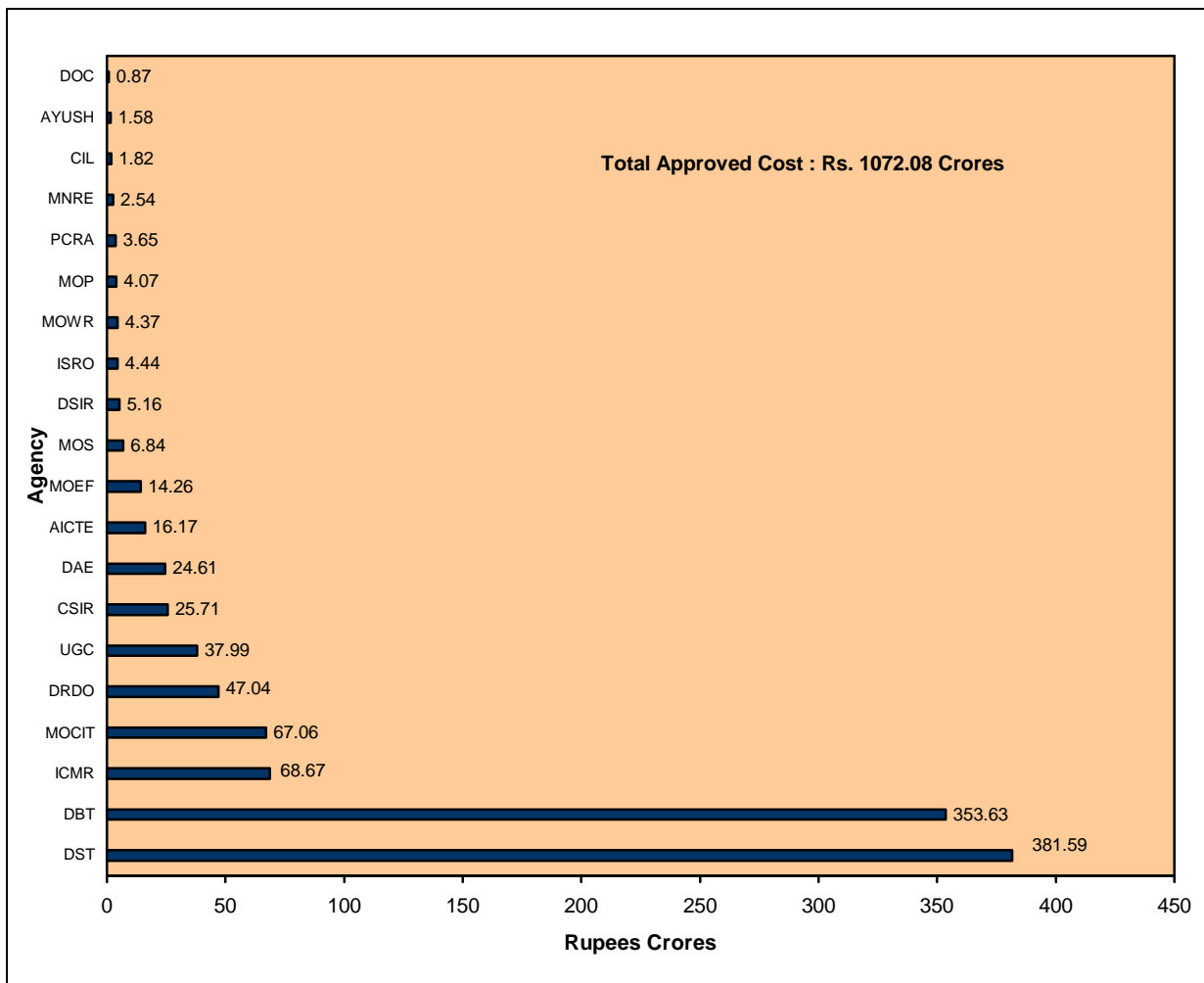
**DISTRIBUTION OF R&D PROJECTS BY TYPES OF INSTITUTES  
& APPROVED COST DURING 2006-07**



**Figure 3**

**Figure 4** shows the pattern of funding by various funding agencies. As may be seen the maximum funding of Rs. 381.59 crores (35.59%) has been by the Department of Science & Technology (DST) for extramural R&D projects. The next in order comes the support from the Department of Biotechnology i.e. Rs. 356.63 crores (33.26%) and Rs. 68.67 crores (6.40%) by the Indian Council of Medical Research (ICMR). The funding done by Ministry of Communications & Information Technology (MOCIT) is to the extent of Rs.67.06 crores (6.26%) and the lowest funding is of Rs. 0.87 crores (0.08%) by the Department of Coal.

