

DST REFERENCE NUMBER
DST/NSTMS/05/01/93

**SURVEY OF
SCIENTIFIC AND TECHNICAL PERSONNEL
IN HIGHER SALARY GROUPS
IN INDIAN INDUSTRIES**

**STUDY SPONSORED BY
THE DEPARTMENT OF SCIENCE & TECHNOLOGY
GOVERNMENT OF INDIA
NEW DELHI**

**PRINCIPAL INVESTIGATOR
P.K. AHUJA**

**CENTRE FOR RESEARCH, PLANNING AND ACTION
16-DAKSHINESHWAR, 10-HAILEY ROAD, NEW DELHI-110001**

Tel. # 3326955, 3355170

Fax: 91-11-3329216

APRIL 1997

DST REFERENCE NUMBER
DST/NSTMS/05/01/93

**SURVEY OF
SCIENTIFIC AND TECHNICAL PERSONNEL
IN HIGHER SALARY GROUPS
IN INDIAN INDUSTRIES**

**STUDY SPONSORED BY
THE DEPARTMENT OF SCIENCE & TECHNOLOGY
GOVERNMENT OF INDIA
NEW DELHI**

**PRINCIPAL INVESTIGATOR
P.K. AHUJA**

**CENTRE FOR RESEARCH, PLANNING AND ACTION
16-DAKSHINESHWAR, 10-HAILEY ROAD, NEW DELHI-110001**

Tel. # 3326955, 3355170

Fax: 91-11-3329216

APRIL 1997

C O N T E N T S

	PAGE No.
Acknowledgments	1 - i
Abbreviations Used	1 - ii
Highlights	1 - iii
Executive Summary	2
Chapter 1 : Introduction	19
Chapter 2 : Coverage Concepts and Definitions	21
Chapter 3 : Main Characteristics of Scientific and Technical Personnel	29
Chapter 4 : Sector wise Analysis	64
Chapter 5 : State wise Analysis	90
Chapter 6 : Industry wise Analysis	106
Chapter 7 : Remuneration of Scientific and Technical Personnel	128
Chapter 8 : Estimation of Scientific and Technical Personnel in Corporate Sector	151
Index of Tables	156
Index of Graphs	160
List of Annexures	162
Annexures	165

ACKNOWLEDGMENTS

I express my gratitude to the Department of Science & Technology, specially Dr.(Mrs.) A.R. Rajeshwari, Adviser, Shri Rakesh Chetal, Director and Dr.G.J. Samathanam, Principal Scientific Officer, for funding the project and providing guidance when ever required. I am also grateful to Shri S.P. Ahuja, Director, Centre for Research, Planning & Action (CERPA), for providing institutional support and assistance from time to time for smooth implementation of the study.

Annual reports of companies, the basic source material for the study, were made available by the Department of Company Affairs. But for cooperation received from the Director (R&S) and Librarian (R&S) of that Department, the study could not have been successfully completed.

I acknowledge valuable contributions made by Shri P.L. Bajaj and Shri Naresh Kumar Rajput, who collected data from the annual reports of companies, and Mrs. Shamshad who was responsible for data entry. Mrs. Shamshad also typed out the report and helped in editing it. Dedicated services were provided by programmers, Shri Ravindran who processed the data and cleaned it of inconsistencies and Shri Kesar Singh who provided commendable support in preparation of tables and annexures. Cooperation received from various members of staff of CERPA is also acknowledged with thanks.

P.K.Ahuja
Principal Investigator
25.04.1997

ABBREVIATIONS USED

STP	:	Scientific & Technical Personnel
TP	:	Technical Personnel
SP	:	Scientific Personnel
S&T	:	Scientific & Technical
CG	:	Central Government
SG	:	State Government
LH	:	Large Houses
MN	:	Multinational
Non LH/MN	:	Non Government other than LH & MN Companies
FERA	:	Foreign Exchange Regulation Act
MRTTP	:	Monopolizes & Restrictive Trade Practices Act
GM	:	General Manager
DGM	:	Deputy General Managers
AM	:	Asst/Dy Manager
SCI	:	Shipping Corporation of India Ltd.
SISC	:	South India Shipping Corporation Ltd.
FG	:	Foreign Going

HIGHLIGHTS

1. **Coverage:** There are 3.05 lakh companies (on 31.3.1994) with paid up capital of Rs.104,891 crores. Of these, 6798 are medium and large companies, 2.23% in terms of numbers and 90.15% in terms of paid up capital of all the companies. The Survey covers 4467 companies, constituting 65.71% of number of large & medium companies and 93.42% of their paid up capital.

2. **Sector wise distribution of Surveyed Companies:**

	No. of Companies	No. of S&T Personnel	Paid Up Capital (Rs. Crores)
Government Companies	627 (14.04%)	7,241 (28.28%)	59,858 (67.76%)
Non-Government Companies	3840	18,366	28,477
Total	4467	25,607	88,335

3. Distribution of S&T Personnel	Govt Cos	Non-Govt Cos	All Companies
Scientific Personnel	1,233 (17.03%)	5,286 (28.78%)	6,519 (25.46%)
Technical Personnel	6,008	13,080	19,088
Total STP	7,241	18,366	25,607
of which Female STP	66 (0.91%)	137 (0.75%)	203 (0.79%)
4. Non S&T Personnel	3,777	10,903	14,680
5. STP Intensity (Percent)	65.72	62.75	63.56
6. Average STP per company			
Scientific Personnel	1.97	1.38	1.46
Technical Personnel	9.58	3.41	4.27
Total STP	11.55	4.79	5.73

7. Distribution of S&T Personnel by fields of specification (by qualifications) and their other characteristics:

	S&T Personnel (percent)	Remuneration (Rs.'000 p.a)	Age (Years)
Technology			
Mechanical	22.38	200	47.4
Electrical	13.64	193	46.5
Civil	3.57	192	50.4
Chemical	5.67	235	46.6
Computer	0.39	207	43.7
Shipping	8.68	316	37.3
Others	5.54	265	47.8
Not specified	14.67	-	-
Total	74.54	222	45.2
Sciences			
Natural	21.28	215	48.3
Agricultural	1.62	205	47.6
Medical	2.56	221	47.5
Total	25.46	216	48.1
Total S&T	100.00	221	46.4

8. Distribution of S&T Personnel by Levels of qualifications (Percent) and their Characteristics :

Doctorate	2.50	255	49.0
Postgraduate	15.70	246	46.1
Graduate	65.36	214	47.2
Diploma	13.06	221	42.1
Certificate	3.38	205	45.8
Total	100.00	221	46.4

9. Distribution of S&T Personnel by designations and their main

Characteristics (Percent):

Senior Management	6.59	387	53.5
Middle Management	23.74	214	49.2
Junior Management	40.20	182	45.9
Engineers	10.85	246	41.8
Scientists	0.11	167	43.3
Medical Personnel	2.27	188	47.4
Computer Personnel	0.55	181	40.4
Others	15.69	245	43.4
Total	100.00	221	46.4

10. Distribution of STP by Primary work activity and their main Characteristics (Percent):

Top Management	5.01	355	50.8
Plant Level	30.36	200	47.5
Marketing	15.48	209	46.2
Adm Finance	5.81	199	47.5
R&D	3.80	193	48.2
Medical	2.44	189	47.4
Computer	2.11	190	43.0
Others	21.76	261	42.8
Not specified	13.23	194	47.6
Total	100.00	221	46.4

11. Levels of qualifications and fields of specialisation (percent):

	Technology	Sciences	Total
Doctorate	35.21	64.79	100.0
Postgraduates	63.84	36.16	100.0
Graduate	73.45	26.55	100.0
Others	95.08	4.92	100.0
Total	74.54	25.46	100.0

12. Main characteristics is S & T Personnel sector wise :

	S & T Personnel (Percent)	Average Remuneration (Rs 000 p.a)	Age (Years)	Technical Personnel (Percent)	Non Managerial personnel (Percent)
Govt companies					
Central Govt (without SC1)	26.58	223	44.8	83.44	46.11
State Govt	19.27	(178)	(48.1)		
All	1.69	177	48.7	75.58	8.53
	28.28	220	45.0	82.97	43.86
Non Govt Companies					
Large Houses	35.56	210	47.6	75.13	26.88
Multinationals	17.62	223	45.7	64.61	21.49
Others	18.53	240	46.8	70.00	20.08
All	71.72	221	46.9	71.22	23.80
All companies	100.00	221	46.4	74.54	29.47
Male STP	99.21	221	46.4	74.89	29.32
Female STP	0.79	187	44.6	31.53	48.28

13. Concentration of S&T personnel and companies by STP employment size (percent):

STP Size	Companies	STP
Nil	67.77	0.00
1-5	20.83	7.75
6-25	7.60	16.30
26-100	2.75	22.11
Above 100	1.05	53.84
Total	100.00	100.00

14. Industry wise variations showing emphasis of Government companies on basic and infrastructure industries and varying STP intensity of different industries.

	STP in Govt Companies (Percent)	STP in Non Govt Companies (Percent)	Technical Personnel (Percent)	STP Intensity (Percent)	Remuneration (Rs.000)
(i) Manufacturing of which	29.83	83.73	69.99	65.26	212
Chemicals	12.81	21.42	55.99	61.73	217
Metals	3.89	12.48	75.59	77.15	195
Machinery	5.02	16.25	82.10	68.85	205
Transport Equipment	1.45	10.14	83.11	78.01	203
Petroleum	4.63	0.25	76.84	73.50	172
(ii) Shipping	27.48	1.67	98.82	67.81	326
(iii) Finance & Consultancy	21.27	3.15	78.82	53.40	207
(iv) Electricity	9.03	5.00	89.82	67.38	173
(v) Mining	4.49	0.58	52.55	81.66	201
(vi) Construction	4.14	0.98	77.92	80.27	231
(vii) Trade & Hotels	2.50	1.79	62.16	46.88	288
(viii) Others	1.26	3.10			
Total	100.00	100.00	74.54	63.56	221

15. Statewise distribution of companies and S & T Personnel and their main characteristics

	S&T Personnel (percent)	Companies (percent)	Remuneration (Rs 000)	Age (Years)
(i) Maharashtra	45.27	23.48	230	45.3
(ii) Delhi	15.22	10.61	199	46.9
(iii) West Bengal	11.41	11.84	242	47.1
(iv) Gujarat	8.93	8.31	195	47.4
(v) Tamil Nadu	3.67	8.42	244	46.8
(vi) Andhra Pradesh	3.00	8.17	222	46.9
(vii) Karnataka	2.59	4.68	191	48.7
(viii) Assam	1.34	2.44	171	47.0
(ix) U.P	1.26	4.84	248	48.0
(x) Bihar	1.21	1.19	166	49.5
(xi) Others	6.10	16.02		
Total	100.00	100.00	221	46.4

EXECUTIVE SUMMARY

CHAPTER 1 : INTRODUCTION

1. Science and Technology contributes to economic and social development through judicious deployment and utilisation of Scientific and Technical Personnel (STP) in different fields of activity. Capacity for higher learning in Science and Technology has increased considerably. While employment of STP in Government and semi Government sectors has been continuously assessed, there is hardly any information on such personnel in industry. Surveys of STP were conducted under NSTMIS in 1983 and 1987, but they were restricted to seven states in southern and western regions. The present survey, covering the entire country, was sanctioned by the Department of Science & Technology on 2nd August 1994. Annual reports of companies, which give information on personnel employed by them in higher salary groups i.e. those receiving remuneration of not less than Rs.144,000 per annum, provide the basic information. Only medium and large companies, having paid up capital of not less than Rs.50 lakhs each, have been covered. 1993-94 is the reference year.

2. The Survey was commissioned on 8th August 1994. The objective was to collect all relevant information on the companies and characteristics of STP employed by them, which would then be studied with a view to establish inter relationships, apart from analyzing the data.

CHAPTER 2 : COVERAGE CONCEPTS AND DEFINITIONS

3. The Survey covers medium and large companies registered under the Companies Act. Statutory Corporations and departmental undertakings are not registerable and, therefore, not covered. There were 3.05 lakh companies as on 31.3.1994, with paid up capital aggregating to Rs.104,891 crores. Of these, only 6798 (or 2.23 %) are medium and large companies, though their paid up capital is Rs.94,561 crores (90.15 %). They would account for almost all the STP in higher salary groups, as smaller companies generally do not employ high salary group personnel.

4. It has been possible to collect data for 4467 companies (66 %). The company data relate to state of location, sector by ownership, industry classification, size in terms of investment (paid up capital) and income, number of personnel in higher salary groups and details of STP. State of location relates to the place of registration of the company and not location of the unit, for which data are not available. Industry classification is based on three digit Standard Industrial Classification, suitably abridged, without losing focus on S&T intensive industries. Sector classification is by ownership of paid up capital as below:

- Government companies (where Government ownership is not less than 51 %), with further sub classification into Central Government(CG) and State Government(SG) companies.
- Large Industrial Houses (LH) as per the MRTP Act.
- Multinationals (MN) as per FERA, including those companies which were earlier FERA companies, but in which foreign equity has been diluted but still continues to be above 25%. These companies seem to continue to retain their earlier policies on employment and remuneration.
- Other non Government companies (non LH/MN).

5. Data on STP have been collected in respect of all the particulars as prescribed for annual reports, namely age, sex, qualifications, discipline, experience, remuneration, primary work activity and level of responsibility. These characteristics have been suitably classified as explained in paras 2.14-2.19.

CHAPTER 3 : MAIN CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL

6. The Survey covers 4467 companies employing 40,287 persons in higher salary groups, including 25,607 STP (63.56 %). Main features of the companies/STP are (Table 3.1 & 3.2):

- * On an average a company employs 9.02 persons in high salary groups, including 5.73 STP.
- * There are only 203 women STP, constituting 5 persons per 100 companies, or 8 persons in 1000 STP.
- 74.54 % of STP have qualifications in Technology/Engineering and 25.46% in Sciences. However, majority of women STP (68.47 %) have Science qualifications.
- The 4467 companies include 627 Government companies (14.04 %). However, they employ 27.35 % of higher salary group personnel, 28.28 % of STP and 32.51 % of women STP.
- On an average, a Government company employs 17.52 higher salary group personnel, 11.52 STP and 0.10 women STP, compared to 7.63 personnel, 4.79 STP and 0.04 women STP by a non Government company.
- S&T employment intensity, measured by STP as percent of all higher salary group personnel, is 63.56 % on an average. It is marginally higher in Government companies (65.72%) than in non Government companies (62.75 %).

7. On the basis of 25,607 STP employed by the surveyed companies, STP employed by all the medium and large companies are

estimated at 31,114 persons (Chapter 8). By and large, this estimate represents STP employed by the entire corporate sector, as smaller companies hardly employ any higher salary group personnel. These personnel constitute 0.011 % of all the main workers and 0.14% of main workers in manufacturing industries in the country.

8. **Fields of Specialisation:** Within the broad classification of STP in Technology (74.54 %) and Sciences (25.46%), discipline has not been indicated in the source material for 33.52 % of STP. The omission is more common in Sciences (18.85%) than in Technology (14.67 %) mainly because a person qualifies in more than one subject, specially at graduate level. For 60 % of STP in Technology stream for which discipline has been indicated, majority are in Mechanical Engineering (22 %), followed by Electrical (14 %), Chemical (6 %) and Civil Engineering (4 %). In the balance of 14 % Shipping technology accounts for 8.7 %, Metallurgy for 1.4 %, Mining for 0.9 %, Textiles for 0.9 %, Marine for 0.5 % and others for less than 0.5 % each. Most of the Shipping technology personnel are in 2 Government companies (Shipping Corporation of India, SCI, with 1873 STP and South India Shipping Corporation, SISC, with 116 STP), having relatively low age, small experience and high remunerations. As these two companies account for 27 % of STP in Government sector, the aggregate data sometimes give distorted conclusions, which need to be adjusted. In Science stream, of the 6.6% of STP for which discipline has been indicated, Medical Sciences account for 2.6 %, followed by Agricultural Sciences (1.6 %), Chemistry (1.0 %), Physics (0.4 %) and other disciplines (1.0%), which mainly include Pharmacology, Geology, Statistics, and Mathematics.

9. Women STP have different preferences. Over 68.5 % of them are in Science stream, including 33.5 % in natural Sciences, 33.5% in Medical Sciences and 1.5% in Agricultural Sciences. In the field of Technology (31.5%), 13% are in Electrical, 5% in Mechanical and 3 % in Civil Engineering. (Tables 3.3 & 3.5)

10. **Levels of Qualifications:** Two thirds of the STP are Graduates, 16 % Post Graduates, 2.5 % Doctorates and 16 % have Diplomas/Certificates, including 4 % in Motor/Shipping. In case of women STP, there are comparatively more of high level qualifications and less of low level qualifications (Table 3.4).

11. **Levels of Responsibility:** Over 70 % of STP are working at Managerial levels and only 30 % on Specialised positions. Among Managerial personnel, 40 % are at lower levels (Manager/Asst Manager), 24 % at middle levels (General Manager/Dy GM) and 6 % at top levels (Chairman, Managing Director and Director). Among the Specialised positions, main categories are Engineers (11 %), Doctors (2 %), Computer/System personnel (0.5 %) and Scientists (0.1 %), while remaining 16 % hold varied positions like Research Officers, Executives, Technicians and many categories of Shipping Personnel. Among women STP, 30 % are working as Doctors. There are also comparatively more of top

managerial women personnel (8 %) and Asst Managers (13 %) and less of all other levels. (Table 3.6)

12. **Primary Work Activity:** Work activity of 13 % of STP has not been specified in the source material. Over two thirds of the remaining 87 % of the STP are engaged in Plant (30 %), Marketing (15 %), Administration/Finance (6 %) and Senior Management (5 %). Remaining one third are in various ancillary activities, namely R&D (4 %), Medical (2 %), Computer (2 %) and other activities (22%) of diverse nature like Planning, Telecommunication, Standards, Pollution control, Project formulation, Diversification, Coordination, Growth etc. In view of their fields of specialisation, 33 % of Women STP are Working as Medical Personnel. There are also comparatively more of women STP at Senior Management (7 %), Administration (8 %) and Computer activities (2 %), with lower proportions at Plant, Marketing and miscellaneous technical activities. (Table 3.7).

13. **Inter Relationships:** Data on fields of specialisation (Table 3.8 & 3.9) show that:

- Proportions of Technical Personnel decrease as levels of qualifications go up i.e. from 95 % among junior qualification levels to 35 % among Doctorates. Scientific Personnel have comparatively higher levels of qualifications, 65% among Doctorates and 36% among Post Graduates.
- Proportions of Technical personnel do not vary much for different levels of responsibilities, except for top managerial levels for which there are comparatively less of Technical Personnel (64 %) and more of Scientific Personnel (36 %).
- Activity wise, there are comparatively more of Technical Personnel at Plant level (82 %) and less (57 %) on Administration.
- Compared to the Bench mark of 28.28 % of STP employed by Government companies, they employ more of Technical Personnel (31%), but less of Doctorate degree holders (24 %) as well as top managerial personnel (18 %).
- On the other hand, Government companies employ more of junior qualification personnel (36 %), personnel on specialised positions (42 %) and those engaged on miscellaneous activities (39 %), a major link in the chain being a large number of Diploma holders in Shipping technology employed by shipping companies.

14. Data on levels of qualifications show that (Tables 3.10 & 3.11):

- There are comparatively more of high qualification levels among Scientific Personnel and top and middle

managerial personnel, and less of them among STP working on specialised positions and on plant, marketing and administration activities.

- There are more of junior qualification levels among Technical Personnel (21%) , specialised positions (35%) and miscellaneous activities (26%).

15. Average Age of STP is 46.4 years. It is lower for women personnel (44.6 years) and those in Government companies (45.0 years) (Table 3.12 & 3.13).

- Age varies with level of qualification, from 44 years for low qualifications (because of early entry age), to 46-47 years for Graduates & Post Graduates and 49 years for Doctorates. Higher average age suggests preponderance of aged persons and restricted new entry. Companies prefer to appoint fresh Graduates/Post Graduates and train them for their requirements.
- STP in specialised and new fields have lower age and those in traditional fields have higher age, suggesting reduced entry of the latter. Average age of Scientific Personnel is higher (48.1 years) than Technical Personnel (45.8 years). Within the latter, Civil engineers are 50.4 years old, Mechanical, Electrical & Chemical engineers 46-47 years and those in specialised fields are 42 years old. In Sciences, there is no much variation among different disciplines.
- Age varies with levels of responsibility from 45.5 years for Assistant Managers to 56.7 years for Chairmen. Among specialised positions, it varies from 40.4 years for Computer personnel to 47.4 years for Doctors.
- There is no variation in age depending on work activity (46-47 years), except that top management personnel are 50.8 years and computer/miscellaneous activity personnel are 43 years old on an average.
- Concentration of STP is in age group 41-50 years (43%), followed by 51-60 years group (32%). While STP above 60 years are fewer (2%) as most of them retire by that age, 23% of them are upto 40 years.
- Distribution of Women STP is similar, except that there are less women above 50 years (25%) and more of them upto 40 years (32%) implying relatively recent entry of women in corporate sector.
- STP in Government companies have also similar pattern except that there is almost none beyond 60 years and comparatively more of them upto 30 years (10%) compared to those in non Government companies (3%).

16. Average experience of STP is 22.7 years, being lower at 20.0 years for women personnel and also for those in Government companies (20.2 years). Pattern with reference to various characteristics of STP is almost the same as in case of average age, except that average experience of women STP in Government Companies (19.2 years) is lower than in non Government Companies (20.3 years) suggesting that intake of women by Government companies has increased in the recent years. (Table 3.12)

17. Distribution of STP by different experience ranges shows that the number of STP is almost constant (15%) for the first 15 years experience. The proportion increases to 25% for 16-20 years experience range and decreases gradually thereafter. This suggests two conclusions. Firstly, STP enter higher salary groups either when they take up employment or only on gaining 15 year experience. Secondly, there was gradual increase in entry of STP during 1956-1980, but stagnation thereafter. (Table 3.14)

18. Average Remuneration of STP is Rs. 2.21 lakhs per annum, or Rs.18.420 per month. There is no variation between Government companies (Rs.2.20 lakhs) and non Government companies (Rs.2.21 lakhs). Women STP get lower remuneration (Rs.1.87 lakhs) due to their lower age and experience. Within these averages, remunerations vary widely. 66% of STP get upto Rs.2.00 lakhs and another 21% get between Rs.2.01-3.00 lakhs. Remaining 13% receive more than Rs.5 lakhs. Parity between Government and non Government STP is because of high remuneration (Rs.3.26 lakhs) paid by SCI to its 1873 employees engaged in international shipping. If this company is excluded, average remuneration in Government companies comes down to Rs.1.87 lakhs, which is 15% below the average remuneration in non Government companies. Remuneration in Government companies is lower in each remuneration range. (Table 3.15).

19. Most of STP are employed by a small number of large sized companies.

- One parameter is investment in paid up capital. 166 companies (4%) with investment exceeding Rs. 50 crores each, employ 31% of STP, while 3376 smaller companies (75%) with investment upto Rs. 5 crores each, employ only 20% of STP. Government companies are generally of big size. Taking a mix of the two sectors, 228 Top companies, 60 in Government sector with investment exceeding Rs.100 crores each and 168 in non Government sector with investment exceeding Rs.25 crores each, employ more than half of the STP in each sector. (Tables 3.16 & 3.17).
- Distribution of STP according to income of the employing companies also follows similar pattern. While only 123 companies (3 %) with income exceeding Rs.500 crores each, employ nearly 40% of STP, 3177 smaller companies (71%) with income upto Rs.25 crores, employ only 9% of STP. (Tables 3.18 & 3.19).

- Distribution of STP by size of employment is more revealing. 3027 companies, or 68% of all the companies, do not employ any STP in higher salary groups. Another 21% of companies employ upto 5 STP each, totaling 8% of STP. On the other hand, there are 47 big companies, 17 in Government sector and 30 in non government sector, which employ more than 100 STP each, or an average of 393 STP each, and employ 54% of all the STP. It is the personnel policies of these companies which mostly determine pattern and structure of STP employed by corporate sector and emoluments drawn by them. (Table 3.20 & 3.21).

20. State wise data show that location of companies and STP employed by them are highly concentrated in a few States. Top five states account for 85% of STP and top ten for 94%. Concentration is more marked in non Government companies. (Table 3.22)

21. Industry wise distribution STP shows that 69% of STP are employed by Manufacturing industries, followed by Shipping (9%), Finance & Consultancy (9%), Electricity (6%) and Transport (2%). Remaining industries account for less than 2% each.

CHAPTER 4 : SECTOR WISE ANALYSIS

22. Government companies constitute only 14.04% of all the companies, but are of bigger size and employ 28.28% of STP. Their average investment is 13 times that of a non Government company, employment is 2.30 times and STP are 2.40 times. However, Government and non Government sectors have sub sectors consisting of smaller and bigger companies. Sizes seem to have affinity in certain analytical conclusions. Central Government (CG), Large House (LH) and Multinational (MN) companies are of big size and State Government (SG) and non LH/MN companies in non Government sector are of small size. (Tables 4.1-4.3).

23. Large companies, though only 17.91% of all the companies, employ 79.77% of all the STP and 25.5 STP per company on average. Details are given below. .pa

Sector	Companies (percent)	STP (Per-cent)	Investment (percent)	STP Per Company	Women STP per 1000 STP
CG	4.05	26.58	61.15	37.6	8.7
LH	11.22	35.56	10.55	18.1	7.4
MN	2.64	17.63	2.45	38.2	6.4
Total	17.91	79.77	74.15	25.5	7.6
SG	9.98	1.70	6.61	0.9	16.1
Non LH/MN	72.11	18.53	19.24	1.4	8.6
Total	82.09	20.23	25.85	1.4	9.3
Grand Total	100.00	100.00	100.00	5.7	7.9

24. **Average Age of STP** varies between 44.8 years for CG companies to 48.7 years for SG companies. Average age for non Government companies varies within this range, from 45.7 years for MN to 47.6 for LH companies. Low age for CG companies is due to 1873 STP of SCI, Constituting 27.52% of all the STP in CG companies, where average age is 36.8 years. If SCI is excluded, average age for CG companies goes up to 47.8 years, 0.9 years higher than 46.9 years for non Government companies. Variations in average experience follow the same pattern. Age wise distribution of STP shows that proportion of STP above 50 years is the highest in SG companies (41%), STP upto 30 years are more visible among CG companies (11%) and form 3 % of STP in non Government companies. (Table 4.4)

25. **STP Intensity** varies between 60-64 in non Government companies, is the lowest (58%) in SG companies and the highest (66%) in CG companies (due to SCI with intensity of 91%). (Table 4.3).

26. **Index of Mobility** is higher for small companies (SG : 2.10 and non LH/MN : 2.27) and low for large companies (1.43 to 1.66), suggesting that STP in large companies do not change their jobs so frequently as in small companies. (Table 4.3).

27. **Levels of Qualifications:** large companies employ less of high qualification STP but more of low qualification STP. Small companies employ more of high qualification STP and less of low qualification levels. (Table 4.5)

28. **Fields of Specialisations:** Proportion of Technical Personnel is the lowest for MN (65%) and the highest for CG (83%), the latter due to SCI personnel. (Table 4.5)

29. **Levels of Responsibilities:** CG companies employ the largest proportion (46%) of STP in Specialised positions (due to SCI) and SG companies the lowest (9%). If SCI personnel are excluded, these position form 8-13% in small companies and 21-24 % in large companies. Among managerial STP (70% of STP), small companies employ more of top managerial personnel (14-18%) than by large companies (3-4% only). This is because small companies employ, if at all, only a few STP in higher salary groups in which chairmen, Managing Directors and Directors dominate. Large companies employ more of these personnel, but their proportion in large number of STP employed by them is necessarily limited. For the same reasons, small companies also employ more of middle Management personnel. Large companies employ less of such personnel but more of junior Management levels (45-56%). (Table 4.5)

30. **Primary Activities:** Plant level STP are the least in CG companies (18%) and the most in LH companies (38%). MN companies employ the largest proportion of Marketing STP (29%). CG companies employ the maximum proportion (49%) of STP on miscellaneous activities, mainly Shipping personal. However, if SCI is excluded, CG companies employ 25% on miscellaneous activities, similar to 24-25% by other large companies.

Distribution of STP on activities depend on the nature of industries in which sub sectors are engaged. Most of STP in CG companies are engaged in consultancy, shipping and infrastructure industries, which require least plant or marketing personnel. On the other hand most of the MN companies manufacture consumer products, which require more of marketing efforts. (Table 4.5)

31. **Average Remunerations** are low for CG (excluding SCI) and SG companies (Rs.1.77 lakhs) followed by LH (Rs.2.10 lakhs), MN (Rs.2.23 lakhs) and smaller non LH/MN companies (Rs.2.40 lakhs). Distribution of STP according to low (Rs.12000-15000 p.m.), medium (Rs.15000-25000 p.m) and high remuneration (above Rs.25000 p.m.) ranges show that, if SCI is excluded, more than three fourths of STP in CG as well as SG companies (76-77%) receive low remunerations compared to only 47-52% in non Government sub-sectors. High remuneration STP are the least in CG (4%) and SG (1%) companies, compared to 9-17% in three non Government sub sectors. Similar is the situation for STP receiving medium remunerations, who form 19-21% of STP in CG/SG companies. compared to 34-40% in LH,MN and other non Government companies.

32. **Employee size Distribution:** Most of the small companies, 84% of SG and 73 % of non LH/MN companies, do not employ any STP. In case of CG, LH & MN sub sectors, only 29-35% of the companies are in nil STP category. STP are concentrated in 348 companies which employ more than 10 STP each and generally belong to the latter sub sectors. These companies account for 97% of STP in CG, 93 % in LH, 96% in MN companies and 87% in all the companies. (Table 4.7).

33. **Investment size Distribution:** 43% of companies, mainly in SG and non LH/MN sub sectors, have investment upto Rs.1 crore each, but employ only 6% of STP. Large proportion of STP (49 %) is employed by 925 companies with medium investment of Rs.5-50 crores each. These include most of the STP in LH (69%) MN (57%) and SG companies (56%) . Most of the STP in CG companies (60%) are in 52 large companies with investment exceeding Rs.100 crores each. Other sub sectors have nominal presence in this investment size. (Table 4.8) .

34. **Regional Distribution** of STP is determined by few main factors like location of LH companies in Mumbai, MN companies in Mumbai and Calcutta, CG companies in Delhi, SCI in Mumbai and dispersal of smaller SG and non LH/MN companies generally in all the States. Thus, the largest proportion of STP is in Western region at overall level (56%) as well in sub sectors of LH (71%), MN (57%), CG (42%) and non LH/MN (48%). Northern region is dominated by CG (36%) and SG (41%) companies. Eastern region has the second largest presence of STP in MN companies (24%). Southern region has more of smaller companies in SG (23%) and non LH/MN (15%) sub sectors. (Table 4.9)

35. **Industry wise Distribution:** Manufacturing is the largest industry employing 69% of STP in all the sectors, 84% in non Government sector and 30% in Government sector. In non Government

sector, the share is the lowest for non LH/MN (71%) and the highest for MN companies (98%). In Government companies, there is small variation in CG (30%) and SG (33%) companies. Other main industries employing STP are:-

- SG companies: Transport (30%) , Consultancy (21%), Electricity (8%) and Construction (4%).
- SG companies: Electricity (25%), Consultancy (19%), Mining (12%), Road transport (5%) and Trade & Hotels (5%).
- LH companies: Electricity (9% in Mumbai & Calcutta) and Transport (4%).
- MN companies : In all 2% .
- Non LH/MN: Financing & consultancy (11%), Transport (9%), Trade & hotels (3%) and Construction (3%).

CHAPTER - 5 : STATE WISE ANALYSIS

36. State wise distribution of STP is highly skew mainly due to geographical and historical reasons. Maharashtra and Delhi alone account for 60 % of STP. If West Bengal, Gujarat and Tamil Nadu are added , the 5 States account for 85 %. On the otherhand Manipur, Mizoram and Tripura have no STP in higher salary groups. Concentration is more for non Government companies. (Tables 5.1 & 5.2)

37 Each region has a large STP employing state which determines the pattern of its employment. Each of the top employing states has a nucleus city which provides momentum to the state. Western region employs 56% of STP, mainly because of Maharashtra (Mumbai), where a large number of LH, MN and some CG companies, including SCI, are located. Northern region is next in importance (19 %), mainly due to CG companies located in Delhi. This is followed by Eastern region (15%) where a number of MN companies are located (in Calcutta). Southern region has the least share of STP (10 %). Average employment per company is also the highest, 9.13 STP, in Western region, around 4.85 in Northern and Eastern regions and the lowest of 2.33 STP in Southern region. STP in Government companies constitute 17-18 % of STP in all the regions, except in Western region where their proportion is the lowest (8 %)as it is dominated by non Government companies (in Maharashtra). (Table 5.3)

38. Average Age varies from state to state. It is low in Maharashtra (45.3 years) because of younger employees (36.8 years) of SCI. If this company is excluded, average age in all the major employing states, including Maharashtra, is around 47 years. Average age in medium employing states is higher at 48-49 years. Average experience also follows similar pattern i.e

between 23-24 years for large employing states, but higher for medium employing states. (Table 5.4)

39. S&T Intensity and index of mobility vary from state to state and do not show any pattern.

40. Data on Levels of Qualifications and Fields of specialisation do not suggest any pattern and state wise variations seem to be of adhoc nature.

41. Investment Size: STP are concentrated (above 50%) in middle investment (Rs.5-50 crores) companies in all the regions, except Northern region, in which these companies account for 31 % of STP. STP in Northern region are either in high investment (above Rs.100 crores) CG companies (27 %) or in small investment (upto Rs.5 crores) companies (40%). There is also a large concentration of STP in high investment companies in Western region (27%).

42. Industry wise: Southern region has the largest proportion of STP (83%) in Manufacturing. Northern region has the lowest proportion of such personnel(45 %), but large proportions of STP in Finance & consultancy (25%),Electricity (13%) and Construction (6%). This is due location of big Consultancy, Electricity and Construction CG companies in Delhi. Eastern region has second largest proportion of STP (76%) in Manufacturing and in Finance & consultancy (10 %). Western region has 72 % of STP in Manufacturing, but comparatively large proportions in Transport (16%) and also in Electricity (6%) due to SCI and Tata power companies located in Mumbai. (Table 5.10)

CHAPTER 6 : INDUSTRY WISE ANALYSIS

43. Manufacturing industries account for two thirds of companies (65%) and STP (68%). Other important employers of STP are Shipping (9%), Finance & business services (8%), Electricity (6%), Transport, Trade & hotels, Construction and Mining (2% each). Within Manufacturing, important industries are Chemicals & related products (19%), Metals & products (10%), Electrical machinery (8%), Transport equipment (8%), Non Electrical machinery (5%), Textiles (5%), Food product (3%), Cement (2%), Alcoholic beverages (2%) and Petroleum (1.5%). (Table 6.1).

44. Government companies dominate in Infrastructure, Consultancy and Basic industries and non Government companies in Manufacturing. While Manufacturing accounts for 84 % of STP in non Government companies, its share in Government companies is only 30 %, rest of the STP in this sector being in Shipping (27%), Consultancy (21%), Electricity (9%), Mining (5%), Construction (4%) and Trade & hotels (2%). Government companies dominate in certain industries, namely Shipping (87% of STP are in Government Companies), followed by Mining (75%), Consultancy (73%), Construction (62%) and Electricity (42%). In Manufacturing,

Government share in STP is only 12 %, though it is higher in Petroleum (88%), Chemical products (19%) and Electrical machinery (17%). (Table 6.2)

45. **STP intensity** varies widely among industries with the overall average of 63.56 %. It is quite high, exceeding 80 %, in Mining and Construction. The index is between 70 and 80 % in Transport equipment, Metals and Petroleum . In industries like Machinery, Plastics, Shipping and Electricity as well the index is above average (65-70%). Low STP intensive industries (index below 50%) are Leather, Non metallic minerals, Trade & hotels and Road transport. (Table 6.1)

46. **Largest number of women STP** are in Metal manufacturing industry (37 STP 18 %), mainly as Medical Officers in steel plants, followed by Consultancy (28 STP), Chemical products (24), Mining (20) as Medical Officers, Alcoholic beverages (15), Electricity (13) and Electrical equipment(12). (Table 6.3)

47. **Average Age** of STP varies in a narrow range of 46-48 years for most of the major employing industries, except for Transport (38.2 years), where young STP are appointed by shipping companies. In smaller industries, average varies widely from 45.5 years (Trade & hotels) to 52.7 years (Wood products). Age wise distribution of STP shows that 64 % of STP upto 30 years age are in Transport industry and only 27 % in Manufacturing. As age increases, proportions in Transport go down (to 3 % in 51-60 year group) and go up in other industries. (Tables 6.13 & 6.4)

48. **Average Experience** of STP follows the same pattern as average age. It ranges between 22-25 years for most of the major employing industries, except for shipping (11.3 years).

49. **Index of Mobility** is around the overall level of 1.60 in Manufacturing, Mining, and Finance & business services. However, it is quite high for certain industries like Road transport (3.64), Construction (2.00) and Trade & hotels (1.92), suggesting quick change of jobs. The index is quite low for Electricity (1.42) and Shipping (1.33), suggesting slow change of jobs, the reason for shipping being that the STP are still young. Within Manufacturing, the index varies between 2.39 (Plastics) and 1.33 (Petroleum) but variations are within (+)/(-) 10 % for most of the main industries. (Table 6.3)

50. **Fields of Specialisation:** With an average of 74.54 % of STP in all industries being with technical qualifications, their proportion is lower in Manufacturing (70%) and Mining (53%) and higher in Shipping (99%), Electricity (90 %), Transport (88%), Consultancy (79%) and Construction (78%). There are comparatively more of Mechanical engineers in Manufacturing and Consultancy, Electrical engineers in Electrical & electronic industry, Mining engineers in Mining and Civil engineers in Construction. Within manufacturing, there are more of Mechanical engineers in Transport equipment, Machinery, Paper and Wood products industries. (Table 6.3)

51. **Levels of Qualifications:** High qualification level STP are well distributed among all the industries, though there are more of such STP in Transport, Chemicals and Alcoholic beverage industries. 60-70 % of STP in most of the industries are Graduates, exceptions being Agriculture (58%) and Transport (29%). proportions of Junior qualification STP, however, vary widely from high proportions in Shipping (52%), Road transport (33%) and Electricity (22%) to low proportions in Mining (6%), Consultancy (7%), Trade & hotels (10%) and Constructions (11%). Proportion of Junior qualification STP in Manufacturing (average 12%) vary from 5% (Petroleum) to 22 % (Cement). (Table 6.6)

52. **Levels of Responsibility:** Nearly 30 % of STP are working on Specialized and technical positions like Engineers, Doctors, Scientists, Computer personnel etc., while 70 % are on Managerial positions. Specialized positions account for 20 % of STP in Manufacturing and over 51% in non manufacturing industries. They dominate in certain industries like Agriculture (62 %), Mining (51 %), Electricity (46%) and Petroleum (45%). On the other hand Management positions dominate in Trade & hotels (87%), Consultancy (80%) and, within Manufacturing, in Wood products, Leather products, Paper, Transport equipment and Plastics (above 90%). There seems to be no linkage between employment of specialized STP and Technology intensive nature of an industry. (Table 6.7)

53. **Primary Work Activity:** Plant level activities are comparatively more important in Manufacturing (engaging 36% of STP), Electricity (45%) and Construction (42%). Marketing is the next important activity in Manufacturing (19% of STP), specially in consumer goods industries like Food products, Alcoholic beverages, Wood products, Leather products and Plastics and also in Machinery (engaging 24-27% of STP). Miscellaneous activities engage large number of STP in Transport (87%), Mining (42%) and Electricity (20%).

54. **Average Remuneration** varies from industry to industry from Rs.1.72 lakhs per annum in Petroleum to Rs.3.26 lakhs in Shipping, average for Manufacturing being Rs.2.12 lakhs. Generally, remunerations are lower in industries dominated by Government companies (except Shipping) and higher in those dominated by MN companies. Distribution of STP for different remuneration ranges show that STP in low remuneration range are comparatively more in industries in which Government companies are more active, namely Mining, Consultancy, Electricity, Agriculture and Petroleum. On the other hand there are more of high remuneration STP in Construction, Food products and Plastics. (Tables 6.3 & 6.9)

55. **Industry wise Regional Distribution** of STP varies from region to region depending on ownership pattern of the industries. Data show that proportion of STP in Northern region (dominated by CG), is the lowest (among regions) in Manufacturing (45%) but the highest in Electricity (13%), Construction (6%) and Consultancy (25%). STP in western region (dominated by LH, MN and few big CG companies including SCI), are mainly in Chemical

products (26%), Shipping (15%), Machinery (14%) , Metals (13%), Transport equipment (6%) and Electricity (6%). In Eastern region, dominated by MN companies engaged in consumer goods, majority of STP are employed in Chemicals & Pharmaceuticals (14%) Food products (11%), Alcoholic beverages (9%), Petroleum (8%), Metals (9%) and Finance & consultancy (10%). STP in Southern region are mainly engaged in Electrical & electronic equipment (19%), Transport equipment (18%), Chemicals (11%), Shipping and Finance & consultancy (5% each). (Table 6.11)

CHAPTER 7 : REMUNERATION OF SCIENTIFIC AND TECHNICAL PERSONNEL

56. Average remunerations received by STP in Government companies and non Government companies, as well as by non STP, are almost of the same level (Rs.2.19-2.21 lakhs per annum). However, there are significant variations for different groups of STP depending on sex, sector, location, activity, qualifications and other characteristics.

57. Women STP receive lower remunerations (Rs.1.87 lakhs) than male STP (Rs.2.21 lakhs) by 15.38%, both in Government sector (by 20.45%) and non Government sector (by 12.67%). (Table 7.1)

58. There are wide variations in remunerations received by STP in different sub sectors ranging from Rs.1.77 lakhs in SG companies to Rs.2.40 lakhs in non LH/MN companies, a margin of 35.59%. Non LH/MN companies are of small size with average 1.4 STP per company. They pay the highest remunerations because, what ever few higher salary group STP they employ are generally senior executives from promoter groups at high remunerations, irrespective of their salary structure.

59. Government companies include Shipping Corporation of India, which employs 1873 STP and gives them average remuneration of Rs.3.26 lakhs due to their special nature of duties. If this company is excluded, average remuneration in Government companies gets reduced to Rs.1.78 lakhs, compared to Rs.2.21 lakhs for non Government companies, a margin of 24.16 %.

60. Extent and nature of variations in average remunerations for different characteristics suggest that they do not depend on any one characteristic but on combination of various characteristics and factors like age, experience, qualifications, nature of responsibility, nature of employing company, its activity and location, each factor having its own impact.

61. Discipline wise, average remuneration ranges between Rs.1.90 lakhs for Agriculture to Rs.2.35 lakhs for Chemical Engineering (margin of 23.68%). In Government companies(excluding shipping), the levels and range of average remunerations are lower from Rs.1.67 lakhs for Mechanical Engineering to Rs.2.10 lakhs for Computer Sciences (margin of 25.75%) compared to from

Rs.1.89 lakhs for Agriculture to Rs.2.54 lakhs for Chemical Engineering (margin at 34.39%) in non Government companies. (Table 7.2)

62. There is direct correlation between levels of qualifications and levels of remunerations. Remunerations increase from Rs.2.05 lakhs for Certificate holders, to Rs.2.14 lakhs for Graduates, Rs.2.46 lakhs for Post Graduates and Rs.2.55 lakhs for Doctorates.

63. Levels of responsibilities have also direct bearing on remunerations, which go up three fold from Rs.1.73 lakhs for the Lowest managerial position (Asst Manager) to Rs.5.15 lakhs for the top position of Chairman. Differences are more pronounced in non Government (3.54 times) than in Government companies (1.28 times). While differences in remunerations between Government and non Government companies are nominal at Junior levels, they increase along with the levels of responsibilities. Remunerations in non managerial Positions increase from Rs.1.67 lakhs for Scientists to Rs.2.46 lakhs for Engineers and are lower than in Managerial positions.

64. Remunerations do not seem to depend on Work activity. There are two exceptions, namely senior management and miscellaneous category personnel (which includes shipping personnel) who get high remunerations. Margin in other activities is only 10.58% From Rs.1.89 lakhs for Medical personnel to Rs.2.09 lakhs for Marketing personnel.

65 Remunerations do not seem to vary according to age of STP. It ranges from Rs.2.12 lakhs (for 41-50 year age group) to Rs.2.35 lakhs (for 21-30 year group), exception being 'above 60 year' STP who are appointed on adhoc bases on high salaries (Rs.3.17 lakhs). While remunerations in Government companies (other than SCI) vary narrowly between Rs. 1.72-1.89 lakhs for different age groups, those in non Government companies show high initial salaries, followed by stagnation for next 20 years and gradual increase there after. (Table 7.3)

66. Data on Experience wise remunerations show that remunerations increase in non Government companies along with experience of STP from Rs.2.02 lakhs for 6-10 years experience to Rs.2.54 lakhs for 35-40 year experience. Fresh appointees (experience upto 5 years), however, get higher remuneration of Rs.2.51 lakhs. Remunerations of STP in Government companies decline till 26-30 year experience group as SCI personnel taper off, and increase marginally there after. (Table 7.4)

67 Remunerations of STP in companies in different income and investment ranges do not follow any pattern but vary irregularly from one range to another, depending on inclusion of certain specific big companies in a range, which influence average remuneration of that range. (Tables 7.5 & 7.6)

68. Data on average remuneration of STP in companies classified according to their employment size show that companies which employ large number of STP pay comparatively lower remunerations. Companies employing upto 10 STP each, pay remunerations of Rs.2.30-2.45 lakhs, while those employing more STP pay only Rs.2.09-2.27 lakhs. Sector wise , this conclusion is true for non Government companies, but not for Government companies, as big shipping companies, namely SCI and SISC which pay high remunerations, raise average remunerations for relevant ranges and alter the basic conclusion , which emerges if these companies are excluded. (Table 7.7)

69. State wise data show that average remuneration varies from Rs.1.66 lakhs in Bihar to Rs.2.69 lakhs in Goa, a margin of 62% . Among the major employing states, it varies from Rs.1.99 lakhs in Delhi (dominated by CG companies) to Rs.2.42 lakhs in West Bengal, dominated by MN companies, a margin of 21.6%. Average remuneration in Maharashtra is in between at Rs.2.30 lakhs, inspite of location of SCI. These states determine region wise averages. While average remunerations for Southern (Rs.2.22 lakhs) and Western (Rs.2.24 lakhs) regions are close to the all India average, remuneration for Eastern region (Rs.2.30 lakhs) is the highest and for Northern region (Rs.2.04 lakhs) the lowest. Remunerations paid by non Government companies exceed those paid by Government companies in all the main states, except in Maharashtra and Tamil nadu due to location of SCI and SISC respectively in the two states. Non government remunerations exceed by more than 40% in Goa (70%), Kerala (56%), Orissa (52%), Andhra Pradesh (51%), Uttar Pradesh and West Bengal. Region wise, non Government remunerations exceed by 49 % in Eastern, 21 % in Northern and 12 % in Southern region. It is only in Western .pa region that remunerations by Government companies exceed those by non Government companies (27%). Table 7.8)

70. Eastern region has the highest proportion (14 %) of highly paid STP (above Rs.25000 pm) due to domination of MN, followed by Western region (14%) due to location of SCI, LH and MN companies. Northern region has the highest proportion of low paid STP (64%) due to location of CG companies in Delhi. Western region has the lowest proportion (48%) of such personnel. (Table 5.8).

71. Industry wise remunerations vary from Rs.1.77 lakhs in Electricity (dominated by Government companies) to Rs.3.14 lakhs in Transport, due to SCE/SISC . Remunerations in other industries vary only from Rs.2.01 lakhs in Mining and Rs.2.31 lakhs in Construction, a margin of 14.93%. Average remuneration in Manufacturing is Rs.2.12 lakhs. There are wide variation from industry to industry in Manufacturing ranging from Rs.1.72 lakhs in Petroleum to Rs.2.97 lakhs in non metallic mineral industry, margin of 72.67%. High remuneration (exceeding Rs.2.20 lakhs) industries are Food Products, non metallic minerals, Plastics & Rubber and Cement, which are dominated by MN or small non LH/MN companies. Low remuneration (below Rs.2.05 Lakhs) industries are

Petroleum, Wood products, Metals, Electrical equipment and Transport equipment.

72. Non Government companies pay more than Government companies in most of the industries , important ones being Mining (+64%) Finance & consultancy (+50%), Trade & hotels (+19%) and Electricity (+12%). It is only in Transport (-12%) and Construction (-10%) that Government companies pay more, because of high remunerations paid to STP working outside India. In Manufacturing, non Government companies pay 26 % more on average. Margins are much higher in Food products (58%), Plastics & rubber (48%), Cement (44%), Paper (41%) and Chemical products (30%). There is not a single Manufacturing industry in which Government companies pay more.

CHAPTER 8 : ESTIMATION OF SCIENTIFIC AND TECHNICAL PERSONNEL IN CORPORATE SECTOR

73. Out of 6798 medium and large companies in the corporate sector, 4467 companies (65.71%) have been covered by the survey. Large sized companies have been covered to the extent of 84.56% (LH/MN) and 81.53 % (CG). Only smaller companies could not be taken up for non availability of their annual reports. Even among the CG, LH & MN companies, larger ones have been covered.

74. There is direct linkage between size of a company (by investment) and STP employed by it (para 3.46). Small companies employ none or few STP. Non surveyed companies have been classified by their size of investment and their STP have been estimated for each range on the basis of employment coefficient of the survey companies for that range. Total STP employed by them is estimated at 5507 persons and total STP by entire corporate sector at 31,114 persons. Distribution of these personnel for different characteristics, sectors, industries and states has been estimated in tables 8.3, 8.4, 8.5 and 8.6 respectively.

CHAPTER I

INTRODUCTION

1.1 Science and Technology contributes to economic and social development through judicious deployment and utilization of scientific & technical knowledge in different fields of activity. Pursuit of Science & Technology policy by Government has resulted in establishment of a number of Technology Institutes, Agricultural Universities as well as Medical, Engineering and Science colleges, providing expanding capacity for higher learning in Science & Technology. Policies have also been pursued resulting in employment of larger number of S&T personnel in Government, semi Government Institutions as well as in Private Sector.

1.2 While employment in Government and Semi Government sectors has been continuously assessed, there is hardly any information on deployment of S&T personnel in industry. Their employment in industry aims at economic progress by optimum use of inputs, increase in productivity, improvement in product quality, reduction in costs and strengthening of competitive management of resources. In this context assessment of S&T personnel employed in industry is crucial for planning their effective utilization as well as for projecting future demand of such personnel in different industries and at different levels.

1.3 The Department of Science and Technology had, in 1985 and 1987, assigned to Indian Institute of Management, Bangalore, survey of S&T personnel drawing gross remuneration of Rs.36,000 or more per annum, employed in industry in seven states in southern and western regions of the country. The survey covered 1506 companies and 54,441 S&T personnel employed by them.

1.4 It was felt that there was a need to make a survey of S&T personnel at national level to analyse their qualifications, nature of employment, salary structure, experience and other relevant characteristics. Accordingly, Department of Science & Technology approved, vide letter No. DST/NSTMS/05/01/93 dated 2nd August, 1994, a study entitled "Survey of Scientific and Technical Personnel in Higher Salary Groups in Indian Industries" for a duration of 36 months under "National Science & Technology Management Information System" Scheme. The study was assigned to Shri P.K. Ahuja, as the Principal Investigator, who was earlier Director (Research & Statistics) in the Department of Company Affairs, with Centre for Research, Planning & Action providing necessary overheads, basic facilities and other support. It was estimated that the Survey would cover about 6200 medium & large companies, including 800 public sector companies, each having paid up capital of Rs.50 lakhs or more. It was to cover only higher salary group employees drawing gross annual remuneration of Rs.72,000, or more, during the year 1989-90. The minimum remuneration of Rs.36,000 taken into account in the earlier Survey by IIM could no longer be adopted as, due to amendment to

the Companies Act effective from 15.6.1988, data on particulars of employees were available only for higher remuneration level of Rs.72,000 per annum. Later it was felt that the data for 1989-90 would be out dated when the report is submitted. It was decided by the Department of Science & Technology on 25th August 1994 that reference year for the Survey should be 1993-94, even though data for this year would be available for personnel receiving remuneration of more than Rs.144,000 per annum as per another amendment to the Companies Act.

1.5 The Survey was commissioned on 8th August 1994. Arrangements were made with the Department of Company Affairs to make available annual reports of the companies, which formed basic source of information. Some large sized companies were also addressed for annual reports. Proformae for collection of data were finalized in consultation with the Department of Science & Technology. The objective was to have all relevant information on the companies and characteristics of the S&T personnel employed by them as explained in Chapter 2, which would then be studied with a view to establish inter relationships, apart from analyzing the data in the context of age, sex, qualifications, discipline, primary work activity, responsibilities, remuneration as well as area and industry wise deployment of the personnel.

1.6 The report takes into account certain concepts like Large house, Multinational, Medium and Large Companies, Higher Salary Groups etc. These have been explained in chapter 2. Similarly certain commonly accepted terms like "Government Companies" have been defined. Importance of the surveyed companies in corporate sector, which is important to establish their representativeness, has been discussed in chapter 2. Characteristics of the S&T personnel and also of the companies have to be grouped or classified depending on the needs of the analysis. All these aspects have been discussed in chapter 2 captioned "Coverage, Concepts and Definitions".

1.7 Overall analysis of the surveyed companies and S&T personnel employed by them has been attempted in chapter 3. This includes sector wise, industry wise, activity wise and size wise classification on the one hand and analysis of characteristics of the personnel like age, sex, qualifications, discipline, level of responsibilities, remuneration and nature of activity on other. Next four chapters have been devoted to study inter relationships between different classifications of the companies and characteristics of the S&T personnel. Based on analysis of data for the surveyed companies, last chapter attempts to provide estimates of the characteristics for all the medium and large sized companies.

CHAPTER 2

COVERAGE CONCEPTS AND DEFINITIONS

2.1 The Survey covers all "medium and large sized" companies in Government as well as non Government sectors registered under the Companies Act, 1956. Public Sector Statutory Corporations (like Air India, Indian Airlines, Nationalized Banks, Financial Institutions) and Departmental Undertakings (like Ordnance Factories, ONGC), which are not required to be registered under the Companies Act, are therefore not covered. Companies having paid up capital of not less than Rs. 50 lakhs have been classified as "Medium and large sized" companies. There were 6798 medium and large sized companies as on 31st March, 1993. These comprised of 833 Government Companies and 5965 non Government Companies.

2.2 Data have been compiled from annual reports of the companies. Under Section 217 (2A) of the Companies Act, all companies are required to furnish prescribed particulars of personnel employed by them drawing gross remuneration above levels as may be notified by the Government. According to the said Section, gross remuneration includes salary, expenditure incurred on providing accommodation, any benefit or amenity provided free of charge or at concessional rates, expenditure towards insurance, pension, annuity & gratuity, as well as any expenditure/obligation which otherwise would have been incurred by the employee. The Section also requires that the companies furnish prescribed particulars in respect of employees, such as age, designation, gross remuneration, nature of employment, nature of duties, qualifications, experience and previous employment.

2.3 Notified Minimum level of gross remuneration for furnishing particulars of employees in annual reports has been raised from time to time. It was Rs. 36,000/- per annum till 15th June, 1988, when it was raised to Rs. 72,000/- per annum. It was subsequently raised to Rs. 1,44,000/- per annum on 18th September, 1990 and again to Rs. 3,00,000/- per annum on 18th October, 1994.

2.4 When the project was sanctioned, it was proposed to collect data for the year 1989-90 which was the last year relevant for minimum annual remuneration of Rs. 72,000/-. It was subsequently felt that the data for 1989-90 might become outdated by the time the study was completed. It was accordingly decided by the Department of Science & Technology on 25th August, 1994 that the data on personnel be collected for the years 1992-93 or 1993-94, as available, when prescribed minimum remuneration level was Rs. 1,44,000 per annum. These personnel will be deemed to be in "Higher Salary Groups".

2.5 There were 3.05 lakh companies registered under the Companies Act, 1956 (generally known as corporate sector) as on 31st March, 1994. Their paid up capital aggregated to Rs. 104,891 crores. "Medium and large" companies are only 6798 in number (or 2.23 percent of all the companies) but their paid up capital totalled Rs.94,561 crores equivalent to 90.15 percent of paid up capital of all the companies. As personnel in "higher salary groups" are employed mainly by "medium and large" companies (see paras 3.46 & 3.52), the Surveyed companies would account for almost all the scientific and technical personnel employed by the corporate sector.

2.6 It has been possible to collect data in respect of 4467 companies. These include 2286 companies for 1993-94, 2145 companies for previous years and 36 companies for subsequent years for which annual reports were available. Department of Company Affairs decided in March, 1996, to micro film annual reports of the companies available with it. As such, that source of information was not available thereafter. Scope for collecting annual reports from companies was restricted as response was only 10-12 percent. The matter was discussed with the Department of Science and Technology on 18th September, 1996, when it was decided that the report might be finalized on the basis of data collected so far and in pipeline. Nevertheless, the coverage of 66 percent of the population might be considered satisfactory under the circumstances and realistic for arriving at conclusions for the corporate sector, as most of the large sized companies employing maximum number of scientific and technical personnel have been covered. (See Chapter 8)

2.7 The following data have been collected in respect of the surveyed companies:

- i) State in which the company is registered;
- ii) Sector, according to ownership, in which the company may be classified;
- iii) Industry/product classification of main product of the company;
- iv) Size of the company in terms of its paid up capital as well as turn over/income;
- v) Number of persons in high salary groups employed by the company and average remuneration drawn by them; and
- vi) Details of scientific and technical personnel employed by the company.

2.8 Statewise classification is based on location of registered office of the company. While most of the companies have activities in the states in which they are registered, there are many cases where a company is registered in one state but

has units in other state/more than one state. A number of Central Government companies are registered in Delhi but have activities in one or more of other states. Many large companies in private sector also have activities in more than one state but have registered offices in Mumbai. Statewise distribution of personnel may, therefore, be viewed in light of this distortion. Concentration of personnel in few states, as may be shown by the data, would get diluted on the basis of location of the employing units, data for which are not available.

2.9 Companies have been classified in the following sectors, depending on pattern of ownership of their share capital:

- i) **Government Companies:** According to the Companies Act, a company is defined as Government Company if not less than 51 percent its share capital is held by Central/State Governments. Subsidiaries of such companies are also Government Companies. There were 1190 Government Companies on 1st April 1994. While they constituted only 0.39 percent of all the companies in the country, by virtue of their large size, they accounted for 66.78 percent of paid up capital of all the companies. The Government companies have been further sub classified as Central Government and State Government companies, the former being relatively of much larger size.
- ii) **Large Industrial Houses:** This concept has been defined under section 20(a) of the Monopolies and Restrictive Trade Practices Act, 1969, as a group of inter connected companies whose assets are not less than Rs.100 crores. The Act placed certain restrictions on growth of such companies. However, in the wake of liberalisation of economic policies, the said Act was amended in September 1991 and all provisions relating to large houses were deleted. As such, the Department of Company Affairs has stopped maintaining information on large houses and their constituent companies. As on 31st March, 1991, there were 1810 companies belonging to the large houses. About 604 of these companies have paid up capital of Rs.50 lakhs or above. The survey covers 501 (82.94 percent) of these companies.
- iii) **Multinationals:** Companies covered under the Foreign Exchange Regulation Act have been taken as multi-nationals. The Act is applicable to those companies in which foreign share participation is not less than 40 percent. These companies are deemed to be controlled by foreign companies/individuals. There were 71 FERA Companies on 1st April, 1993. Some of them have paid up capital below Rs. 50 Lakhs. A large number of earlier FERA companies, which include house hold names like Hindustan Lever, Glaxo, Cadbury and ITC, are no longer

covered by FERA as they have reduced foreign share ownership to less than 40 percent. However, from employment and remuneration angle, these companies continue to retain their earlier policies, specially if the foreign ownership is still sizeable. For the purpose of this Survey, all FERA Companies and those which were FERA Companies at any earlier point of time and still have more than 25 percent foreign participation, have been taken as multinationals.

2.10 Three digit Standard Industrial Classification has been adopted by the Department of Companies Affairs for classifying corporate sector. For the purpose of the Survey, this classification has been abridged taking into account developments in the fields of science and technology, particularly with a view to focus on S&T intensive industries. Classification adopted for the Survey is at Annexure 16.

2.11 Size of a company generally depends on investment, turnover, or assets. Paid up/share Capital is normally taken to represent investment in a company. Data on turnover/income, as well as paid up (share) capital, have been collected in the Survey.

2.12 Data on the following characteristics of the scientific and technical personnel have been collected from particulars furnished in the annual reports:

- i. Age
- ii. Sex;
- iii. Qualifications;
- iv. Discipline;
- v. Experience;
- vi. Remuneration;
- vii. Primary work activity; and
- viii. Level of responsibility.

2.13 Sex classification is based on appropriate prefix, if given by the companies, or when it is apparent from first name. Where neither prefix has been given, nor first name stated, the Survey assumes that employee is a male person. Share of Women employees may, therefore, be under stated to the extent the relevant information has not been explicitly furnished in the annual reports.

2.14 Qualifications have been classified as "Doctorate", "Post Graduate", "Graduate" (including equivalents like AMIE), "Diploma" and "Others", which include mainly Certificate/License from ITI or a Technical Institution. Large number of technical

personnel in higher salary groups are employed by shipping companies. Most of them have qualification like Master (FG), Grade I (FG) and grade II (FG) awarded by Director General of Shipping. (FG stands for foreign going vessels.) These have been classified as Post- Graduate, Graduate and Diploma levels respectively.

2.15 Disciplines have been classified under two streams, namely "Technology" and "Science". The Technology stream has been further classified as follows:

- i) Mechanical Engineering;
- ii) Electrical Engineering, including Electronics;
- iii) Civil Engineering, including Structural Engineering and Architecture;
- iv) Computer Engineering, including Systems analysis;
- v) Chemical Engineering ;and
- vi) Others, which have been specified and include a variety of fields like metallurgy, Mining, Shipping, Aeronautics etc.
- vii) In certain cases, discipline has not been specified while stating qualifications like BE, B Tech. etc.

2.16 The following sub classifications have been adopted for Science stream:

- i) Agricultural sciences;
- ii) Medical sciences;
- iii) Biological sciences;
- iv) Physics;
- v) Chemistry;
- vi) Others, which have been specified and include Geology, Mathematics, Statistics, etc.
- vii) In many cases of natural sciences, discipline has not been specified and qualifications have been stated as BSc, MSc, Ph.D.

2.17 Levels of responsibility have been classified under the following groups:

- i) Chairman, including Chairman cum Managing Director;
- ii) Managing Director, including Joint Managing Director;

- iii) Director, including Executive Director;
- iv) General Manager, including President and Vice President;
- v) Deputy General Manager;
- vi) Manager;
- vii) Assistant/Deputy Manager;
- viii) Engineer;
- ix) Scientist;
- x) Medical Doctor, which includes Medical Officer
- xi) Programmer/Computer Personnel;
- xii) Others; this group includes various responsibilities like Officer, Executive, Chief Officer, Captain and Commanding Officer of a Ship, Medical Representative, Chemist, Controller, Assistant and Deputy Director, Consultant, Research Officer, Technician, Electrician and Adviser

2.18 Primary work activities have been classified under the following groups:

- i) Senior/overall Management; it has been assumed that Directors and Managing Directors are engaged in this activity unless they have been shown to be in charge of any specific activity group;
- ii) Plant Level; this includes all activities related to the plant, like production services, production control, technical, engineering, electrical, construction, maintenance and quality control;
- iii) Marketing; this includes sales, purchase, export, import, sources development, vendor development, procurement, hire purchase, quality assurance and product servicing;
- iv) Research and development; this includes interalia design, product and process development and laboratory research;
- v) Computer, including Systems;
- vi) Medical;
- vii) Administration and finance, including Accounts, Training, Human resource development, and Managerial services; and
- viii) Others; activities have been specified but cannot be classified in any of the above classes; these include planning, security, telecommunications, liaison, project formulation, collaboration, growth, diversification, stand-

planning, security, telecommunications, liaison, project formulation, collaboration, growth, diversification, standards, corporate development, material handling, co-ordination and pollution control.

ix) In certain cases work activity has not been specified.

2.19 For the purpose of analysis, the following groupings have been used:

(i) Levels of responsibilities have been classified into four groups : Top level Management (Chairman, Managing Director and Director), Middle Level Management (General Manager and Deputy General Manager), Lower Level Management (Manager and Assistant/Deputy Manager) and Specialized/Technical Positions (Scientist, Engineer, programmer and all other non managerial designations).

(ii) Three Ranges of remunerations have been adopted for analysis : Lower level (monthly remuneration of Rs.12000-15000), Middle level (monthly remuneration of Rs.15001-25000) and Top level (monthly remuneration over Rs.25000).

2.20. The following definitions have been adopted:

STP Intensity :	Number of S&T Personnel as percent of number of all personnel.
Index of Mobility:	Ratio of total experience (in years) of S&T personnel and his experience (in years) in the company in which he is working during the reference year 1993-94.
Medium & Large Companies	Companies having paid up capital of not less than Rs. 50 Lakhs.
Higher Salary Group Personnel	Personnel receiving total remuneration of not less than Rs. 1.44 lakhs per annum, or Rs.12,000 per month.

TABLE 3.1

PATTERN OF EMPLOYMENT

	Government Companies	Non Govt Companies	All Companies
			(Numbers)
1. Companies	627	3,840	4,467
2. Personnel Employed			
S & T Personnel(STP)	7,241	18,366	25,607
Non S & T Personnel	3,777	10,903	14,680
Total	11,018	29,269	40,287
3. S & T Personnel			
Male	7,175	18,229	25,404
Female	66	137	203
Total	7,241	18,366	25,607
4. S & T Personnel			
Scientific Personnel(SP)	1,233	5,286	6,519
Technical Personnel (TP)	6,008	13,080	19,088
Total	7,241	18,366	25,607
5. Scientific Personnel			
Male	1,190	5,190	6,380
Female	43	96	139
Total	1,233	5,286	6,519
6. Technical Personnel			
Male	5,985	13,039	19,024
Female	23	41	64
Total	6,008	13,080	19,088

CHAPTER 3

MAIN CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL

An Overview

3.1 The Survey covers 4,467 medium and large companies. They employ 40,287 persons in higher salary groups. Of these, 25,607 persons (63.56 percent) are with Science and Technology qualifications (referred to as Scientific & Technical Personnel, or S&T Personnel). On an average, a company employs 9.02 persons in higher salary groups, including 5.73 S&T Personnel.

3.2 Of the S&T Personnel, only 203 are women, constituting just 5 persons per 100 companies, or 8 persons in 1000 S&T Personnel.

3.3 Almost three fourths (74.54 percent) of the Scientific and Technical Personnel are with qualifications in Technology/ Engineering fields (referred to as Technical Personnel) and only 25.46 percent have qualifications in Science subjects (referred to as Scientific Personnel). Thus, Technical Personnel have three times more opportunities for employment in the corporate sector than Scientific Personnel. However, majority of the women employees (68.47 percent) are having Science qualifications. This is mainly due to relatively more women employees in medical profession.

3.4 The 4,467 companies include 627 Government companies (14.04 percent). However, the Government companies are relatively large employers. Of 40,287 persons in higher salary groups, Government companies account for 27.35 percent. On an average, a Government company employs 17.52 persons in higher salary groups compared to 7.63 persons employed by a non Government company. Within this higher employment level, Government companies employ relatively more of S&T Personnel, as well as women, than non Government companies. On an average a Government company employs 11.52 S&T Personnel, including 0.10 women S&T personnel, corresponding figures for non Government companies being 4.79 S&T Personnel and 0.04 women S&T Personnel. Share of Government Companies in S&T Personnel is 28.28 percent and in Women S&T Personnel is 32.51 percent, though they constitute only 14.04 percent of the companies. Table 3.1 gives data on pattern of employment by Government and non Government companies and Table 3.2 gives relevant ratios. Annexure 1 gives detailed sector wise data on companies and S&T Personnel employed by them.

3.5 S&T employment intensity can be measured by ratio of S&T Personnel to all personnel in higher salary groups. Average S&T employment intensity in the surveyed companies is 63.56 percent. It is marginally higher in Government companies (65.72 percent) than in non Government companies (62.75 percent).

TABLE 3.2

PATTERN OF EMPLOYMENT
(RATIOS AND SHARES)

	Government Companies	Non Government Companies	All Companies
1. Shares (Percent)			
(i) Companies	14.04	85.96	100.00
(ii) All Personnel	27.35	72.65	100.00
(iii) S&T Personnel	28.28	71.72	100.00
(iv) Female S&T Personnel	32.51	67.49	100.00
2. Employees per Company (Numbers)			
(i) All Personnel	17.52	7.63	9.02
(ii) Non S&T Personnel	6.00	2.84	3.29
(iii) S&T Personnel	11.53	4.79	5.73
(iv) Female S&T Personnel	0.10	0.04	0.05
(v) Scientific Personnel	1.97	1.38	1.46
(vi) Technical Personnel	9.58	3.41	4.27
3. Ratio (X100)			
(i) STP/Non STP	191.71	168.45	174.43
STP/All Personnel	65.72	62.75	63.56
(ii) TP/SP	487	247	293
TP/STP	83	71	75
(iii) Female SP/Female STP	65	70	68
Female STP/All STP	0.91	0.75	0.79
Female SP/Female TP	187	234	217
Female SP/All SP	3.48	1.82	2.13
Female TP/All TP	0.38	0.31	0.34

Details at Annexure-1

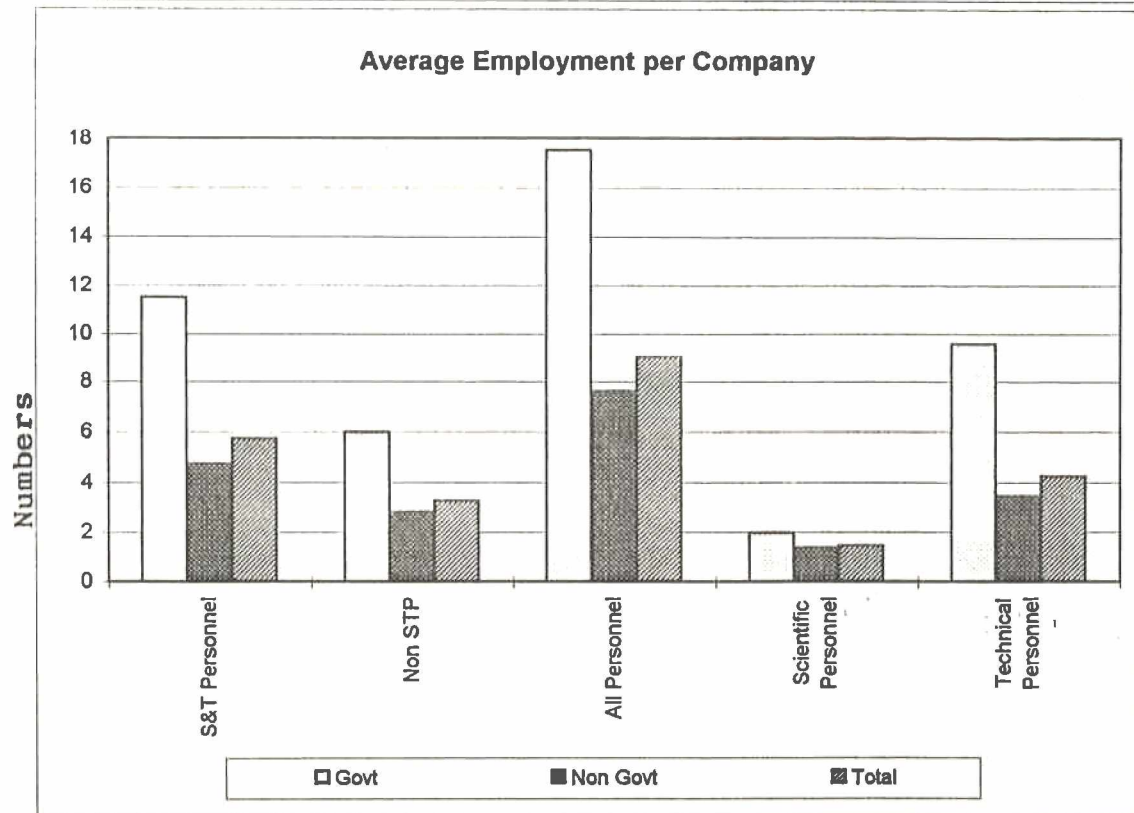
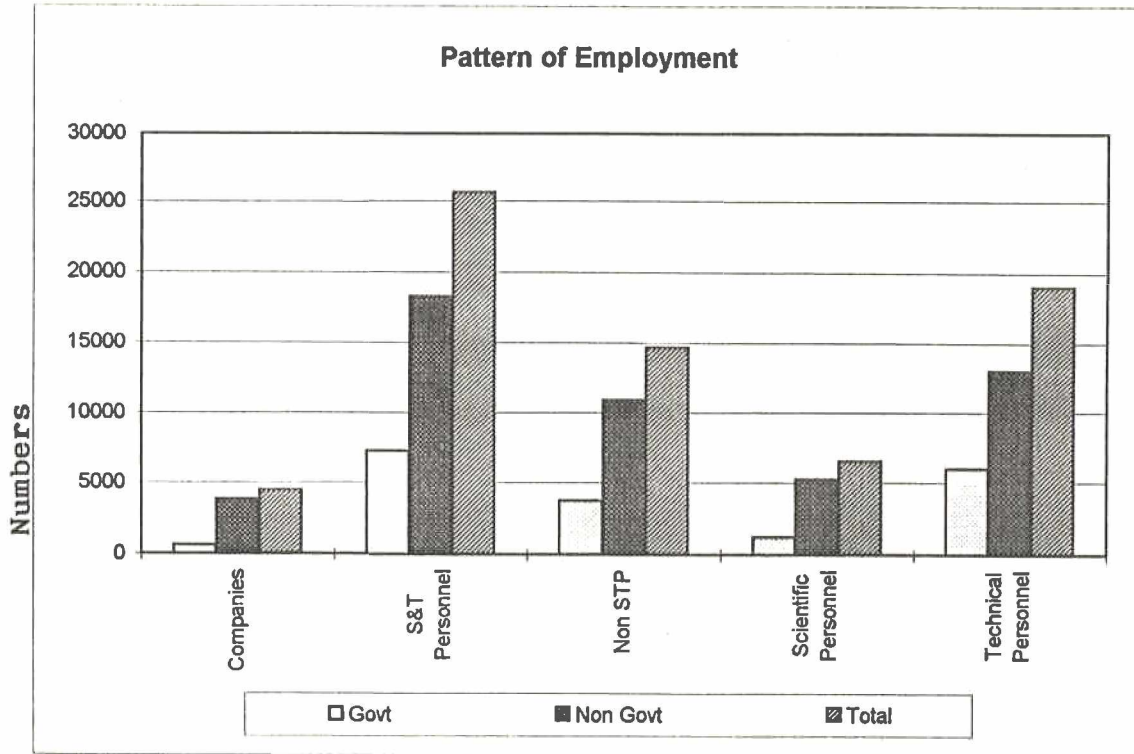


TABLE 3.3

DISTRIBUTION OF S&T PERSONNEL BY FIELDS
OF SPECIALISATION (QUALIFICATIONS)

Fields of Specialisations (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Percent in Total All STP (5)	Percent in Total Female (6)
(i) Technology					
Mechanical	5719	11	5730	22.38	5.42
Electrical	3466	26	3492	13.64	12.81
Civil	908	26	914	3.57	2.96
Chemical	1450	1	1451	5.67	0.49
Computer	98	1	99	0.39	0.49
Others	3638	8	3646	14.24	3.94
Not Specified *	3745	11	3756	14.67	5.42
Total (Technical)	19024	64	19088	74.54	31.53
(ii) Sciences					
(a) Agriculture	413	3	416	1.62	1.48
(b) Medical	588	68	656	2.56	33.50
(c) Natural					
Physics	110	0	110	0.43	0.00
Chemistry	254	1	255	1.00	0.49
Biology	6	1	7	0.03	0.49
Others	242	6	248	0.97	2.96
Not Specified	4767	60	4827	18.85	29.56
Total (c)	5379	68	5447	21.27	33.51
Total (Sciences)	6380	139	6519	25.46	68.47
Grand Total (i)+(ii)	25404	203	25607	100.00	100.00

* See Table-3.5

TABLE 3.4

DISTRIBUTION OF S&T PERSONNEL BY LEVELS
OF QUALIFICATIONS

Levels of Qualifications (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Percent in Total All STP (5)	Percent in Total Female (6)
Doctorate	632	7	639	2.50	3.45
Post Graduate	3974	47	4021	15.70	23.15
Graduate	16598	138	16736	65.36	67.98
Diploma	3335	9	3344	13.06	4.43
Others	865	2	867	3.38	0.99
Total	25404	203	25607	100.00	100.00

Details for tables 3.3-3.7 at Annexure-2.

TABLE 3.5 CHARACTERISTICS OF S&T PERSONNEL IN SPECIALISED FIELDS

Discipline	Male (Nos)	Female (Nos)	Total (Nos)	Total (Percent)	Average Age (Years)
I. Technology					
T(FG-SHIPS)	1145	2	1147	31.66	36.1
T(MOTOR-SHIPS)	1078	0	1078	29.57	40.1
T(METALLURGY)	366	1	367	10.07	48.3
T(MINING)	237	2	239	6.56	50.7
T(TEXTILE)	235	1	236	6.47	49.0
T(MARINE)	136	0	136	3.73	44.2
T(INDUSTRIAL)	89	0	89	2.44	46.6
T(PRODUCTION)	45	0	45	1.23	45.3
T(INSTRUMENT)	45	0	45	1.23	43.0
T(AUTO)	36	0	36	0.99	49.9
T(AERONAUTICS)	36	0	36	0.99	49.2
T(CERAMIC)	22	0	22	0.60	48.8
T(TELECOMMUNICATIONS)	18	0	18	0.49	49.1
T(PAPER)	17	0	17	0.47	46.0
T(DREDGING)	14	0	14	0.38	39.3
T(DESIGN)	14	0	14	0.38	46.0
T(RADIO)	13	0	13	0.36	51.4
T(DAIRY)	9	0	9	0.25	45.8
T(DRAFTMANSHIP)	8	0	8	0.22	52.6
T(PRINTING)	7	0	7	0.19	49.4
T(REFRIGERATION)	6	0	6	0.16	50.5
T(LEATHER)	5	0	5	0.14	44.2
T(BOILER)	5	0	5	0.14	57.0
T(SILICATE TECH.)	4	0	4	0.11	51.0
T(PAPER ENGG)	4	0	4	0.11	54.8
T(FOUNDRY)	4	0	4	0.11	52.0
T(MACHINE)	4	0	4	0.11	48.0
T(PETROLIEM)	3	0	3	0.08	48.0
T(SUGAR)	3	0	3	0.08	50.3
T(OIL)	3	0	3	0.08	50.0
T(POWER)	2	0	2	0.05	53.0
T(LIB.)	1	1	2	0.05	50.0
T(METROLOGY)	2	0	2	0.05	40.0
T(LAB)	2	0	2	0.05	50.5
T(GLASS)	2	0	2	0.05	59.5
T(PAINTS)	2	0	2	0.05	44.5
T(THERMAL)	2	0	2	0.05	49.0
T(FERMENTATION)	2	0	2	0.05	51.5
OTHERS *	12	1	13	0.33	48.1
Total Technology	3638	8	3646	100.00	42.0
II. Sciences					
S(PHARMA)	120	1	121	48.79	47.0
S(STAT)	52	4	56	22.58	46.0
S(GEOLOGY)	35	0	35	14.11	50.8
S(MATHS)	27	1	28	11.29	47.1
S(ECONOMICS)	3	0	3	1.21	50.7
S(OPERATION RESEARCH)	2	0	2	0.81	38.5
S(ZOOLOGY)	2	0	2	0.81	43.0
S(DIARY)	1	0	1	0.40	44.0
Total Sciences	242	6	248	100.00	47.3
Grand Total (I+II)	3880	14	3894	100.00	42.3

* Include one Person each in the fields of PVC, Plastic, Rubber, Process, Oceanology Hydro Power, Fire, Standards, Sanitation, Hydraulic, Food and Sound Technology

fields such as Pharmacology, Geology, Statistics and Mathematics as shown in Table 3.5.

3.11 Among 203 women S&T Personnel, 139 persons (68.47 percent) have qualifications in Science stream in contrast to the share of only 25.46 percent for Scientific Personnel at over all level. This is mainly due to the fact that a large number of women prefer medical profession. Thus Medical Sciences account for 68 women personnel, or 33.50 percent of all the Women S&T Personnel. Another 68 women (33.50 percent) have qualifications in Natural sciences. Out of 64 women Technical Personnel (31.53 percent of women Personnel), 26 persons (12.81 percent) are qualified in Electrical/Electronic engineering which is another preferred field of specialisation for women personnel. Only 11 persons (5.42 percent) are qualified as Mechanical engineers and 6 persons (2.96 percent) as Civil Engineers.

Levels of Qualifications

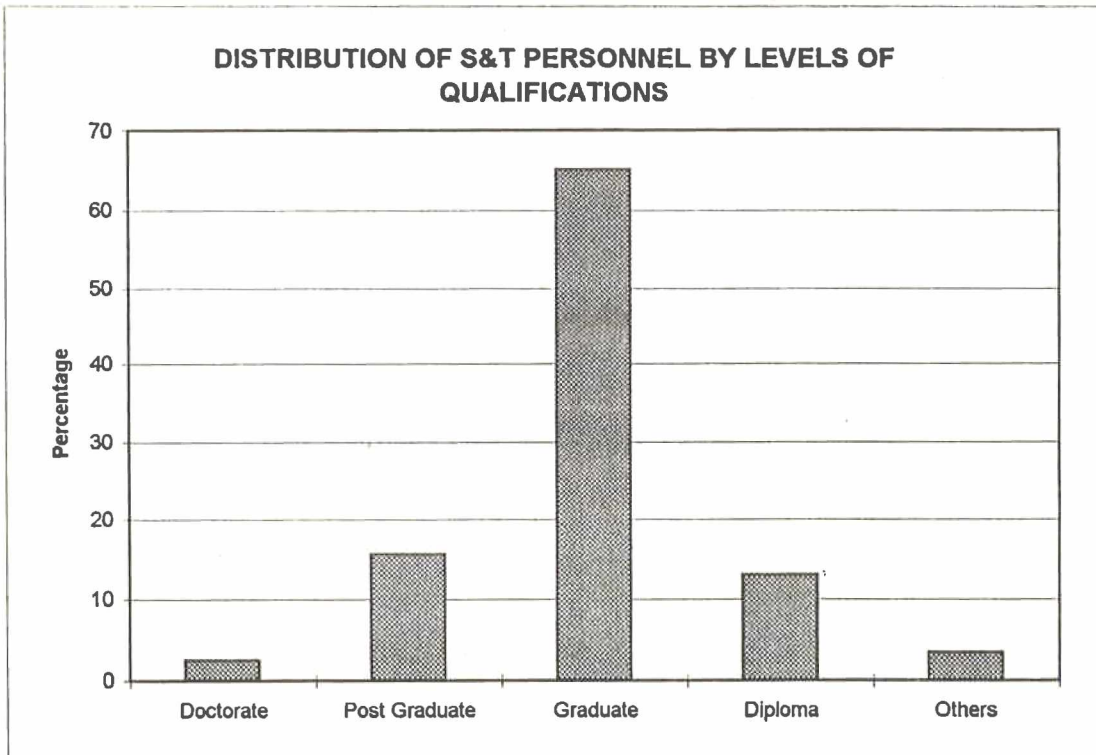
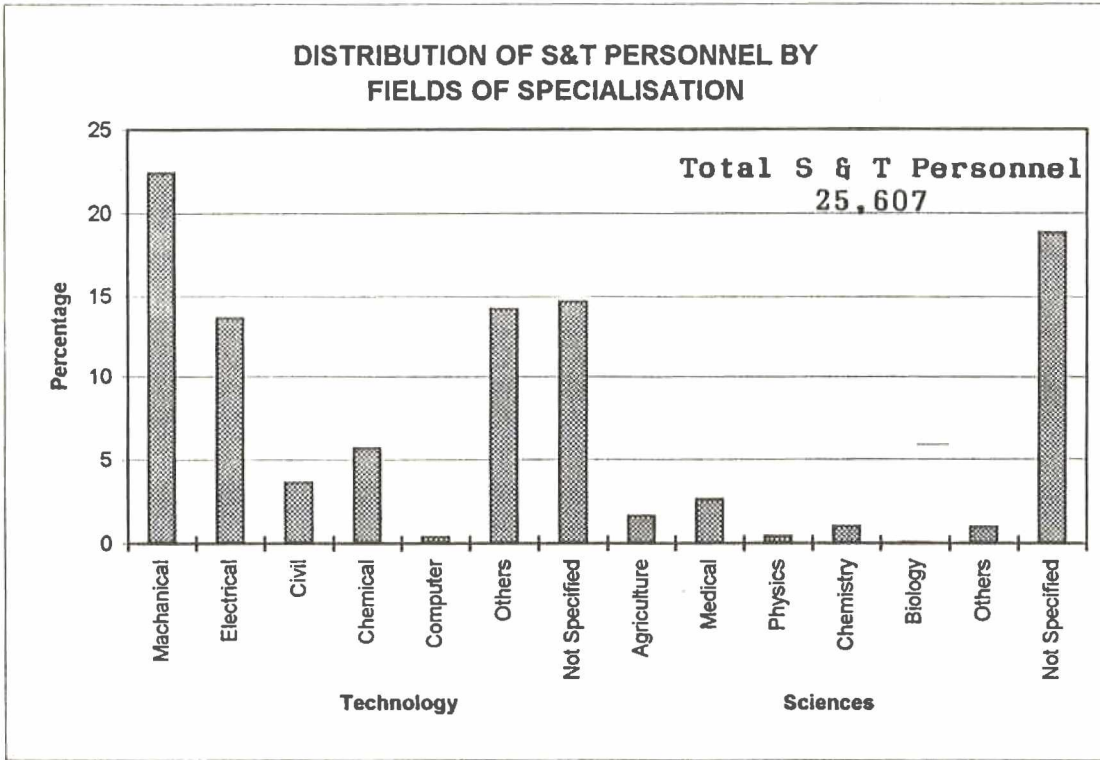
3.12 Almost two thirds of the Scientific and Technical Personnel (65.36 percent) are Graduates. Another 18.20 percent have higher levels of qualifications, namely Masters and Doctorate degrees. Remaining 16.44 percent of the S&T Personnel have lower levels of qualifications like Diplomas and Certificates from Technical Institutions. Table 3.4 gives data on levels of qualifications.

3.13 Pattern of qualifications of women employees is similar in that the Graduate women also account for two thirds (67.98 percent) of all the women S&T Personnel. But most of the remaining women employees have higher levels of qualifications, namely Masters (23.15 percent) and Doctorate (3.45 percent) degrees. Only fewer women (5.42 percent) hold Diplomas and Certificates.

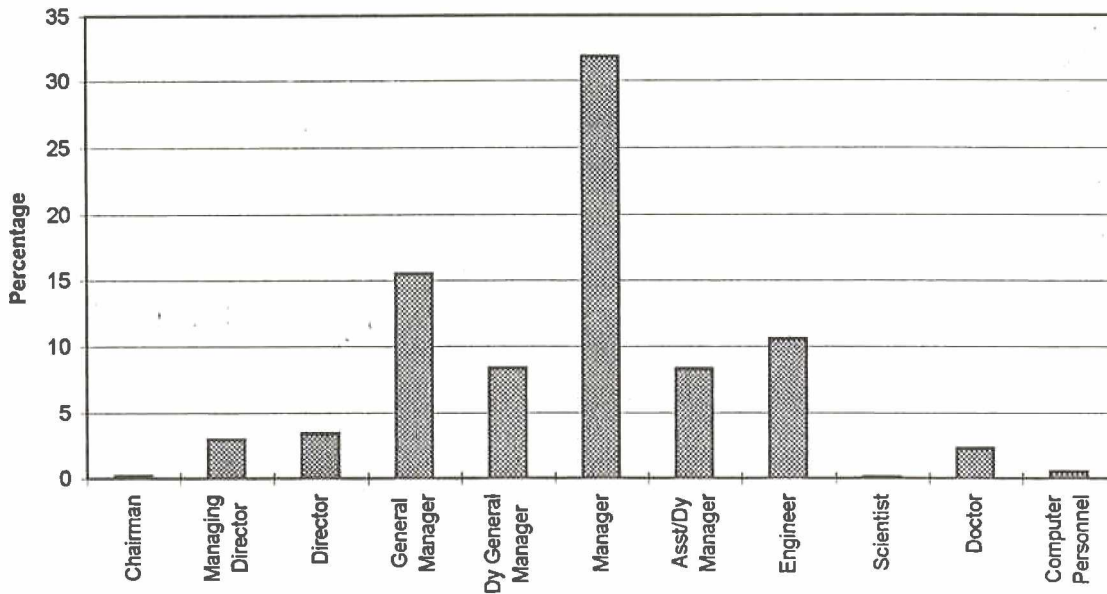
Levels of Responsibilities

3.14 Over 70 percent of the S & T Personnel are working on Managerial positions and remaining 29.47 percent on Specialized and Technical positions. Bulk of the Managerial personnel (40.20 percent of S&T Personnel) are at Lower Management levels designated as Managers and Assistant/Deputy Managers. Another 23.74 percent of the S & T Personnel are working at Middle Management levels designated as General Managers and Deputy General Managers. Top Management positions like Chairmen, Managing Directors and Directors account for 6.59 percent of S&T Personnel.