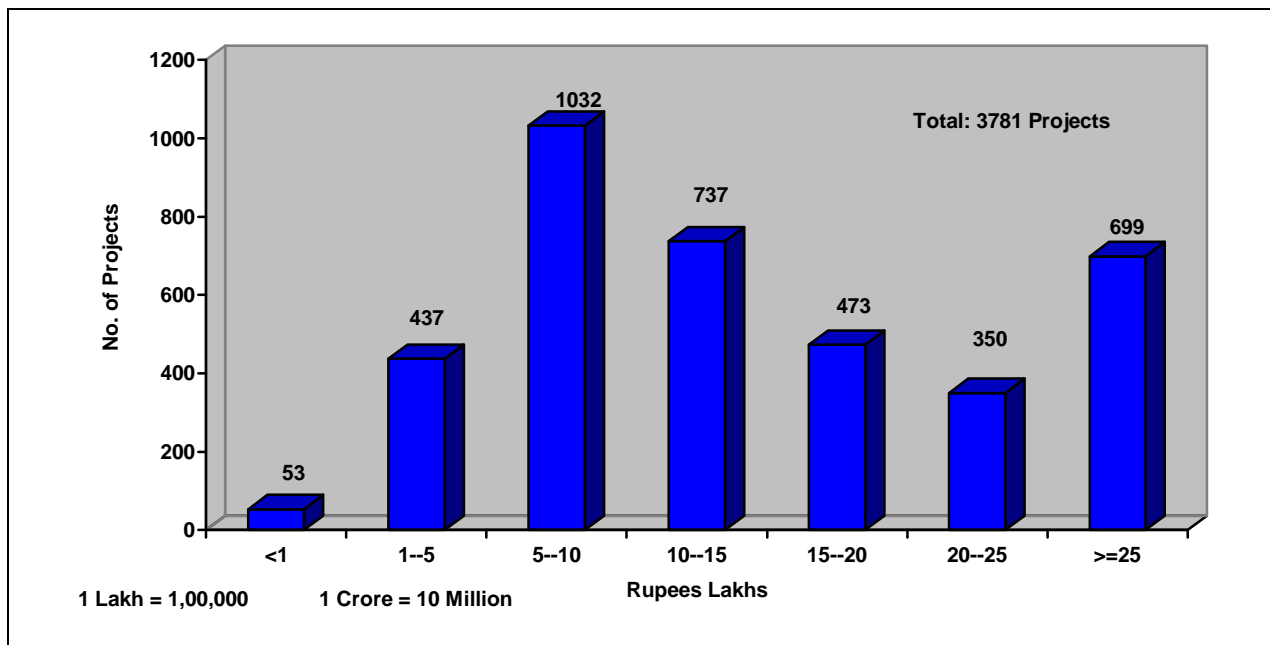
### R&D SUPPORT BY CENTRAL S&T AGENCIES DURING 2006-07



**Figure 4**

As per **Figure 5** the analysis indicate that the majority of projects i.e. 1032 were in the cost range of Rs. 5 to 10 lakhs. 737 projects were in the cost range of Rs. 10 to 15 lakhs and 699 projects were in the cost range of above Rs. 25 lakhs. 473 projects were between the cost range of Rs. 15 to 20 Lakhs and 437 projects were between the cost range of Rs. 1 to 5 lakhs. There were 350 projects costing between Rs. 20 to 25 lakhs and 53 projects were of less than Rs. 1 lakh.