3.15 Among the 29.47 percent of the S&T Personnel holding Technical and Specialized positions, Engineers account for the largest share of 10.85 percent followed by Doctors (2.27 percent), Computer/Systems personnel (0.55 percent) and Scientists (0.11 percent). Remaining 15.69 percent of S&T Personnel hold various Technical positions like Research Officer, Chemist,



Distribution of S&T Personnel by Levels of Responsibility



Distribution of S&T Personnel by Primary Work Activity

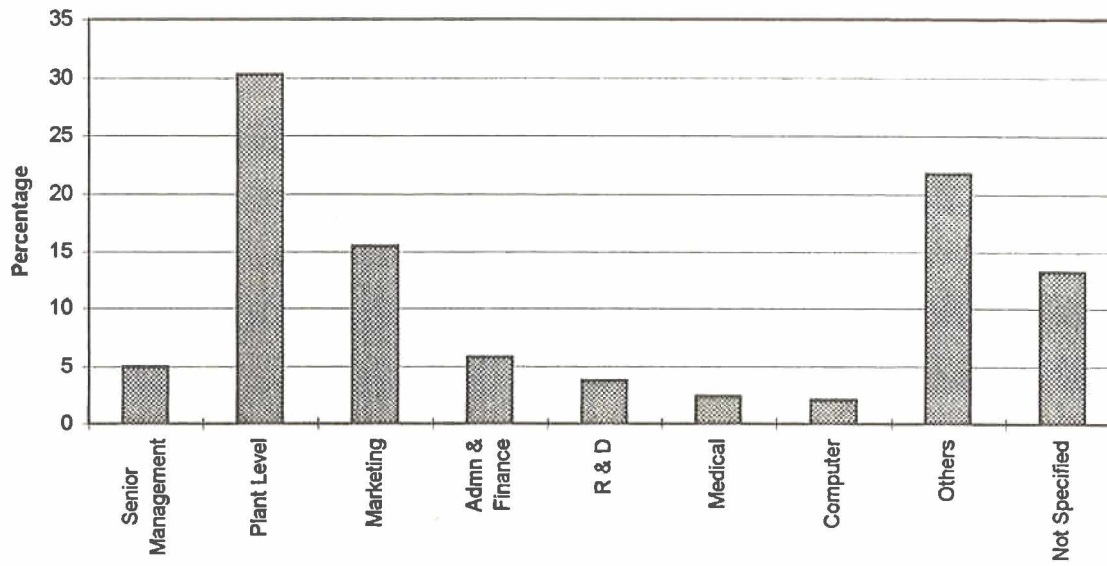


TABLE 3.6

DISTRIBUTION OF S&T PERSONNEL BY LEVELS
OF RESPONSIBILITIES

Levels of Responsibility (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Percent in Total	
				All STP (5)	Female STP (6)
Chairman	49	0	49	0.19	0.00
Managing Director	753	7	760	2.97	3.45
Director	869	9	878	3.43	4.43
General Manager	3931	11	3942	15.39	5.42
Dy General Manager	2124	12	2136	8.36	5.91
Manager	8116	40	8156	31.85	19.70
Asst / Dy Manager	2113	26	2139	8.35	12.81
Engineer	2771	8	2779	10.85	3.94
Scientists	26	1	27	0.11	0.49
Doctor	520	62	582	2.27	30.54
Computer Personnel	141	1	142	0.55	0.49
Others	3991	26	4017	15.69	12.81
Total	25404	203	25607	100.00	100.00

TABLE 3.7

DISTRIBUTION OF S&T PERSONNEL BY PRIMARY
WORK ACTIVITY

Primary work Activity (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Percent in Total	
				All STP (5)	Female STP (6)
Senior Management	1271	13	1284	5.01	6.40
Plant Level	7749	26	7775	30.36	12.81
Marketing	3944	19	3963	15.48	9.36
Admn & Finance	1473	16	1489	5.81	7.88
R & D	966	8	974	3.80	3.94
Medical	559	66	625	2.44	32.51
Computer	535	5	540	2.11	2.46
Others	5544	25	5569	21.75	12.32
Not Specified	3363	25	3388	13.23	12.32
Total	25404	203	25607	100.00	100.00

Medical Representative, Chief Officer, Executive, Consultant, Advisor, Technician, Electrician, Captain/Commanding Officer etc. Table 3.6 gives data on employment of S&T Personnel according to their levels of responsibility.

3.16 Deployment of women S&T Personnel is some what different from the overall deployment pattern. While 51.73 percent of the women personnel are employed in Managerial positions, 48.27 percent are employed in Technical and Specialized positions. Among women personnel in Managerial cadre, 7.88 percent occupy Top Managerial positions, and 43.85 percent are at Middle and Lower Managerial Levels. As many as 30.54 percent of women S&T Personnel are working as Doctors/Medical Officers, which is their preferred profession.

Primary Work Activity

3.17 Work activities of over 13 percent of the S&T Personnel have not been indicated by the companies in their annual reports. Generally, work activity has not been indicated in case of the Top Management personnel as well, but as they are normally engaged in Senior Management functions, they have been classified accordingly. Classification of the remaining 86.77 percent of S&T Personnel shows that over two thirds of them are engaged in Plant activities, Marketing, Administration and Senior Management functions and other one third in Medical, R&D, Computer and other activities.

3.18 The largest number of S & T Personnel i.e 7775 persons (30.36 percent) are working at Plant Level, followed by 3963 persons (15.48 percent) on Marketing. Senior Management activity accounts for another 5.01 percent of S & T personnel. Of the remaining personnel, Administration and Finance accounts for 5.81 percent, Research and Development for 3.80 percent, Medical activities for 2.44 percent and Computer/Systems for 2.11 percent. The balance of 21.75 percent of the personnel are engaged in various activities like Planning, Telecommunications, Standards, Pollution control, Project Formulation, Growth, Collaboration, Diversification, Coordination, Security etc. Table 3.7 gives data on distribution of S&T Personnel by work activity.

3.19 Work activities of women S&T Personnel are different than the over all pattern for the same reasons as stated earlier that women personnel prefer Medical profession. Thus 32.51 percent of women are engaged in Medical Profession (compared to the overall of 2.44 percent). Relatively more women are also engaged in Administration and Finance (7.88 percent as against 5.81 percent at over all level). Representation of women in Senior Management (6.40 percent), in Computer activities (2.46 percent) and in Research & Development (3.94 percent) is similar to the overall pattern. On the other hand fewer women are working at Plant level (12.81 percent) and on Marketing (9.36 percent) compared to the over all levels.

TABLE 3.8

**FIELDS OF SPECIALISATION FOR DIFFERENT LEVELS
OF QUALIFICATIONS RESPONSIBILITIES AND
ACTIVITIES FOR S&T PERSONNEL**

Characteristics (1)	Technology (2)	Sciences (3)	Total (4)
			(Percent)
1. Levels of Qualifications			
Doctorate	35.21	64.79	100.00
Post Graduate	63.84	36.16	100.00
Graduate	73.45	26.55	100.00
Others	95.08	4.92	100.00
Total	74.55	25.45	100.00
2. Levels of Responsibilities			
Top Management	64.26	35.74	100.00
Middle Management	75.09	24.91	100.00
Junior Management	75.59	24.41	100.00
Specialised Positions	74.98	25.02	100.00
Total	74.55	25.45	100.00
3. Primary Work Activity			
Senior Management	63.86	36.14	100.00
Plant Level	82.29	17.71	100.00
Marketing	61.37	38.63	100.00
Administration & Finance	57.56	42.44	100.00
Others	80.14	19.86	100.00
Not Specified	75.81	24.19	100.00
Total	74.55	25.45	100.00

Details for Tables 3.8-3.9 at Annexure-3.

3.20 Annexure 2 gives detailed data on important characteristics of S&T Personnel for different levels of qualifications, fields of specialisation, levels of responsibility and work activity, separately for Government companies, non Government companies and combined for both the sectors.

Fields of Specialization and other Characteristics

3.21 As stated earlier, 75 percent of the S&T Personnel have qualifications in Technology and only 25 percent in Sciences. Within these averages, shares of Technology and Sciences vary for different levels of qualifications, responsibilities and work activities. Table 3.8 gives data on fields of specialisation for different characteristics of S&T Personnel. Detailed data, separately for Government and non Government companies, are at Annexure 3 .

3.22 In general, Scientific Personnel have higher levels of qualifications than Technical Personnel. Thus nearly two thirds (64.79 percent) of Doctorate degree holders are in Sciences. But Sciences account for only 4.92 percent of Diploma and Certificate holders. The share of Technical Personnel goes down as levels of qualifications increase i.e from 95.08 percent for Junior qualifications to 35.21 percent for Doctorate level.

3.23 Proportion of Technical Personnel does not vary much for different levels of responsibilities and is around 75 percent, except for Top Management levels for which there are relatively less of Technical Personnel i.e. 42.86 percent of Chairmen and 61.32 percent of Managing Directors. Data on distribution of Technical Personnel among different work activities shows that relatively larger number of such personnel (88.29 percent) are working at Plant Level while the lowest share (57.56 percent) is in regard to Administration and Finance.

3.24 Data on proportions of Scientific and Technical Personnel employed by Government companies are given at Table 3.9. Compared to 28.28 percent of S&T Personnel at over all level, Government companies employ relatively more of Technical Personnel (31.48 percent) and less of Scientific Personnel (18.90 percent). They employ relatively less of Doctorate degree holders (24.57 percent) as well as Top Management personnel (18.38 percent). An other feature of the pattern of employment by Government companies is that they employ relatively more of personnel with Junior qualification levels (36.00 percent), personnel on Technical and Specialized positions (42.08 percent) and those engaged in "other" activities (38.90 percent). A major link in this chain is employment of a large number of Diploma holders in Technology related to foreign going ships employed by Shipping Corporation of India Limited.

Levels of Qualifications and other Characteristics

3.25 Distribution of S&T Personnel according to levels of qualifications for different disciplines, responsibilities and

TABLE 3.9

**SHARE OF S&T PERSONNEL EMPLOYED BY GOVERNMENT
COMPANIES BY FIELDS OF SPECIALISATION FOR
DIFFERENT LEVELS OF QUALIFICATIONS
RESPONSIBILITIES AND ACTIVITIES**

Characteristics (1)	Technology (2)	Sciences (3)	Total (4)
			(Percent)
1. Levels of Qualifications			
Doctorate	30.67	21.26	24.57
Post Graduate	34.20	21.80	29.72
Graduate	29.01	18.16	26.13
Others	37.36	9.66	36.00
Total	31.48	18.90	28.28
2. Levels of Responsibilities			
Top Management	20.39	14.76	18.38
Middle Management	25.94	14.93	23.20
Junior Management	25.01	15.88	22.78
Specialised Positions	46.97	27.44	42.08
Total	31.48	18.90	28.28
3. Primary Work Activity			
Senior Management	19.15	12.93	18.38
Plant Level	18.16	13.22	17.29
Marketing	10.73	13.46	11.78
Administration	42.59	20.25	33.11
Others	49.65	28.49	44.75
Not Specified	43.39	22.77	37.51
Total	31.48	18.90	28.28

activities is shown in table 3.10. Detailed data, separately for Government and non Government companies, are at Annexure 4.

3.26 On an average 2.50 percent of S&T personnel have Doctorate degrees. Relatively there are more of Doctorates among Scientific Personnel (6.35 percent) and Top Management personnel (5.39 percent). On the other hand Doctorates are fewer among Technical Personnel (1.18 percent), personnel on specialized and Technical positions (1.46 percent) and those engaged at Plant Level, on Marketing and Administrative activities (1.75 - 1.80 percent). Similar trend, though not with so much emphasis, is also visible in respect of Post Graduates. Opposite is the case for Junior level qualifications. While Diploma/Certificate holders account for 16.44 percent of the S&T Personnel on an average, they account for only 3.18 percent of Scientific Personnel and 4.03 percent of Top Management personnel. There are also fewer such personnel engaged in Marketing and Administrative activities (5-7 percent). On the other hand, there are more of Junior qualification personnel among Technical Personnel (20.98 percent), Specialized positions (34.59 percent) and "other" activities (25.74 percent).

3.27 Data on proportions of S&T Personnel for different levels of qualifications employed by Government companies are shown in Table 3.11. As against an average of 28.28 percent of S&T personnel, Government companies employ relatively more of Technical Personnel (31.46 percent), personnel on Specialized positions (42.07 percent) and those having Administration (33.11 percent) and other "Other" activities (48.11 percent). Correspondingly they employ less of Scientific Personnel and Senior Management personnel. Data on levels of qualifications, show that Government companies employ relatively less of Doctorates and more of Junior level qualifications. There are more of Doctorate degree holders specially among those engaged on Senior Management (29.31 percent) and Administration (34.62 percent) activities. There are relatively more of Post Graduates among Technical Personnel (34.20 percent) and those on non Management positions (42.78 percent) in Government companies compared to non Government companies. Employment of personnel with Junior level qualifications by Government companies is relatively significant in respect of Specialized positions (48.35 percent) as well as for "other" activities (66.44 percent) for the reason, as stated earlier, that Shipping Corporation of India employs a large number of Diploma/certificate holders.

AGE AND EXPERIENCE

3.28 Average age of S&T Personnel is 46.4 years and average experience is 22.7 years, implying average entry age of 23.7 years. Average age of women personnel is lower at 44.6 years. Their experience is also lower at 20.0 years. While average age of male personnel in Government companies is lower than in non Government companies, reverse in the situation for women personnel. Details of variations in age with reference to different characteristics of S&T personnel are given in Table

TABLE 3.10

**LEVELS OF QUALIFICATIONS FOR DIFFERENT
DISCIPLINES RESPONSIBILITIES AND
ACTIVITIES OF S&T PERSONNEL**

Characteristics (1)	Doctorate (2)	Post Graduate (3)	Graduate (4)	Others (5)	Total (6)
					(Percent)
1. Fields of Specialisations					
Technology	1.18	13.44	64.40	20.98	100.00
Sciences	6.35	22.31	68.16	3.18	100.00
Total	2.50	15.70	5.36	16.44	100.00
2. Levels of Responsibilities					
Top Management	5.39	17.37	73.21	4.03	100.00
Middle Management	3.50	18.16	73.35	4.99	100.00
Junior Management	2.19	14.45	71.41	11.95	100.00
Specialised Positions	1.46	15.05	48.90	34.59	100.00
Total	2.50	15.70	65.36	16.44	100.00
3. Primary Work Activity					
Senior Management	4.52	17.52	73.60	4.36	100.00
Plant Level	1.80	11.11	69.25	17.84	100.00
Marketing	1.77	14.23	77.16	6.84	100.00
Administration & Finance	1.75	16.59	76.76	4.90	100.00
Others	3.49	21.20	49.57	27.74	100.00
Not Specified	2.24	14.37	70.40	12.99	100.00
Total	2.50	15.70	65.36	16.44	100.00

Details for Tables 3.10-3.11 at Annexure-4.

3.12. This table also gives other variants like experience and mobility.

3.29 Different classes of Scientific and Technical Personnel have different average ages. Important factors that determine variations in age are levels of qualifications, levels of responsibility and nature & fields of specialisation. Generally, higher average age of a class of S&T Personnel suggests preponderance of aged persons in the class, relatively lower growth rate of new entrants and late entry in employment due to long duration of education. Average experience on the other hand depends on average age as well as average entry age, which is determined by duration of education.

3.30 Data on average ages for different levels of qualifications indicate that average ages vary between 42-49 years. Doctorate Degree holders have the highest average age of 49.0 years. This suggests that entry of Doctorate degree holders is at higher age due to long duration of education and also that they are no longer preferred in industry, as most of the companies like to appoint fresh Graduates and Post Graduates and train them according to their requirements. Diploma holders, on the other hand, have low average age of 42.1 years. Average experience follows the same pattern as average age with adjustment for duration of education. It varies between 18.6 year for Diploma holders to 23.8 years for Doctorates.

3.31 Data show that field of specialisation has direct effect on average age of S&T Personnel. Fields, which are of relatively recent origin, have younger employees, while traditional fields have more aged employees. Output of Technical Institutes has grown faster than that of Science Colleges. Within the former, specialized fields are gaining more importance. This emerging pattern shapes the pattern of employment of S&T Personnel. Thus, average age of Scientific Personnel is higher at 48.1 years compared to 45.8 years for Technical Personnel. Within the latter, average age for traditional engineering fields is higher than for specialized fields which have come up in the recent years. Civil engineering was preferred discipline earlier. Accordingly S&T Personnel in this field have higher average age of 50.4 years. Preference later shifted to Mechanical, Electrical and Chemical engineering. As a result, average age for these professions is around 46 - 47 years. On the other hand personnel in specialized fields have average age of only 42 years. This is mainly due to preponderance of Technical Personnel in Shipping Technology in this group which has average age of 37.3 years and average experience of 11.3 years only. Within the Science field, there are no much variations in average ages for different disciplines, and are around 47-48 years, average being 47.3 years for Physics, 47.5 years for Medical & Agricultural Sciences and 48.3 years for Chemistry. In fact average age of Scientific Personnel is not much higher than average age of personnel with any traditional engineering field like Chemical, Electrical and Mechanical engineering.

TABLE 3.11

SHARES OF S&T PERSONNEL IN GOVERNMENT COMPANIES
BY LEVELS OF QUALIFICATIONS FOR DIFFERENT
DISCIPLINES RESPONSIBILITIES AND ACTIVITIES

Characteristics (1)	Doctorate (2)	Post Graduate (3)	Graduate (4)	Others (5)	Total (6)
(Percent)					
1. Fields of Specialisations					
Technology	30.67	34.20	29.01	37.39	31.48
Sciences	21.26	21.80	18.16	9.66	18.90
Total	24.57	29.72	26.13	36.00	28.28
2. Levels of Responsibilities					
Top Management	28.57	22.87	17.49	1.47	18.38
Middle Management	23.94	24.55	23.55	11.55	23.20
Junior Management	22.67	24.91	21.55	51.79	22.78
Specialised Positions	26.36	42.78	37.91	48.35	42.07
Total	24.57	29.72	26.13	36.00	28.28
3. Primary Work Activity					
Senior Management	29.31	20.00	16.30	0.11	16.90
Plant Level	10.00	16.90	19.00	11.61	17.29
Marketing	15.71	11.17	12.26	6.64	11.78
Administration	34.62	39.2	32.55	20.55	33.11
Others	24.54	42.25	38.60	62.20	44.75
Not Specified	52.63	34.91	40.84	19.77	37.51
Total	24.57	29.72	26.13	36.00	28.28

3.32 Average experience of S&T Personnel also follows the same pattern as average age. While average experience of Scientific Personnel is 24.3 years that of Technical Personnel is 22.2 years.

3.33 Due to traditional promotion structure, average age increases along with level of responsibility. Thus among the Managerial cadres, average age increases from 45.5 years for Assistant Managers to 56.7 years for Chairmen. Experience also follows the same pattern and increases from 22.3 years to 29.6 years for the two levels. Among specialized professions, average age varies from 40.4 years for Computer/Systems personnel to 47.4 years for Doctors.

3.34 There is no much correlation between age and work activity. Average ages of personnel engaged in activities at Plant level, Marketing, Administration, Finance, R&D, Medical and other activity groups are around 46-47 years. The only exceptions are Top Management activity which has average age of 50.8 years and Computer activity for which average age is 43.0 years. Average age for other miscellaneous activities is also lower at 42.8 years because of inclusion of shipping personnel.

3.35 Age wise distribution of S&T Personnel is shown in Table 3.13. Details are at Annexure 5. The maximum concentration of Personnel is in age group 41-50 years, which accounts for 43.01 percent of the personnel. This is followed by 32.12 percent in 51-60 years age group. Less personnel in this age group is due to large scale retirement in Government companies after 58 years age. Large number of Diploma/Certificate holder in non Government companies who reached high salary groups during 50-60 years of age were also retired. 22.75 percent of the personnel are upto 40 years and 2.12 percent are above 60 years.

3.36 The maximum number of women employees (42.36 percent) are also in the age group 41-50 years. Fewer women are above that age (25.61 percent) while 32.02 percent are in lower age groups, implying relatively recent entry of women S&T Personnel in corporate sector.

3.37 Due to retirement policy followed by Government companies, there are hardly any employees in this sector above 60 years age (0.23 percent). However 2.87 percent of employees in non Government sector are older than 60 years. Government companies are also characterized by more younger employees upto 30 years age (10.10 percent) than in non Government companies (3.35 percent). Thus, while 53.68 percent of personnel upto 30 years are in Government sector, the share of Government companies in employees above 50 years is 25.09 percent.

TABLE 3.12

**AGE EXPERIENCE AND INDEX OF MOBILITY OF S&T
PERSONNEL BY DIFFERENT CHARACTERISTICS**

Characteristics (1)	Average Age (Years) (2)	Average Total Experience (Years) (3)	Average Experience in the last company (Years) (4)	Index of Mobility (Total exp/exp.in the last company) (Ratio) (5)
I. Field of Specialisation				
(i) Technology				
Mechanical	47.4	24.3	15.7	1.55
Electrical	46.5	23.3	16.0	1.46
Civil	50.4	27.1	16.8	1.61
Chemical	46.6	22.9	13.8	1.66
Computer	43.7	20.1	12.9	1.56
Others	42.0	17.0	10.4	1.63
Not Specified	45.2	21.6	12.1	1.79
Total (Technology)	45.8	22.2	13.9	1.60
(ii) Sciences				
Agriculture	47.6	23.3	14.5	1.61
Medical	47.5	20.5	14.7	1.39
Natural				
Physics	47.3	23.3	14.0	1.66
Chemistry	48.3	24.5	16.7	1.47
Biology	48.0	23.4	13.9	1.68
Others	47.3	23.9	16.2	1.48
Not Specified	48.3	24.9	15.3	1.63
Total (Natural)	48.3	24.0	16.0	1.50
Total (Sciences)	48.1	24.3	15.3	1.59
Grand total	46.4	22.7	14.2	1.60
II. Level of Qualifications				
Doctorate	49.0	23.8	11.4	2.09
Post-Graduate	46.1	21.8	12.3	1.77
Graduate	47.2	23.7	14.9	1.59
Diploma	42.1	18.6	13.3	1.40
Others	45.8	23.3	17.1	1.36
Total	46.4	22.7	14.2	1.60

TABLE 3.12
(CONTINUED)

Characteristics	Average Age (Years)	Average Total Experience (Years)	Experience in the last company (Years)	Index of Mobility (Total exp/exp.in the last company) (Ratio)
(1)	(2)	(3)	(4)	(5)
III . Level of Responsibilities				
Chairman	56.7	29.6	13.1	2.26
Managing Director	50.7	27.0	10.2	2.65
Director	51.4	27.6	12.5	2.21
General Manager	50.0	26.6	12.2	2.18
Dy General Manger	48.5	25.0	15.6	1.60
Manager	46.4	23.1	15.8	1.46
Asst/Dy Manager	45.5	22.3	18.1	1.23
Engineer	41.8	17.4	12.5	1.39
Scientist	43.3	18.8	10.6	1.77
Doctor	47.4	20.2	15.2	1.33
Computer Personnel	40.4	17.2	11.2	1.54
Others	43.4	19.5	12.7	1.54
Total	46.4	22.7	14.2	1.60
IV. Primary Work Activity				
Senior Management	50.8	27.0	11.0	2.45
Plant Level	47.5	24.2	15.7	1.54
Marketing	46.2	23.1	14.2	1.63
Admn & Finance	47.5	24.1	13.1	1.84
R & D	48.2	24.5	15.6	1.57
Medical	47.4	20.3	15.4	1.32
Computer	43.0	19.9	12.4	1.60
Others	42.8	18.4	11.7	1.57
Not Specified	47.6	24.2	16.8	1.44
Total	46.4	22.7	14.2	1.60
V. Sex				
Male	46.4	22.7	14.2	1.60
Female	44.6	20.0	13.9	1.44
Total	46.4	22.7	14.2	1.60

TABLE 3.13

**AGE WISE DISTRIBUTION OF S&T PERSONNEL
IN GOVERNMENT AND NON GOVERNMENT COMPANIES**

Age Group (Years) (1)	Government Companies (2)	Non Government Companies (3)	All Companies (4)	Share of Govern- ment Companies (5)
				(Percent)
Upto 20	0.14	0.03	0.06	66.67
21 - 30	9.96	3.32	5.19	54.21
31 - 40	15.95	18.11	17.50	25.77
41 - 50	43.57	42.77	43.01	28.65
51 - 60	30.15	32.90	32.12	26.54
Above 60	0.23	2.87	2.12	3.12
Total	100.00	100.00	100.00	28.28

Data at Annexure-5

TABLE 3.14

**EXPERIENCE WISE DISTRIBUTION OF S&T PERSONNEL
IN GOVERNMENT AND NON GOVERNMENT COMPANIES**

Experience (Years) (1)	Government Companies (2)	Non Government Companies (3)	All Companies (4)	Share of Govern- ment Companies (5)
				(Percent)
Upto 5	13.05	1.11	4.48	82.65
6 - 10	4.18	4.76	4.60	25.88
11 - 15	11.30	2.55	5.03	63.22
16 - 20	16.24	28.39	24.96	18.39
21 - 25	22.10	22.10	22.10	28.11
26 - 30	18.95	18.71	18.78	28.56
31 - 35	11.97	15.09	14.21	23.83
36 - 40	2.17	5.87	4.82	12.76
Above 40	0.04	1.42	1.03	1.15
Total	100.00	100.00	100.00	28.28

Data at Annexure-6

Mobility

3.38 As against total average experience of 22.7 years, average experience in the last reporting company in which the S&T Personnel are employed is 14.2 years. The index of mobility works out to 1.60. In other words S&T Personnel have changed employers 1.60 times on an average. Table 3.12 incorporates data in this regard as well.

3.39 The index of mobility varies from 1.23 to 2.65. The highest index is in respect of Top Management personnel, namely Managing Directors. On the other hand the least mobility is for the lowest Management level, namely Assistant Managers. In fact index of mobility seems to be directly related to the levels of responsibility, age and experience, which are all interrelated. The lower Management level personnel have lower average age and experience and have grown along with the company in which they are initially employed, most of them from lower salary groups. Data also show that Medical Personnel too have low mobility (1.33) and remain attached to the company of entrance. Index of mobility also seems to be directly related to the levels of qualifications and varies from 1.36 for Certificate holders to 2.09 for Doctorate degree holders. Reasons are similar. While Doctorate, Post Graduate and Graduate Degree holders have some mobility, Diploma holders are tied up with the companies in which they are initially employed, having no prospects to get higher salary group posts elsewhere. The index of mobility does not vary much with reference to the field of specialisation, except that persons with qualifications in Medical sciences have low mobility, (1.39), as stated earlier. The index varies between 1.46 and 1.66 for other disciplines. There is no much variation in the index for different activities like Plant, Marketing, Administration, Finance, R&D, Computer and other fields, except that the Senior Management activity has high mobility (2.24) and Medical activity has low mobility (1.32). The index varies between 1.54 and 1.84 for other activity groups.

Experience

3.40 Average experience of S&T Personnel is 22.7 years. While average for Government companies is 20.2 years, it is higher at 23.7 years for non Government companies. Due to their late entry, average experience of women personnel is lower at 20.0 years compared to 22.7 years for male personnel. Distribution of S&T personnel according to experience in quinquennial ranges is shown in Table 3.14. Annexure 6 gives data on characteristics of S&T personnel for different experience ranges.

3.41 The maximum number of personnel (24.96 percent) is in experience range of 16-20 years and the number gradually declines there after in each five year range to 4.82 percent in 36-40 years range and 1.03 percent for experience above 40 years. On the other hand, the number of personnel in higher salary groups is almost constant for the first 15 years of experience with modest increase from 1141 persons (4.48 percent) in first five year

TABLE 3.15

DISTRIBUTION OF S&T PERSONNEL BY REMUNERATION RANGES

Remuneration (Rs. Lakhs per annum) (1)	Government Companies		Non Government Companies		All Companies	
	Nos (2)	Percent (3)	Nos (4)	Percent (5)	Nos (6)	Percent (7)
Upto 150	1454	20.08	3005	16.36	4459	17.42
151 - 200	3599	49.70	8793	47.87	12392	48.39
201 - 250	674	9.61	3061	16.66	3735	14.59
251 - 300	449	6.20	1256	6.84	1705	6.67
301 - 350	289	3.99	780	4.25	1069	4.16
351 - 400	186	2.57	428	2.33	614	2.40
401 - 500	274	3.78	484	2.64	758	2.96
501 - 600	167	2.31	227	1.24	394	1.54
601 - 700	63	0.87	112	0.61	175	0.68
Above 700	86	1.19	220	1.20	306	1.19
Total	7241	100.00	18366	100.00	25607	100.00

experience range to 1267 persons (5.03 percent) in 11-15 years experience range. Two conclusions may be reached from this trend. Firstly, the S&T Personnel get higher salary groups when they join service or within first few years, and promotions to higher salary groups take place only on completion of 15 years experience. Secondly, there was gradual increase in entry of S&T Personnel in higher salary groups from 1956 to 1980 but stagnation in such entry in the next decade.

3.42 Pattern of experience of women personnel also follows the same pattern as male personnel with a significant exception that there was no stagnation in entry of women personnel in the decade 1980-90 and their numbers have continued to increase in the past twenty years.

3.43 There are some essential difference between Government and non Government sectors in regard to experience. Firstly, there are fewer employees beyond experience of 35 years in Government companies (2.21 percent) than in non Government companies (7.29 percent) due to fixed retirement age in Government companies. Secondly, while there are fewer employees in high salary groups in non Government companies with experience range upto 15 years (8.42 percent of personnel) suggesting a restricted entry of such personnel in the decade 1980-90 there was no such stagnation in Government companies where personnel with experience upto 15 years accounted for 28.53 percent. In fact Government companies accounted for as much as 82.65 percent and 63.22 percent of employees in both the sectors for experience ranges of 1-5 years and 11-15 years respectively. Perhaps very low intake by non-Government companies during corresponding years and implementation of revised pay scale by Government companies led to this situation.

Remuneration

3.44 Average remuneration of S&T Personnel is Rs. 2.21 lakhs per annum. Averages are the same for Government companies (Rs.2.20 lakhs) and for non Government companies (Rs.2.21 Lakhs). Women S&T Personnel get lower average remuneration of Rs.1.87 lakhs. Within these averages, remunerations vary widely. While 65.81 percent of the personnel receive remunerations (from Rs.1.44 lakhs) upto Rs.2.00 lakhs per annum, another 21.26 percent receive between Rs.2.01-3.00 lakhs per annum and 9.52 percent receive between Rs.3.01-5.00 lakhs. The remaining 3.41 percent receive remunerations above Rs.5.00 lakhs per annum, or Rs.41,667 per month. Data on S&T Personnel in different remuneration ranges are given in Table 3.15.

3.45 Proportions of S&T Personnel in non Government companies are higher than in Government companies in all the middle remuneration slabs in Rs.2.01-3.50 lakhs range. For low as well as high remuneration slabs, proportions of S&T Personnel are higher in Government companies. Higher preparation in Government

TABLE 3.16

**DISTRIBUTION OF COMPANIES UNDER DIFFERENT
INVESTMENT RANGES AND S&T PERSONNEL
EMPLOYED BY THEM**

Paid Up Capital Range (Rs. Crore)	Companies		Paid Up Capital (Rs. Crore) (Percent)		S&T Personnel	
	Num- ber (2)	Per- cent (3)	(4)	(5)	Num- ber (6)	Per- cent (7)
(1)						
Upto 1	1915	42.86	1351	1.53	1585	6.19
1 - 5	1461	32.71	3668	4.15	3678	14.36
5 - 10	451	10.10	3236	3.66	2429	9.49
10 - 25	341	7.63	5287	5.98	3729	4.56
25 - 50	133	2.98	4627	5.27	6350	24.80
50 - 100	76	1.70	5386	6.10	1792	7.00
100 - 500	62	1.39	13402	15.17	4855	18.96
500 - 1000	11	0.25	7146	8.09	210	0.82
Above 1000	17	0.38	44232	50.08	979	3.82
Total	4467	100.00	88335	100.00	25607	100.00

TABLE 3.17

**COMPARATIVE DISTRIBUTION OF S&T PERSONNEL
IN GOVERNMENT AND NON GOVERNMENT COMPANIES
BY DIFFERENT INVESTMENT RANGES**

Paid Up Capital (Rs. Crore)	Companies		S&T Personnel		Share of Government Companies in STP	
	Govt (Nos) (2)	Non Govt (Nos) (3)	Govt (Nos) (4)	Non Govt (Nos) (5)	(Percent) (6)	(Percent) (7)
(1)						
Upto 1	133	1782	323	1262	6.95	20.38
1 - 5	240	1221	1175	2503	16.43	31.95
5 - 10	56	395	166	2263	12.42	6.83
10 - 25	67	274	652	3077	19.65	17.48
25 - 50	42	91	672	5678	31.58	10.58
50 - 100	29	47	156	1636	38.16	8.71
100 - 500	35	27	2938	1917	56.45	60.51
500 - 1000	10	1	210	0	90.91	100.00
Above 1000	15	2	949	30	88.24	96.94
Total	627	3840	7241	18366	14.04	28.28

companies (69.78 percent) for lower remunerations upto Rs.2.00 lakhs than in non Government companies (64.23 percent) is because Government companies generally pay lower remunerations. Higher proportions for remunerations exceeding Rs.3.50 lakhs are due to high remunerations paid by Shipping Corporation of India to its personnel engaged on foreign going vessels. If this company is excluded, proportions of S&T personnel in Government companies in higher remuneration ranges are well below the proportions in non Government companies in each slab.

Concentration of Employment

3.46 Most of the S&T Personnel are employed by relatively few large sized companies. Size of a company has been measured in terms of investment, income and number of S&T Personnel employed by it.

Investment Size

3.47 Investment (paid up capital) of the surveyed companies adds up to Rs.88,335 crores. Most of the investment is in few big companies. Top 166 companies having investment of more than Rs.50 crores each, constitute just 3.72 percent of all the companies, but account for 79.44 percent of investment of all the companies and 30.60 percent of S & T Personnel employed by them. On the other hand, 3376 smaller companies, having investment of less than Rs.5 crores each, constitute over three fourths (75.57 percent) of all the companies but their investment adds up to just 5.68 percent of investment of all the companies and they employ 20.55 percent of S&T Personnel of all the companies. Middle level companies with investment of Rs 5-50 crores each, account for 20.71 percent of all the companies, 14.88 percent of their investment and 48.85 percent of their S&T Personnel. Table 3.16 gives distribution of companies and S&T Personnel for various investment ranges. Annexure 7.

3.48 Of the total investment of Rs 88,335 crores of the surveyed companies, Government companies account for Rs 59,858 crores or 67.76 percent. Government companies are generally highly capital intensive, but inspite of their high investment, they employ only 28.28 percent of S&T Personnel and generate 34.31 percent of income of all the companies.

3.49 Over 40 percent of S&T Personnel employed by Government companies are in 35 medium companies in the investment range of Rs.101-500 crores. This includes Shipping Corporation of India, the largest employer, accounting for 25.87 percent of S&T Personnel in Government sector. 25 giant companies with investment of more than Rs 500 crores each, employ another 16.01 percent of the S&T Personnel. Rest of 43.42 percent of S&T Personnel are employed by 567 companies with investment of less than Rs.100 crores each. Dominant in this segment is investment

TABLE 3.18

**DISTRIBUTION OF COMPANIES UNDER DIFFERENT
INCOME RANGES AND S&T PERSONNEL
EMPLOYED BY THEM**

Income Ranges (Rs. Crore) (1)	Companies		S&T Personnel	
	Numbers (2)	Percent (3)	Numbers (4)	Percent (5)
Upto 1	1310	29.33	998	3.90
1 - 5	831	18.60	330	1.29
5 - 10	422	9.45	364	1.42
10 - 25	614	13.75	772	3.01
25 - 50	406	9.09	1628	6.36
50 - 100	353	7.90	2150	8.40
100 - 500	408	9.13	9217	35.99
500 - 1000	66	1.48	3653	14.27
Above 1000	57	1.28	6495	25.36
Total	4467	100.00	25607	100.00

TABLE 3.19

**COMPARATIVE DISTRIBUTION OF S&T PERSONNEL
IN GOVERNMENT COMPANIES AND NON GOVERNMENT
COMPANIES UNDER DIFFERENT INCOME RANGES**

Income Ranges (Rs. Crore) (1)	Companies		S&T Personnel		Share of Government Companies in Companies STP	
	Govt (Nos) (2)	Non Govt (Nos) (3)	Govt (Nos) (4)	Non Govt (Nos) (5)	(Percent) (6)	(Percent) (7)
Upto 1	118	1192	21	977	9.01	2.10
1 - 5	125	706	32	298	15.04	9.70
5 - 10	69	353	168	196	16.35	46.15
10 - 25	76	538	88	684	12.38	11.40
25 - 50	60	346	120	1508	14.78	7.37
50 - 100	51	302	219	1931	14.45	10.19
100 - 500	78	330	2517	6700	19.12	27.31
500 - 1000	20	46	478	3175	30.30	13.09
Above 1000	30	27	3598	2897	52.63	55.40
Total	627	3840	7241	18366	14.04	28.28

range of Rs.2-5 crores, which accounts for 240 Government companies (38.28 percent) and 16.23 percent of S&T Personnel.

3.50 Government companies have much larger investment and are larger employers compared to the non Government Companies. While there are only 30 non Government companies with investment of more than Rs. 100 crores each, employing 1947 S&T Personnel equivalent to 10.60 percent of employment in non Government sector, there are 60 companies in Government sector in the same investment range which employ 4097 S&T Personnel or 56.58 percent of S&T Personnel in that sector. Table 3.17 gives data on comparative employment of S&T Personnel in Government and non Government companies for different investment ranges. Annexure 7 gives data on S&T Personnel for different investment ranges separately for Government and non Government Companies.

INCOME

3.51 Concentration of employment of S&T Personnel in companies under different income ranges follows the same pattern as in case of investment ranges, with suitable adjustment for Capital Output Ratios. On an average, income of the surveyed companies is 5.89 times their investment in paid up capital, the ratio being 2.98 for Government companies and 11.99 for non Government companies.

3.52 Only 123 top companies (2.76 percent of all the companies) with income exceeding Rs.500 crores each, employ nearly 40 percent of the S&T personnel. On the other hand 3177 companies (71.13 percent of all the companies) with income upto Rs.25 crores each, employ only 9.62 percent of the S&T personnel. Data on distribution of S&T Personnel for different income ranges are at Table 3.18.

3.53 Concentration is relatively more in Government companies as there are more of large sized Government companies employing larger number of S&T Personnel. Thus 7.97 percent of Government companies have income in excess of Rs.500 crores each and employ 56.29 percent of S&T personnel in that sector, while there are only 1.90 percent such big companies in non Government sector employing 33.06 percent of S&T personnel in the sector. Annexure 8 gives employment pattern according to income ranges while Table 3.19 gives comparative concentration in Government and non Government companies.

S&T Personnel Size

3.54 Concentration of employment has also been studied with reference to size of S&T Personnel employment by each company. As stated earlier, most of the personnel are employed by few large sized companies. In fact almost 67.76 percent of the companies do not employ any S&T Personnel in high salary groups. Another 20.82 percent of the companies employ only upto five S&T

TABLE 3.20

DISTRIBUTION OF COMPANIES UNDER DIFFERENT
EMPLOYMENT GROUPS AND S&T PERSONNEL
EMPLOYED BY THEM

Range of S&T Employee (1)	Companies		S&T Personnel	
	Numbers (2)	Percent (3)	Numbers (4)	Percent (5)
0	3027	67.76	0	0.00
1 - 5	930	20.82	1985	7.75
6 - 10	162	3.63	1380	5.39
11 - 25	178	3.98	2795	10.91
26 - 50	77	1.72	2615	10.21
51 - 100	46	1.03	3046	11.90
101 - 250	33	0.74	5000	19.53
Above 250	14	0.31	8786	34.31
Total	4467	100.00	25607	100.00

TABLE 3.21

COMPARATIVE DISTRIBUTION OF S&T PERSONNEL
IN GOVERNMENT AND NON GOVERNMENT COMPANIES
ACCORDING TO SIZE OF EMPLOYMENT

Range of S&T Employee (Number of STP) (1)	Companies		S&T Personnel		Share of Govt Companies in S&T Personnel	
	Govt (Nos) (2)	Non Govt (Nos) (3)	Govt (Nos) (4)	Non Govt (Nos) (5)	Companies (Percent) (6)	Personnel (Percent) (7)
0	441	2586	0	0	14.57	0.00
1 - 5	92	838	249	1736	9.89	12.54
6 - 10	25	137	165	1139	15.43	11.96
11 - 25	33	145	475	2320	18.54	16.99
26 - 50	13	64	434	2181	16.88	16.60
51 - 100	6	40	420	2626	13.04	13.79
101 - 250	13	20	1841	3159	39.39	36.82
Above 250	4	10	3657	5129	28.57	41.62
Total	627	3840	7241	18366	14.04	28.28

Personnel each, totaling 7.75 percent of all the S&T Personnel. On the other side of the spectrum there are 14 big companies constituting only 0.31 percent of all the companies, which employ more than 250 S&T Personnel each, or 628 S&T Personnel per company on an average, and account for 34.31 percent of S & T Personnel employed by all the companies. If top 47 companies employing more than 100 S & T Personnel each are taken into account, they employ more than half (53.84 percent) of all the S&T Personnel. Personnel policies of these companies by and large determine pattern and structure of S&T Personnel employed by the corporate sector and emoluments drawn by them. Table 3.20 gives data on concentration of S&T Personnel according to different ranges of employment by the companies. Annexure 9 gives detailed data separately for Government and non Government companies.

3.55 Concentration of S&T Personnel is more marked in Government sector, where few large employers employ most of the S&T personnel. Only 17 Government companies (2.71 percent) employ more than 100 S&T Personnel each, aggregating to almost three fourths (75.92 percent) of S&T Personnel in Government sector. On the other hand, 30 non Government companies (0.78 percent) employ more than 100 S&T Personnel each and account for 45.13 percent of S&T Personnel in that sector. While only 18.35 percent of the S&T Personnel in Government sector are employed by middle size companies having 11-100 S&T Personnel each, the share of such companies in non Government sector is much larger (38.81 percent). Table 3.21 gives data on comparative concentration of employment of S&T Personnel in Government and non Government companies according to the size of employment.

State Wise Distribution

3.56 Location of companies as well as employment of S&T Personnel is highly concentrated in few states. Top two states of Maharashtra & Delhi account for 34.10 percent of companies and 60.49 percent of S&T Personnel employed in the country. If next three states of West Bengal, Gujarat and Tamil Nadu are added, the share of top 5 states goes up to 62.66 percent of companies and 84.50 percent of S&T Personnel. The concentration increases further if top 10 states accounting for 83.99 percent of companies and 93.91 percent of S&T Personnel are considered . Data on statewise distribution of companies and S&T Personnel employed by them are given in Table 3.22.

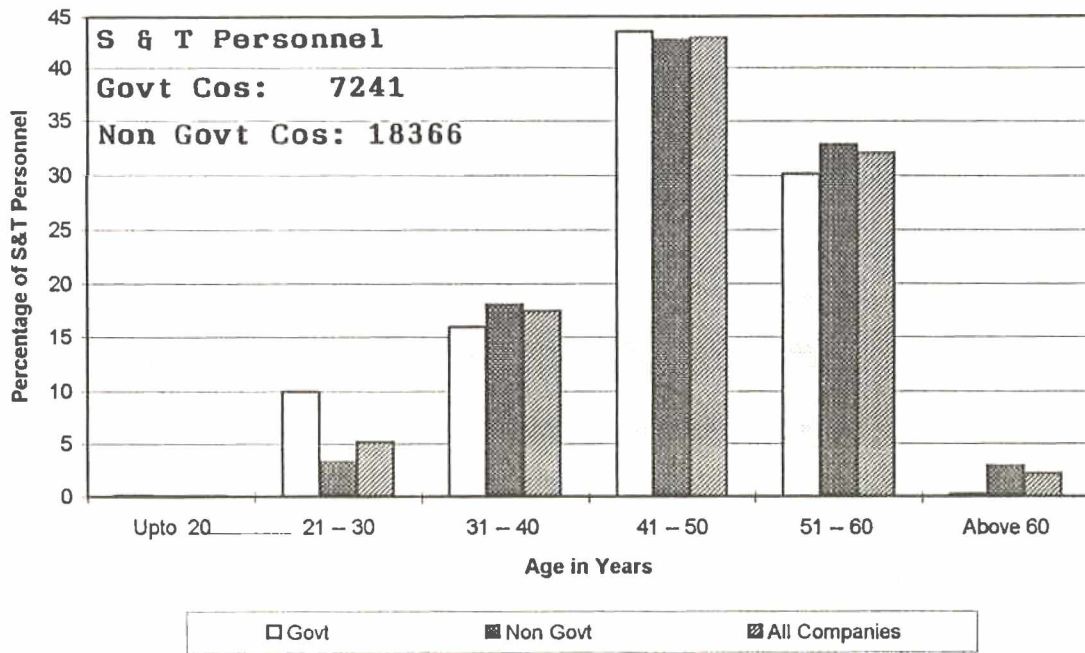
3.57 Concentration of employment is more marked in non Government companies than in Government companies. As against 66.26 percent of companies and 85.55 percent of S & T Personnel being located in top 5 states in case of non Government Companies, corresponding figures for Government companies are lower at 40.67 percent and 81.89 percent respectively. While Government sector accounts for 28.28 percent of S&T Personnel employed in all the companies, relatively more of S&T Personnel are employed in Government sector in some main employing states like Delhi (62.45

TABLE 3.22

STATEWISE DISTRIBUTION OF SCIENTIFIC
AND TECHNICAL PERSONNEL

State/UT	Companies		S&T Personnel		Share of Govt Companies in	
	Nos	Percent	Nos	Percent	Companies (Per- cent)	STP (Per- cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1) Maharashtra	: 1049	23.49	11596	45.27	5.53	20.33
2) Delhi	: 474	10.61	3899	15.22	23.15	7.74
3) West Bengal	: 529	11.84	2622	11.41	12.29	10.88
4) Gujarat	: 371	8.31	2286	8.93	7.82	23.77
5) Tamil Nadu	: 376	8.42	940	3.67	14.36	22.13
6) Andhra Pradesh	: 365	8.17	767	3.00	9.04	40.16
7) Karnataka	: 209	4.68	665	2.60	21.05	18.50
8) Assam	: 109	2.44	343	1.34	13.76	69.10
9) Uttar Pradesh	: 216	4.84	323	1.26	23.15	7.74
10) Bihar	: 53	1.19	309	1.21	50.94	92.56
11) Madhya Pradesh	: 105	2.35	263	1.03	18.10	33.08
12) Goa	: 43	0.96	245	0.96	25.58	0.41
13) Punjab	: 83	1.86	243	0.95	10.84	23.05
14) Orissa	: 71	1.59	219	0.86	28.17	18.26
15) Rajasthan	: 105	2.35	193	0.75	19.05	31.09
16) Kerala	: 122	2.73	168	0.66	42.62	20.83
17) Haryana	: 57	1.28	157	0.61	17.54	12.10
18) Himachal Pradesh	: 26	0.58	28	0.11	46.15	50.00
19) Chandigarh	: 35	0.78	14	0.05	37.14	35.71
20) Meghalaya	: 8	0.18	11	0.04	50.00	100.00
21) Pondicherry	: 23	0.51	9	0.04	43.48	0.00
22) Nagaland	: 9	0.20	2	0.01	33.33	50.00
23) Arunachal Pradesh	: 8	0.18	2	0.01	37.50	50.00
24) Andaman&Nicobar	: 1	0.02	2	0.01	**.**	**.**
25) Jammu&Kashmir	: 12	0.27	1	0.00	75.00	0.00
26) Manipur	: 5	0.11	0	0.00	**.**	**.**
27) Mizoram	: 1	0.02	0	0.00	100.00	**.**
28) Tripura	: 2	0.04	0	0.00	50.00	**.**
Grand Total	4467	100.00	25607	100.00	14.04	28.28

Age wise Distribution of S&T Personnel



Investment Size wise Distribution of Companies and S&T Personnel

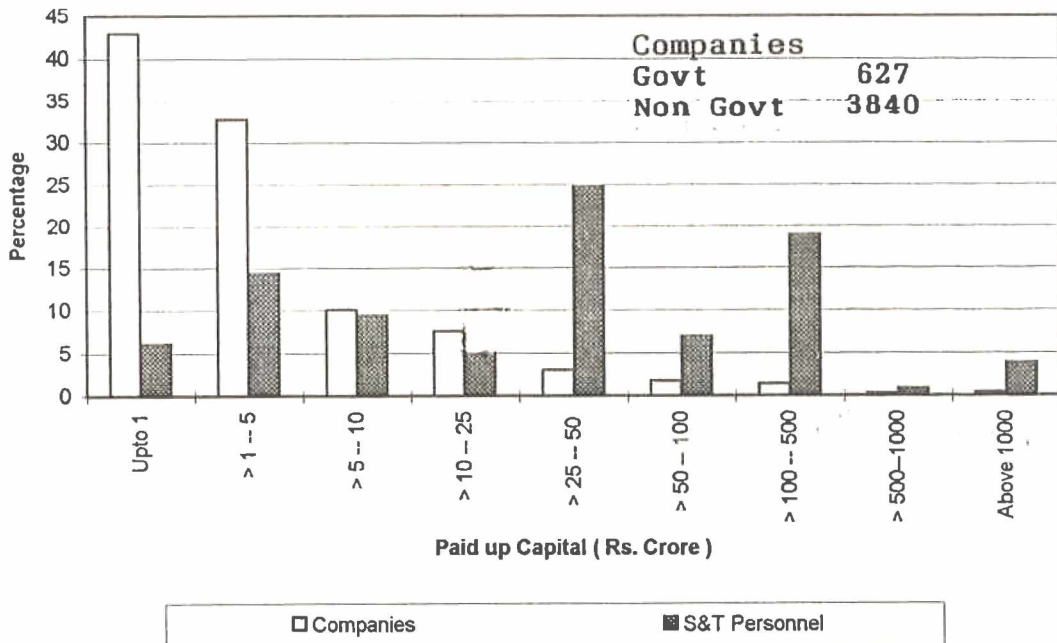


TABLE 3.23

INDUSTRY WISE DISTRIBUTION OF SCIENTIFIC
AND TECHNICAL PERSONNEL

Activity (1)	Companies (Nos) (Per- cent)		S&T Personnel (Nos) (Per- sonnel)		Share of Government companies in Companies S&T Personnel (Percent) (Percent) (6) (7)	
	(2)	(3)	(4)	(5)	(6)	(7)
1. Agriculture,	78	1.75	43	0.17	41.03	16.28
2. Mining	78	1.75	432	1.69	42.31	75.23
3. Manufacturing	2917	65.30	17538	68.49	10.46	12.32
of which						
Food Products	292	6.54	759	2.96	12.67	1.05
Alcoholic Bev.	55	1.23	480	1.87	9.09	0.00
Textiles	387	8.66	1203	4.70	11.63	3.41
Paper	117	2.62	377	1.47	7.69	12.20
Leather	32	0.72	61	0.24	50.00	0.00
Chemicals	470	10.52	4860	18.98	8.51	19.05
Rubber & Plastic	117	2.62	387	1.51	5.13	7.49
Petroleum	24	0.54	380	1.48	33.33	88.16
Cement	80	1.79	506	1.98	6.25	7.74
Non Met.Min.	121	2.71	237	0.93	6.61	0.00
Metals	404	9.04	2573	10.05	6.68	10.92
Machinery	195	4.37	1296	5.06	9.23	1.47
Electrical Machinery	298	6.67	2053	8.02	18.12	16.80
Transport equipments	120	2.69	1972	7.70	13.33	5.32
4. Electricity, Gas & Water	25	0.56	1572	6.14	56.00	41.60
5. Construction	95	2.13	480	1.87	25.26	62.50
6. Trade & Hotels	356	7.97	510	1.99	16.29	35.49
7. Transport, storage & communication	86	1.93	2846	11.11	33.72	71.68
of which Shipping	15	0.34	2296	8.97	20.00	86.67
8. Services of which Financing & Business services	792	17.73	2162	8.44	16.29	71.69
	693	15.51	2119	8.28	15.73	72.68
9. Other	40	0.90	24	0.09	7.50	100.00
Total (1 - 9)	4467	100.00	25607	100.00	14.04	28.28

percent), Assam (69.10 percent), Bihar (92.56 percent) and Andhra Pradesh (40.16 percent) and relatively less are employed in Maharashtra (20.33 percent), West Bengal (10.88 percent), Karnataka (18.50 percent), Uttar Pradesh (7.74 percent) and Orissa (18.26 percent). Annexure 11 gives detailed data on state wise distribution of S&T Personnel separately for Government and non Government companies.

3.58 It is important to note, as pointed out earlier in Chapter 2, that location of a company is determined by state in which it is registered. In many cases a company may be registered in one state but may have manufacturing units in other or more than one state. Thus, the extent of concentration of S&T Personnel as shown by the data will get diluted if location of employing units is taken into account. Two main examples are Delhi and Maharashtra. There are 49 Government companies, including some giant companies, registered in Delhi but some of them have manufacturing units in other States. By virtue of registration of companies, 33.63 percent of S&T Personnel employed by Government companies are deemed to be in Delhi. This is misleading. Similarly a large number of non government companies are located in Mumbai but have units in many other states. Though the data show that 50.30 percent of S&T Personnel in non Government sector are employed by companies in Maharashtra, some of these personnel would in fact be located elsewhere. Unfortunately unit wise data on employment are not available to examine precisely the statewise distribution of S&T Personnel.

Industry wise Distribution

3.59 Manufacturing Industry is the most important activity accounting for 65.30 percent of companies and 68.49 percent of S&T Personnel in the Corporate sector. Other main employers of S&T Personnel are Shipping (8.97 percent), Finance & Consultancy Services (8.28 percent) and Electricity (6.14 percent). Remaining 8.12 percent of S&T personnel are employed in various activities like Transport (2.14 percent), Trade & Hotels (1.99 percent), Construction (1.87 percent), Mining (1.69 percent), Community services and Agriculture. Among the Manufacturing Industries, main employers are Chemicals & Chemical Products (18.98 percent), Machinery and Equipment (13.08 percent), Metals and Metal products (10.05 percent), Transport Equipment (7.70 percent) and Textiles (4.70 percent). Table 3.23 gives Distribution of companies and S&T Personnel among different activity classifications. Detailed data on distribution and characteristics of S&T Personnel, separately for Government and non Government companies are at Annexure 16.

CHAPTER 4

SECTOR WISE ANALYSIS

4.1 Companies have been classified according to their equity ownership into two main sectors, namely "Government" and "Non Government". Government companies have been further sub classified into 'Central Government' and 'State Government' companies. 'Non Government' companies have also been sub classified into 'Large Houses', 'Multinationals' and 'Others', also referred to as non LH/MN companies. Many of the Multinational companies also belong to Large Houses, but they have been classified only under Multinationals.

4.2 Out of the 4467 surveyed companies, 627 are Government companies and the remaining 3840 companies are in non Government sector. While Government companies constitute only 14.04 percent of all the companies, they employ 28.28 percent of the S&T Personnel, as they are generally of large size. On an average, paid up capital of a Government company is 13 times that of a non Government company, and a Government company employs 2.40 times S&T Personnel, 2.14 times non S&T Personnel and 2.30 times all personnel in high salary groups employed by a non Government company.

4.3 Out of the 627 Government companies, 181 are Central Government companies and the remaining 446 are State Government companies. Central Government companies are generally of much larger size. Though they constitute only 4.05 percent of all the companies, they employ 26.58 percent of the S&T Personnel. They employ on an average 37.6 S&T Personnel each, compared to only 0.9 S&T Personnel employed by a State Government company, 4.8 Personnel by a non Government company and 5.7 S&T Personnel by all the companies.

4.4 Distribution of S&T Personnel among non Government companies also follows similar pattern. While Large House and Multinational companies add up to only 619, or 13.86 percent of all the companies, they employ as many as 53.18 percent of the S&T Personnel. On an average they employ 22.0 S&T Personnel each, compared to 1.4 S&T Personnel employed by a non LH/MN company. Among the LH/MN companies, a Multinational company employs the largest number of S&T personnel, 38.2, compared to 18.1 personnel employed by a Large House company. As stated earlier, most of the Multinational companies also belong to Large Houses. Out of the 118 Multinational companies, 63 are also in Large Houses. It is these MN cum LH companies which are the largest employers, employing on an average 58.4 S&T personnel per company. Pattern of sector wise employment and main characteristics of S&T

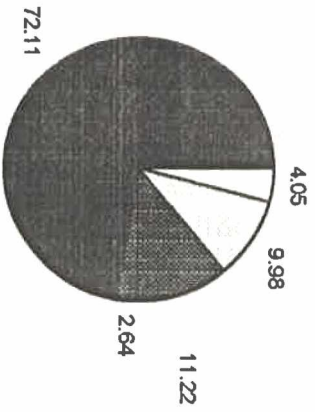
TABLE 4.1

SECTOR WISE DISTRIBUTION OF COMPANIES
AND S&T PERSONNEL

Character- istics (1)	Government Companies			Non Government Companies			All Com- pan- ies (9)	
	Central Govt (2)	State Govt (3)	Total (4)	Large Houses (5)	Multi Nationals (6)	Others Total (7) (8)		
	(Numbers)							
1. Compan- ies	181	446	627	501	118	3221	3840	4467
	(Rs. Crore)							
Paid Up Capital	54,016	5,842	59,858	9,319	2,166	16,992	28,477	88335
Income	161,168	17,198	178,366	77,201	40,315	224,014	341,530	519,896
	(Numbers)							
2. S&T Personnel								
Male	6,748	427	7,175	9,040	4,484	4,705	18,229	25,404
Female	59	7	66	67	29	41	137	203
Total	6,807	434	7,241	9,107	4,513	4,746	18,366	25,607
3. Non STP	3,461	316	3,777	5,029	2,784	3090	10,903	14,680
4. All Per- sonnel	10,268	750	11,018	14,136	7,297	7,836	29,269	40,287

Companies

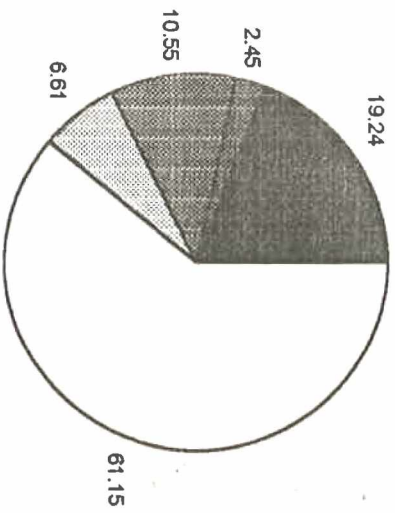
Total 4467



□ Central Govt. □ State Govt. ■ Large House ■ Multi National ■ Others

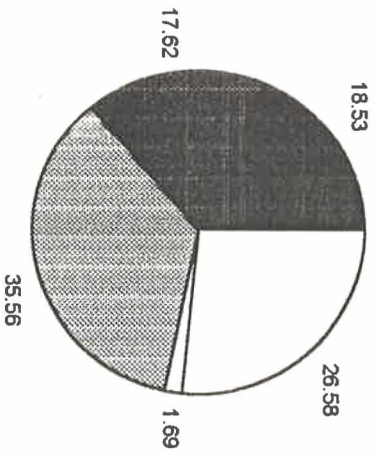
Paid up Capital

Total Rs. 88335 Crores



□ Central Govt. □ State Govt. ■ Large House ■ Multi National ■ Others

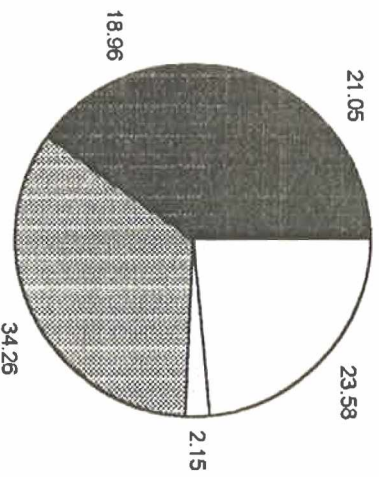
S&T Personnel Total 25607 Personnel



□ Central Govt. □ State Govt. ■ Large House ■ Multi National ■ Others

Non S&T Personnel

Total 14680 Personnel



□ Central Govt. □ State Govt. ■ Large House ■ Multi National ■ Others

TABLE 4.2

SECTOR WISE MAIN CHARACTERISTICS OF S&T PERSONNEL

Character- istics (1)	Government Companies			Non Government Companies				All Com- Pan- ies (9)
	Central Govt (2)	State Govt (3)	Total (4)	Large Houses (5)	Multi Nationals (6)	Others (7)	Total (8)	
1. Age (Years)								
Male	44.8	48.7	45.0	47.6	47.7	46.9	47.0	46.4
Female	45.0	46.6	45.1	47.4	42.1	41.0	44.4	44.6
Total	44.8	48.7	45.0	47.6	45.7	46.8	46.9	46.4
2. Experience (Years)								
Male	20.1	23.1	20.2	24.2	23.0	23.6	23.6	22.7
Female	19.2	19.1	19.2	22.5	19.4	17.5	20.3	20.0
Total	20.1	23.1	20.2	24.2	22.9	23.6	23.7	22.7
3. Experience in last company (Years)								
Male	14.1	11.0	13.9	15.9	13.8	10.4	14.3	14.2
Female	14.6	10.0	14.2	16.4	12.5	10.5	13.8	13.9
Total	14.1	11.0	13.9	15.9	13.8	10.4	14.3	14.2
4. Remuneration (Rs. 000)								
S&T Personnel								
Male	223	177	220	211	223	240	221	221
Female	176	160	175	184	191	208	193	187
Total STP	223	177	220	210	223	240	221	221
Non STP	239	175	234	209	210	223	213	219
All Personnel	228	176	224	210	218	233	218	220

Details for Tables 4.2-4.3 at Annexure-1

**Average Paid up Capital and Personnel Per Company
Sector wise**

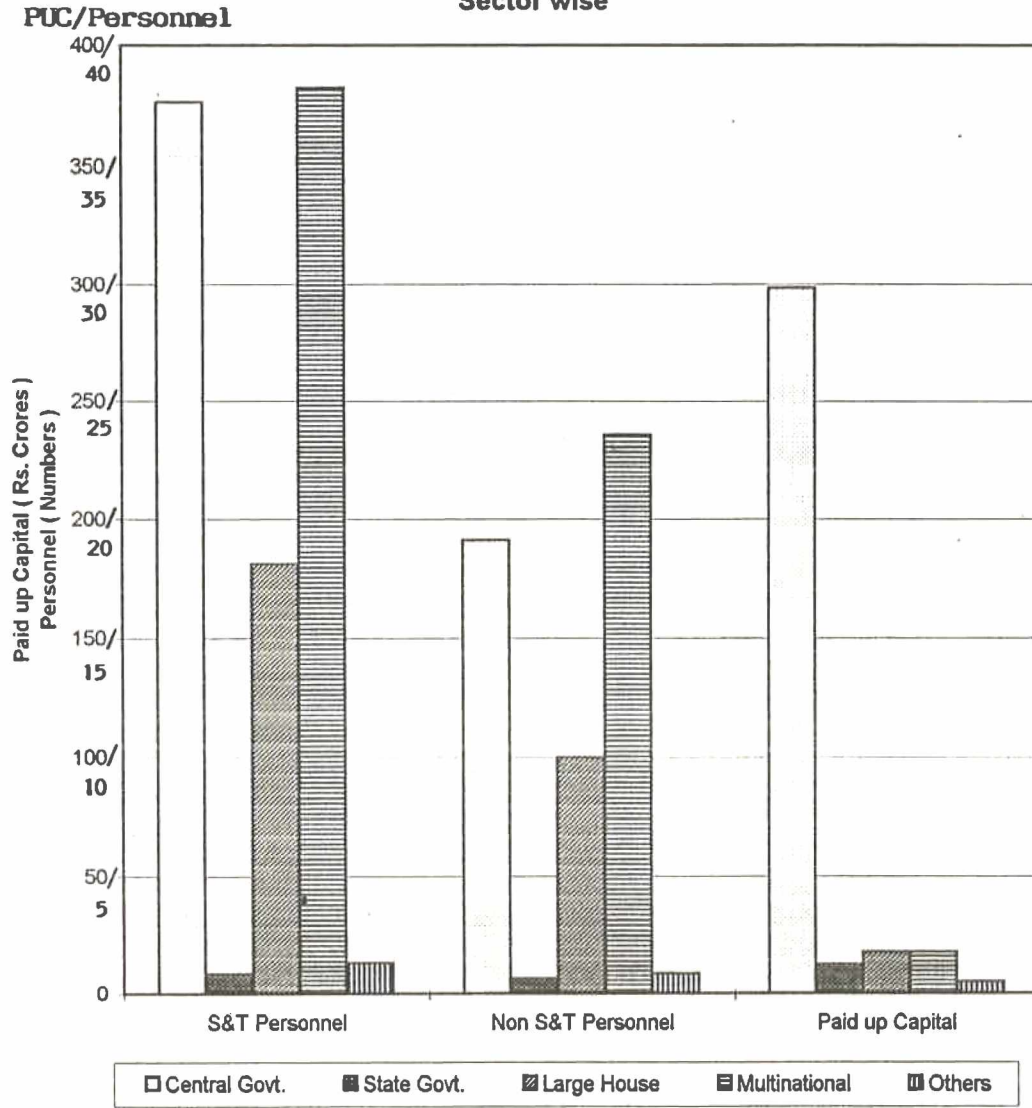


TABLE 4.3

**SECTOR WISE MAIN CHARACTERISTICS AND DISTRIBUTION OF
COMPANIES AND S&T PERSONNEL
(Averages Ratios and Percentages)**

Character- istics	Government Companies			Non Government Companies			All Com- pan- ies	
	Central Govt	State Govt	Total	Large Houses	Multi Nation- als	Others Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Numbers)								
1. Average per company								
S&T Per- sonnel	37.6	0.9	11.5	18.1	38.2	1.4	4.8	5.7
Non STP	19.1	0.7	6.0	10.0	23.6	0.9	2.8	3.3
All Per- sonnel	56.7	1.6	17.5	28.2	61.8	2.4	7.6	9.0
(Rs. Crore)								
Paid up capital	298.43	13.05	95.47	18.60	18.36	5.28	7.42	19.78
Income	890.43	38.50	283.65	154.10	341.65	69.58	88.97	116.39
2. Companies								
(Percent)								
Numbers	4.05	9.98	14.04	11.22	2.64	72.11	85.96	100.00
Paid up Capital	61.15	6.61	67.76	10.55	2.45	19.24	32.24	100.00
Income	31.00	3.31	34.31	14.85	7.72	43.09	65.69	100.00
3. S&T Personnel								
Male	26.56	1.68	28.24	35.58	17.65	18.52	71.76	100.00
Female	29.06	3.45	32.51	33.00	14.29	20.20	67.49	100.00
Total	26.58	1.69	28.28	35.56	17.62	18.53	71.72	100.00
4. Non STP	23.58	2.15	25.73	34.26	18.96	21.05	74.27	100.00
5. All Per- sonnel	25.49	1.86	27.35	35.09	18.11	19.45	72.65	100.00
6. STP Inten- sity	66.29	57.87	65.72	64.42	61.85	60.57	62.75	63.56
7. Index of mobility								
(Ratios)								
Male	1.43	2.10	1.45	1.52	1.67	2.27	1.65	1.60
Female	1.32	1.91	1.35	1.37	1.55	1.67	1.47	1.44
Total	1.43	2.10	1.45	1.52	1.66	2.27	1.66	1.60

Personnel are given in Tables 4.1, 4.2 and 4.3 and details are at Annexure 1

4.5 If the Large House, Multinational and Central Government companies are classified in one group, they employ 79.76 percent of the S&T Personnel, though they constitute only 17.91 percent of the companies. It is the employment and remuneration policies of these companies which have major impact on the pattern and extent of employment and characteristics of S&T Personnel in Corporate sector.

Women Employees

4.6 Women S&T Personnel constitute just 0.79 percent of the S&T Personnel. Women S&T Personnel are proportionately more in Government (0.91 percent of STPs) than in non Government companies. There is no evidence of any preference for women in Large Houses or Multinationals as compared to the other non Government companies (0.75 percent of STPs).

Age & Experience

4.7 Age wise distribution of S&T Personnel (Table 4.2) shows that within the average age of 46.4 years, average age for Central Government companies is lower at 44.8 years due to employment of younger personnel by Shipping Corporation of India. On the other hand, average age of State Government companies is the highest at 48.7 years. There is no much variation in average age among different non Government sub sectors and the average varies between 45.7 years for Multinationals and 47.6 years for Large Houses.

4.8 Variations in average experience follow similar pattern as in average age. With the overall average experience of 22.7 years, a Central Government company employee has the lowest experience of 20.1 years. Average experience for all other sub sectors vary narrowly between 22.9 years for Multinational employees to 24.2 years for Large House employees.

4.9 Average age of women personnel is lower at 44.6 years compared to 46.4 years for male personnel. There is no marked difference in average age of women and male personnel in Central Government and Large House companies, but the age of women personnel is below that of male personnel by 2.1 years in case of State Government companies and by 5.8 years for non LH/MN companies.

TABLE 4.4

SECTOR WISE AND AGE WISE DISTRIBUTION
OF S&T PERSONNEL

Age Group (Years)	Government Companies			Non Government Companies			All Com- pan- ies	
	Central Govt	State Govt	Total	Large Houses	Multi Nation- als	Others Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Numbers)								
Upto 20	10	0	10	3	1	1	5	15
21 - 30	719	2	721	232	158	219	609	1330
31 - 40	1109	46	1155	1365	1069	893	3327	4482
41 - 50	2943	212	3155	4065	1859	1932	7856	11011
51 - 60	2011	172	2183	3162	1387	1493	6042	8225
Above 60	15	2	17	280	39	208	527	544
Total	6807	434	7241	9107	4513	4746	18366	25607
(Percent)								
Upto 20	0.15	0.00	0.14	0.03	0.02	0.02	0.03	0.06
21 - 30	10.56	0.46	9.96	2.55	3.50	4.61	3.32	5.19
31 - 40	16.29	10.60	15.95	14.99	23.69	18.82	18.11	17.50
41 - 50	43.24	48.85	43.57	44.64	41.19	40.71	42.77	43.01
51 - 60	29.54	39.63	30.15	34.72	30.74	31.46	32.90	32.12
Above 60	0.22	0.46	0.23	3.07	0.86	4.38	2.87	2.12
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average age(years)	44.8	48.7	45.0	47.6	45.7	46.8	46.9	46.4

4.10 Sector wise distribution of S&T personnel for different age groups is shown in Table 4.4. The maximum numbers of S&T Personnel (43.01 percent) are in 41-50 year age group for each of the sectors and sub sectors ranging between the minimum of 40.71 percent of S&T Personnel (non LH/MN companies) to the maximum of 48.85 percent (State Government companies). There is no indication of any pattern. Older personnel (above 50 years) are more prevalent among State Government companies (40.09 percent) followed by 37.79 percent for Large Houses. Central Government companies (29.76 percent) and Multinationals (31.59 percent) have low proportions of 'above 50 years' group. Younger personnel, upto 30 years age in high salary groups, are more visible among Central Government companies (10.71 percent), mainly due to Shipping Corporation of India, and hardly present among State Government companies (only 0.46 percent) as they seem to qualify for such positions only on gaining some experience. Proportion of younger personnel in non Government companies is only 3.35 percent, with variation from 2.58 percent for Large Houses to 4.63 percent for non LH/MN companies.

S&T Intensity

4.11 Average S&T employment intensity in all the companies is 63.56 S&T Personnel per 100 employees in higher salary groups (Table 4.3). With this average, S&T intensity is the highest at 66.29 percent for Central Government companies and the lowest at 57.87 percent for State Government companies. It varies narrowly in the non Government sector between 64.42 percent for Large Houses and 60.57 percent for non LH/MN companies. The Highest S&T intensity of the Central Government companies is mainly because of the largest such intensity (91.30 percent) for Shipping Corporation of India which employ the large number of Personnel having qualifications in Shipping technology. If this company is excluded, S&T intensity of the Central Government companies (62.20 percent) falls in line with the non Government companies.

Mobility

4.12 Average index of Mobility is 1.60, signifying that average total experience of the S&T Personnel is 1.60 times their average experience in the last reporting company. In other words, this index indicates that S&T Personnel have changed a companies 1.60 times on an averages. The index varies among different sub sector. While it is quite high for sub sectors comprising smaller companies like State Government (2.10) and non LH/MN (2.27), the index is lower for sub sectors of large companies ranging between 1.43 (Central Government) and 1.66 (Multinationals). This suggests that there is quicker change of jobs by personnel in smaller companies compared to large sized companies. Table 4.3 gives data in this regard.

TABLE 4.5

SECTOR WISE CHARACTERISTICS OF S&T PERSONNEL

Character- istics	Government Companies			Non Government Companies			Grand Total	
	Central Govt	State Govt	Total	Large Houses	Multi Nation- als	Others Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Percent)								
1. Level of Qualifications								
Doctorate	2.06	3.92	2.17	1.98	3.99	2.57	2.62	2.50
Post Grad- uate	16.15	22.12	16.50	13.59	15.69	18.54	15.39	15.70
Graduate	59.72	70.73	60.39	66.61	66.76	69.20	67.32	65.36
Others	22.07	3.23	20.94	17.82	13.56	9.69	14.67	16.44
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
2. Field of Specialisation								
(i) Tech of which	83.44	75.58	82.97	75.13	64.61	70.00	71.22	74.54
Mechanical	19.77	17.05	19.61	26.10	22.53	19.30	23.47	22.38
Electrical	9.05	20.97	9.76	16.23	13.41	14.79	15.16	13.64
(ii) Sciences of which	6.56	24.42	17.03	24.87	35.39	30.00	28.78	25.46
Natural	11.74	20.74	12.28	18.15	31.86	26.46	23.67	21.27
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
3. Level of Responsibility								
Top Managt	3.67	13.82	4.28	3.84	3.94	17.89	7.50	6.59
Middle Mangt	18.03	42.17	19.47	24.12	18.46	34.51	25.42	23.74
Jr. Mangt	32.19	35.48	32.39	45.16	56.11	27.52	43.28	40.20
Non Managt.	46.11	8.53	43.86	26.88	21.49	20.08	23.80	29.47
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
4. Primary work activity								
Sr. Managt	2.45	11.52	3.00	3.10	2.39	14.26	5.81	5.01
Plant Level	18.32	22.35	18.56	38.18	35.03	28.94	35.01	30.36
Marketing	5.54	20.74	6.45	15.47	29.23	16.18	19.04	15.48
Admn	6.67	8.99	6.81	4.85	5.56	6.38	5.42	5.81
Others	49.07	28.56	47.84	25.05	24.68	24.34	24.78	30.10
Not Speci- fied	17.95	7.84	17.34	13.35	3.11	9.90	9.94	13.23
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Details at Annexure-10

Levels of Qualifications

4.13 Sector wise distribution of S&T Personnel according to the fields of specialization, levels of qualifications and other characteristics is shown in Table 4.5. Detailed data are at Annexure 10. Low qualification levels (Diplomas and Certificates) account for relatively large proportion (20.94 percent) of S&T Personnel in Government companies than in non Government companies (14.67 percent). Proportion of Graduates is correspondingly lower in Government companies (60.39 percent compared to 67.32 percent). Proportion of high qualification levels (Post Graduates and Doctorates) is around 18-19 percent, both in Government as well as non Government companies.

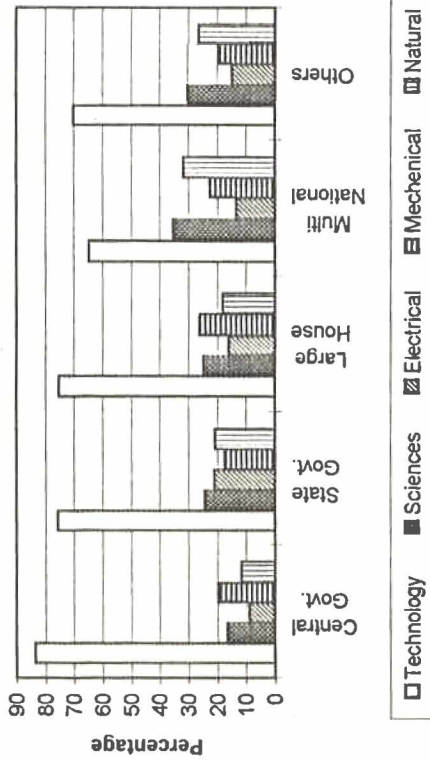
4.14 This distinction between Government and non Government companies disappears when data are analyzed for sub sectors. The analysis suggests that there are similarities among Central Government, Large House and Multinational companies (which are of large size), on the one hand and State Government and non LH/MN companies (which are of small size) on the other. While large size companies employ 18-38 S&T Personnel per company on an average depending on the sub sector, smaller companies employ only around one S&T Person per company on an average. This distinction between large and small companies is seen not only in regard to the levels of qualifications, but for some other characteristics of S&T Personnel as well.

4.15 Data show that large size companies (namely CG, LH, and MN sub sectors) employ relatively less of high qualification personnel, ranging from 15.57 percent (Large Houses) to 19.68 percent (Multinationals), but more of low qualification personnel (13.56 to 22.07 percent). Smaller companies, on the other hand, employ more of high qualification personnel, ranging upto 26.04 percent by State Government companies, but less of low qualification personnel ranging between only 3.23 percent (State Government) to 9.69 percent (non LH/MH). Proportion of Graduates varies between 60 and 70 percent among all sub sectors.

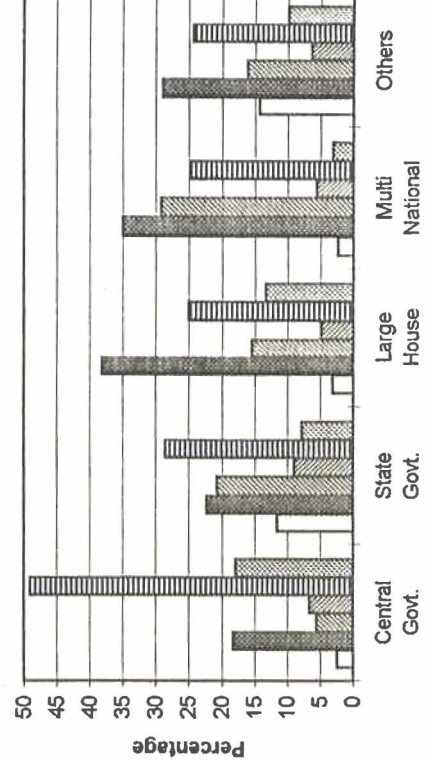
Fields of Specialization

4.16 With the average of 74.54 percent of S&T Personnel being Technical Personnel (balance of 25.46 percent being Scientific Personnel), the proportion of Technical Personnel is quite high (82.97 percent) for Government companies and lower (71.22 percent) for non Government companies. Proportion is the highest (83.44 percent) in Central Government companies and the lowest for Multinationals (64.61 percent). The high proportion of Technical Personnel employed by Central Government companies is mainly due to large number of such Personnel employed by Shipping Corporation of India which accounts for 27.87 percent of S&T Personnel employed by Government companies.

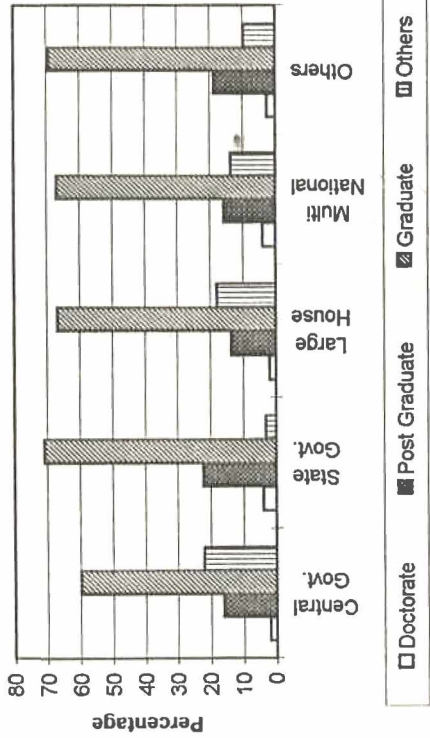
**Distribution of S&T Personnel
by Field of Specialisation**



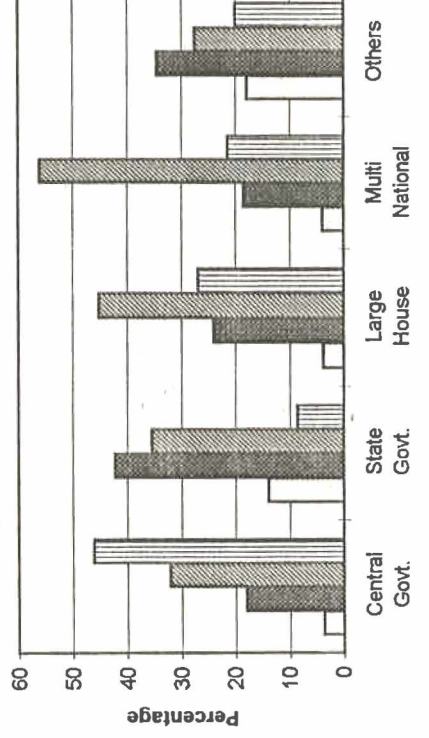
**Distribution of S&T Personnel
by Primary Work Activity**



**Distribution of S&T Personnel
by Levels of Qualification**



**Distribution of S&T Personnel
by Levels of Responsibility**



Levels of Responsibility

4.17 Non Managerial (Specialized and Technical) positions account 29.47 percent of the S&T Personnel. While this proportion is the highest (46.11 percent) for Central Government companies, it is the lowest (8.53 percent) for State Government companies. Among the non Government companies, the proportion varies between 26.88 percent (Large Houses) and 20.08 percent (non LH/MN companies). The large proportion of non Managerial employees in Central Government companies is partly due to employment of Specialized personnel by Shipping Corporation of India. If Shipping technology personnel are excluded, proportion of the remaining Specialised positions forms a pattern and varies among sub sectors depending on the sizes of the companies. The proportion is low for small companies, being 8.30 percent for State Government companies and 13.34 percent for non LH/MN companies, but is high for large companies varying between 21.49 percent (Multinationals) and 24.26 percent (Central Government companies).

4.18 Among the Managerial personnel which account for 70.53 percent of the S&T Personnel, Pattern seems to depend on the size of the company. Small companies employ relatively more of Top Management personnel (13.82 percent by state Government companies and 17.89 percent by non LH/MN companies) than by large size companies (3-4 percent). This is because most of the small companies employ, if at all, only a few S&T Personnel in high salary groups, in which Managing Directors/Directors dominate. Proportion of such personnel in large companies is necessarily limited. The data also show that while small company sub sectors employ relatively more of personnel in Middle Management levels (42.17 percent and 34.51 percent respectively by SG and non LH/MN companies), large companies employ less of such personnel (18.03 to 24.12 percent). The latter, however, employ more of Junior Management levels ranging between 56.11 percent and 45.16 percent of S&T Personnel by Multinational and Large House Companies respectively.

Primary Work Activity

4.19 Consistent with the employment of Top Management personnel, proportion of personnel engaged in Senior Management activity is relatively much more in sub sectors comprising smaller companies (11.52 percent and 14.26 percent) than in those of large companies (2.39 percent to 3.10 percent) irrespective of whether they are in Government or non Government sectors.

4.20 Non Government companies employ more of personnel at Plant level (35.01 percent) and for Marketing (19.04 percent). Within this sector, Multinationals engage much larger proportion (64.26 percent) of personnel on these two activities. On the other hand Central Government companies employ only 18.32 percent and 5.54 percent of S&T Personnel on Plant and Marketing

TABLE 4.6

**SECTOR WISE AND REMUNERATION WISE DISTRIBUTION
OF S&T PERSONNEL**

Range of Remuneration (000 Rs. per Annum)	Government Companies			Non Government Companies			Grand Total	
	Central Govt	State Govt	Total	Large Houses	Multi Nation-als	Others Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Numbers of STP)								
Upto 180	4062	336	4398	4746	2127	2316	9189	13587
181 - 300	1685	93	1778	3504	1809	1613	6926	8704
Above 300	1060	5	1065	857	577	817	2251	3316
Total	6807	434	7241	9107	4513	4746	18366	25607
(Percent of STP)								
Upto 180	59.68	77.42	60.74	52.11	47.13	48.80	50.03	53.06
181- 300	24.75	21.43	24.55	38.48	40.08	33.99	37.71	33.99
Above 300	15.57	1.15	14.71	9.41	12.79	17.21	12.26	12.95
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average Remuneration (Rs. 000 Per annum)								
	223	177	220	210	223	240	221	221

activities respectively. There is no much variation among sub sectors for personnel engaged on Administration and Finance.

4.21 Variations in activity pattern are mainly due to nature of industries in which different sub sectors are engaged. Large number of Central Government companies are engaged in Consultancy, Shipping and Infrastructure industries, which require least Plant or Marketing personnel. On the other hand most of the Multinational companies manufacture Consumer products for which they require proportionately more of Marketing personnel.

4.22 Activities other than Management, Plant, Marketing and Administration account for 47.84 percent of S&T Personnel in Government companies and 24.78 percent in non Government companies. Proportion of personnel for these 'other' activities is the highest in regard to the Central Government companies (49.07 percent) and the lowest for non LH/MN companies (24.34 percent). However, if Shipping Technology personnel are excluded, the proportion for other activities gets reduced to 27.22 percent of personnel in Central Government companies, the lowest proportion being 17.60 percent for non LH/MN companies. Other activities in Central Government companies include mainly specialized activities in Consultancy and Infrastructure related companies.

4.23 In case of 13.23 percent of S&T Personnel, activity has not been specified in the source material. The proportion is larger (17.34 percent) for Government companies than for non Government companies (9.94 percent).

Remuneration

4.24 Average remuneration of S&T Personnel is Rs.2.21 lakhs per annum. Within this average, employees of State Government companies receive the lowest remuneration of Rs.1.77 lakhs, followed by Rs.2.10 lakh by Large House employees and Rs.2.23 lakhs by Multinational as well as Central Government company employees. Curiously, the highest average remuneration of Rs.2.40 lakhs has been paid by non LH/MN companies which are relatively of much smaller size. Their average paid up capital is only Rs.5.28 crores and they employ just an average of 1.4 S&T Personnel per company. The high remuneration paid by them is explained by the fact that what ever few persons they employ, are generally from promoter groups, most of them working as Managing Directors or Directors at relatively higher remuneration, irrespective of salary structure of the companies. Average remuneration paid by the Central Government companies is high mainly because of average remuneration of Rs.3.26 lakhs paid by the Shipping Corporation of India. The other Central Government companies paid remuneration of Rs.1.78 lakhs on an average, which is lower than the average remuneration paid by any of the non Government sub sectors and is on par with average remuneration paid by State Government companies.

TABLE 4.7

SECTOR WISE AND S&T PERSONNEL RANGE WISE DISTRIBUTION OF COMPANIES AND S&T PERSONNEL

STP Range (No. of STP)	Government Companies			Non Government Companies			Grand Total	
	Central Govt	State Govt	Total	Large Houses	Multi Nationals	Others		Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Companies								
								(Numbers)
0	64	377	441	195	34	2357	2586	3027
1 - 10	58	59	117	175	33	767	975	1092
11 - 50	37	9	46	95	28	86	209	255
Above 50	22	1	23	36	23	11	70	93
Total	181	446	627	501	118	3221	3840	4467
								(Percent)
0	35.36	84.53	70.33	38.92	28.81	73.18	67.35	67.76
1 -10	32.04	13.23	18.66	34.93	27.97	23.81	25.39	24.45
11-50	20.45	2.02	7.34	18.96	23.73	2.67	5.44	5.71
Above 50	12.15	0.22	3.67	7.19	19.49	0.34	1.82	2.08
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
2. S&T Personnel								
								(Numbers)
1 - 10	221	175	396	622	166	2016	2804	3200
11- 50	806	164	970	2224	713	1649	4586	5556
Above 50	5780	95	5875	6261	3634	1081	10976	16851
Total	6807	434	7241	9107	4513	4746	18366	25607
								(Percent)
1- 10	3.25	40.32	5.47	6.83	3.68	42.47	15.27	12.50
11-50	11.84	37.79	13.40	24.42	15.80	34.75	24.97	21.70
Above 50	84.91	21.89	81.13	68.75	80.52	22.78	59.76	65.80
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

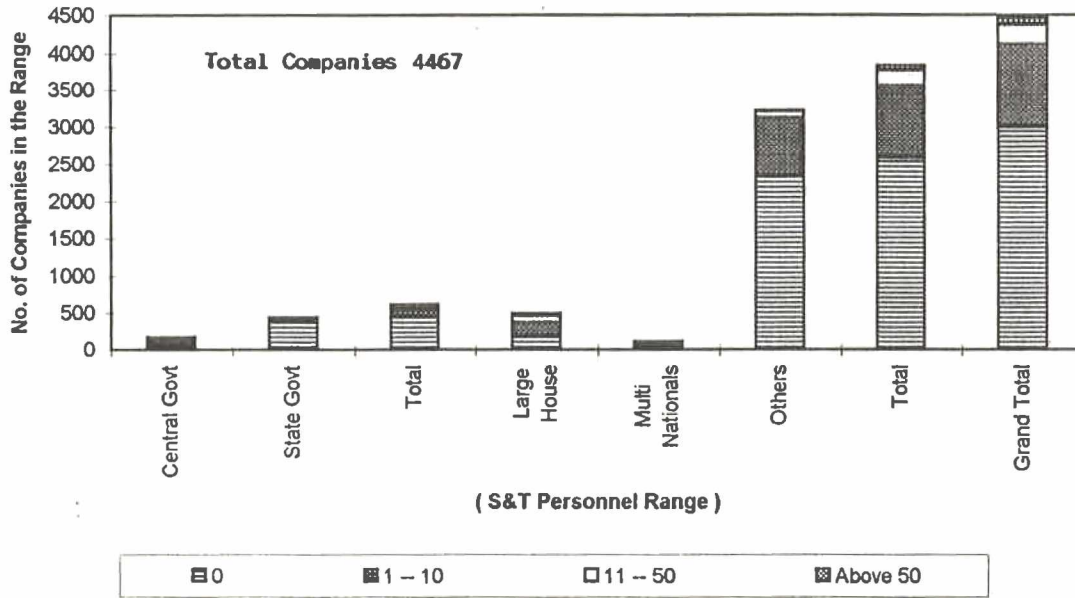
4.25 Within the average remuneration of Rs.2.21 lakhs, remuneration varies not only among sectors and sub sectors but also within each sector and sub sector. Data are given in Table 4.6. While 60.74 percent of the S&T Personnel in Government sector receive low remuneration (upto Rs.15,000 per month) , proportion of such personnel in non Government sector is lower at 50.03 percent. On the other hand, proportion of personnel receiving medium remuneration (between Rs.15000 and Rs.25,000 per month) is relatively much more in non Government sector (37.71 percent) than in the Government sector (24.55 percent). Besides the large proportion of low remuneration personnel, Government sector also has large proportion of high remuneration (above Rs.25,000 per month) personnel which account 14.71 percent of the personnel in this sector, compared to 12.26 percent in the non Government sector. Large proportion of high remuneration personnel in Government sector is due to high average remuneration received by personnel in Shipping Corporation of India (Rs.27,167 p.m) which employ large number of S&T Personnel. If this company is excluded from the analysis, proportion of low remuneration personnel goes up to 76.55 percent of S&T Personnel in the Government sector and proportion of high remuneration personnel goes down to only 3.97 percent.