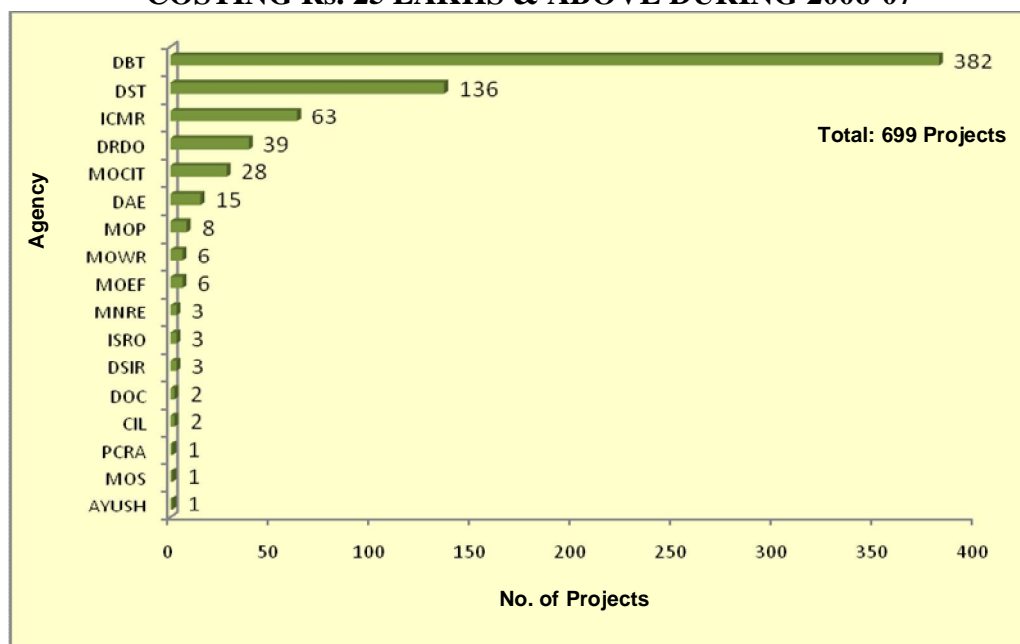
## DISTRIBUTION OF R&D PROJECTS BY APPROVED COST DURING 2006-07



**Figure 5**

Agency-wise distribution of 699 large projects costing equal to and over Rs. 25 lakhs each is given in **Figure-6**. Out of this, maximum number of projects i.e. 382 were funded by the Department of Biotechnology (DBT) followed by 136 projects by the Department of Science & Technology (DST). Further this was followed by 63 projects sanctioned by the Indian Council of Medical Research (ICMR), 39 by the Defence Research & Development Organisation (DRDO), 28 by the Ministry of Communications & Information Technology (MOCIT), 15 by the Department of Atomic Energy. The remaining 36 projects were approved by other agencies.