4.26 There is not much variation in proportions of S&T Personnel in different sub sectors within Government as well as non Government sectors in so far as high remuneration range is concerned. There are fewer such personnel in Government companies. Only 4.22 percent of the Central Government company employees (after excluding Shipping Corporation) and 1.15 percent of personnel in State Government companies are in high remuneration range. Proportion of high remuneration personnel is much higher in non Government companies. It is the highest in respect of non LH/MN companies (17.21 percent) who, as explained earlier, employ promoter group personnel as Managing Directors, Directors, or Senior Executives on high salaries. Multinational companies pay medium remunerations (between Rs.15,000 - 25,000 per month) to many of their employees (40.08 percent) and 12.79 percent of their employees are in high salary range.

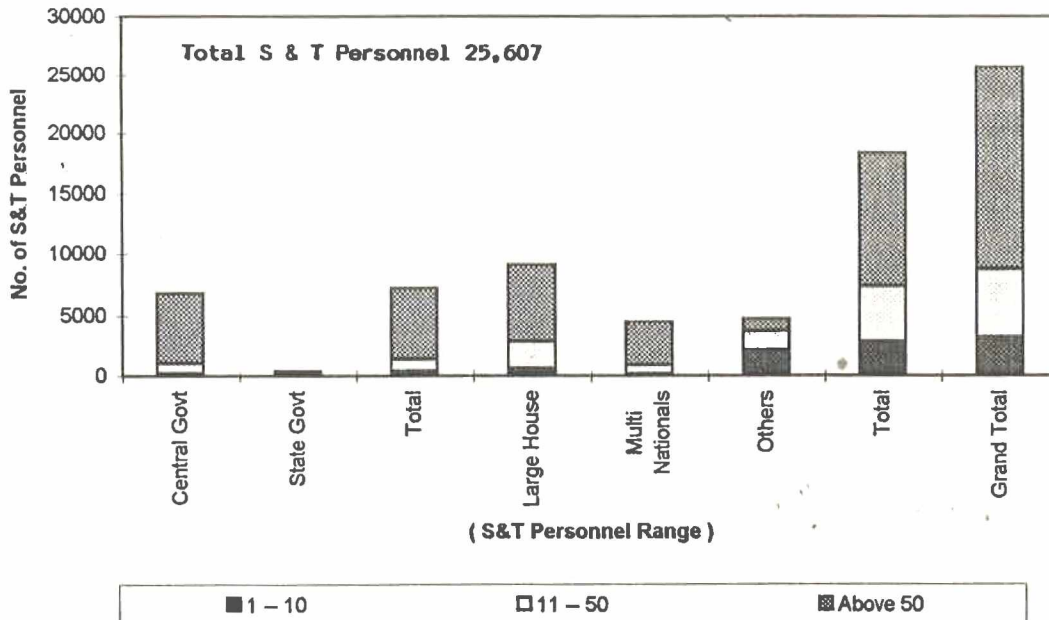
Size of S & T Personnel

4.27 Employment of S & T Personnel is concentrated in a small number of large sized companies. As many as 67.76 percent of companies do not employ any S & T Personnel. This percentage varies only marginally between Government companies (70.33 percent) and non Government companies (67.35 percent). However, while there are fewer companies in sub sectors like Central Government, Large House and Multinational companies which belong to the nil S&T Personnel category, this category dominates among sub sectors comprising small companies. Thus, 84.53 percent of State Government companies and 73.18 percent of non LH/MN companies do not employ any S&T Personnel. Proportion of nil S&T Personnel companies is lower in LH, MN and CG sub sectors (35.36 percent to 28.81 percent). S&T Personnel are concentrated in

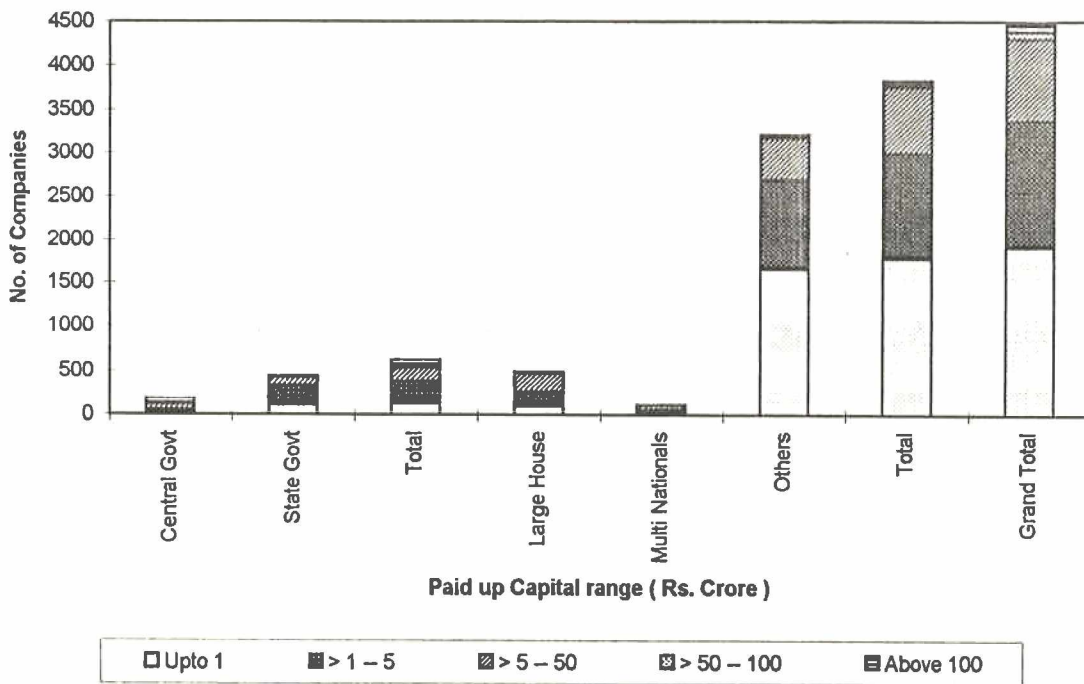
Distribution of Companies by size of S&T Personnel



Distribution of S&T Personnel by STP Size of Companies



Distribution of Companies by Size of Investment



Distribution of S&T Personnel by Investment Size of Companies

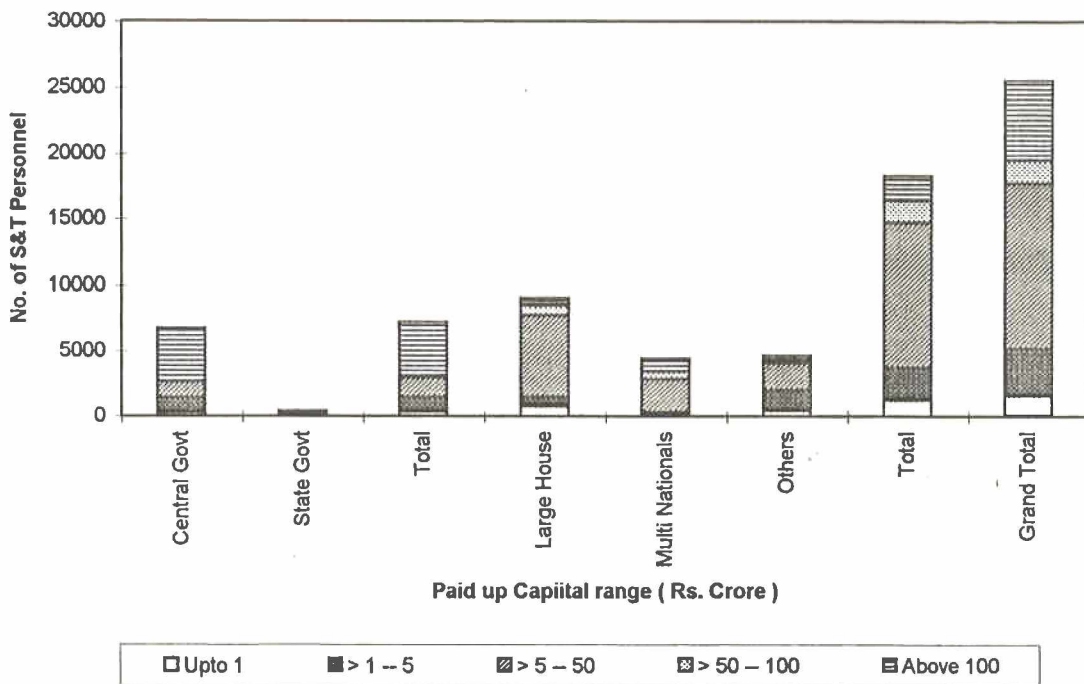


TABLE 4.8

SECTOR WISE AND INVESTMENT WISE DISTRIBUTION
OF COMPANIES AND S&T PERSONNEL

Paid up capital range (Rs.Crore) (1)	Government Companies			Non Government Companies				Grand Total (9)
	Central Govt (2)	State Govt (3)	Total (4)	Large Houses (5)	Multi Nationals (6)	Others (7)	Total (8)	
1. Companies (Numbers)								
Upto 1	15	118	133	103	22	1657	1782	1915
1 - 5	31	209	240	151	26	1044	1221	1461
5 - 50	68	97	165	219	60	481	760	925
50 - 100	15	14	29	16	5	26	47	76
Above 100	52	8	60	12	5	13	30	90
Total	181	446	627	501	118	3221	3840	4467
(Percent)								
Upto 1	8.29	26.46	21.20	20.56	18.64	51.44	46.42	42.87
1 - 5	17.12	46.86	38.28	30.14	22.03	32.42	31.79	32.71
5 - 50	37.57	21.75	26.32	43.71	50.85	14.93	19.79	20.71
50 - 100	8.29	3.14	4.63	3.19	4.24	0.81	1.22	1.70
Above 100	28.73	1.79	9.57	2.40	4.24	0.40	0.78	2.01
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
2. S&T Personnel (Numbers)								
Upto 1	281	42	323	770	65	42	1262	1585
1 - 5	1136	39	1175	691	235	1577	2503	3678
5 - 50	1249	241	1490	6273	2590	2155	11018	12508
50 - 100	61	95	156	801	621	214	1636	1792
Above 100	4080	17	4097	572	1002	373	1947	6044
Total	6807	434	7241	9107	4513	4746	18366	25607
(Percent)								
Upto 1	4.13	9.68	4.46	8.46	1.44	9.00	6.87	6.19
1 - 5	16.68	8.98	16.23	7.58	5.21	33.22	13.63	14.36
5 - 50	18.35	55.53	20.58	68.88	57.39	45.41	59.99	48.85
50 - 100	0.90	21.89	2.15	8.80	13.76	4.51	8.91	7.00
Above 100	59.94	3.92	56.58	6.28	22.20	7.86	10.60	23.60
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

companies which employ more than 10 S&T Personnel each. These companies account for 96.74 percent of S&T Personnel in Central Government Companies, 92.85 percent in Large Houses and 95.62 percent in Multinationals. Data are given in Table 4.7.

Investment size wise Distribution

4.28 Distribution of S&T Personnel in companies according to their size of investment (paid up capital) is shown in Table 4.8. Companies have been classified in four investment ranges. Smallest investment of Rs.50-100 Lakhs is most dominant among non LH/MN companies accounting for 51.44 percent of companies in this sub sector. Second investment size of Rs.101-500 lakhs is dominant among State Government companies and accounts for 46.86 percent of these companies. Third investment size of Rs.501-5000 lakhs is most prevalent among Large House (43.71 percent) and Multinational (50.85 percent) companies. 37.57 percent of Central Government companies are also in this investment size. The largest investment size of 'above Rs.5000 lakhs' is dominated by Central Government companies (37.02 percent), while there are only few Large House (5.59 percent) and Multinational (8.48 percent) companies in this investment size.

4.29 Small size companies upto Rs.100 Lakh investment, employ non, or few S&T Personnel. Though they account for 42.87 percent of companies, they employ only 6.19 percent of S&T Personnel. The largest proportion of S&T personnel (48.85 percent) is employed by 20.71 percent of the companies in investment range of Rs.501-5000 Lakhs. As many as 68.88 percent of S&T Personnel in large Houses, 57.39 percent in Multinationals and 55.53 percent in State Government companies are in this segment. However, 59.94 percent of S&T Personnel in Central Government companies are employed by companies with large investments exceeding Rs.100 crores each, which also constitute 28.73 percent of companies in this sub sector.

Regional Distribution

4.30 Data on regional distribution of S&T Personnel, sector-wise, is at Table 4.9. Location pattern seems to be determined by a few main factors like location of Large Houses in Mumbai, Location of Multinationals in Calcutta, Location of central Government Companies in Delhi, location of Shipping Corporation of India in Mumbai and dispersal of small companies in all the states.

4.31 The highest concentration of S&T Personnel is in Western Region which accounts for 55.92 percent of the S&T Personnel. This region also accounts for the highest proportion of S&T Personnel in Government Sector (41.85 percent) as well as non Government sector (61.47 percent). Within the non Government sector, the highest concentration of employees is in regard to Large Houses (70.68 percent) as a number of such companies are registered in Mumbai, though some of their employees are located

TABLE 4.9
SECTOR WISE AND REGION WISE DISTRIBUTION
OF S&T PERSONNEL

Region	Government Companies			Non Government Companies				Grand Total
	Central Govt	State Govt	Total	Large Houses	Multi Nationals	Others	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Numbers of STP)								
1. North	2462	179	2641	959	311	1017	2287	4928
2. West	2882	148	3030	6437	2578	2275	11290	14320
3. South	572	102	674	619	522	734	1875	2549
4. East	891	5	896	1092	1102	720	2914	3810
Total	6807	434	7241	9107	4513	4746	18366	25607
(Percent)								
1. North	36.17	41.25	36.47	10.53	6.89	21.43	12.45	19.24
2. West	42.34	34.10	41.85	70.68	57.12	47.93	61.47	55.92
3. South	8.40	23.50	9.31	6.80	11.57	15.47	10.21	9.95
4. East	13.09	1.15	12.37	11.99	24.42	15.17	15.87	14.89
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

else where. The lowest concentration is for non LH/MN sub sector (47.93 percent). 42.34 percent of S&T personnel in Central Government companies are also located in Western region, mainly because the Shipping Corporation of India and a few other large Central Government companies are registered in Mumbai.

4.32 The second high concentration of S&T Personnel is in Northern region in which 19.24 percent of S&T Personnel are located. However, the proportions vary significantly for Government (36.47 percent) and non Government (12.45 percent) sectors. 36.17 percent of S&T personnel in Central Government companies are in this region. This is partly due to a number of big Central Government companies located in Delhi, though activities of some of these companies are located in other states/regions. In regard the non Government companies, proportion of personnel in Northern region is only 12.45 percent. The proportion for Multinational and Large House companies is still lower at 6.89 percent and 10.53 percent respectively. It is the non LH/MN companies, which are more evenly distributed in the country, that employ 12.45 percent of their personnel in this region.

4.33 Eastern region accounts for 14.89 percent of the S&T Personnel in the country. Proportions vary significantly among sub sectors, from only 1.15 percent for State Government companies to 24.42 percent for Multinationals. It seems that there are only few State Government companies in this region which employ personnel in higher salary groups. On the other hand, the proportion for Multinational companies in this region is quite high (24.42 percent) as a number of such companies are located in Calcutta.

4.34 Proportion of S&T Personnel in Southern region is the lowest at 9.95 percent. There is no much variation between Government and non Government companies (9.31 and 10.21 percent respectively). However, there are significant variations within the two sectors. State Government undertakings are quite active in this region, where they employ 23.50 percent of their S&T Personnel. But there are few Central Government Undertaking employees (8.40 percent) in this region. Among the non Government companies, Large House companies have the lowest concentration in this region (6.80 percent) while smaller companies employ relatively more (15.47 percent) of their S&T personnel.

Industry wise Distribution

4.35 Data on sector wise and industry wise distribution of S&T Personnel are given in Table 4.10. Government companies are engaged mainly in Infrastructure and Consultancy activities. Though, on average, Government companies account for 28.28 percent of all the S&T personnel, proportion of such personnel is quite high in Shipping (87.54 percent), Business services/Consultancy (71.69 percent), Mining (75.23 percent), Construction (62.50

TABLE 4.10

SECTOR WISE AND INDUSTRY WISE DISTRIBUTION
OF S&T PERSONNEL

Activity (1)	Government Companies			Non Government Companies				Grand Total (9)
	Central Govt (2)	State Govt (3)	Total (4)	Large Houses (5)	Multi Nationals (6)	Others (7)	Total (8)	
(Number of STP)								
1. Agriculture	0	7	7	1	0	35	36	43
2. Mining	273	52	325	43	0	64	107	432
3. Manufacturing	2016	144	2160	7571	4417	3390	15378	17538
4. Electricity, Gas & Water	552	102	654	826	27	65	918	1572
5. Construction	300	0	300	38	14	128	180	480
6. Trade & Hotel	158	23	181	172	17	140	329	510
7. Transport	2018	22	2040	379	3	424	806	2846
8. Financing & Business Services	1466	84	1550	77	35	500	612	2162
9. Others	24	0	24	0	0	0	0	24
Total	6807	434	7241	9107	4513	4746	18366	25607
(Percent)								
1. Agriculture	0.00	1.61	0.10	0.01	0.00	0.74	0.20	0.17
2. Mining	4.01	11.98	4.49	0.47	0.00	1.35	0.58	1.69
3. Manufacturing	29.62	33.19	30.16	83.13	97.86	71.42	83.73	68.58
4. Electricity, Gas & Water	8.11	23.50	9.03	9.07	0.60	1.37	5.00	6.14
5. Construc- tion	4.41	0.00	4.14	0.42	0.31	2.70	0.98	1.87
6. Trade, Hotel	2.32	5.30	2.50	1.89	0.38	2.95	1.79	1.99
7. Transport	29.64	5.07	28.17	4.16	0.07	8.93	4.39	11.11
8. Finan- cing Bus- inness Services	21.54	19.35	21.41	0.85	0.78	10.54	3.33	8.44
9. Others	0.35	0.00	0.33	0.00	0.00	0.00	0.00	0.09
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

percent) and generation & distribution of Electricity (41.60 percent). On the other hand, share of Government companies in S&T Personnel engaged in Manufacturing industries is lower at 12.32 percent. However, within Manufacturing industries, Government companies account for as much as 88.16 percent of the S&T Personnel in Petroleum refining industry.

4.36 Pattern of industry wise employment of S&T Personnel in various sub sectors varies considerably. While 83.73 percent of S&T personnel in non Government companies are employed in Manufacturing industries, the lowest and the highest proportions are in respect of non LH/MN companies (71.42 percent) and Multi nationals (97.86 percent). Proportion of S&T Personnel in Manufacturing industries for Government sector is only 30.16 percent, with small variation among Central and State Government sub sectors. As much as 28.17 percent of S&T Personnel in Government sector are employed in Transport and 21.41 percent in Business services/Consultancy, followed by 9.03 percent in generation & distribution of Electricity, 4.49 percent in Mining and 4.14 percent in Construction. Apart from Manufacturing, other activities in non Government sector are Electricity (5.00 percent of the S&T Personnel in the sector), Transport (4.39 percent) and Finance & Business services (3.33 percent).

TABLE 5.1

STATEWISE DISTRIBUTION OF SCIENTIFIC AND TECHNICAL PERSONNEL

State/UT (1)	Companies			S&T Personnel			Non STP (Nos) (8)	STP Inten- sity(%) (9)
	Nos (2)	Percent (3)	Cummul- ative (4)	Nos (5)	Percent (6)	Cummul- ative (7)		
1) Maharashtra	1049	23.48	23.48	11596	45.27	45.27	7086	62.07
2) Delhi	474	10.61	34.09	3899	15.22	60.49	1572	71.27
3) West Bengal	529	11.84	45.93	2922	11.41	71.90	2459	54.30
4) Gujrat	371	8.31	54.24	2286	8.93	80.83	847	72.97
5) Tamil Nadu	376	8.42	62.68	940	3.67	84.50	532	63.86
Total (1-5)	2799	62.66	62.66	21643	84.50	84.50	12496	63.40
6) Andhra Pradesh	365	8.17	70.84	767	3.00	87.50	751	50.53
7) Karnataka	209	4.68	75.52	665	2.60	90.10	191	77.69
8) Assam	109	2.44	77.96	343	1.34	91.44	155	68.88
9) Uttar Pradesh	216	4.84	82.80	323	1.26	92.70	156	67.43
10) Bihar	53	1.19	83.99	309	1.21	93.91	23	93.07
Total (6-10)	952	21.31	83.99	2407	9.41	93.91	1276	65.35
11) Madhya Pradesh	105	2.35	86.34	263	1.03	94.94	88	74.93
12) Goa	43	0.96	87.39	245	0.96	95.90	119	67.31
13) Punjab	83	1.86	89.16	243	0.95	96.85	119	67.13
14) Orissa	71	1.59	90.75	219	0.86	97.71	123	64.04
15) Rajsthan	105	2.35	93.10	193	0.75	98.46	112	63.28
Total (11-15)	407	9.11	93.10	1163	4.55	98.46	561	67.46
16) Kerala	122	2.73	95.83	168	0.66	99.12	97	63.40
17) Haryana	57	1.28	97.10	157	0.61	99.73	107	59.47
18) Himachal Pra.	26	0.58	97.69	28	0.11	99.84	21	57.14
19) Chandigarh	35	0.78	98.47	14	0.05	99.89	113	11.02
20) Meghalaya	8	0.18	98.65	11	0.04	99.93	6	64.71
21) Pondicherry	23	0.51	99.16	9	0.04	99.97	3	75.00
22) Nagaland	9	0.20	99.36	2	0.01	99.98	0	100.00
23) Arunachal Pra.	8	0.18	99.54	2	0.01	99.99	0	100.00
24) Andman & Nikobar	1	0.02	99.56	2	0.01	100.00	0	100.00
25) Jammu & Kashmir	12	0.27	99.83	1	0.00	100.00	0	100.00
26) Manipur	5	0.11	99.94	0	0.00	100.00	0	***.**
27) Mizoram	1	0.02	99.96	0	0.00	100.00	0	***.**
28) Tripura	2	0.04	100.00	0	0.00	100.00	0	***.**
Total (16-28)	309	6.90	100.00	394	1.54	100.00	347	84.21
Grand Total	4467	100.00	100.00	25607	100.00	100.00	14680	63.56

CHAPTER 5

STATE WISE ANALYSIS

5.1 Medium and large companies are located in 28 states and union territories. In three of the states (Manipur, Mizoram and Tripura), the companies do not employ any personnel in higher salary groups. S&T Personnel are located in the remaining 25 states and union territories. Detailed data on state wise distribution of S&T Personnel, separately for Government and non Government companies, are given in Annexure 11. The data are summarized in Table 5.1 showing state wise distribution of companies and S & T Personnel in descending order.

5.2 Distribution of companies as well as S&T Personnel among various states is highly skew. They are concentrated in a few states in which the corporate sector is more active, mainly due to geographical and historical reasons. Only two states of Maharashtra and Delhi account for over one third (34.09 percent) of all the companies in the country. As companies in these states include most of the big Central Government and Large House companies who employ relatively large number of S&T Personnel, concentration of S&T Personnel in these two states is as high as 60.49 percent. If the states are grouped in five each, according to the number of S&T Personnel in descending order, top 5 states which, besides Maharashtra and Delhi, include West Bengal, Gujarat and Tamil Nadu, account for 62.66 percent of companies and 84.50 percent of S&T Personnel. Next 5 states in descending order are Andhra Pradesh, Karnataka, Assam, Uttar Pradesh and Bihar. These states account for another 21.32 percent of companies and 9.41 percent of S&T Personnel. Remaining 18 state and union territories account for only 16.00 percent of companies and 6.09 percent of S&T Personnel in corporate sector.

5.3 Statewise distribution of S&T Personnel in Government and non Government companies is shown in Table 5.2. Concentration of companies is more marked in case of non Government companies. Two thirds (66.26 percent) of the non Government companies are located in top 5 states; proportion of Government companies in these states is 40.67 percent. This is because State Government companies are generally well distributed among all the states. However, as most of the Large House and Central Government companies are located in the top 5 states, concentration in terms of S&T Personnel in these states is significantly high, both for non Government companies (85.55 percent) as well as Government Companies (81.89 percent).

Regional Distribution

5.4 Regional distribution of companies and S&T Personnel, separately for Government and non Government companies is shown in Table 5.3. Details are given in Annexure 13. The highest

TABLE 5.2

STATEWISE AND SECTOR WISE DISTRIBUTION OF
SCIENTIFIC AND TECHNICAL PERSONNEL

State/UT (1)	Companies			S&T Personnel			Share of	Govt
	Govt	Non Govt	All	Govt	Non Govt	All	Companies	in
	(Nos) (2)	(Nos) (3)	(Nos) (4)	(Nos) (5)	(Nos) (6)	(Nos) (7)	(Per.) (8)	STP (Per.) (9)
1) Maharashtra	9.25	25.81	23.49	32.55	50.30	45.28	5.53	20.33
2) Delhi	7.81	11.07	10.61	33.63	7.97	15.23	10.34	62.45
3) West Bengal	10.37	12.08	11.84	4.39	14.18	11.41	12.29	10.88
4) Gujarat	4.63	8.91	8.31	8.45	9.11	8.93	7.82	23.77
5) Tamil Nadu	8.61	8.39	8.42	2.87	3.99	3.67	14.36	22.13
Total (1-5)	40.67	66.26	62.66	81.89	85.55	84.82	9.11	27.40
6) Andhra Pra.	5.26	8.65	8.17	4.25	2.50	3.00	9.04	40.16
7) Karnataka	7.02	4.30	4.68	1.70	2.95	2.59	21.05	18.50
8) Assam	2.39	2.45	2.44	3.27	0.58	1.34	13.76	69.10
9) Uttar Pra.	7.97	4.32	4.84	0.35	1.62	1.26	23.15	7.74
10) Bihar	4.31	0.68	1.19	3.95	0.13	1.21	50.94	92.56
Total (6-10)	26.95	20.39	21.31	13.52	7.78	9.41	17.75	40.67
11) Madhya Pra.	3.03	2.24	2.35	1.20	0.96	1.03	18.10	33.08
12) Goa	1.75	0.83	0.96	0.01	1.33	0.96	25.58	0.41
13) Punjab	1.44	1.93	1.86	0.77	1.02	0.95	10.84	23.05
14) Orissa	3.19	1.33	1.59	0.55	0.97	0.86	28.17	18.26
15) Rajasthan	3.19	2.21	2.35	0.83	0.72	0.75	19.05	31.09
Total (11-15)	12.60	8.54	9.11	3.37	5.00	4.55	19.41	20.98
16) Kerala	8.29	1.82	2.73	0.48	0.72	0.66	42.62	20.83
17) Haryana	1.59	1.22	1.28	0.26	0.75	0.61	17.54	12.10
18) Himachal Pra.	1.91	0.36	0.58	0.19	0.08	0.11	46.15	50.00
19) Chandigarh	2.07	0.57	0.78	0.07	0.05	0.05	37.14	35.71
20) Meghalaya	0.64	0.10	0.18	0.15	0.00	0.04	50.00	100.00
21) Pondicherry	1.59	0.34	0.51	0.00	0.05	0.04	43.48	0.00
22) Nagaland	0.48	0.16	0.20	0.01	0.01	0.01	33.33	50.00
23) Arunachal Pra.	0.48	0.13	0.18	0.01	0.01	0.01	37.50	50.00
24) A & N	0.16	0.00	0.02	0.03	0.00	0.01	**.**	**.**
25) Jammu&Kashmir	1.44	0.08	0.27	0.00	0.01	0.00	75.00	0.00
26) Manipur	0.80	0.00	0.11	0.00	0.00	0.00	**.**	**.**
27) Mizoram	0.16	0.00	0.02	0.00	0.00	0.00	100.00	**.**
28) Tripura	0.16	0.03	0.02	0.00	0.00	0.00	50.00	**.**
Total (16-28)	19.78	4.82	6.90	1.22	1.62	1.54	40.13	22.34
Grand Total	100.00	100.00	100.00	100.00	100.00	100.00	14.04	28.28

State wise Distribution of Companies and S&T Personnel

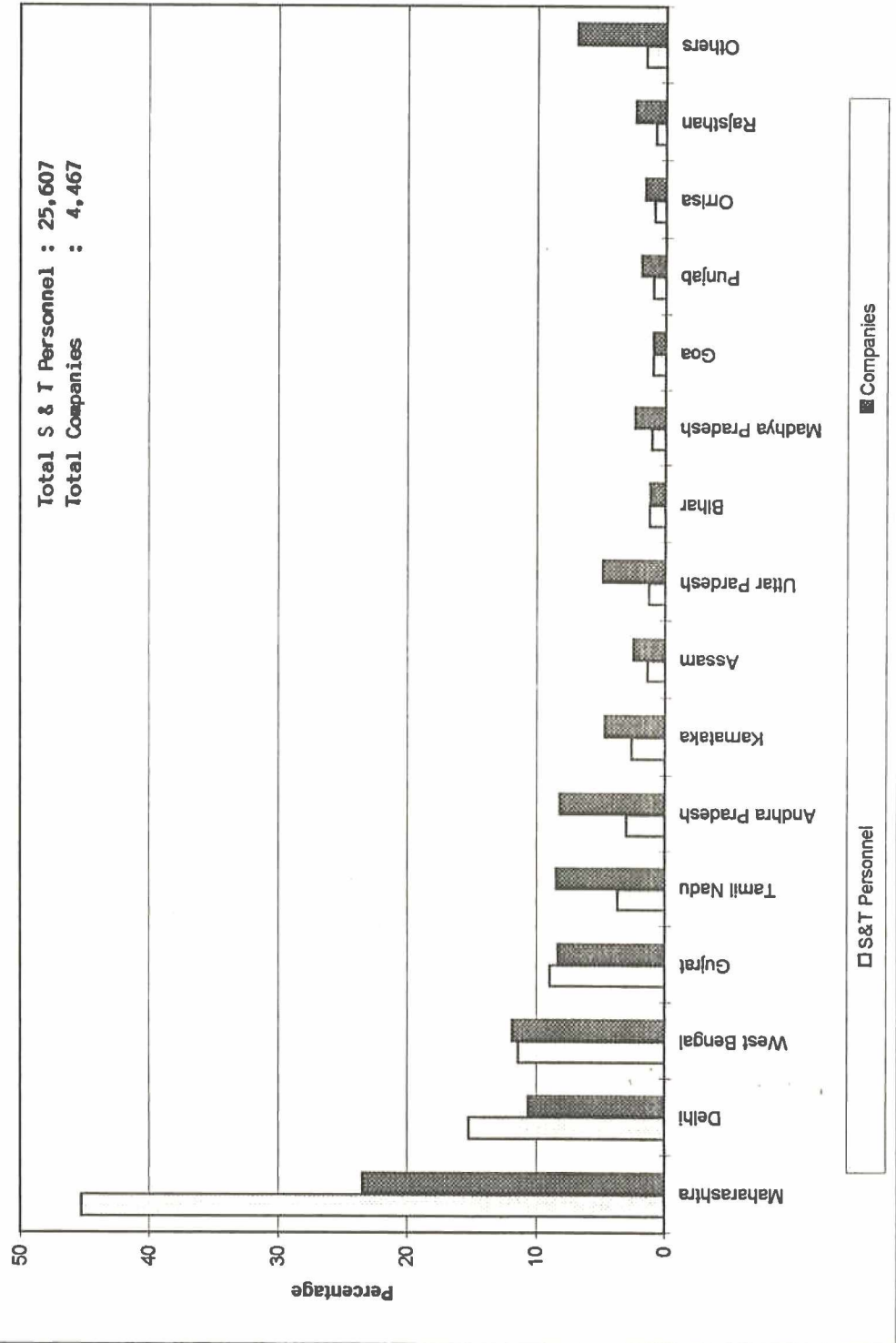


TABLE 5.3

REGION WISE DISTRIBUTION OF S&T PERSONNEL

Region/State	Companies			S&T Personnel			Share of Govt Companies in STP	
	Govt	Non Govt	All	Govt	Non Govt	All	(8)	(9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Percent)								
North								
Delhi	7.81	11.07	10.61	33.63	7.97	15.23	10.34	62.45
Uttar Pra.	7.97	4.32	4.84	0.35	1.62	1.26	23.15	7.74
Madhya Pra.	3.03	2.24	2.35	1.20	0.96	1.03	18.10	33.08
Punjab	1.44	1.93	1.86	0.77	1.02	0.95	10.84	23.05
Haryana	1.59	1.22	1.28	0.26	0.75	0.61	17.54	12.10
Himachal Pra	1.91	0.36	0.58	0.19	0.08	0.11	46.15	50.00
Chandigarh	2.07	0.57	0.78	0.07	0.05	0.05	37.14	35.71
J & K	1.44	0.08	0.27	0.00	0.01	0.00	75.00	0.00
Total	27.27	21.80	22.57	36.48	12.46	19.24	16.96	53.59
East								
West Bengal	10.37	12.08	11.84	4.39	14.18	11.41	12.29	10.88
Assam	2.39	2.45	2.44	3.27	0.58	1.34	13.76	69.10
Bihar	4.31	0.68	1.19	3.95	0.13	1.21	50.94	92.56
Orissa	3.19	1.33	1.59	0.55	0.97	0.86	28.17	18.26
Meghalaya	0.64	0.10	0.18	0.15	0.00	0.04	50.00	100.00
Arunachal Pra.	0.48	0.13	0.18	0.01	0.01	0.01	37.50	50.00
A & N	0.16	0.00	0.02	0.03	0.00	0.01	**.**	**.**
Nagaland	0.48	0.16	0.20	0.01	0.01	0.01	33.33	50.00
Tripura	0.16	0.03	0.04	0.00	0.00	0.00	50.00	**.**
Mizoram	0.16	0.00	0.02	0.00	0.00	0.00	100.00	**.**
Manipur	0.80	0.00	0.11	0.00	0.00	0.00	**.**	**.**
Total	23.13	16.95	17.82	12.36	15.88	14.88	18.22	23.52
South								
Tamil Nadu	8.61	8.39	8.42	2.87	3.99	3.67	14.36	22.13
Andhra Pra.	5.26	8.65	8.17	4.25	2.50	3.00	9.04	40.16
Karnataka	7.02	4.30	4.68	1.70	2.95	2.60	21.05	18.50
Kerala	8.29	1.82	2.73	0.48	0.72	0.66	42.62	20.83
Pondicherry	1.59	0.34	0.51	0.00	0.05	0.04	43.48	0.00
Total	30.78	23.49	24.51	9.31	10.21	9.95	17.63	26.44
West								
Maharashtra	9.25	25.81	23.49	32.55	50.30	45.27	5.53	20.33
Gujarat	4.63	8.91	8.31	8.45	9.11	8.93	7.82	23.77
Goa	1.75	0.83	0.96	0.01	1.33	0.96	25.58	0.41
Rajasthan	3.19	2.21	2.35	0.83	0.72	0.75	19.05	31.09
Total	18.82	37.76	35.10	41.85	61.45	55.93	7.53	21.16
Grand Total	100.00	100.00	100.00	100.00	100.00	100.00	14.04	28.28

**State wise and Sector wise
Distribution of S&T Personnel**

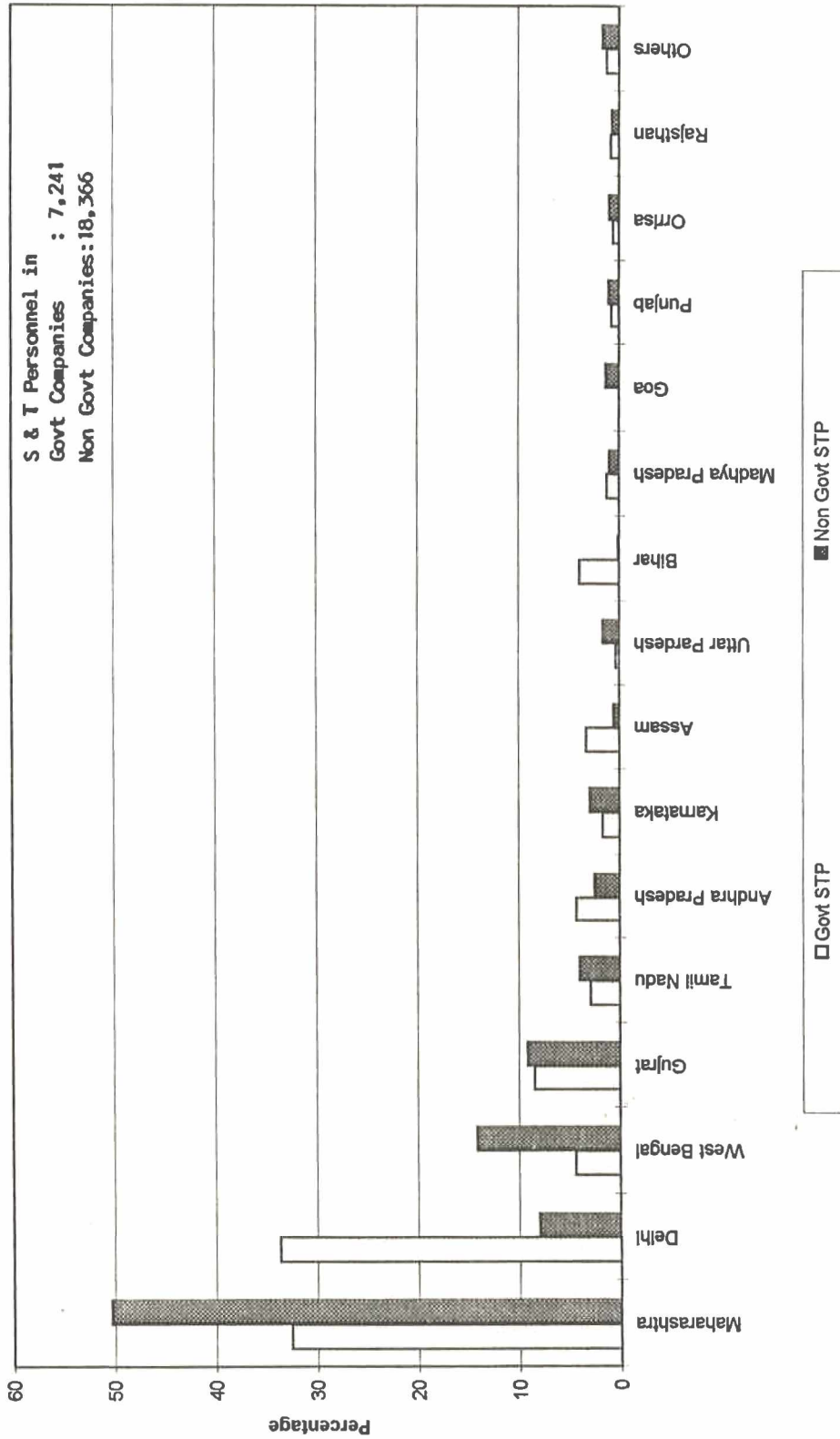


TABLE 5.4

STATEWISE AND REGION WISE CHARACTERISTICS OF S&T PERSONNEL

State/UT (1)	S&T Personnel			Percent (5)	Average	Average	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)		Remun. (Rs.000) (6)	Age (Years) (7)	Total (Years) (8)	In last Co. (Years) (9)
North								
Delhi	3873	26	3899	15.23	199	46.9	23.5	12.6
Uttar Pra.	322	1	323	1.26	248	48.0	24.4	8.2
Madhya Pra.	255	8	168	0.66	224	48.2	24.5	13.0
Punjab	238	5	243	0.95	194	46.6	23.4	9.3
Haryana	157	0	157	0.61	222	48.6	25.9	10.1
Himachal Pra.	28	0	28	0.11	198	45.7	21.4	5.1
Chandigarh	14	0	14	0.05	163	47.6	0.0	0.0
J & K	1	0	1	0.00	185	57.0	38.0	23.0
Total	4888	40	4928	19.24	204	47.1	23.6	11.9
East								
West Bengal	2896	26	2922	11.41	242	47.1	23.6	13.5
Assam	337	6	343	1.34	171	47.0	22.8	17.8
Bihar	305	4	309	1.21	166	49.5	26.4	18.8
Orissa	218	1	219	0.86	208	50.6	27.3	12.5
Meghalaya	11	0	11	0.04	179	49.8	27.3	12.1
Arunachal Pra.	2	0	2	0.01	172	55.0	10.5	7.5
A & N	2	0	2	0.01	170	48.0	24.0	3.0
Nagaland	2	0	2	0.01	165	51.0	23.5	3.0
Tripura	0	0	0	0.00	0	0.0	0.0	0.0
Mizoram	0	0	0	0.00	0	0.0	0.0	0.0
Manipur	0	0	0	0.00	0	0.0	0.0	0.0
Total	3800	37	3837	14.98	230	47.5	24.0	14.3
South								
Tamil Nadu	934	6	940	3.67	244	46.8	23.2	11.6
Andhra Pra.	757	10	767	3.00	222	46.9	23.5	12.4
Karnataka	661	4	665	2.60	191	48.7	25.1	17.4
Kerala	167	1	168	0.66	224	48.2	24.5	13.0
Pondicherry	9	0	9	0.04	253	48.9	25.6	6.6
Total	2528	21	2549	9.95	222	47.4	23.9	13.4
West								
Maharashtra	11496	100	11596	45.29	230	45.3	21.5	15.3
Gujarat	2282	4	2286	8.93	195	47.4	23.9	15.7
Goa	245	0	245	0.96	269	44.4	20.4	12.0
Rajasthan	192	1	193	0.75	194	48.0	24.2	10.3
Total	14188	105	14293	55.83	224	45.7	21.9	15.2
Grand Total	25404	203	25607	100.00	221	46.4	22.7	14.2

concentration of companies is in Western region (35.10 percent) while the lowest concentration is in Eastern region (17.82 percent). Prominence of Western region emerges more forcefully in terms of S&T Personnel as 55.93 percent of the S&T personnel are employed in this region. This is due to location of large number of companies in Mumbai which has emerged as industrial and commercial centre of the country. Most of the Large House and Multinational companies, which employ larger number of personnel, are located in this region. Companies in Western region employ 9.13 S&T Personnel per company on an average, compared to 5.73 personnel on all India basis. Concentration of non Government companies and S&T Personnel is more significant in Western region. As many as 37.76 percent of companies and 61.45 percent of S&T Personnel in non Government sector are located in Western region. Location of Government companies in this region is relatively less (18.82 percent) than in any other region, but employment of S&T Personnel in Government companies is the highest in this region (41.85 percent). This is because of location of Shipping Corporation of India in Mumbai, which employ 25.87 percent of S&T Personnel employed in all the Government companies.

5.5 Next to Western region, though far below its level, concentration of S&T Personnel is in Northern region where 22.57 percent of companies and 19.24 percent of S&T Personnel are located. This again is due to location of a number of large sized Central Government companies in Delhi. The lowest concentration of S & T Personnel is in Southern region which accounts for 9.95 percent of all the S&T Personnel. Though relatively 'large number of companies are located in this region, (24.51 percent), employment of S&T Personnel is low because average employment of S&T Personnel per company in this region is the lowest at 2.33 persons compared to 5.73 persons on all India basis, 9.13 persons in Western region and around 4.85 persons in Northern as well as Eastern regions.

5.6 As proportion to companies in both the sectors, Government companies are equally distributed in Northern, Eastern and Southern regions (17-18 percent of companies in each region) but are fewer in the Western region (7.53 percent), where Large Houses and other non Government companies are more active. In terms of S&T Personnel, Government companies dominate in Northern region where 53.59 percent of the S&T Personnel are in Government sector. Shares of Government companies in other regions are in the range of 21-26 percent : Southern region 26.44 percent), Eastern region (23.52 percent) and Western region (21.16 percent). There is one (or two) principal state employing large number of S&T Personnel in each of the regions : Northern (Delhi), Western (Maharashtra) Eastern (West Bengal) and southern (Tamil Nadu and Andhra Pradesh). It is the pattern of employment in these states that determines pattern of employment in the respective regions.

TABLE 5.5

REGION WISE AND AGE WISE DISTRIBUTION OF S&T PERSONNEL

Age range (Years)		North	East	South	West	Total
		(Number of STP)				
Upto	20	1	0	1	13	15
21	- 30	97	96	96	1041	1330
31	- 40	866	591	403	2622	4482
41	- 50	2250	1723	1014	6024	11011
51	- 60	1625	1328	973	4299	8225
61	- 70	89	99	62	294	544
Total		4928	3837	2549	14293	25607
		(Percent)				
Upto	20	0.22	0.00	0.04	0.09	0.06
21	- 30	1.97	2.50	3.77	7.28	5.19
31	- 40	17.57	15.40	15.81	18.34	17.50
41	- 50	45.66	44.91	39.78	42.15	43.01
51	- 60	32.97	34.61	38.17	30.08	32.12
61	- 70	1.81	2.58	2.43	2.06	2.12
Total		100.00	100.00	100.00	100.00	100.00
Average Age (Years)		47.1	47.5	47.4	45.7	46.4

Women S&T Personnel

5.7 Region wise main characteristics of S&T Personnel are shown in Table 5.4. Detailed data separately for Government and non Government companies are at Annexure 12. Ratio of women S&T Personnel to all S&T personnel in Northern and Southern regions is not much different than the all India ratio of 7.9 per 1000. However, relatively more of women S&T Personnel are employed in Eastern region (9.6 per 1000) and less in Western region (7.3 per 1000).

Age and Experience

5.8 With overall average of 46.4 years, average age varies from state to state. There is no pattern in variations as employees, specially those in high salary groups, are transferable, and move from state to state. Average age of S&T Personnel in Maharashtra is comparatively low at 45.3 years. Average age in all other states taken together is higher at 47.1 years. Average age in major employing states is around this level : Delhi (46.9 years), West Bengal (47.1 years), Tamil Nadu (46.8 years), Gujarat (47.4 years). Average age is low in Maharashtra because of location of Shipping Corporation of India in Mumbai, whose S&T Personnel have average age of 36.8 years. If this company is excluded, average age of other S&T Personnel in Maharashtra works out to 46.9 years, which is similar to average age in other main employing states. Among the smaller employing states, the age is generally higher : Karnataka (48.7 years), Kerala (48.2 years), Haryana (48.6 years), Uttar Pradesh (48.0 years), Bihar (49.5 years), Orissa (50.6 years) and Rajasthan (48.0 years). There are hardly any smaller employer states except Punjab (46.6 years) where average age is low.

5.9 Experience also follows the same pattern as age. With overall average experience of 22.7 years, S&T Personnel in Maharashtra have low average experience of 21.5 years while average for all other States is 23.7 years. S&T personnel in main employer states like Delhi (23.5 years), West Bengal (23.6 years), Gujarat (23.9 years) and Tamil Nadu (23.2 years) have average experience close to this average. S&T Personnel in smaller employer states generally have higher average experience.

Age wise Distribution

5.10 Dominant age group of S&T Personnel on all India basis, as well as in each region, is 41-50 years, though proportion of personnel in this age group varies from 39.78 percent in Southern region to 45.66 percent in Northern region. In the Western region, which is the largest employer of S&T Personnel, proportion of younger employees (upto 40 years) is relatively more in each decennial age group totalling 25.71 percent, compared to all India level of 22.75 percent. Proportion of personnel above 40 years in each of the decennial age groups is correspondingly less. Contrary is the situation in the other three regions. Table 5.5 gives age wise data of S&T Personnel for different regions.

TABLE 5.6

STATEWISE LEVELS OF QUALIFICATIONS OF S&T PERSONNEL

State/UT	Doctorate	Post Graduate	Graduate	Others	Total
	(Percent of STP)				
Andhra Pradesh	3.76	4.25	2.90	2.07	3.00
Andaman Nikobar	0.00	0.05	0.00	0.00	0.01
Arunachal Pradesh	0.00	0.00	0.01	0.00	0.01
Assam	1.25	1.02	1.69	0.26	1.34
Bihar	0.63	0.90	1.57	0.17	1.21
Chandigarh	0.00	0.02	0.08	0.00	0.05
Delhi	11.87	16.66	16.80	8.10	15.23
Goa	0.47	1.17	0.96	0.83	0.96
Gujarat	10.49	5.97	9.95	7.46	8.93
Haryana	0.63	0.82	0.64	0.31	0.61
Himachal Pradesh	0.31	0.15	0.11	0.05	0.11
Jammu & Kashmir	0.00	0.00	0.01	0.00	0.00
Karnataka	2.19	2.11	2.56	3.25	2.60
Kerala	0.63	0.80	0.75	0.17	0.66
Madhya Pradesh	0.94	1.02	1.20	0.38	1.03
Maharashtra	45.22	44.29	40.52	65.14	45.28
Manipur	0.00	0.00	0.00	0.00	0.00
Meghalaya	0.00	0.02	0.06	0.00	0.04
Mizoram	0.00	0.00	0.00	0.00	0.00
Nagaland	0.16	0.00	0.01	0.00	0.01
Orissa	0.78	0.90	1.02	0.17	0.86
Pondicherry	0.00	0.00	0.05	0.02	0.04
Punjab	0.94	0.97	0.99	0.76	0.95
Rajasthan	0.78	0.52	0.91	0.36	0.75
Tamil Nadu	2.35	3.73	3.80	3.30	3.67
Tripura	0.00	0.00	0.00	0.00	0.00
Uttar Pradesh	2.19	1.67	1.34	0.40	1.26
West Bengal	14.40	12.96	12.07	6.82	11.41
Total	100.00	100.00	100.00	100.00	100.00
Region					
North	16.90	21.31	21.16	10.00	19.24
East	18.47	16.04	16.50	7.41	14.98
South	8.92	10.89	10.06	8.81	9.95
West	55.71	51.75	52.28	73.78	55.82
Total	100.00	100.00	100.00	100.00	100.00

Details at Annexure-14

S&T Intensity

5.11 S&T intensity (S&T Personnel as percent of all personnel) varies from state to state. Compared to the all India average of 63.56 percent, it is lower (62.07 percent) in Maharashtra which employs the largest number of S&T Personnel and where non Government companies are dominant. On the other hand the intensity is quite high (71.27 percent) in Delhi, the second largest employer of S&T Personnel, in which Government companies are dominant. It is also relatively high (72.97 percent) in Gujarat but low in West Bengal (54.30 percent) in which Multinationals are dominant. The index is relatively higher in medium range employers like Karnataka (77.69 percent), Assam (68.88 percent), Uttar Pradesh (67.43 percent), Bihar (93.07 percent), Madhya Pradesh (74.93 percent), Goa (67.13 percent) and Punjab (67.13 percent). It is low only for Andhra Pradesh (50.53 percent). Data may be seen in Table 5.1.

Mobility

5.12 With average index of mobility at 1.60, the index is quite high for S&T Personnel in Delhi (1.87) dominated by Government companies, but low for Maharashtra (1.41) dominated by non Government companies, as is the case for S&T intensity. Among other main (top ten) employing states, the index is relatively high for S&T Personnel in West Bengal (1.75), Tamil Nadu (2.0), Andhra Pradesh (1.90) and Uttar Pradesh (2.98), while it is low for Gujarat (1.52), Karnataka (1.44), Assam (1.28) and Bihar (1.40). No trend or pattern can be established with reference to location or ownership.

Levels of Qualifications

5.13 State wise levels of qualifications of S&T Personnel do not suggest any trend or pattern. Variations in states and regions seem to be of adhoc nature and for specific reasons. Among the major employer states of S&T Personnel, proportion of lower qualifications is relatively quite small (6.82 percent) and that of Doctorates quite large (14.40 percent) in West Bengal. This is an indicator of preferences of Multinationals which dominate in the state. Maharashtra on the other hand has a large proportion of lower qualification personnel (65.14 percent) mainly due to shipping companies located in Mumbai. Delhi has lower proportions of lower qualification levels as well as Doctorates, but marginally higher proportion of Graduates and Post graduates. Andhra Pradesh has higher proportion of Doctorates and Post graduates and lower proportion of Diploma holders, where as reverse is the situation in Karnataka. Data in this regard are at Table 5.6 and details at Annexure 14.

Fields of Specialization

5.14 Data on fields of specialization of S&T Personnel also do not show any pattern but show variations of adhoc nature. Data are at Table 5.7 and details at Annexure 15. While proportion of

TABLE 5.7

STATEWISE FIELDS OF SPECIALISATION OF S&T PERSONNEL

State/UT	Technology			Sciences		Grand Total
	Mech	Elec	Total	Natural	Total	
	(Percent of STP)					
Andhra Pradesh	2.41	3.18	2.77	3.54	3.67	3.00
Andaman Nikobar	0.00	0.00	0.00	0.04	0.03	0.01
Arunachal Pradesh	0.02	0.00	0.01	0.00	0.00	0.01
Assam	1.87	0.86	1.16	1.22	1.87	1.34
Bihar	2.22	1.35	1.47	0.38	0.43	1.21
Chandigarh	0.00	0.11	0.06	0.04	0.05	0.05
Delhi	19.67	15.32	16.71	10.79	10.88	15.23
Goa	0.79	1.23	0.93	0.63	1.04	0.96
Gujarat	9.14	10.28	8.26	10.89	10.88	8.93
Haryana	0.58	0.52	0.62	0.52	0.58	0.61
Himachal Pradesh	0.05	0.20	0.12	0.10	0.08	0.11
Jammu & Kashmir	0.00	0.00	0.01	0.00	0.00	0.00
Karnataka	3.68	3.89	2.82	2.27	1.95	2.60
Kerala	0.54	0.40	0.48	1.26	1.17	0.66
Madhya Pradesh	1.08	0.86	0.94	0.52	1.29	1.03
Maharashtra	40.83	49.14	46.36	43.37	42.12	45.28
Manipur	0.00	0.00	0.00	0.00	0.00	0.00
Meghalaya	0.00	0.06	0.05	0.04	0.03	0.04
Mizoram	0.00	0.00	0.00	0.00	0.00	0.00
Nagaland	0.02	0.00	0.01	0.00	0.00	0.01
Orissa	1.01	0.74	0.84	0.97	0.89	0.86
Pondicherry	0.02	0.09	0.04	0.02	0.02	0.04
Punjab	0.89	0.89	0.97	0.88	0.87	0.95
Rajasthan	0.61	0.77	0.71	0.94	0.87	0.75
Tamil Nadu	3.89	1.86	3.55	4.35	4.02	3.67
Tripura	0.00	0.00	0.00	0.00	0.00	0.00
Uttar Pradesh	1.22	0.72	1.12	1.95	1.67	1.26
West Bengal	9.46	7.53	9.97	15.28	15.62	11.41
Total	100.00	100.00	100.00	100.00	100.00	100.00
Region						
North	23.49	18.61	20.56	15.35	15.42	19.24
East	14.73	10.54	13.59	18.34	19.05	14.98
South	10.54	9.42	9.66	11.35	10.81	9.95
West	51.24	61.43	56.19	54.96	54.72	55.83
Total	100.00	100.00	100.00	100.00	100.00	100.00

personnel with Science qualifications is relatively low in Maharashtra, Delhi, Karnataka and Bihar among the main employer states, it is relatively higher in West Bengal, Gujarat, Tamil Nadu, Andhra Pradesh, Kerala, Madhya Pradesh and Uttar Pradesh. Proportions of Technology personnel are higher and lower correspondingly. Within the Technology field, Mechanical Engineers are relatively more in Delhi, Gujarat, Tamil Nadu, Bihar and Karnataka, but less in West Bengal and Maharashtra. Shipping Technology personnel are mainly in Maharashtra. Region wise averages show that Technology Personnel are relatively less in Eastern region and more in Northern region, there being no much variation in other two regions. Mechanical engineers are more in Northern region and less in Western region.

Remuneration

5.15 With average remuneration of S&T Personnel at Rs.2.21 lakhs per annum, it varies among states from Rs.1.66 lakhs for Bihar to the maximum of Rs.2.69 lakhs for Goa. However, among the major employing states, average remuneration is the lowest for Delhi (Rs.1.99 lakhs) which is dominated by Central Government companies and the highest for West Bengal (Rs.2.42 lakhs) which is dominated by Multinationals. Maharashtra lies in between at Rs.2.30 lakhs per annum. Regional averages are determined by these states. While averages for Southern (Rs.2.22 Lakhs) and Western (Rs.2.24 Lakhs) regions are close to the over all average of Rs.2.21 lakhs, average remuneration for Eastern region is the highest (Rs.2.30 lakhs) and the lowest (Rs.2.04 lakhs) for Northern region:

5.16 Over half (53.06 percent) of the S&T Personnel receive low level remunerations (between Rs.12000 and Rs.15000 p m). Another 33.99 percent of the personnel receive medium level remuneration (Rs.15000-25000 pm) while the balance of 12.95 percent receive high remunerations above Rs.25,000 pm. Western region, which is the largest employer of S&T personnel has also the largest proportion (14.13 percent) of highly paid personnel (above Rs.25,000 pm) and the lowest proportion (48.46 percent) of the low paid personnel in high salary groups (Rs.12000-15000 pm). This is mainly due to location of Shipping Corporation of India and a number of LH/MN companies in Mumbai. At the other end of the spectrum is Northern region, the second largest employer, where low paid personnel dominate (63.56 percent) while proportion of highly paid personnel is the lowest (8.50 percent). Eastern region is also characterized by a high level of highly paid personnel (14.33 percent), again due to location of a number of Multinational companies in Calcutta. Annexure 12 and Table 5.8 give data on state wise and region wise remunerations received by the S&T personnel.

Investment wise distribution

5.17 Maximum concentration of S&T Personnel is in companies with middle investment (paid up capital) range of Rs.5-50 crores each. Proportion of S&T Personnel in this range exceeds 50 percent

TABLE 5.8

REGION WISE AND REMUNERATION WISE DISTRIBUTION
OF S&T PERSONNEL

Remuneration Range (Rs. 000)	North	East	South	West	Total
	(Number of STP)				
Upto 180	3132	2064	1464	6927	13587
Above 180 - 300	1377	1223	757	5347	8704
Above 300	419	550	328	2019	3316
Total	4928	3837	2549	14293	25607
	(Percent)				
Upto 180	63.56	53.79	57.43	48.46	53.06
Above 180 - 300	27.94	31.88	29.70	37.41	33.99
Above 300	8.50	14.33	12.87	14.13	12.95
Total	100.00	100.00	100.00	100.00	100.00
	(Rs. Thousands)				
Average Remuneration	204	230	222	224	221

TABLE 5.9

REGION WISE AND INVESTMENT WISE DISTRIBUTION
OF S&T PERSONNEL

Paid Up Capital Range (Rs. Crore)	North	East	South	West	Total
	(Number of STP)				
Upto 1	414	323	124	724	1585
Above 1 - 5	1540	416	572	1150	3678
Above 5 - 50	1545	2073	1445	7445	12508
Above 50 - 100	91	337	254	1110	1792
Above 100	1338	688	154	3864	6044
Total	4928	3837	2549	14293	25607
	(Percent)				
Upto 1	8.40	8.42	4.86	5.07	6.19
Above 1 - 5	31.25	10.84	22.45	8.05	14.36
Above 5 - 50	31.35	54.03	56.69	52.08	48.85
Above 50 - 100	1.85	8.78	9.96	7.77	7.00
Above 100	27.15	17.93	6.04	27.03	23.60
Total	100.00	100.00	100.00	100.00	100.00

in all the regions except in Northern region (31.35 percent). Smaller investment companies (upto Rs. 5 crores) and large investment companies (above Rs.100 crores) dominate in Northern region and account for 39.65 percent and 27.15 percent respectively of S&T Personnel in this region. This distinction is mainly due to either big Central Government companies with investments above Rs.100 crores located in Delhi or smaller non Government companies located in Delhi as well in as other states in the region. Western region has also a high concentration of S&T personnel in high investment companies (27.03 percent) due to a number of LH/MN companies as well as Shipping corporation of India located in Mumbai. Data may be seen in Table 5.9.

Industry wise Distribution

5.18 Manufacturing is the largest employer of S&T Personnel (68.58 percent) followed by Transport (11.11 percent), Finance & Consultancy (8.28 percent), Electricity (6.14 percent), Trade (1.99 percent), Construction (1.87 percent) and Mining (1.69 percent). Region wise, the largest proportion of S&T Personnel in Manufacturing (82.78 percent) is in Southern region, while the lowest proportion (44.89 percent) is in Northern region. The latter region on the other hand has the largest proportion of personnel engaged in Finance & Consultancy services (25.12 percent) as well as in generation & distribution of Electricity (13.05 percent) and construction (6.17 percent). This is due to location of a number of Central Government Finance and Consultancy Companies (like Engineers India, Indian Railway Finance Corporation and Rail India Technical Services) and companies dealing with Electricity (like Thermal/Hydro Power, Nuclear power, and Power grid Corporations) in Delhi. Eastern region has the second largest proportion of personnel engaged in Manufacturing industries (76.47 percent) as well as in Finance & Consultancy services (9.77 percent) as a number of such companies are located in Calcutta. In the Western region, while 72.11 percent of S&T personnel are engaged in Manufacturing, a large proportion (16.05 percent) are also engaged in Transport, the latter being due to location of Shipping companies in Mumbai. This region also has the second largest proportion of personnel (5.78 percent) engaged in generation & distribution of Electricity mainly due to Tata Hydro electric and Tata Power companies located in Mumbai. Data are given in Table 5.10.

TABLE 5.10

REGION WISE AND INDUSTRY WISE DISTRIBUTION
OF S&T PERSONNEL

Activity	North	East	South	West	Total
(Number of STP)					
1. Agriculture	2	7	16	18	43
2. Mining	100	122	58	152	432
3. Manufacturing	2212	2934	2110	10306	17562
4. Electricity, Gas & Water	643	76	27	826	1572
5. Construction	304	47	24	105	480
6. Trade & Hotel	144	140	41	185	510
7. Transport	272	135	145	2294	2846
8. Financing & Business Services	1238	375	121	385	2119
9. Others	13	1	7	22	43
Total	4928	3837	2549	14293	25607
(Percent)					
1. Agriculture	0.04	0.18	0.13	0.17	0.17
2. Mining	2.03	3.18	2.28	1.06	1.69
3. Manufacturing	44.89	76.47	82.78	72.11	68.58
4. Electricity, Gas & Water	13.05	1.98	1.06	5.78	6.14
5. Construction	6.17	1.22	0.94	0.73	1.87
6. Trade, Hotel	2.92	3.65	1.61	1.29	1.99
7. Transport	5.52	3.52	5.69	16.05	11.11
8. Financing & Business Services	25.12	9.77	4.75	2.69	8.28
9. Others	0.26	0.03	0.27	0.15	0.17
Total	100.00	100.00	100.00	100.00	100.00

CHAPTER 6

INDUSTRY WISE ANALYSIS

6.1 Three digit Standard Industrial Classification has been adopted for classification of the surveyed companies. However, as this classification is too lengthy, it has been abridged to one or two digit classification for some industries which are neither S&T intensive, nor important for developments in the field of Science and Technology. While this classification has been used in Annexures, a summary classification has been adopted for tables in the report to focus on S&T intensive industries. Many companies are engaged in more than one industry. They have been classified in industry in which they are dominant.

6.2 Distribution of companies and S&T Personnel among different industries is shown in Table 6.1 Detailed data, separately for Government and non Government companies, are at Annexure 16. Manufacturing industries account for two thirds of companies (65.30 percent) as well of S&T Personnel (68.49 percent). Next large employers of S&T Personnel are Shipping (8.97 percent) and Finance & Business services (8.28 percent). Generation and distribution of Electricity also employ a large number of S&T Personnel (6.14 percent). Other activities of lesser importance from employment angle are Road and air Transport (2.14 percent), Trade & Hotels (1.99 percent), Construction (1.87 percent) and Mining (1.69 percent).

6.3 Within Manufacturing industries, Chemicals & products is the largest employer accounting for 10.52 percent of companies and 18.98 percent of S&T Personnel. These companies include large sized fertilizer and pharmaceutical undertakings. The next large employer is Metals & Products accounting for 9.04 percent of companies and 10.05 percent of S&T Personnel. These include steel plants in public sector. This is followed by Electrical/Electronic machinery & apparatus (8.02 percent of S&T Personnel), Transport equipment (7.70 percent), Non Electrical machinery (5.06 percent), Textiles (4.70 percent), Food products (2.96 percent), Cement (1.98 percent), Alcoholic beverages (1.87 percent) and Petroleum (1.51 percent).

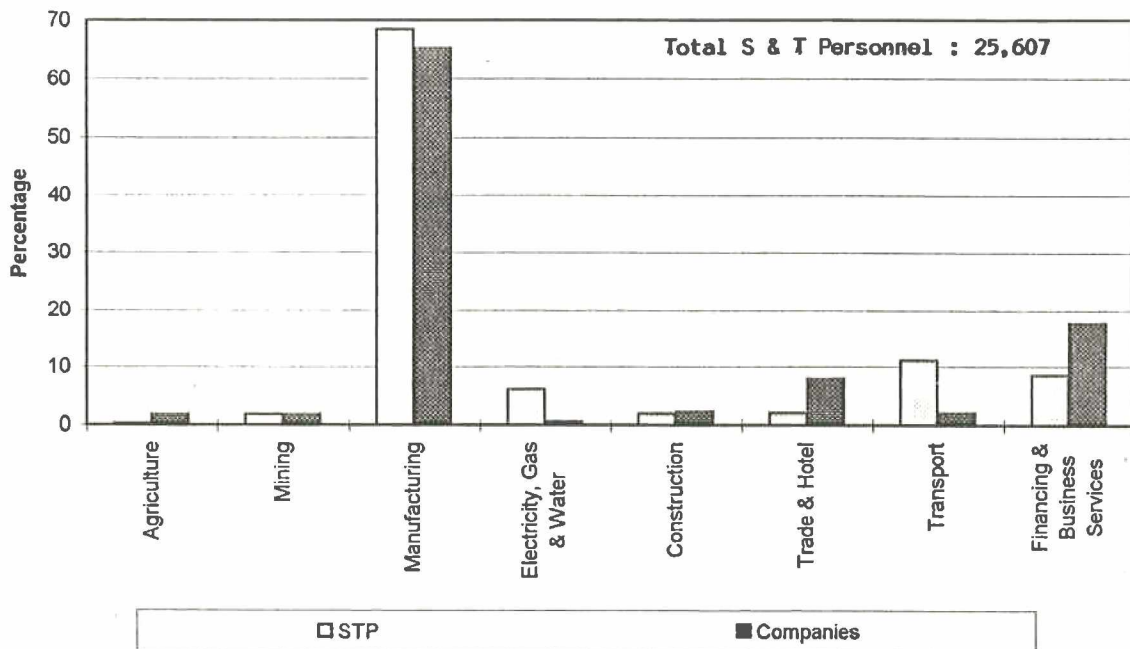
6.4 Pattern of employment in Government and non Government companies varies considerably due to different objectives for which companies have been set up in Public sector. Data are given at Table 6.2. While Manufacturing accounts for 83.73 percent of S&T Personnel in non Government sector, it accounts for only 29.83 percent of S&T personnel in Government sector. The latter has emphasis on Shipping (27.48 percent), Finance & Consultancy services (21.27 percent). Electricity (9.03 percent), Mining (4.49 percent), Construction (4.14 percent) and Trade (mainly foreign trade) & Hotels (under ITDC) (2.50 percent). These are all infrastructure industries set up in Public sector to boost economic activity at overall level. Employment in these sectors by non Government companies is small except for Electricity, mainly two units in Mumbai, (5.00 percent of S&T Personnel),

TABLE 6.1

**INDUSTRY WISE DISTRIBUTION OF SCIENTIFIC
AND TECHNICAL PERSONNEL**

Activity	Companies		S&T Personnel		Non STP	All Personnel		STP
	Nos	(%)	Nos	(%)	Nos	Nos	(%)	Intensity (Percent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Agriculture	78	1.75	43	0.17	28	71	0.18	60.56
2. Mining	78	1.75	432	1.69	97	529	1.31	81.66
3. Manufacturing								
Food Pro.	292	6.54	759	2.96	621	1380	3.43	55.00
Alcoholic Bev	55	1.23	480	1.87	375	855	2.12	56.14
Textiles	387	8.66	1203	4.70	712	1915	4.75	62.82
Wood	35	0.78	54	0.21	8	62	0.15	87.10
Paper	117	2.62	377	1.47	324	701	1.74	53.78
Leather	32	0.72	61	0.24	83	144	0.36	42.36
Chemical	470	10.52	4860	18.98	3013	7873	19.54	61.73
Rubber&Plastic	117	2.62	387	1.51	176	563	1.40	68.74
Petroleum	24	0.54	380	1.48	137	517	1.28	73.50
Cement	80	1.79	506	1.98	333	839	2.08	60.31
Non Met Min	121	2.71	237	0.93	319	556	1.38	42.63
Metals	404	9.04	2573	10.05	762	3335	8.28	77.15
Machinery	195	4.37	1296	5.06	578	1874	4.65	69.16
Electrical	298	6.67	2053	8.02	1104	3157	7.84	65.03
Machinery								
Transport equipments	120	2.69	1972	7.70	556	2528	6.27	78.01
Others	170	3.81	340	1.33	236	576	1.43	59.03
Total 3	2917	65.30	17538	68.49	9337	26875	66.71	65.26
4. Electricity, Gas & Water	25	0.56	1572	6.14	761	2333	5.79	67.38
5. Construction	95	2.13	480	1.87	118	598	1.48	80.27
6. Trade & Hotels	356	7.97	510	1.99	578	1088	2.70	46.88
7. Transport, storage & communication								
Shipping	15	0.34	2296	8.97	1090	3386	8.40	67.81
Other	71	1.59	550	2.14	759	1309	3.25	42.02
Total 7	86	1.93	2846	11.11	1849	4695	11.65	60.62
8. Services								
Financing & Business services	693	15.51	2119	8.28	1849	3968	9.85	53.40
Community, Social	99	2.22	43	0.17	26	69	0.17	62.32
Total 8	792	17.73	2162	8.44	1875	4037	10.02	53.55
9. Other	40	0.90	24	0.09	37	61	0.15	39.34
Total (1 - 9)	4467	100.00	25607	100.00	14680	40287	100.00	63.56

Industry wise Distribution of S&T Personnel



Industry wise Distribution of S&T Personnel in Manufacturing Industries

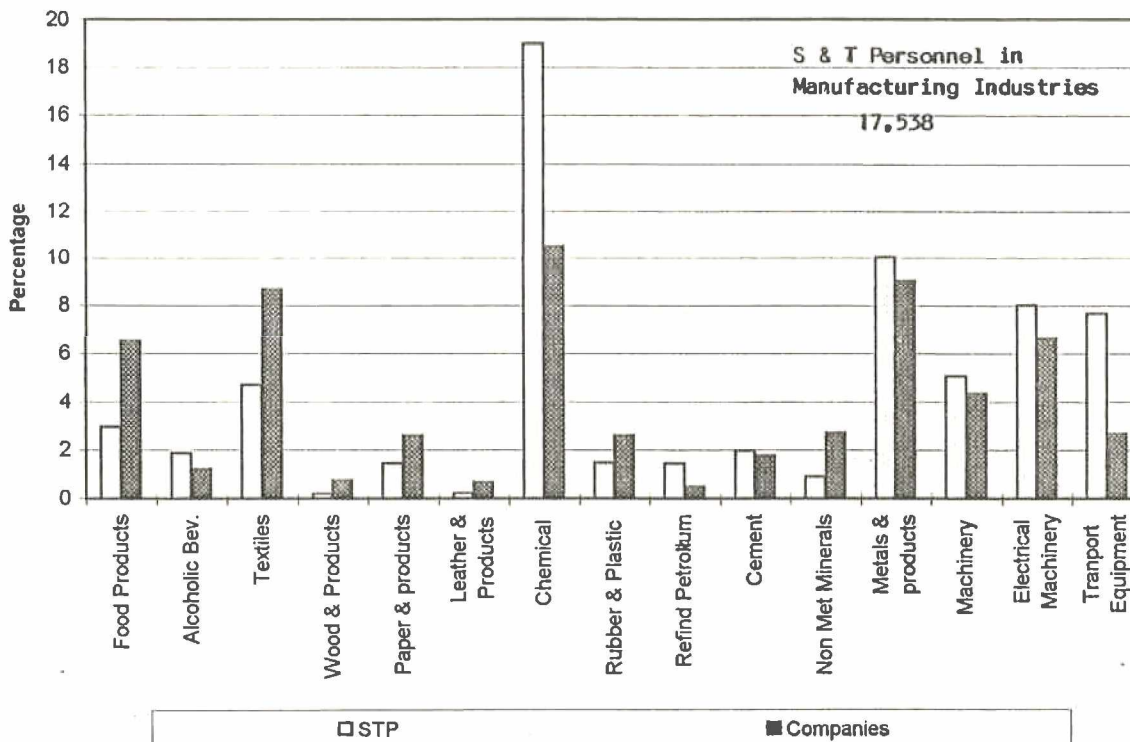


TABLE 6.2

INDUSTRY WISE EMPLOYMENT OF S&T PERSONNEL IN
GOVERNMENT AND NON GOVERNMENT COMPANIES

Activity (1)	Companies			S&T Personnel (P e r c e n t)			Share of Govt Cos in STP	
	Govt (2)	N Govt (3)	All (4)	Govt (5)	N Govt (6)	All (7)	Cos (8)	(9)
1. Agriculture	5.10	1.20	1.75	0.10	0.20	0.17	41.03	16.28
2. Mining	5.26	1.17	1.75	4.49	0.58	1.69	42.31	75.23
3. Manufacturing								
Food Products	5.90	6.64	6.54	0.11	4.09	2.96	12.67	1.05
Alcoholic Bev.	0.80	1.30	1.23	0.00	2.61	1.87	9.09	0.00
Textiles	7.18	8.91	8.66	0.57	6.33	4.70	11.63	3.41
Wood	0.64	0.81	0.78	0.00	0.29	0.21	11.43	0.00
Paper	1.44	2.81	2.62	0.64	1.80	1.47	7.69	12.20
Leather	2.55	0.42	0.72	0.00	0.33	0.24	50.00	0.00
Chemical & Rubber, Plastic	6.38	11.20	10.52	12.81	21.42	18.98	8.51	19.05
Petroleum	1.28	0.42	0.54	4.63	0.25	1.48	33.33	88.16
Cement	0.80	1.95	1.79	0.33	2.62	1.98	6.25	4.74
Non Met	1.28	2.94	2.71	0.00	1.29	0.93	6.61	0.00
Metals	4.31	9.82	9.04	3.89	12.48	10.05	6.68	10.92
Machinery	2.87	4.61	4.37	0.26	6.95	5.06	9.23	1.47
Electrical	8.61	6.35	6.67	4.76	9.30	8.02	18.12	16.80
Machinery Transport equipments	2.55	2.71	2.69	1.45	10.14	7.70	13.33	5.32
Others	1.12	4.24	3.81	0.01	1.85	1.33	4.12	0.29
Total 3	48.64	68.02	65.30	29.83	83.73	68.49	10.46	12.32
4. Electricity, Gas & Water	2.23	0.29	0.56	9.03	5.00	6.14	56.00	41.60
5. Construction	3.83	1.85	2.13	4.14	0.98	1.87	25.26	62.50
6. Trade & Hotels	9.25	7.76	7.97	2.50	1.79	1.99	16.29	35.49
7. Transport, storage & communication								
Shipping	0.48	0.31	0.34	27.48	1.67	8.97	20.00	86.67
Other	4.15	1.17	1.59	0.69	2.72	2.14	36.62	9.09
Total 7	4.63	1.48	1.93	28.17	4.39	11.11	32.72	71.68
8. Services								
Financing & Business services	17.38	15.21	15.51	21.27	3.15	8.28	15.73	72.68
Community, Social	3.19	2.06	2.22	0.14	0.18	0.17	20.20	23.26
Total 8	20.57	17.27	17.73	21.41	3.33	8.44	16.29	71.69
9. Other	0.48	0.96	0.90	0.33	0.00	0.09	7.50	100.00
Total (1-9)	100.00	100.00	100.00	100.00	100.00	100.00	14.04	28.28

Details at Annexure-16

Financing (3.15 percent) and Trade & Hotels (1.79 percent). Importance of Government companies varies widely from industry to industry. Proportion of Government companies in S&T Personnel is quite high in Shipping (86.67 percent), followed by Mining (75.23 percent) and Finance & Consultancy (72.68 percent). The proportion is more than 40 percent in Construction (62.50 percent) and Electricity (41.60 percent). In manufacturing, Government companies employ only 12.32 percent of S&T Personnel employed in all the companies. However, within Manufacturing, their employment of S&T Personnel is high at 88.16 percent in refined Petroleum. Other manufacturing industries in which there is Government presence, though low but not insignificant, are Chemicals & products (19.05 percent), Electrical & Electronic machinery & apparatus (16.80 percent) and Metals & products (10.92 percent). It may be noted that all these manufacturing industries are basic industries requiring heavy investment.

S&TP Intensity

6.5 S&T Personnel Intensity is relevant mainly at industry level, as it is partly determined by needs of Technology and Science in an industry. The index measured by S&T Personnel employed in an industry as percent of all employees in that industry, varies significantly from industry to industry, with overall average of 63.56 percent. It may not be a good measure for industries employing small number of S&T Personnel, as employment of personnel from different disciplines may be of adhoc nature rather than due to technology in the industry. Barring such cases, the S&T Intensity is quite high, exceeding 80 percent, in Mining (81.66 percent) and Construction (80.27 percent). The Index is between 70 and 80 percent in industries like Transport equipment (78.01 percent), Metals (77.15 percent) and Petroleum (73.50 percent). In industries like Machinery, (Electrical and non-electrical), Plastics, Shipping and Electricity, the Index is between 65 and 70 percent. These may also be termed as S&T Intensive industries. On the other side of the spectrum are low Technology industries like Leather, non metallic Minerals, Trade & Hotels and Road Transport where the S&T Intensity is below 50 percent. Industries for which the Index is between 50 and 60 percent, and may be considered below average in S&T Intensity (63.56 percent), are Food Products, Alcoholic beverages, Paper & products and Financing & Consultancy. Data on S&T Intensity are given in Table 6.1.

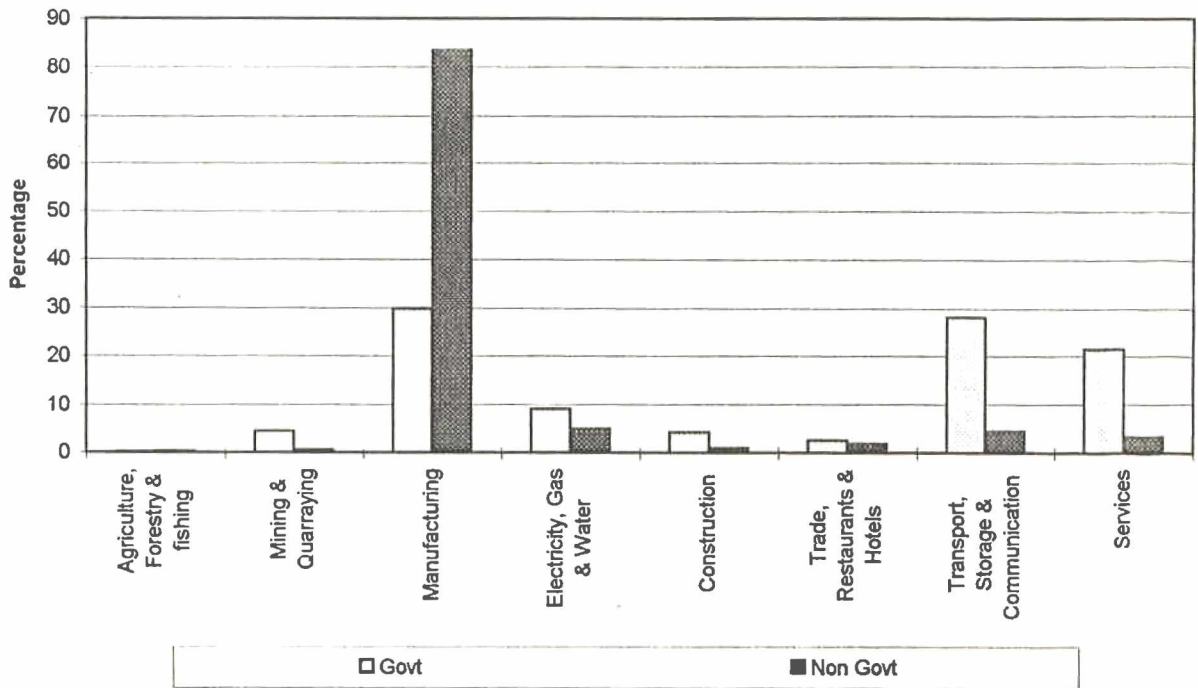
6.6 S&TP intensity in Government companies is some what higher (65.72 percent) than in non Government companies (62.75 percent). This is inspite of Government companies employing a large proportion of S&T Personnel in low S&T Intensity industries like Finance & Consultancy. The high S&T Intensity in Government sector is partly because Government companies are more active in S&T Intensive industries. Thus in industries like Mining, Machinery, Transport equipment, Food products, Textile, Paper, Cement, Construction and Consultancy, S&T Intensity in Government companies is much higher than in non Government companies. Only some of these are S&T Intensive. In major industries, comparison

TABLE 6.3

INDUSTRY WISE CHARACTERISTICS OF SCIENTIFIC
AND TECHNICAL PERSONNEL

Activity (1)	S&T Personnel			Average Remu. (Rs.000) (6)	Average Age (Years) (7)	Average Experience (Years) (8)	Mobility (Percent) (9)	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)					
1. Agriculture	43	0	43	0.17	172	46.4	20.5	301
2. Mining	412	20	432	1.69	201	48.2	21.7	157
3. Manufacturing								
Food Products	754	5	759	2.96	260	46.1	22.8	219
Alcoholic Bev.	465	15	480	1.87	225	44.8	21.9	166
Textiles	1199	4	1203	4.70	217	47.1	23.9	217
Wood	51	3	54	0.21	194	52.7	28.9	229
Paper	372	5	377	1.47	214	49.7	25.7	184
Leather	60	1	61	0.24	227	49.6	27.1	136
Chemical	4836	24	4860	18.98	217	47.5	23.9	152
Rubber, Plastic	386	1	387	1.57	235	47.6	24.4	239
Petroleum	374	6	380	1.48	172	47.0	22.8	133
Cement	505	1	506	1.98	221	46.2	22.6	160
Non Met Min	236	1	237	0.93	297	49.6	26.5	188
Metals	2536	37	2573	10.05	195	49.3	25.2	135
Machinery	1295	1	1296	5.06	209	47.5	24.5	176
Electrical	2041	12	2053	8.02	198	45.7	22.9	154
Machinery Transport equipments	1966	6	1972	7.70	203	48.1	25.2	150
Other Manu.	339	1	340	1.33	212	47.1	24.4	254
Total 3	17415	123	17538	68.49	212	47.5	24.1	160
4. Electricity, Gas & Water	1559	13	1572	6.14	173	46.6	23.5	142
5. Construction	472	8	480	1.87	231	49.4	25.2	200
6. Trade & Hotels	504	6	510	1.99	288	45.5	22.3	192
7. Transport, storage & communication								
Shipping	2296	0	2296	8.97	326	37.3	11.3	133
Other	546	4	550	2.15	268	41.7	18.2	364
Total 7	2842	4	2846	11.11	314	38.2	12.6	162
8. Services								
Financing & Business Services	2091	28	2119	8.28	207	47.3	23.8	158
Community, Social personal services	42	1	43	0.17	242	49.3	25.5	234
Total 8	2133	29	2162	8.44	208	47.3	23.9	159
9. Other	24	0	24	0.09	185	53.0	28.0	109
Total (1 - 9)	25404	203	25607	100.00	221	46.4	22.7	160

Industry wise and Sector wise Distribution of S&T Personnel



Industry wise and Sector wise Distribution of S&T Personnel in Manufacturing Industries

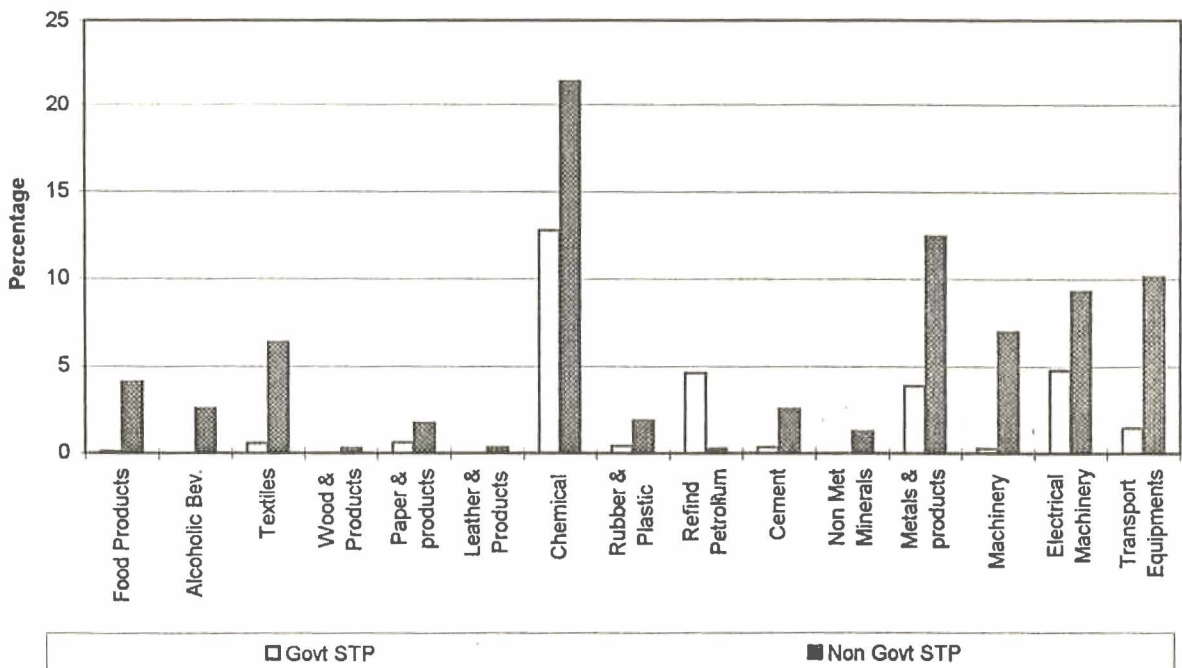


TABLE 6.4

INDUSTRY WISE AND AGE WISE DISTRIBUTION
OF S&T PERSONNEL

Activity (1)	Age (Years)						Total (8)
	Upto 20 (2)	21-30 (3)	31-40 (4)	41-50 (5)	51-60 (6)	Above 60 (7)	
	(Percent of STP)						
1. Agriculture	0.00	0.30	0.20	0.12	0.17	0.55	0.17
2. Mining	0.00	0.45	1.25	1.76	2.09	0.74	1.69
3. Manufacturing							
Food Products	0.00	2.41	3.75	2.86	2.57	6.07	2.96
Alcoholic Bev.	0.00	1.05	3.03	1.82	1.53	0.74	1.87
Textiles	0.00	4.81	4.91	4.01	4.97	12.50	4.70
Wood	0.00	0.00	0.11	0.11	0.39	0.92	0.21
Paper	6.67	0.08	0.69	1.54	1.86	3.86	1.47
Leather	0.00	0.15	1.14	1.87	1.42	2.02	1.51
Chemical	6.67	8.12	16.11	20.48	20.64	13.97	18.98
Rubber & Plastic	0.00	0.15	1.14	1.87	1.42	2.02	1.51
Petroleum	0.00	0.00	1.07	2.00	1.33	0.55	1.48
Cement	6.67	2.18	2.48	1.62	2.08	2.94	1.98
Non Met ^{Min}	0.00	0.23	0.54	0.94	1.12	2.76	0.93
Metals	0.00	1.28	6.31	10.02	13.41	12.32	10.05
Machinery	0.00	0.83	4.35	5.93	4.96	5.33	5.06
Electrical	6.67	4.66	11.31	7.69	7.40	4.96	8.02
Machinery							
Transport equip.	0.00	0.98	6.31	8.23	8.81	8.27	7.70
Others	0.00	0.30	1.49	1.39	1.19	3.31	1.33
Total 3	26.67	27.07	63.68	70.78	74.02	80.51	68.49
4. Electricity, Gas Water	0.00	3.31	7.10	6.01	6.54	1.84	6.14
5. Construction	0.00	0.60	1.16	1.67	2.61	3.86	1.87
6. Trade & Hotels	0.00	0.83	2.59	2.32	1.37	2.76	1.99
7. Transport, storage & communication							
Shipping	73.33	56.62	13.88	5.91	3.02	2.02	8.97
Other	0.00	7.59	3.46	1.49	1.43	2.21	2.15
Total 7	73.33	64.21	17.34	7.40	4.45	4.23	11.11
8. Services							
Financing & Bus- ness services	0.00	3.23	6.58	9.71	8.29	5.51	8.28
Community Social personal services	0.00	0.00	0.11	0.17	0.23	0.00	0.17
Total 8	0.00	3.23	6.69	9.88	8.52	5.51	8.45
9. Other	0.00	0.00	0.00	0.05	0.22	0.00	0.09
Total (1 - 9)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Proportion in Age groups	0.06	5.19	17.50	43.00	32.12	2.12	100.00

of intensities in Government and non Government companies respectively are: Electrical machinery (80.05 and 62.66), Non-Electrical machinery (79.17 and 69.03), Transport equipment (97.22 and 77.15), Electricity (91.21 and 56.81), Finance & Consultancy (58.40 and 43.50), Construction (84.99 and 73.47), Chemicals & products (55.82 and 63.31) and Shipping (66.31 and 79.48). It is possible that Government companies employ more of S&T Personnel, not always because of technical necessity, but because S&T Personnel have comparatively more brilliant academic record than non S&T Personnel due to competition among students to get admission in Technology/Engineering Institutions and Science Colleges.