### AGENCY-WISE DISTRIBUTION OF R&D PROJECTS COSTING Rs. 25 LAKHS & ABOVE DURING 2006-07



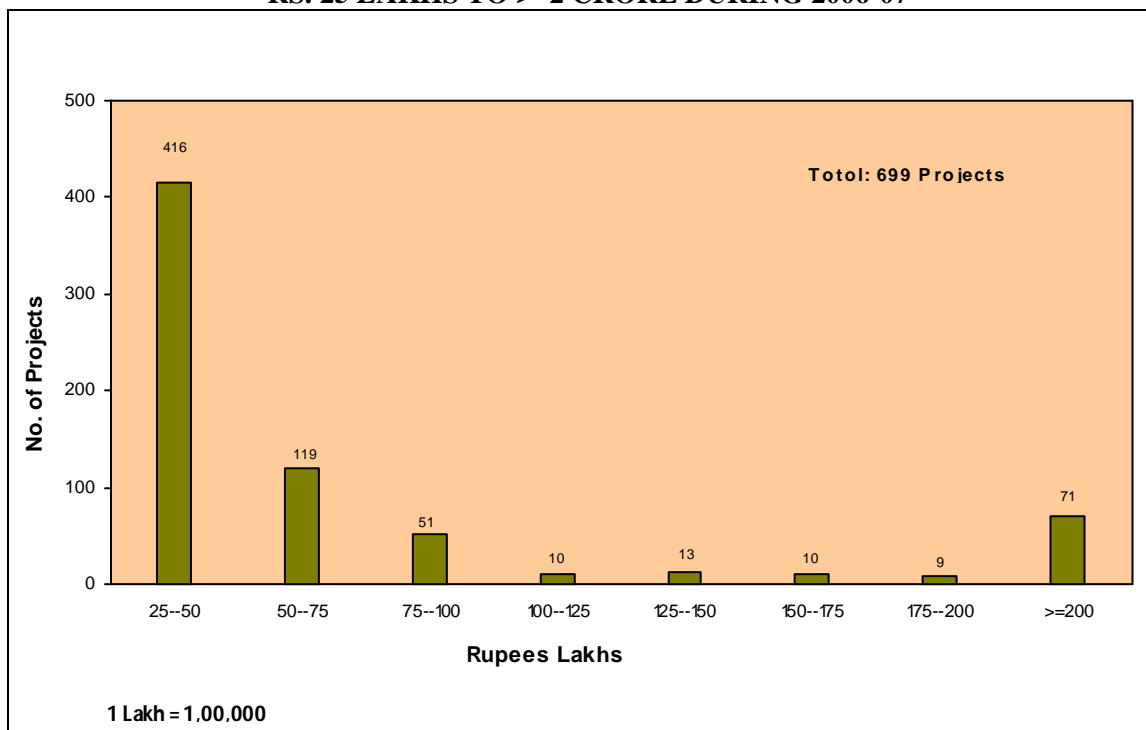
**Figure 6**

As may be seen from **Figure 5**, the total number of projects costing Rs. 25 lakhs and above are 699. Their further distribution along with total approved cost is shown in **Table 6**. The highest number of projects i.e. 416 are in the cost range of Rs. 25-50 lakhs followed by 119 in the cost range of Rs. 50-75 lakhs and 71 projects are in the cost range of  $\geq$  Rs. 2 crores.

**Table 6**  
**Distribution of Extramural R&D Projects costing Rs. 25 Lakhs & above During 2006-07**

<b>Cost Range (Rs. Lakhs)</b>	<b>Number of Projects</b>	<b>Total Approved Cost</b>
25--50	416	148.24
50--75	119	71.21
75--100	51	43.55
100--125	10	11.32
125--150	13	17.09
150--175	10	15.72
175--200	9	16.68
$\geq$ 200	71	403.46
<b>Total:</b>	<b>699</b>	<b>727.27</b>

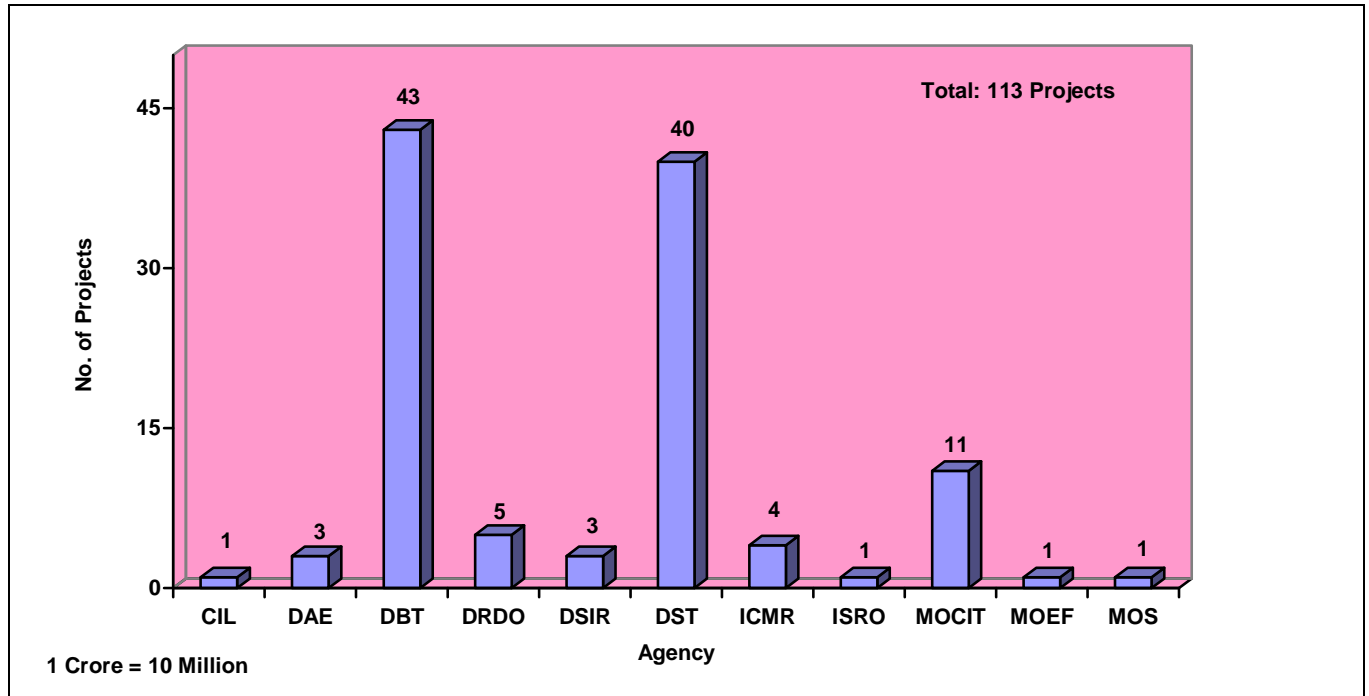
**DISTRIBUTION OF R&D PROJECTS BY APPROVED COST OF  
RS. 25 LAKHS TO  $\geq$ 2 CRORE DURING 2006-07**