Women Personnel

6.7 Main characteristics of S&T Personnel like Sex, Age, Experience and Remuneration, industry wise, are shown in Table 6.3. Details, separately for Government and non Government companies, are at Annexure 17. The largest number of women S&T Personnel are employed in manufacture of Metals, 37 personnel out of 203 women employed in all the industries (18.23 percent). Most of them are working as Medical Personnel in hospitals set up by steel plants for their employees. Next largest employment of women (28 persons) is in Consultancy services, which provide office jobs. This is followed by Chemicals & products industry (24), and Mining industry (20), mainly as Medical officers. Other main industries which employ women S&T personnel are Alcoholic beverage (15), Electricity (13), Electrical & Electronic equipment (12), Construction (8), mainly in design centres, Hotels (6) and Petroleum (6).

6.8 Government companies employ 66 women S&T Personnel, or 32.51 percent of women S&T Personnel in both the sectors. 20 of them are in Mining industry, as Medical officers. Another 9 women are in Consultancy services, 7 in Construction and 6 each in Metals and Petroleum industries. Of 137 women S&T Personnel in non Government sector, 31 are in Metal industry (as Medical officers), 20 in Pharmaceuticals, 19 in Consultancy services, 15 in Alcoholic beverages and 9 in Electronics.

Average Age and Experience

6.9 While average age is 46.4 years, it varies in a narrow range of 46-48 years for most of the major employing industries except Transport where average age is only 38.2 years, mainly due to young persons appointed by Shipping industry to serve on international shipping routes. If this industry is excluded, average age for all other industries goes up from 46.4 years to 47.5 years. Some small employer industries have relatively higher (than 48 years) average age and these include wood products (52.7 years), Paper products (49.7 years), Leather products (49.6 years) and non metallic minerals (49.6 years). Average age in Metal industry is also relatively high (49.3 years). Industries which have relatively lower (than 46 years) average age are Alcoholic beverages (44.8 years), Electric & Electronic machinery

TABLE 6.5

INDUSTRY WISE FIELDS OF SPECIALISATION OF SCIENTIFIC
AND TECHNICAL PERSONNEL

Activity (1)	Technology			Sciences		Grand Total (7)
	Mech. (2)	Elec. (3)	Total (4)	Natural (5)	Total (6)	
						(Percent of STP)
1. Agriculture	20.93	9.30	41.86	34.88	58.14	100.00
2. Mining	18.29	5.32	52.55	11.81	47.45	100.00
3. Manufacturing						
Food Products	15.94	6.94	52.96	37.29	47.04	100.00
Alcoholic Bev.	18.33	6.25	48.33	36.67	51.67	100.00
Textiles	15.30	12.05	73.65	24.94	26.35	100.00
Wood	38.89	25.93	94.44	5.56	5.56	100.00
Paper	44.03	12.73	81.43	17.24	18.57	100.00
Leather	9.84	6.56	42.62	57.38	57.38	100.00
Chemical	16.60	8.05	55.99	37.63	44.01	100.00
Rubber & Plastic	20.16	11.37	63.57	34.63	36.43	100.00
Petroleum	34.47	8.16	76.84	13.42	23.16	100.00
Cement,	27.67	14.82	69.57	28.06	30.43	100.00
Non Met. Minerals	28.27	13.92	76.79	22.36	23.21	100.00
Metals	27.05	13.18	75.59	15.97	24.41	100.00
Machinery	41.28	10.49	81.56	16.98	18.44	100.00
Electrical	16.61	36.24	82.56	17.05	17.44	100.00
Machinery						
Transport equip.	43.41	10.50	83.11	14.50	16.89	100.00
Others	27.94	11.47	71.18	28.24	28.82	100.00
Total 3	24.70	13.30	69.99	25.28	30.01	100.00
4. Electricity, Gas & Water	23.79	44.72	89.82	8.72	10.18	100.00
5. Construction	14.79	7.71	77.92	19.58	22.08	100.00
6. Trade & Hotels	21.76	9.61	62.16	34.71	37.84	100.00
7. Transport, storage & communication						
Shipping	2.92	2.40	98.82	1.18	1.18	100.00
Other	6.18	8.55	88.55	10.91	11.45	100.00
Total 7	3.55	3.58	96.84	3.06	3.16	100.00
8. Services						
Financing & Business services	30.49	11.04	78.81	20.20	21.19	100.00
Community, Social personal services	9.30	6.98	44.19	46.51	55.81	100.00
Total 8	30.06	10.96	78.12	20.72	21.88	100.00
9. Other	12.50	16.67	87.50	12.50	12.50	100.00
Total (1 - 9)	22.38	13.64	74.54	21.27	25.46	100.00

Details at Annexure-19

& apparatus (45.7 years) and Trade & Hotels (45.5 years). Data are at Table 6.3.

6.10 Age wise distribution of S&T Personnel in different industries is characterized by the fact that most of the younger personnel in high salary groups are employed by Shipping industry. Thus, in the age groups upto 30 years, 64.3 percent of the personnel are engaged in Transport industry (including 56.7 percent in Shipping) and only 27.0 percent in Manufacturing, 3.2 percent in Finance and Consultancy, 3.3 percent in Electricity and 2.2 percent in other activities. Proportion of personnel in Transport industry goes down gradually as age increases, to 4.23 percent for age above 60 year. Proportion of personnel in Manufacturing industries goes up correspondingly along with the age from 27.0 percent for age upto 30 years to 63.7 percent in the next age group (31-40 years) and to 80.51 percent for age above 60 years. The trend of increasing proportion of S&T Personnel in higher age groups upto 60 years to compensate for reducing proportion in Transport industry, is seen in all the industries. Data are given in Table 6.4.

6.11 Average experience is 22.7 years and follows the same pattern as average age. Average experience for most of the major employing industries ranges between 22-25 years. It is quite low (11.3 years) for Shipping due to low age personnel appointed by this industry. If this industry is excluded, average experience of all other industries goes up from 22.7 years to 23.5 years. Average experience is relatively high (above 26 years) in Wood product, Leather products and non metallic mineral industries. It is low (below 22 years) for Alcoholic Beverages and Road Transport industries.

Mobility

6.12 Average index of mobility is 1.60. The index is around this level for Manufacturing, Mining and Finance & Business services. However, for certain industries, the index is quite high, suggesting that S&T Personnel change jobs in these activities more frequently. These include Road transport (3.64), Agriculture & Forestry (3.01), Community & Social services (2.34) Construction (2.00) and Trade & Hotels (1.92). In certain industries like Electricity (1.42) and Shipping (1.33) the index is lower than average.

6.13 Within Manufacturing (1.60), the index of mobility is within the range of (+) 10 percent /(-) 10 percent for most of the main industries like Machinery, electrical and non electrical, Transport equipment, Chemicals & products, Cement and Alcoholic beverages. However, there are some industries where mobility lower or higher by more than 10 percent from the average. Mobility is quite high for Plastic (2.39), Wood products (2.29), Food Products (2.19), Textiles (2.17), Non metallic minerals (1.88) and Paper (1.84) industries. These industries employ 11.78 percent of S&T Personnel in all the industries. Industries where mobility is low include Metals

TABLE 6.6

INDUSTRY WISE LEVELS OF QUALIFICATIONS
OF S&T PERSONNEL

Activity (1)	Doctorate (2)	Post Graduate (3)	Graduate (4)	Others (5)	Total (6)
(Percent of STP)					
1. Agriculture	4.65	6.98	58.14	30.23	100.00
2. Mining	0.93	18.29	74.31	6.48	100.00
3. Manufacturing					
Food Products	1.58	20.16	72.60	5.67	100.00
Alcoholic Bev.	3.33	22.71	61.88	12.08	100.00
Textiles	1.91	14.46	63.84	19.78	100.00
Wood	0.00	3.70	96.30	0.00	100.00
Paper	1.33	11.94	67.64	19.10	100.00
Leather	0.00	13.11	77.05	9.84	100.00
Chemical	5.86	15.74	69.26	9.14	100.00
Rubber & Plastic	3.10	15.76	75.71	5.43	100.00
Petroleum	2.63	13.16	79.21	5.00	100.00
Cement, Lime & Plaster	2.57	13.04	62.25	22.13	100.00
Non Metallic Minerals	7.59	18.14	66.24	8.02	100.00
Metals & Products	1.63	12.51	74.23	11.62	100.00
Machinery & equipments other than electrical	1.62	11.34	73.07	13.97	100.00
Electrical & Electronic Machinery & apparatus	2.19	13.35	66.88	17.58	100.00
Transport equipments	1.01	12.73	72.01	14.25	100.00
Other Manufacturing	2.65	16.47	72.65	8.24	100.00
Total 3	3.03	14.40	70.13	12.44	100.00
4. Electricity, Gas & Water	0.89	13.74	63.04	22.33	100.00
5. Construction	1.67	17.29	69.79	11.25	100.00
6. Trade, restaurants & Hotels	2.55	15.69	71.96	9.80	100.00
7. Transport, storage & communication					
Shipping	0.30	21.30	25.87	52.53	100.00
Other	0.18	27.09	40.00	32.73	100.00
Total 7	0.28	22.42	28.60	48.70	100.00
8. Services					
Financing & Business services	2.64	17.79	73.05	6.51	100.00
Community, Social personal services	6.98	27.91	62.79	2.33	100.00
Total 8	2.73	17.99	72.85	6.43	100.00
9. Other	0.00	29.17	37.50	33.33	100.00
Total (1 - 9)	2.50	15.70	65.36	16.44	100.00

Details at Annexure 18

(1.35), Petroleums (1.33) and Leather products (1.36). These industries also employ 11.77 percent of the S&T Personnel. Data are at Table 3.3.

Fields of Specialization

6.14 With an average of 74.54 percent of Technical Personnel in all the companies, their proportion in Manufacturing industries is lower at 69.99 percent. It is also lower in Agriculture (41.86 percent), Mining (52.55 percent) and Community & Social services (44.19 percent). These industries generally engage personnel specialized in respective fields of Sciences. Proportion of Technical Personnel is higher in Shipping (98.82 percent) Electricity (89.82 percent), Road transport (88.55 percent), Finance & Consultancy (78.81 percent) and Construction (77.92 percent). Within Technical Personnel, there are comparatively more of Mechanical Engineers in Manufacturing and Consultancy services, more of Electrical engineers in electrical/electronic industries, more of Mining Engineers in Mining, more of Civil Engineers in Construction and more of Shipping technology personnel in Shipping industry. Within Manufacturing industries, there are relatively more of Mechanical Engineers in Transport equipment, Machinery, Paper and Wood products industries. Data are given Table 6.5. Detailed data separately for Government and non Government companies are given in Annexure 19.

Levels of Qualifications

6.15 Proportions of Doctorates (2.50 percent) and Post Graduates (15.70 percent), classified as high qualification level personnel, add upto 18.20 percent of S&T Personnel in all the industries. They are generally distributed proportionately, with minor deviations, among all the industries except that there are relatively more of Post Graduates in Transport industry (22.42 percent). Junior qualification level personnel constitute 16.44 percent of all the S&T Personnel. Their proportion in different industries, however, vary widely. Shipping activity has the maximum proportion of Junior qualification personnel (52.53 percent) followed by Road Transport (32.73 percent), Agriculture & Forestry (30.23 percent) and Electricity (22.33 percent). Presence of these personnel is quite small in Mining (6.48 percent), Finance & Consultancy (6.51 percent), Trade & Hotels (9.80 percent) and Construction (11.25 percent). 12.44 percent of personnel in Manufacturing industries are with Junior qualification levels. Proportion of Graduates is between 60-70 percent in most of the industries, exceptions being Agriculture & Forestry (58.14 percent) and Transport (28.60 percent). Data are given in Table 6.6. Detailed data, separately for Government and non Government companies are at Annexure 18.

6.16 Doctorates (3.03 percent) and Post Graduates (14.40 percent) account for 17.43 percent of S&T Personnel in Manufacturing industries. Proportion of High qualification personnel is generally 15-20 percent in most of the industries, with the exception of Chemicals & Products (21.60 percent), Non metallic

TABLE 6.7

INDUSTRY WISE LEVELS OF RESPONSIBILITY
OF S&T PERSONNEL

Activity (1)	Top Mangt. (2)	Middle Managt (3)	Jr Managt (4)	Non Managerial (5)	Total (6)
				(Percent of STP)	
1. Agriculture	16.28	9.30	11.63	62.79	100.00
2. Mining	10.19	25.23	13.19	51.39	100.00
3. Manufacturing					
Food Products	8.43	23.58	44.27	23.72	100.00
Alcoholic Bev.	1.46	21.67	53.12	23.75	100.00
Textiles	9.89	31.09	31.34	27.68	100.00
Wood	16.67	55.56	25.93	1.85	100.00
Paper	12.73	28.91	51.72	6.63	100.00
Leather	4.92	32.79	57.38	4.92	100.00
Chemical	6.98	20.99	47.12	24.92	100.00
Rubber & Plastic	13.18	38.50	38.24	10.08	100.00
Petroleum	5.00	18.16	31.58	45.26	100.00
Cement	8.70	33.40	27.08	30.83	100.00
Non Metallic Min	13.92	37.97	33.76	14.35	100.00
Metal	6.41	21.26	53.75	18.58	100.00
Machinery	8.64	31.71	46.68	12.96	100.00
Electrical	6.92	22.89	49.39	20.80	100.00
Machinery					
Transport	4.67	31.59	55.58	8.16	100.00
Others	14.12	42.65	34.71	8.53	100.00
Total 3	7.38	25.71	46.77	20.13	100.00
4. Electricity, Gas & Water	2.54	15.46	36.32	45.67	100.00
5. Construction	13.96	30.83	20.21	35.00	100.00
6. Trade & Hotels	10.00	41.76	35.10	13.14	100.00
7. Transport, storage & Communication					
Shipping	1.09	6.79	7.84	84.28	100.00
Other	3.82	8.18	8.73	79.27	100.00
Total 7	1.62	7.06	8.01	83.31	100.00
8. Services					
Financing & Business Service	5.99	29.31	44.55	20.15	100.00
Community, Social Personal services	23.26	32.56	20.93	23.26	100.00
Total 8	6.34	29.37	44.08	20.21	100.00
9. Other	0.00	66.67	8.33	25.00	100.00
Total 1-9	6.59	23.74	40.20	29.47	100.00

minerals (25.73 percent) and Alcoholic beverages (26.04 percent) having more of such personnel and Non electrical machinery (12.96 percent), Metals (14.14 percent) and Paper (13.27 percent) having less of such personnel. Junior qualification levels account for 12.44 percent of S&T Personnel in Manufacturing industries. However, proportions vary significantly from industry to industry, from 5.00 percent (Petroleum) to 22.13 percent (Cement). Proportion of Graduates vary from 61.88 percent (Alcoholic beverages) to 79.21 percent (Petroleum) with an average of 70.13 percent for all the Manufacturing industries.

Levels of Responsibility

6.17 Nearly 30 percent of S&T Personnel are working on Specialized and Technical positions like Engineers, Scientists, Doctors, Computer personnel etc. and 70 percent on Managerial positions. Specialized positions account for 20.13 percent in Manufacturing industries and over 51 percent in non manufacturing industries on an average. They dominate in certain industries like Transport (83.31 percent), Agriculture (62.79 percent), Mining (51.39 percent), Electricity (45.67 percent) and Refined Petroleum (45.26 percent). On the other hand Management levels dominate in Trade & Hotels (86.86 percent), Finance & Consultancy (79.85 percent) and, within Manufacturing, Wood products (98.15 percent), Leather products (95.08 percent), Paper (93.37 percent), Transport equipment (91.84 percent) and Plastics (89.92 percent). There seems to be no linkage between employment of Specialized personnel and technology intensive nature of an industry.

6.18 There are comparatively more of Top Managerial personnel in certain industries like Paper, Wood products, Plastics, Construction and Trade & Hotels. These are all minor employers of S&T Personnel. Junior management levels dominate in Leather (57.38 percent), Paper (51.72 percent), Alcoholic beverage (53.12 percent), Metals & products (53.75 percent), Chemicals & Products (47.12 percent), Transport equipment (55.58 percent), Electricals & Electronics (49.39 percent) and Finance & Consultancy (44.55 percent). Data are given in Table 6.7. Employment of S&T Personnel in different levels of responsibilities depends on various factors, including nature of the product (consumer, basic or intermediate), ownership pattern of the company and needs of technology inputs. No direct relationship can be established between level of responsibilities and industry, except that Specialized & Technical positions dominate in some technology intensive industries.

PRIMARY Work Activity

6.19 Plant level activities account for 30.36 percent of the S&T Personnel. Plant level is more important for Manufacturing industries (35.97 percent) and also for Electricity (44.85 percent) and Construction (41.67 percent). Low Plant level activity is only in respect of Agriculture, Trade & Hotels and Finance & Consultancy, besides Shipping. Only Engineers on ships have been

TABLE 6.8

**INDUSTRY WISE AND PRIMARY WORK ACTIVITY WISE
DISTRIBUTION OF S&T PERSONNEL**

Activity	Senior Mangt	Plant Level	Mark- eting eting	Admn	Others	Not Specified	Total
(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)
(Percent of STP)							
1. Agriculture	16.28	11.63	6.98	2.33	55.81	6.98	100.00
2. Mining	9.03	30.32	8.10	3.70	42.36	6.48	100.00
3. Manufacturing							
Food Products	6.59	33.60	20.16	7.51	25.03	7.11	100.00
Alcoholic Bev.	1.67	27.08	24.79	7.71	28.54	10.21	100.00
Textiles	7.65	38.82	13.72	4.90	25.10	9.81	100.00
Wood	9.26	37.04	27.78	16.67	9.26	0.00	100.00
Paper	9.28	52.25	16.18	7.16	12.20	2.92	100.00
Leather	4.92	27.87	31.15	9.84	19.67	6.56	100.00
Chemical	4.98	38.48	20.74	4.44	23.19	8.17	100.00
Rubber,Plastic	10.59	30.75	32.04	7.49	15.50	3.62	100.00
Petroleum	3.68	43.95	9.74	5.53	32.37	4.74	100.00
Cement	5.73	50.00	9.29	5.93	20.55	8.50	100.00
Non Met Min	10.55	42.19	17.30	4.22	22.36	3.38	100.00
Metal	5.21	35.33	8.90	3.38	15.74	31.44	100.00
Machinery	6.33	34.72	24.23	4.48	19.29	10.96	100.00
Electrical	5.89	29.66	27.08	4.72	27.91	4.72	100.00
Machinery							
Transport equipments	3.30	31.49	20.54	9.23	24.19	11.26	100.00
Others	12.65	36.76	22.94	6.47	14.12	7.06	100.00
Total 3	5.64	35.97	19.22	5.40	22.31	11.46	100.00
4. Electricity, Gas & Water	1.02	44.85	5.34	20.55	20.10	8.14	100.00
5. Construction	10.00	41.67	10.00	5.83	23.75	8.75	100.00
6. Trade & Hotels	8.43	24.51	26.08	8.04	25.10	7.84	100.00
7. Transport,storage & Communication							
Shipping	0.78	2.74	1.39	1.22	92.42	1.44	100.00
Other	4.00	18.91	5.45	1.27	64.55	5.82	100.00
Total 7	1.41	5.87	2.18	1.23	87.03	2.28	100.00
8. Services							
Financing, Business Service	4.58	5.85	10.15	4.58	24.68	50.17	100.00
Community, Social Personal services	11.63	11.63	6.98	2.33	51.16	16.28	100.00
Total 8	4.72	5.97	10.08	4.53	25.21	49.49	100.00
9. Other	0.00	16.67	37.50	0.00	37.50	8.33	100.00
Total 1-9	5.01	30.36	15.48	5.81	30.10	13.23	100.00

taken to be working at plant level. But in fact all employees on a ship, electricians, mechanics, radio officers, navigators etc., (other than Managerial, Marketing and Administration personnel), may be deemed to be working at plant level. With this definition 95.16 percent of S&T Personnel in shipping industry are working at plant level.

6.20 Marketing is the next important activity employing 15.48 percent of S&T personnel. This activity is more important in Manufacturing (19.22 percent) and Trade & Hotels (26.08 percent) and of low importance in other activities like Mining, Construction, Electricity, Transport and Services. Within Manufacturing, Marketing is of considerable importance in consumer goods industries like Food products, Alcoholic beverages, Wood product, leather products and Plastics. Marketing is also an important element in Machinery (24-27 percent). Senior Management and Administration account for 10.82 percent of S&T personnel. These activities vary from industry to industry, without showing any pattern.

6.21 Miscellaneous activities account for a large proportion (30.10 percent) of S&T personnel. proportions in these activities vary from 20.10 percent in Electricity to 42.36 percent in Mining and 87.03 percent in Transport. No linkages can be established. Even within Manufacturing, proportion of personnel in this activity varies from 9.26 percent (Wood products) to 32.37 percent (Petroleum). Data are given in Table 6.8.

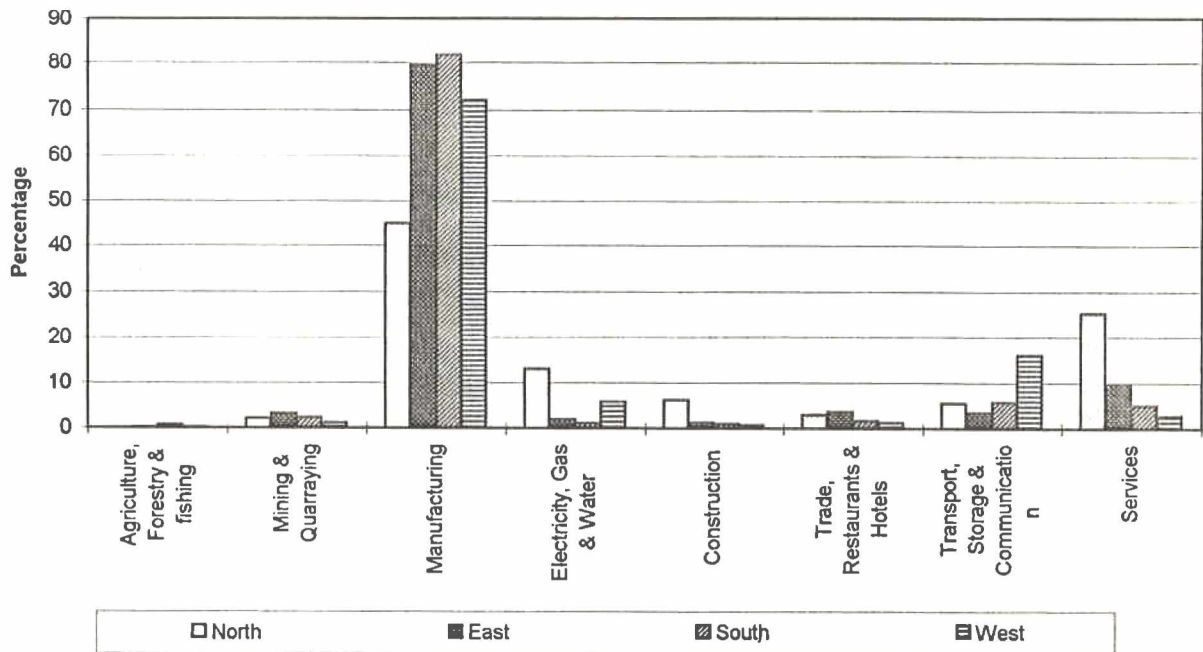
Remuneration

6.22 Average remuneration varies from industry to industry, from Rs. 1.72 lakhs per annum in Petroleum industry to Rs. 3.26 lakhs in Shipping, the average for Manufacturing being Rs. 2.12 lakhs. Generally, remunerations are lower in industries dominated by Government (except Shipping) and higher in those dominated by Multinationals. Distribution of S&T Personnel among industries shows that more than half of the personnel (53.06 percent) receive Low remunerations (Rs.12000-15000 pm), another one third (33.99 percent) Medium remunerations (Rs.15000-25000 pm) and 12.95 percent receive High remunerations. While 68.49 percent of the S&T Personnel are in manufacturing industries, their proportions in Low and Medium remuneration ranges are higher (70.32 percent and 72.20 percent), but lower (51.27 percent) in High remuneration range. This is due to large number of high remuneration personnel in Shipping industry. If this industry is excluded from the analysis, proportions of S&T Personnel in Manufacturing vary from 72.39 percent for Low remuneration range to 74.07 percent in High range and 80.38 percent in Medium range. Data given in Table 6.9 show that personnel in Low remuneration range are comparatively more in industries in which Government companies are more active, namely Mining, Finance & Consultancy, Electricity and Agriculture. Among Manufacturing industries, proportion of S&T Personnel with Low remunerations is relatively high in Electrical & electronic equipment, Transport equipment, Petroleum, Chemicals & products and Textiles. On the other hand

TABLE 6.9
INDUSTRY WISE AND REMUNERATION WISE
DISTRIBUTION OF S&T PERSONNEL

Activity (1)	Range of Remuneration (Rs.000)			Total (5)
	Upto 180 (2)	181 - 300 (3)	Above 300 (4)	
				(Percent)
1. Agriculture	0.26	0.08	0.03	0.17
2. Mining	2.16	1.08	1.36	1.69
3. Manufacturing				
Food Products	2.22	3.60	4.37	2.96
Alcoholic Bev.	1.67	2.30	1.60	1.87
Textiles	4.92	4.55	4.16	4.70
Wood	0.26	0.16	0.12	0.21
Paper	1.43	1.68	1.12	1.47
Leather	0.29	0.21	0.12	0.24
Chemical	19.47	18.85	17.28	18.98
Rubber & Plastic	1.22	1.82	1.90	1.51
Petroleum	2.33	0.68	0.15	1.48
Cement	1.75	2.34	1.93	1.98
Non Met. Min	0.79	0.79	1.81	0.93
Metals	10.04	12.51	3.62	10.05
Machinery	4.89	5.94	3.47	5.06
Electrical	9.21	7.66	4.04	8.02
Machinery				
Transport equipments	8.44	7.81	4.37	7.70
Others	1.38	1.30	1.21	1.33
Total 3	70.32	72.20	51.27	68.49
4. Electricity, Gas & Water	9.02	3.64	0.90	6.14
5. Construction	1.80	1.56	2.99	1.87
6. Trade, & Hotels	2.07	1.93	1.84	1.99
7. Transport, storage & communication				
Shipping	2.86	10.18	30.79	8.97
Other	1.57	2.25	4.25	2.15
Total 7	4.43	12.43	35.04	11.11
8. Services				
Financing & Business services	9.64	6.88	6.33	8.28
Community, Social personal services	0.19	0.10	0.24	0.17
Total 8	9.83	6.99	6.57	8.44
9. Other	0.12	0.09	0.00	0.09
Total (1 - 9)	100.00	100.00	100.00	100.00
Proportion in different ranges	53.06	33.99	12.95	100.00

Industry wise Distribution of S&T Personnel in each Region



Industry wise Distribution of S&T Personnel in Manufacturing Industries in each Region

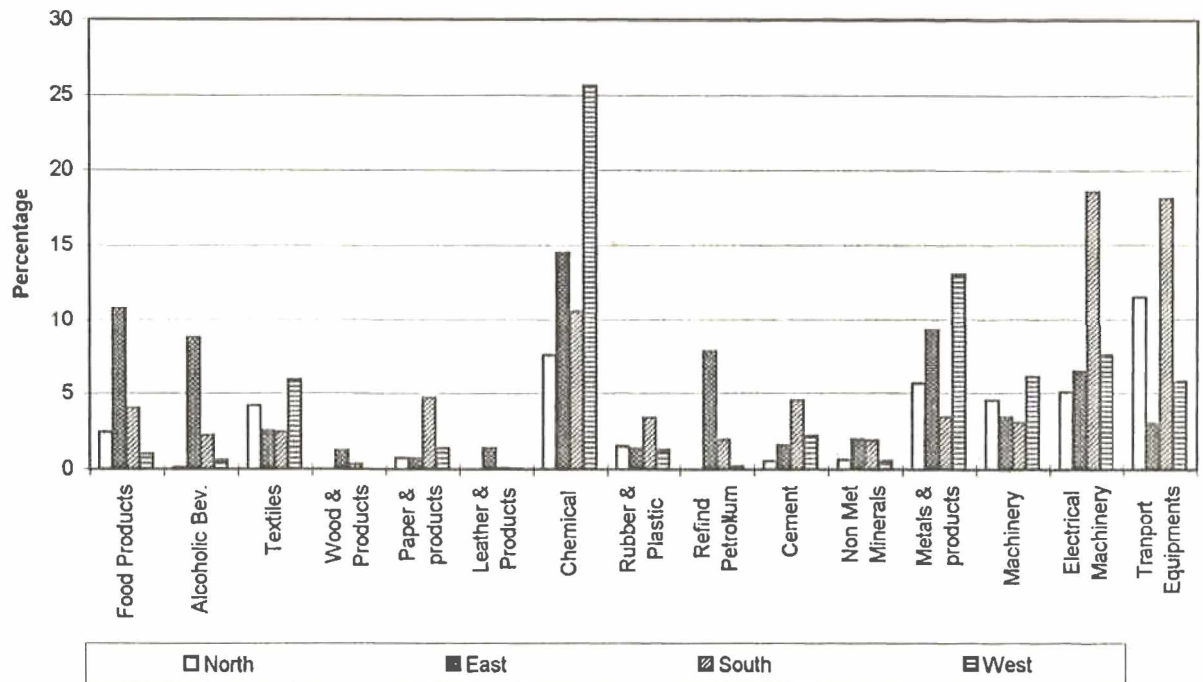


TABLE 6.10
INDUSTRY WISE AND INVESTMENT WISE
DISTRIBUTION OF S&T PERSONNEL

Activity (1)	Paid Up Capital (Rs. Crore)					Total (7)
	Upto 1 (2)	2- 5 (3)	6-50 (4)	51-100 (5)	Above 100 (6)	
						(Percent of STP)
1. Agriculture	0.63	0.76	0.10	0.00	0.00	0.17
2. Mining	0.88	0.38	0.98	1.00	4.33	1.69
3. Manufacturing						
Food Products	1.07	3.37	2.85	14.23	0.20	2.96
Alcoholic Bev.	0.00	0.49	1.01	0.00	5.72	1.87
Textiles	5.43	4.21	7.22	3.18	0.18	4.70
Wood	2.71	0.27	0.00	0.00	0.00	0.21
Paper	10.91	1.06	0.86	1.90	0.28	1.47
Leather	0.00	0.08	0.46	0.00	0.00	0.24
Chemical	13.12	11.26	16.68	39.34	23.76	18.98
Rubber & Plastic	0.95	3.24	2.12	0.00	0.07	1.51
Refined Petroleum	0.82	0.19	2.36	1.17	0.93	1.48
Cement	0.50	0.14	1.76	14.23	0.33	1.98
Non Met Min	1.20	2.72	1.03	0.17	0.00	0.93
Metals	3.09	4.16	16.41	1.23	4.70	10.05
Machinery	1.83	5.98	7.64	4.58	0.00	5.06
Electrical	2.84	10.25	12.60	4.24	0.61	8.02
Machinery						
Transport equipments	0.57	3.21	6.80	6.42	14.30	7.70
Others	4.48	2.58	1.37	0.17	0.00	1.33
Total 3	49.53	53.21	81.16	90.85	51.08	68.49
4. Electricity	21.58	0.00	5.52	0.00	9.15	6.14
Gas & Water						
5. Construction	9.78	2.45	2.17	0.00	0.10	1.87
6. Trade & Hotels	3.66	1.09	2.67	3.07	0.53	1.99
7. Transport, storage & communication						
Shipping	0.82	0.76	3.06	0.06	29.20	8.97
Other	2.90	6.09	2.05	0.33	0.45	2.15
Total 7	3.72	6.85	5.11	0.39	29.65	11.11
8. Services						
Financing & Business services	10.16	34.18	2.02	4.69	4.77	8.28
Community, Social	0.06	1.09	0.16	0.00	0.00	0.17
Total 8	10.00	35.26	2.18	4.69	4.77	8.44
9. Other	0.00	0.00	0.12	0.00	0.40	0.09
Total (1 - 9)	100.00	100.00	100.00	100.00	100.00	100.00
(Proportion in different Investment ranges)						
	6.19	14.36	48.85	7.00	23.60	100.00

S&T Personnel with high remunerations are proportionately more in Construction, Trade & Hotels and, among Manufacturing industries, in Food Products, Alcoholic beverages, Pharmaceuticals, Plastics, Cement and non metallic minerals.

Investment wise Distribution

6.23 Companies with comparatively smaller investments upto Rs.5 crores, which account for 20.55 percent of S&T Personnel, employ relatively less of personnel in Manufacturing industries (50-53 percent) and more in Electricity (6.50 percent) and Finance & Consultancy (26.94 percent). Companies with investments between Rs.6-100 crores, which employ 55.85 percent of S&T Personnel, and include most of the Large Houses and Multinationals, employ most of the personnel in Manufacturing industries (80-90 percent) and less in all other activities. Companies with investments above Rs.100 crores, are generally in Central Government sub sector and include Shipping Corporation of India. These companies employ nearly one fourth of the S&T Personnel, half of them (51.08 percent) being in Manufacturing industries, 29.20 percent in Shipping, 9.15 percent in Electricity, 4.33 percent in Mining and 4.77 percent in Finance & Consultancy, all the activities being of infrastructure character. Data are given in Table 6.10.

Regional Distribution

6.24 Industry wise dispersal of S&T Personnel in different regions is basically determined by sector wise distribution of the personnel among different industries and dominance of different sectors in different regions. As Government companies dominate Northern region and are oriented toward infrastructure industries, employment of S&T Personnel in Northern region is the lowest (among regions) in manufacturing industries (44.89 percent), but the highest in Electricity (13.05 percent), Construction (6.17 percent) and Finance & Consultancy services (25.12 percent). Western region is dominated by Large Houses as well as by few big Central Government companies, specially Shipping corporation of India. Thus, important industries in which S&T Personnel are employed in this region are Chemicals & Products (25.63 percent), Shipping (15.05 percent), Machinery (13.65 percent), Metals & products (12.98 percent) (TISCO is registered in this region, though manufacturing units are out side the region), Electricity (5.78 percent) and Transport equipment (5.79 percent). In Eastern region, dominated by Multinationals engaged in consumer goods, main industries in which S&T Personnel are working are Chemicals & Product, including Pharmaceuticals (14.46 percent), Food products (10.60 percent), Alcoholic beverages (8.78 percent), Petroleum (7.82 percent, Metals & product (9.25 percent) and Finance & Consultancy services (9.77 percent). Dominant employers of S&T Personnel in Southern region are Electricals & Electronics (18.60 percent), Transport equipment (18.12 percent), Chemicals & Products (10.59 percent), Shipping (4.55 percent) (South India Shipping Corporation is registered here) and Finance & Consultancy (4.75 percent). Table 6.11 gives data.

TABLE 6.11

INDUSTRY WISE AND REGION WISE DISTRIBUTION
OF S&T PERSONNEL

Activity (1)	North (2)	East (3)	South (4)	West (5)	Total (6)
					(Percent of STP)
1. Agriculture	0.04	0.18	0.63	0.13	0.17
2. Mining	2.03	3.18	2.28	1.06	1.69
3. Manufacturing					
Food Products	2.35	10.74	4.00	0.90	2.96
Alcoholic Bev.	0.14	8.78	2.16	0.57	1.87
Textiles	4.16	2.48	2.39	5.89	4.70
Wood	0.00	1.17	0.35	0.00	0.21
Paper	0.71	0.73	4.71	1.36	1.47
Leather	0.02	1.33	0.08	0.05	0.24
Chemical	7.55	14.46	10.59	25.63	18.98
Rubber & Plastic	1.46	1.33	3.30	1.26	1.51
Petroleum	0.00	7.82	1.88	0.22	1.48
Cement	0.55	1.54	4.51	2.13	1.98
Non Met Min	0.63	1.93	1.84	0.59	0.93
Metals	5.62	9.25	3.37	12.98	10.05
Machinery	4.50	3.34	3.02	6.08	5.06
Electrical	5.05	6.46	18.60	7.57	8.02
Machinery					
Transport equipments	11.51	3.00	18.12	5.79	7.70
Others	0.63	2.11	2.90	1.08	1.33
Total 3	44.89	79.47	81.84	72.11	68.49
4. Electricity, Gas & Water	13.05	1.98	1.06	5.78	6.14
5. Construction	6.17	1.22	0.94	0.73	1.87
6. Trade, Hotels	2.92	3.65	1.61	1.29	1.99
7. Transport, storage & communication					
Shipping	0.57	0.03	4.55	15.05	8.97
Other	4.95	3.49	1.14	1.00	2.15
Total 7	5.52	3.52	5.69	16.05	11.11
8. Services					
Financing & Business services	25.12	9.77	4.75	2.69	8.28
Community, Social personal services	0.26	0.03	0.27	0.15	0.17
Total 8	25.39	9.80	5.02	2.85	8.45
9. Other	0.00	0.00	0.94	0.00	0.09
Total (1 - 9)	100.00	100.00	100.00	100.00	100.00

CHAPTER 7

REMUNERATION OF SCIENTIFIC AND TECHNICAL PERSONNEL

7.1 Average remuneration drawn by S&T Personnel is Rs.2.21 lakhs annum (Rs. 18,417 per month). Average remuneration drawn by non S&T Personnel is almost of the same level (Rs.2.19 lakhs). There is also no variation in average remunerations drawn by S&T Personnel in Government companies (Rs. 2.20 lakhs) and in non Government companies (Rs.2.21 lakhs). There are, however, significant variations in average remunerations for different groups of S&T Personnel depending on sex, sector, location, activity, qualifications and other characteristics of the personnel.

7.2 Data on sex and sector variations in remunerations are at Table 7.1.

Important Conclusions are:-

- (i) Women personnel receive lower remuneration (Rs.1.87 Lakhs) than male personnel (Rs.2.21 lakhs) by 15.38 percent. Lower remunerations for women are both in Government sector (20.45 percent) as well as in non Government sector (12.67 percent).
- (ii) There are wide variations in remunerations between different sub sectors, ranging from Rs. 1.77 lakhs per annum in State Government companies to Rs. 2.40 lakhs in non LH/MN companies, a margin of 35.59 percent.
- (iii) Differences in remunerations depend neither on size of the companies (State government and non LH/MN companies pay widely different remunerations) nor on ownership pattern (central & state Government companies on the one hand and Large house & Multinational companies on the other pay varying remunerations).

7.3 Normally Government companies pay lower remunerations. The parity in remunerations brought out in the above data is essentially due to average remuneration of Rs.3.26 lakhs per annum (Rs.27,167 per month) paid by Shipping Corporation of India to their 1873 S&T Personnel due to special nature of their duties. If this company is excluded from the analyses, remuneration received by S&T Personnel by all other Central Government companies works out to Rs.1.78 lakhs, which is identical to the average for State Government companies. Non Government companies pay higher remunerations ranging between Rs.2.10 lakhs by Large Houses to Rs.2.40 Lakhs by non LH/MN companies.

7.4 Highest average remuneration of Rs.2.40 lakhs has been paid by non Government companies other than Large Houses/Multinationals. These are generally small companies, having low paid up capital and employing only 1.4 s&T Personnel on average. Normally such companies pay low remunerations. However, these

TABLE 7.1

SECTOR WISE AVERAGE REMUNERATION OF S&T PERSONNEL

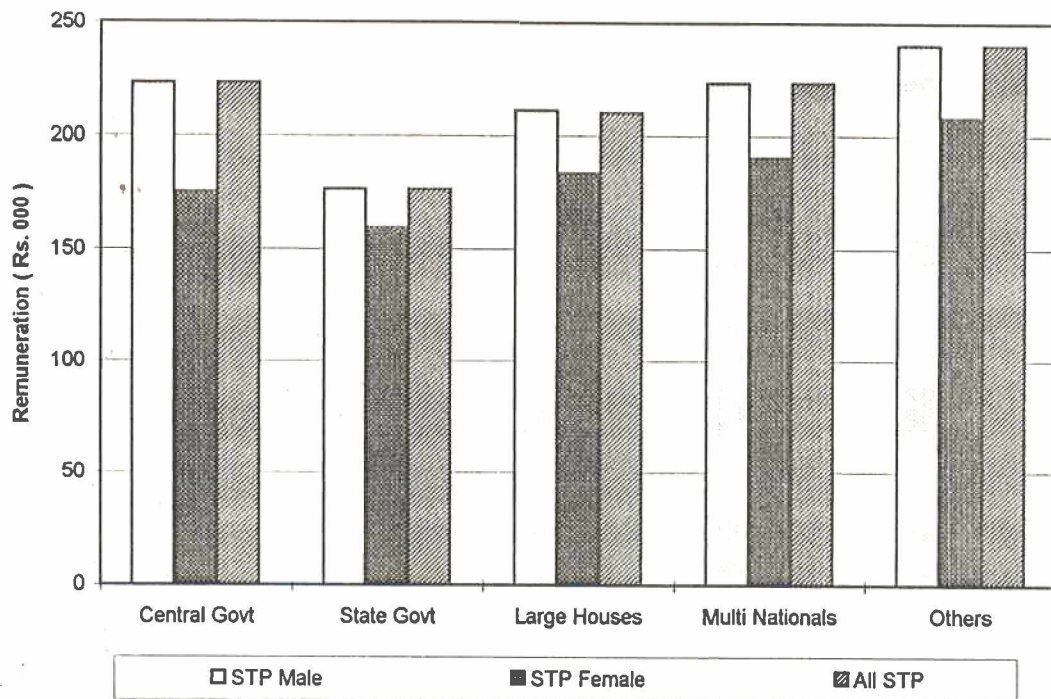
Characteristic (1)	Government Companies			Non Government Companies			All Com- pan- ies (9)	
	Central Govt (2)	State Govt (3)	Total (4)	Large Houses (5)	Multi Nationals (6)	Others (7)		Total (8)
S&T Personnel								(Thousand Rs. Per Annum)
Male	223	177	220	211	223	240	221	221
Female	176	160	175	184	191	208	193	187
Total STP	223	177	220	210	223	240	221	221
Non STP	239	175	234	209	210	223	213	219
All Personnel	228	176	224	210	218	233	218	220

TABLE 7.2

AVERAGE REMUNERATION FOR VARIOUS CHARACTERISTICS
OF S&T PERSONNEL

Characteristics (1)	Government Companies (Rs. 000) (2)	Non Government Companies (Rs. 000) (3)	All Companies (Rs. 000) (4)	Ratio of Non Govt/Govt (5)
I. Field of Specialisation				
(i) Technology				
Mechanical	167	211	200	1.26
Electrical	171	199	193	1.16
Civil	175	207	192	1.18
Chemical	185	254	235	1.37
Computer	210	205	207	0.98
Others	326	259	295	0.79
Not Specified	199	223	217	1.12
Total (Technical)	227	220	222	0.97
(ii) Sciences				
(a) Agriculture	195	189	190	0.97
(b) Medical	178	206	195	1.16
(c) Natural				
Physics	169	214	205	1.26
Chemistry	202	224	221	1.11
Biology	--	176	176	--
Others	168	225	213	1.33
Not Specified	187	228	221	1.22
Total (c)	179	222	215	1.23
Total (Sciences)	185	223	216	1.21
Grand Total (i+ii)	220	221	221	1.00

Sector wise Remuneration of S&T Personnel



Age wise Remuneration of S&T Personnel

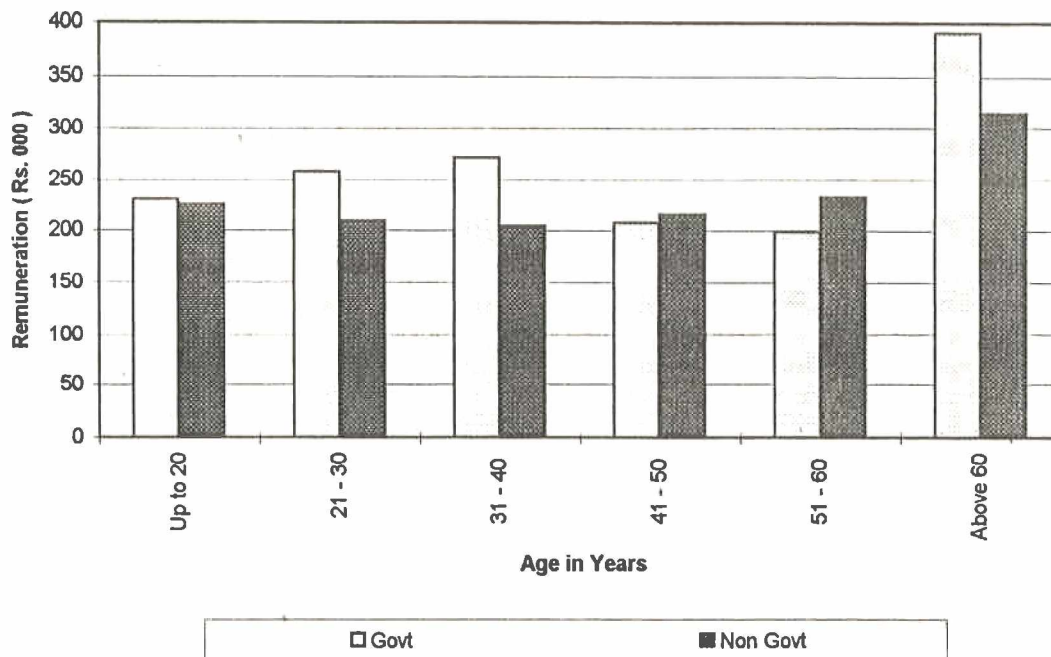


TABLE 7.2
(CONTINUED)

Characteristics (1)	Government Companies (Rs. 000) (2)	Non Government Companies (Rs. 000) (3)	All Companies (Rs. 000) (4)	Ratio of Non Govt/Govt (5)
II. Level of Qualifications				
Doctorate	191	276	255	1.45
Post Graduate	269	236	246	0.88
Graduate	198	220	214	1.11
Diploma	251	200	221	0.80
Others	205	205	205	1.00
Total	220	221	221	1.00
III. Level of Responsibility				
Chairman	227	609	515	2.68
Managing Director	192	418	387	2.18
Director	178	320	288	1.80
General Manager	185	251	241	1.36
Dy General Manager	174	194	186	1.11
Manager	186	193	191	1.04
Asst / Dy Manager	177	172	173	0.97
Engineer	277	215	246	0.78
Scientist	164	168	167	1.02
Doctor	173	200	188	1.16
Computer Personnel	161	218	181	1.35
Others	283	223	245	0.79
Total	220	221	221	1.00
IV. Primary work activity				
Senior Management	189	389	355	2.06
Plant Level	184	203	200	1.10
Marketing	186	212	209	1.14
Admn & Finance	164	216	199	1.32
R & D	170	201	193	1.18
Medical	173	201	189	1.16
Computer	181	199	190	1.10
Others	291	232	261	0.80
Not Specified	174	207	194	1.19
Total	220	221	221	1.00

companies employ chairmen, Managing Directors, Directors or senior executives from Promoters at high remunerations irrespective of their salary structure. This factor considerably increases average remuneration for the group.