**Figure 7**

**Figure 8** indicates that there were 113 projects costing Rs. 1 crore & above which were funded by 11 agencies during 2006-07. Majority of these projects i.e. 43 (38.05%) were funded by the Department of Biotechnology (DBT) followed by 40 (35.40%) by the Department of Science & Technology (DST).

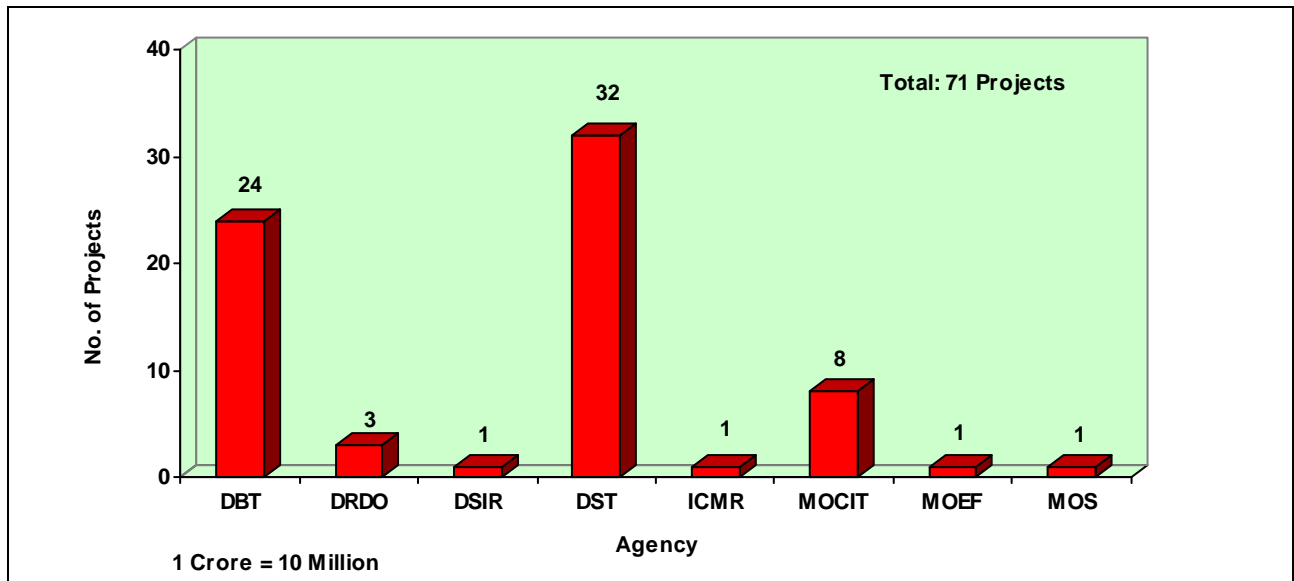
**AGENCY-WISE DISTRIBUTION OF R&D PROJECTS  
COSTING Rs. 1 CRORE & ABOVE DURING 2006-07**



**Figure 8**

It may be seen from **Figure 9** that there were 71 projects each costing Rupees two crores and above funded by eight agencies. The maximum number of high cost projects i.e. 32 were funded by Department of Science & Technology.

**AGENCY-WISE DISTRIBUTION OF R&D PROJECTS COSTING  
Rs. 2 CRORES & ABOVE DURING 2006-07**



**Figure 9**