Fields of Specialisation

7.5 Remunerations in each sector/sub sector vary considerably depending on characteristics of the personnel. Data in this regard are given in Table 7.2 separately for Government and non Government companies. Data show the following variations in remunerations for different fields of specialisation.

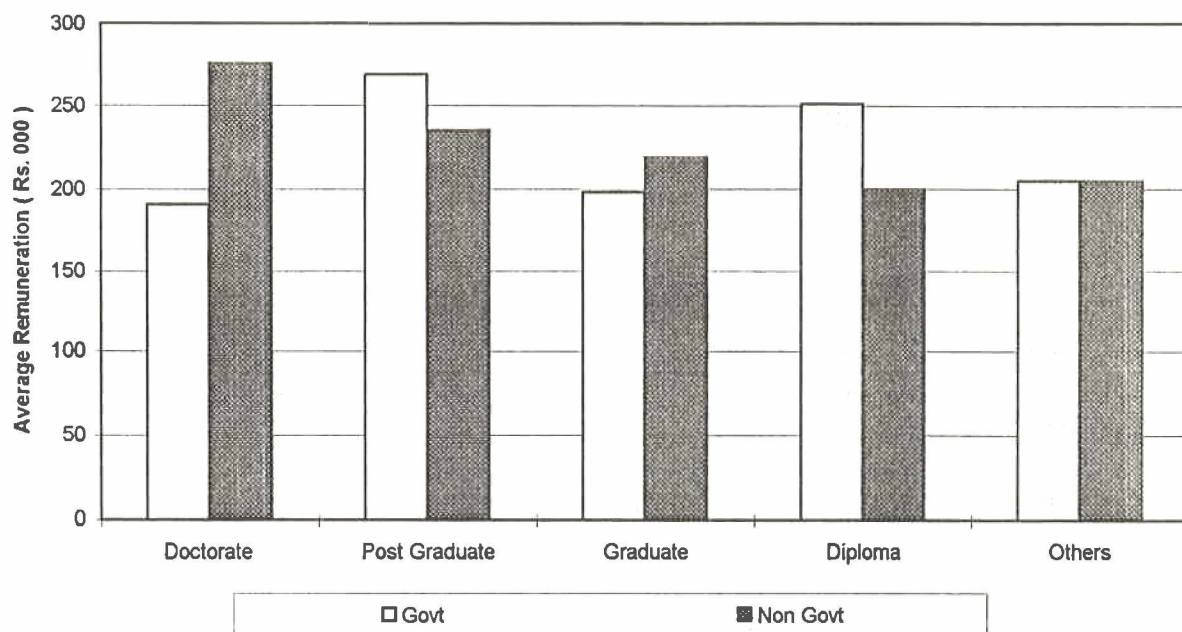
- (i) Average remunerations range between Rs.1.76 Lakhs for Biology (in which only few STPs are employed) and Rs.2.95 lakhs for "Other/Miscellaneous" fields, which include high remuneration paying Shipping Technology. If these extremes are disregarded, the remunerations vary from Rs.1.90 lakhs for Agriculture to Rs.2.35 lakhs for Chemical Engineering, a margin of 23.68 percent.
- (ii) Average remunerations in Government companies (excluding Shipping) vary from Rs.1.67 lakhs for Mechanical Engineering to Rs. 2.10 lakhs for Computer Sciences, a margin of 25.75 percent. Variations in non Government companies are wider ranging from Rs.1.89 lakhs for Agriculture to Rs.2.54 lakhs for Chemical Engineering, margin of 34.39 percent.
- (iii) Discipline wise ratios of remunerations in non Government companies and Government companies vary from 0.97/0.98 for Agriculture and Computer Sciences, suggesting parity between the two sectors in these fields, to 1.37 for Chemicals Engineering.

7.6 The extent and nature of variations in average remunerations suggest that remunerations do not depend on disciplines, or any particular characteristic but on combination of various characteristics and factors like age, experience, level of qualifications, nature of responsibility, nature of employing company, its activity and location, each factor having its own effect.

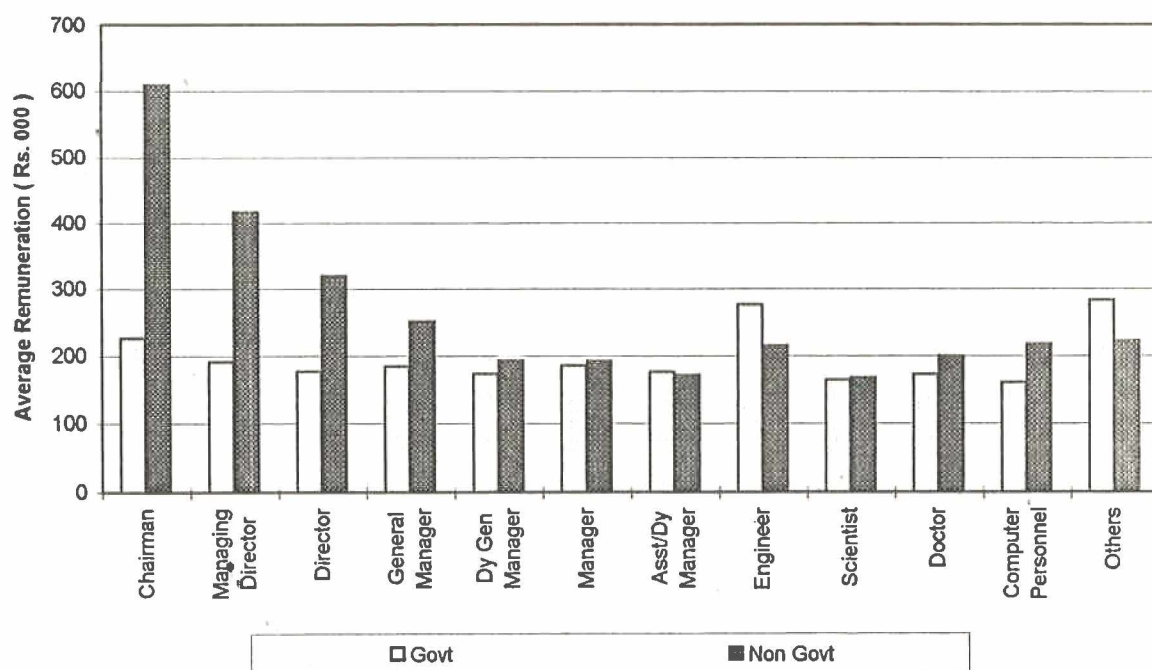
Levels of Qualifications

7.7 There is direct correlation between levels of qualifications and levels of remunerations. Average remuneration increases from Rs.2.05 lakhs for Certificate holders, to Rs.2.14 lakhs for Graduates, Rs.2.46 lakhs for Post Graduates and Rs.2.55 lakhs for Doctorates. Only exception in the chain is Diploma holders who get an average remuneration of Rs.2.21 lakhs. This is due to a large number of such personnel in Shipping industry who receive high remunerations. If these personnel are excluded, Diploma holders get remuneration on par with Certificate holders.

Remuneration of S&T Personnel by Levels of Qualifications



Remuneration of S&T Personnel by Levels of Responsibilities



7.8 The correlation between remunerations and levels of qualifications are more specific in non Government companies, who have paid their S&T employees average remunerations going up from Rs.200 lakhs for low qualifications to Rs.2.76 lakhs for Doctorates. There is no such correlation in Government sector mainly because of presence of Shipping personnel drawing high remunerations at all levels of qualifications..

Levels of Responsibilities

7.9 Levels of responsibilities have direct bearing on remunerations and margins between different levels are significant. Average remuneration goes up three fold from Rs. 1.73 lakhs for the lowest Managerial positions (Asst/Dy Managers) to Rs.5.15 lakhs for the highest position of chairman of a Company. The differences are more pronounced in non Government companies (3.54 times) than in Government companies (1.28 times). Remunerations of non Managerial positions vary from Rs. 1.67 lakhs for Scientists to Rs.2.46 lakhs for Engineers, the latter being high mainly because a number of Engineers are employed by Shipping companies. As most of the Shipping companies are in Government sector, remuneration of Engineers in Government companies is much higher (Rs.2.77 lakhs) than in non Government companies (Rs.2.15 lakhs).

7.10 Differences in remunerations between non Government and Government companies increase as levels of responsibilities increase. While chairmen in non Government companies receive 2.68 times remuneration received by Chairmen in Government companies, the ratio goes down to 2.18 for Managing Directors , 1.80 for Directors 1.36 for General Managers and disparity almost disappears at the levels of Managers (1.04) and Asst. Managers (0.97). Among Specialized positions, while there is parity in remuneration in the two sectors for Scientists, Computer personnel in non Government sector receive 1.35 times the remuneration in Government.

Primary Work Activity

7.11 Remunerations generally do not depend on work activity. There are two exception, namely Senior Managerial personnel who get high remunerations due to their responsibilities and "Other/Miscellaneous" personnel who get high remunerations because this category includes Shipping personnel. Variations among other activities are only 10.58 percent, from Rs.1.89 lakhs for Medical personnel to Rs.2.09 lakhs for Marketing. Variation in non Government companies (6.53 percent) are less than in Government companies (13.41 percent)

7.12 While Senior Management activities personnel in non Government companies receive 2.06 times remuneration than in Government companies, variations in other activities range modestly from only 10 percent for personnel at Plant level/ computer personnel to 32 percent for Administration and Finance Personnel.

TABLE 7.3

AGE WISE AVERAGE REMUNERATION OF S&T PERSONNEL

Age Group (Years)		Government Companies (Rs. 000)	Non Government Companies (Rs. 000)	All Companies (Rs. 000)	Ratio of Non Govt/Govt
(1)		(2)	(3)	(4)	(5)
Upto	20	230	225	228	0.98
21	- 30	258	209	235	0.81
31	- 40	271	204	222	0.75
41	- 50	207	215	212	1.04
51	- 60	199	232	223	1.17
Above	60	391	315	317	0.81
Total		220	221	221	1.00

TABLE 7.4

EXPERIENCE WISE AVERAGE REMUNERATION
OF S&T PERSONNEL

Experience (Years)		Government Companies (Rs. 000)	Non Government Companies (Rs. 000)	All Companies (Rs. 000)	Ratio of Non Govt/Govt
(1)		(2)	(3)	(4)	(5)
Upto	5	271	251	267	0.93
6	- 10	309	202	230	0.65
11	- 15	270	207	247	0.77
16	- 20	221	210	212	0.95
21	- 25	193	213	207	1.10
26	- 30	185	220	210	1.19
31	- 35	194	237	227	1.22
35	- 40	196	254	247	1.30
Above	40	403	350	351	0.87
Total		220	221	221	1.00

Age wise Remunerations

7.13 Remuneration does not seem to vary according to age of the employee. Average remunerations for different decennial age groups upto 60 years range narrowly from Rs.2.12 lakhs (for 41-50 years age group) to Rs.2.35 lakhs (for 21-30 years group). It is only for age beyond 60 years that average remuneration is high at Rs.3.17 lakhs . High age personnel are appointed both by Government and non Government companies on adhoc basis on high salaries. Data are given in Table 7.3.

7.14 Sector wise analysis shows that variations in average remunerations in Government companies are quite irregular. While remuneration increases from Rs.2.30 lakhs for age group 'upto 20 years' to Rs.2.71 lakhs for 31-40 year group, it declines there after to Rs.1.99 lakhs for 51-60 year group, again going upto Rs.3.91 lakhs for personnel above 60 years. Irregular growth pattern of Government companies and high remunerations paid to Shipping personnel at younger ages result into irregular trends. If Shipping companies are excluded, average remuneration by Government companies varies only marginally between Rs.1.72 lakhs and Rs.1.89 lakhs for different age group upto 60 years. Data for non Government companies show high initial salaries followed by stagnation for next 20 years and gradual increase there after.

7.15 Comparative data for Government and non Government sectors suggest relatively high salaries in Government companies till 40 year age, due to high salaries to shipping personnel who are in this age range, and reversal of situation thereafter, except for above 60 years age personnel.

Experience wise remunerations

7.16 Data on average remunerations for different quinquennial experience groups given in Table 7.4 show a clear pattern. Average remuneration first declines gradually from Rs.2.67 lakhs for 1-5 year experience group to Rs.2.07 lakhs for 21-25 year group and increases gradually thereafter to Rs.3.51 lakhs for 'above 40 years' experience group. The trend becomes more clear when remunerations for two sectors are examined. Remunerations are quite high for Government companies for experience upto 15 years, as is the case for age upto 40 years, due to high proportion of Shipping personnel in these groups. As the numbers of such personnel decline in higher experience groups, average remunerations in Government companies go down to Rs.1.85 lakhs for 26-30 year group, going up marginally there after due to normal promotions and increments, upto Rs.1.96 lakhs for 35-40 year group. Remunerations in non Government companies increase consistently along with experience from Rs.2.02 lakhs for 6-10 years group to Rs. 2.54 lakhs for 35-40 year group. It is only for fresh appointees (experience upto 5 years) that remunerations are higher at Rs.2.51 lakhs. This confirms recruitment made by corporate sector at high salaries in the last five years in the wake of liberalization policy.

TABLE 7.5

**AVERAGE REMUNERATION OF S&T PERSONNEL IN COMPANIES
UNDER DIFFERENT INCOME RANGES**

Income (Rs. Crores) (1)	Government Companies (Rs. 000) (2)	Non Government Companies (Rs. 000) (3)	All Companies (Rs. 000) (4)	Ratio of Non Govt/Govt (5)
Up to 1	232	202	210	0.87
1 - 5	171	219	214	1.28
5 - 10	174	197	191	1.13
10 - 25	200	251	247	1.25
25 - 50	174	212	209	1.22
50 - 100	173	244	238	1.41
100 - 500	187	223	214	1.19
500 - 1000	171	206	202	1.20
Above 1000	252	225	240	0.89
Total	220	221	221	1.00

Income Size and Remunerations

7.17 Data on remuneration for S&T Personnel in companies classified under different income ranges are at Table 7.5. Remunerations do not follow any pattern but vary irregularly from Rs.1.91 lakhs for companies in income range of Rs.5-10 crores to Rs.2.38 lakhs for income range of Rs.51-100 crores. Sector wise data also show irregular pattern. Each range includes some big employing companies which determine average for that range. Among Government companies, remuneration for income range Rs.11-25 crores is relatively higher at Rs.2.00 lakhs. This is because this range includes South India Shipping Corporation, which employs 116 S&T Personnel and pays average remuneration of Rs.3.69 lakhs. Similarly 'Above Rs.1000 crores' income range includes Shipping Corporation of India which explains average remuneration of Rs.2.52 lakhs for the range.

Investment Size and Remunerations

7.18 Data on remunerations received by S&T Personnel employed by companies in different investment (Paid up capital) ranges are given in Table 7.6. The remunerations do not follow any pattern but vary irregularly from Rs.1.64 lakhs (for investments above Rs.1000 crores) to Rs.2.51 lakhs (for investments of Rs.101-500 crores). As in case of income ranges, remunerations for different investment ranges are determined by some specific companies in the range. The lowest remuneration for investments above Rs.1000 crores is because there are only two non Government companies in the range and the remuneration represents low salaries paid by 15 Government companies. Similar is the reason for investment range of Rs.501-1000 crores for which average remuneration is low at Rs.1.76 lakhs, as it does not include any non Government company. The highest remuneration is in the investment range of Rs.101-500 crores, as this includes Shipping Corporation of India. Next high remuneration (Rs.2.41 lakhs) is for investment range of Rs. 11-25 crores because this includes South India Shipping Corporation and some Multinational companies. Remunerations in other investment ranges vary only from Rs. 2.03 lakhs to Rs. 2.27 lakhs. However, the data establish one pattern that high investment Government companies pay low remunerations compared to not only non Government companies but also low investment Government companies.

Employee Size and Remuneration

7.19 Data on average remunerations received by S&T Personnel in companies classified according to their employment size are at Table 7.7. The data clearly show that companies which employ large number of S&T Personnel pay comparatively low remunerations. Thus, companies employing upto 10 S&T Personnel pay remunerations of Rs.2.30-2.45 per annum, while companies employing more personnel pay only Rs.2.09-2.27 lakhs. Sector wise, this conclusion is true for non Government companies. Government companies pay remunerations of Rs.1.63-1.83 lakhs for employment sizes upto 100 S&T Personnel. However, average

TABLE 7.6

**AVERAGE REMUNERATION OF S&T PERSONNEL IN COMPANIES
UNDER DIFFERENT INVESTMENT RANGES**

Investment (Rs. Crores)	Government Companies (Rs. 000)	Non Government Companies (Rs. 000)	All Companies (Rs. 000)	Ratio of Non Govt/Govt
(1)	(2)	(3)	(4)	(5)
Upto 1	192	207	204	1.08
1 - 5	175	216	203	1.23
5 - 10	176	231	227	1.31
10 - 25	214	247	241	1.15
25 - 50	204	210	210	1.03
50 - 100	166	214	209	1.29
100 - 500	271	221	251	0.82
500 - 1000	176	0	176	0.00
Above 1000	163	201	164	1.23
Total	220	221	221	1.00

TABLE 7.7

**AVERAGE REMUNERATION OF S&T PERSONNEL IN COMPANIES
UNDER DIFFERENT S&T EMPLOYEE RANGES**

STP Range (Nos.)	Government Companies (Rs. 000)	Non Government Companies (Rs. 000)	All Companies (Rs. 000)	Ratio of Non Govt/Govt
(1)	(2)	(3)	(4)	(5)
1 - 5	178	237	230	1.33
6 - 10	182	254	245	1.40
11 - 25	183	228	221	1.25
26 - 50	163	240	227	1.47
51 - 100	182	229	222	1.26
101 - 250	197	215	209	1.09
Above 250	252	197	220	0.78
Total	220	221	221	1.00

remuneration goes upto Rs.1.97 lakhs for 101-250 employee size because it includes South India Shipping Corporation and remuneration further increases to Rs.2.52 lakhs for "Above 250 persons" size because it includes Shipping Corporation of India.

State wise Remunerations

7.20 With average remuneration of S&T Personnel at Rs.2.21 lakhs per annum, it varies among states from Rs.1.66 lakhs for Bihar to the maximum of Rs.2.69 lakhs for Goa. However, among the major employing states, average remuneration is the lowest for Delhi (Rs.1.99 lakhs) which is dominated by Central Government companies and the highest for West Bengal (Rs.2.42 lakhs) which is dominated by Multinationals. Maharashtra lies in between at Rs.2.30 lakhs per annum. Regional averages are determined by these states. While averages for Southern (Rs.2.22 Lakhs) and Western (Rs.2.24 Lakhs) regions are close to the over all average of Rs.2.21 lakhs, average remuneration for Eastern region is the highest (Rs.2.30 lakhs) and the lowest (Rs.2.04 lakhs) for Northern region. Data are given in Table 7.8.

7.21 Non Government companies generally pay more than Government companies. The data show overall parity between the two sectors only due to high remunerations paid by Shipping Corporation of India. Remunerations paid by non Government companies exceed those paid by Government companies in all the States, except in Maharashtra, Tamil Nadu, Arunachal Pradesh and Chandigarh - Maharashtra because of Shipping Corporation of India, Tamil Nadu due to South India Shipping Corporation and in other two states, which employ few personnel, because non Government companies there pay low remunerations. Among other states, remunerations by non Government companies exceed those by Government companies by over 40 percent in case of Goa (70 percent), Kerala(55 percent), Orissa (52 percent), Andhra Pradesh (50 percent), Uttar Pradesh (44 percent) and West Bengal (40 percent). Regional averages show that remunerations paid by non Government companies exceed those by Government companies by 49.10 percent in Eastern region, 20.97 percent in Northern region and 12.25 percent in Southern region, the excess being negative (-20.19 percent) only in Western region because of Shipping Corporation.

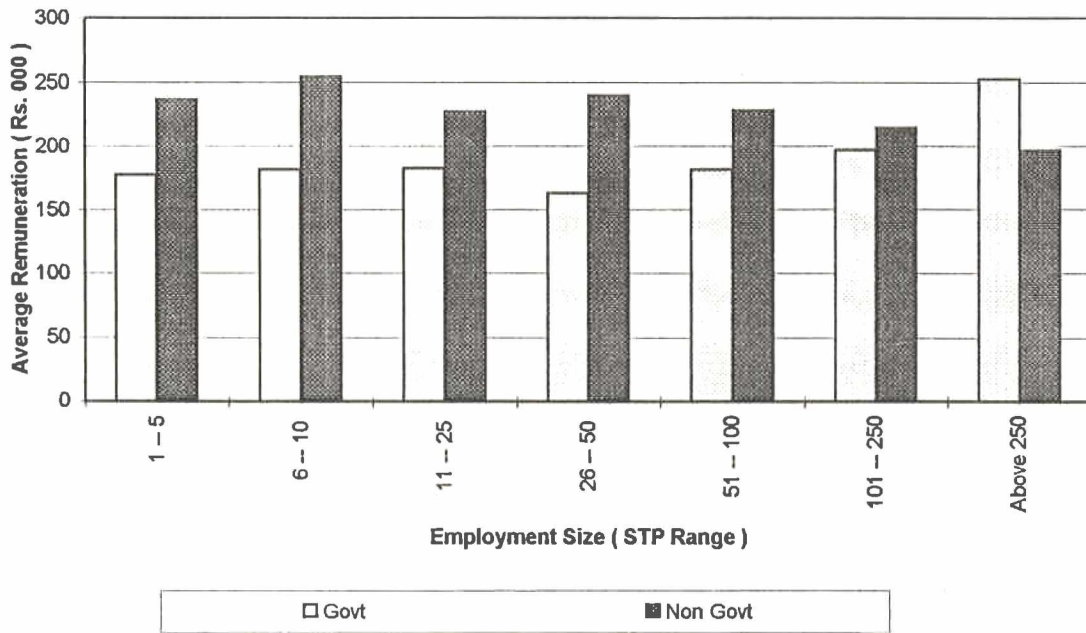
7.22 Average remunerations received by non S&T personnel are only slightly (1.38 percent) below the remunerations of S&T Personnel. However, position varies from state to state. In certain states average remunerations of S&T personnel exceed those of non S&T personnel by margins exceeding 10 percent : Goa (31.22 percent, Uttar Pradesh (20.39 percent), Tamil Nadu (12.44 percent) and Andhra Pradesh (12.12 percent). In certain states S&T Personnel receive lower remunerations than by non S&T personnel by over 10 percent: Punjab (15.65 percent), Karnataka (13.18 percent), Assam (12.31 percent) , Haryana (11.55 percent) and Himachal Pradesh (11.45 percent). In other states, including major employers like Delhi, West Bengal, Maharashtra and Gujarat, differences in remunerations are within 10 percent.

TABLE 7.8

STATEWISE REMUNERATION OF SCIENTIFIC
AND TECHNICAL PERSONNEL

State/Region (1)	S&T Personnel			NG/Govt (Per- cent) (5)	Non S&T Person- nel (6)	STP/NON STP(Per cent) (7)
	Govt. (Rs.000) (2)	N.Govt. (Rs.000) (3)	Total (Rs.000) (4)			
North						
Delhi	186	221	199	118.82	218	91.28
Uttar Pradesh	176	254	248	144.32	206	120.39
Madhya Pradesh	190	240	223	126.31	223	100.00
Punjab	182	197	194	108.24	230	84.35
Haryana	168	230	222	136.90	251	88.45
Himachal Pra.	170	185	178	108.82	201	88.55
Chandigarh	169	160	163	94.67	179	91.06
J & K	0	185	185	0.00	000	0.00
Total	186	225	204	120.97	209	97.61
East						
West Bengal	178	250	242	140.44	227	106.60
Assam	163	188	171	115.34	195	87.69
Bihar	162	218	166	134.56	179	92.73
Orissa	146	222	208	152.05	224	92.85
Meghalaya	179	***	179	***.**	166	107.83
Arunachal Pra.	180	165	172	91.67	***	***.**
Andman Nikobar	170	***	170	***.**	***	***.**
Nagaland	152	178	165	117.11	***	***.**
Tripura	***	***	***	***.**	***	***.**
Mizoram	***	***	***	***.**	***	***.**
Manipur	***	***	***	***.**	***	***.**
Total	167	249	230	149.10	225	102.22
South						
Tamil Nadu	278	235	244	84.53	217	112.44
Andhra Pradesh	170	257	222	151.17	198	112.12
Karnataka	176	195	191	110.80	220	86.82
Kerala	155	242	224	156.13	220	101.82
Pondicherry	***	253	253	***.**	159	159.12
Total	204	229	222	112.25	214	103.74
West						
Maharashtra	297	213	230	71.71	232	99.14
Gujarat	173	203	195	117.34	200	97.05
Goa	158	269	269	170.25	205	131.22
Rajasthan	160	209	194	131.63	194	100.00
Total	269	212	224	78.81	228	98.25
Grand Total	220	221	221	100.45	218	101.38

Remuneration by Employment Sizes of Companies



Industry wise Remuneration

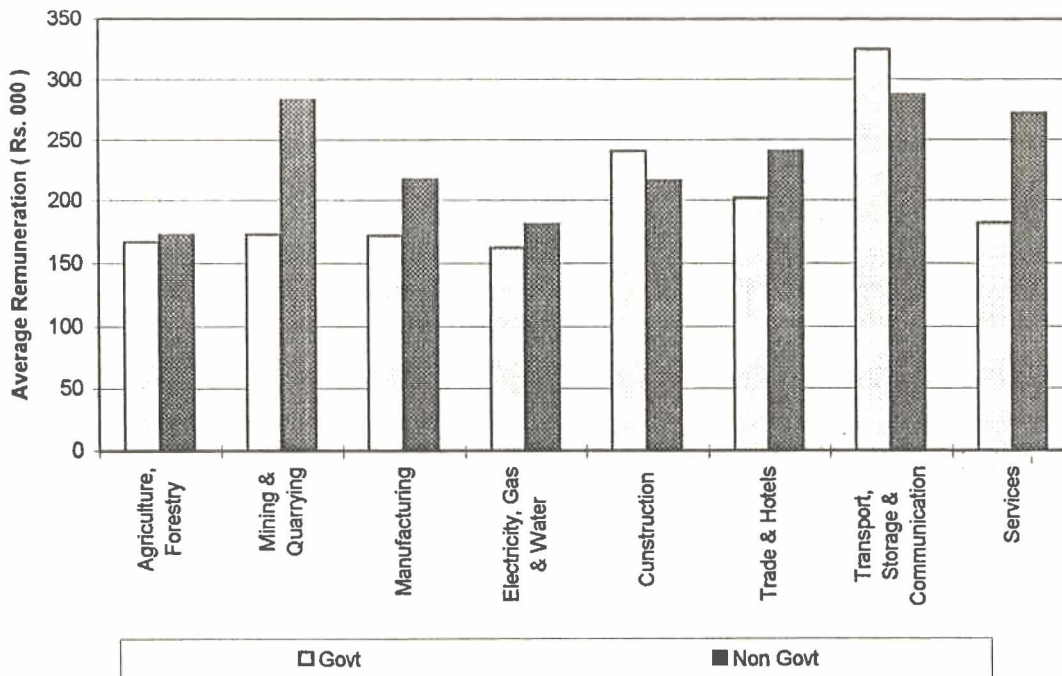


TABLE 7.9

INDUSTRY WISE REMUNERATION OF S&T PERSONNEL

Activity (1)	S&T Personnel			NG/Govt (Per- cent) (5)	Non S&T Person- nel (6)	STP/NON STP(Per cent) (7)
	Govt.	N.Govt.	Total			
	(Rs.000) (2)	(Rs.000) (3)	(Rs.000) (4)			
1. Agriculture	167	173	172	103.59	193	89.12
2. Mining	173	283	201	163.58	214	93.93
3. Manufacturing						
Food Products	165	261	260	158.18	245	106.93
Alcoholic Bev.	0	225	225	----	234	96.15
Textiles	170	219	217	128.82	205	105.85
Wood	0	194	194	----	219	88.58
Paper	158	222	214	140.51	202	105.94
Leather	0	227	227	----	173	131.21
Chemical	173	227	217	129.71	167	129.94
Rubber & Plastic	163	241	235	147.85	223	105.38
Petroleum	170	188	172	110.59	163	105.50
Cement	156	224	221	143.59	199	111.06
Non MetMinerals	0	297	297	----	271	109.59
Metals	157	200	195	127.39	195	100.00
Machinery	167	210	209	125.75	232	90.09
Electrical	173	202	198	116.76	199	99.50
Machinery						
Transport equipments	197	203	203	103.05	204	99.57
Others	159	212	212	133.33	210	100.95
Total 3	172	217	212	126.16	198	107.07
4. Electricity, Gas & Water	162	181	173	111.73	159	108.81
5. Construction	241	216	231	89.63	216	106.94
6. Trade & Hotels	202	241	228	119.31	232	98.28
7. Transport, storage & communication						
Shipping	329	305	326	92.71	433	75.29
Other	188	275	272	152.49	241	111.20
Total 7	325	287	314	88.31	354	88.70
8. Services						
Financing & Business services	182	273	207	150.00	191	108.38
Community, Social	167	265	242	158.68	680	35.59
Total 8	182	272	208	149.45	191	108.90
9. Other	185	0	185	----	191	96.86
Total (1 - 9)	220	221	221	100.45	218	101.38

Regional average remunerations also do not vary much and differences between those of S&T personnel and non S&T personnel are within a narrow range of (+)/(-) 4 percent.

Industry wise Remunerations

7.23 Compared to an average of Rs.2.21 lakhs per annum, remunerations are quite high at Rs. 3.14 lakhs in Transport industry (+ 42 percent) and low at Rs.1.72 Lakhs in Agriculture and Electricity (-22 percent). Remunerations in other industries vary between Rs. 2.01 lakhs in Mining and Rs.2.31 lakhs in Construction. Shipping industry pays high remunerations because of nature of duties and Agriculture and Electricity industries pay low salaries because they are dominated by Government sector. data are at Table 7.9.

7.24 Average remuneration in Manufacturing industries is Rs.2.12 lakhs per annum. However, there are wide variations in different industries. High remuneration industries includes Food products (Rs.2.60 Lakhs), Non metallic minerals (Rs.2.97 lakhs), Plastics (Rs.2.35 Lakhs), and Cement (Rs.2.21 lakhs). Most of these industries are either dominated by Multinationals or small non Government companies which pay high salaries. On the other hand, low remunerations are paid in Petroleum (Rs.1.72 lakhs), Wood products (Rs.1.94 Lakhs), Metals (Rs.1.95 Lakhs), Electrical & Electronics equipment (Rs.1.98 lakhs) and Transport equipment (Rs.2.03 Lakhs). Some of these are dominated by Government sector.

7.25 Non Government companies pay higher remunerations in most of the industries, important examples being Finance & consultancy (+50 percent), Mining (+64 percent), Trade & Hotels (+19 percent) and Electricity (+ 12 percent). It is only in Transport (-12 percent) and Construction (-10 percent) that they pay less than Government companies.

7.26 Non Government companies in Manufacturing industries pay higher remunerations than by Government companies to the extent of 26 percent on average. Important industries where high remunerations are paid are Food (58 percent), Plastics (48 percent), Cement (44 percent), Paper (41 percent) Chemicals & Products (30 percent), Textiles (29 percent), Metals (27 percent) and Machinery (26 percent). There is not a single manufacturing industry in which Government companies pay more remuneration, the lowest differential being in Transport equipment manufacture where remuneration in non Government companies exceed by 3 percent.

Distribution of S&T Personnel

7.27 Remunerations vary not only among different characteristics and classifications but also among personnel in each characteristic and class. Table 7.10 gives data on distribution of S&T Personnel under different characteristics for three remuneration ranges, namely Low remunerations (Rs.12000-15000 pm/

TABLE 7.10

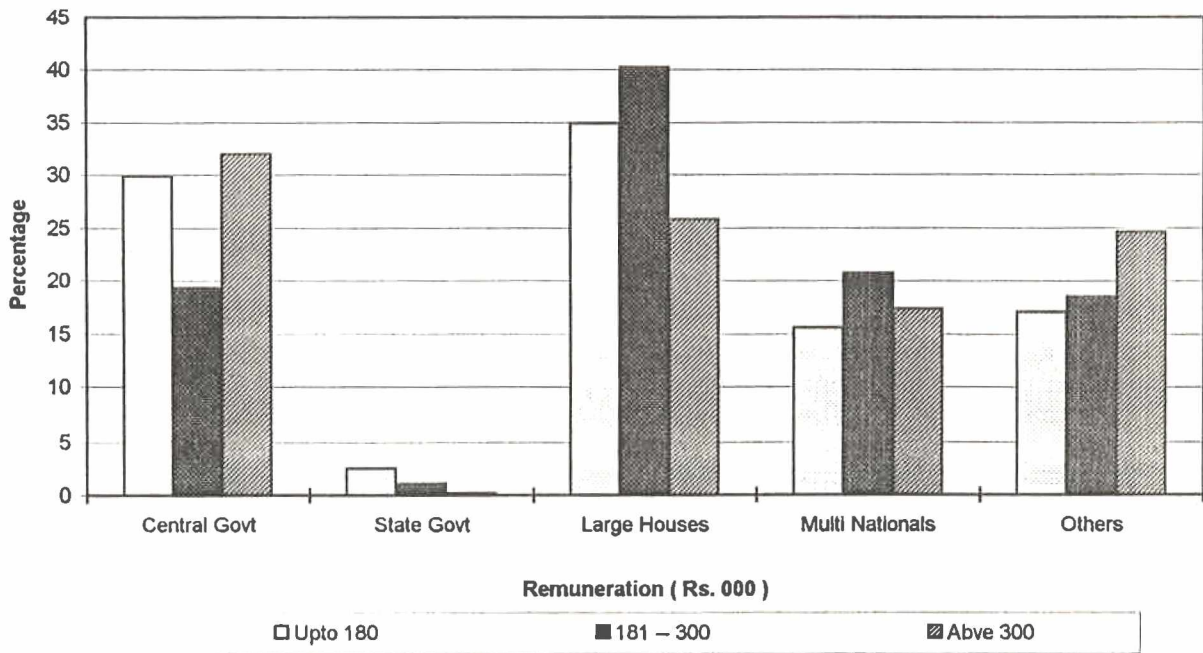
DISTRIBUTION OF S&T PERSONNEL UNDER DIFFERENT REMUNERATION RANGE AND CLASSIFICATIONS OF COMPANIES / S&T PERSONNEL

		(Remuneration Rs. 000 per annum)			
		Upto 180	181 - 300	Above 300	All
1. Sector					
Government Companies					
Central Government		29.90	19.36	31.97	26.58
State Government		2.477	1.07	0.15	1.70
Total		32.37	20.43	32.12	28.28
Non Government Companies					
Large Houses		34.93	40.26	25.84	35.56
Multi Nationals		15.65	20.78	17.40	17.62
Others		17.05	18.53	24.64	18.53
Total		67.63	79.57	67.88	71.72
Grand Total		100.00	100.00	100.00	100.00
2. Age Group (Years)					
Upto	20	0.04	0.09	0.06	0.06
21	- 30	3.18	8.08	5.88	5.19
31	- 40	18.97	13.94	20.87	17.50
41	- 50	46.07	40.53	36.88	43.00
51	- 60	30.61	34.94	30.91	32.12
Above	60	1.13	2.42	5.40	2.12
Total		100.00	100.00	100.00	100.00
3. Experience Group (Years)					
Upto	5	1.69	7.64	7.63	4.48
6	- 10	4.73	3.73	6.33	4.60
11	- 15	5.43	2.55	9.86	5.03
16	- 20	27.62	21.97	21.89	24.96
21	- 25	23.85	21.45	16.65	22.10
26	- 30	19.50	19.70	13.39	18.78
31	- 35	12.84	16.20	14.60	14.21
36	- 40	3.83	5.55	7.00	4.82
Above	40	0.52	1.21	2.65	1.03
Total		100.00	100.00	100.00	100.00
4. Income Range (Rs. Crore)					
Upto	1	4.23	3.86	3.04	3.90
Above 1	- 5	1.19	1.24	1.39	1.29
Above 5	- 10	1.10	1.98	1.45	1.42
Above 10	- 25	2.75	3.18	5.19	3.01
Above 25	- 50	6.70	6.2	4.55	6.36
Above 50	- 100	7.41	8.10	11.01	8.40
Above 100	- 500	37.63	37.99	26.54	35.99
Above 500	- 1000	15.63	13.84	9.14	14.27
Above	1000	23.36	23.52	37.70	25.36
Total		100.00	100.00	100.00	100.00

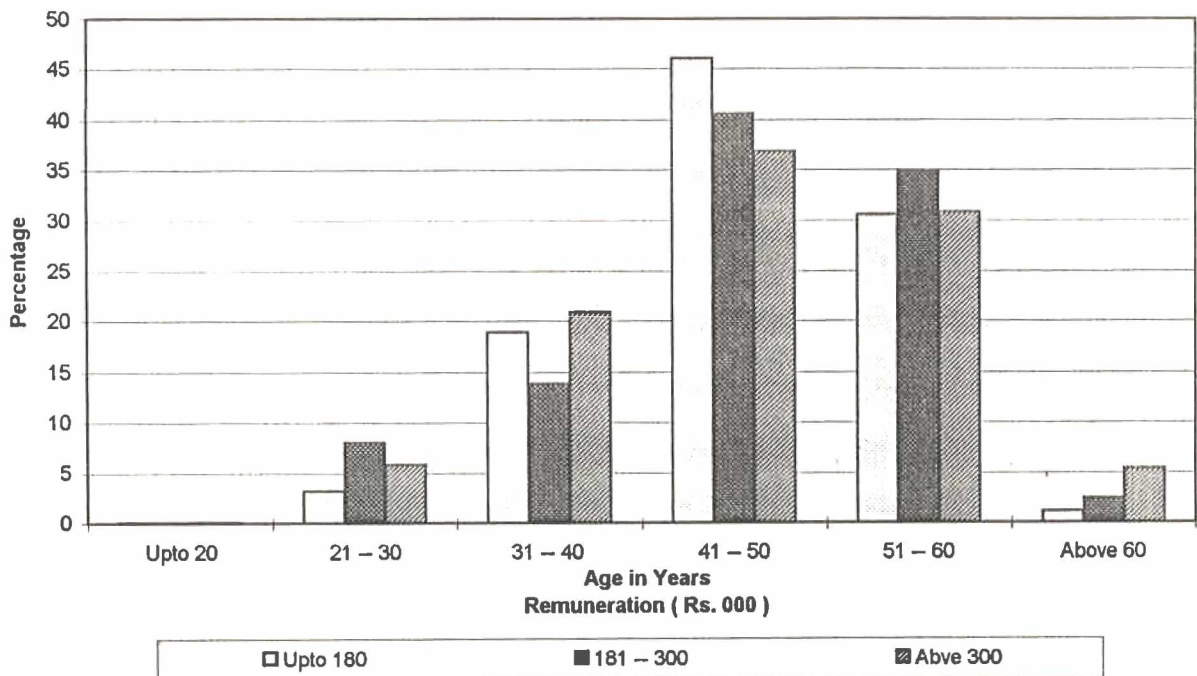
TABLE 7.10
(CONTINUED)

(1)	(Remuneration Rs. 000 per annum)			
	Upto 180 (2)	181 - 300 (3)	Above 300 (4)	All (5)
Investment Range(Rs.Crore)				
Upto 1	6.77	5.47	3.68	6.19
1 - 5	15.81	13.66	8.93	14.36
5 - 10	9.02	10.01	10.43	9.49
10 - 25	13.98	14.35	19.75	14.56
25 - 50	23.29	28.73	17.64	24.80
50 - 100	7.23	7.31	5.46	7.00
100 - 500	16.24	18.95	33.69	18.96
500 -1000	1.33	0.32	0.03	0.82
Above 1000	6.31	1.21	0.39	3.82
Total	100.00	100.00	100.00	100.00
Region				
North	23.05	15.82	12.64	19.24
East	15.19	14.05	16.59	14.98
South	10.78	8.70	9.89	9.95
West	50.98	61.43	60.89	55.82
Total	100.00	100.00	100.00	100.00
7. Industry				
1. Agriculture	0.26	0.08	0.03	0.17
2. Mining & Quarry	2.16	1.08	1.36	1.69
3. Manufacturing	70.32	72.20	51.27	68.49
4. Electricity, Gas & Water	9.02	3.64	0.90	6.14
5. Construction	1.80	1.56	2.99	1.87
6. Trade & Hotels	2.07	1.93	1.84	1.99
7. Transport storage & communication	4.43	12.43	35.04	11.11
8. Service(s)	9.83	6.99	6.57	8.44
9. Other(s)	0.12	0.09	-	0.09
Total	100.00	100.00	100.00	100.00

Remuneration wise Distribution of S&T Personnel by Sectors



Remuneration wise Distribution of S&T Personnel by Age Ranges



Rs.1.44-1.80 lakh pa), Medium remunerations (Rs.15001-25000 pm/Rs.1.80-3.00 lakhs pa) and High remunerations (above Rs.25000 pm/Rs.3.00 lakhs pa). Some of the characteristics have been discussed in the earlier chapters, but these have also been summarised here.// On an average, over half (53.06 percent) of the S&T Personnel receive Low remunerations, an other 33.99 percent receive Medium remunerations and the balance of 12.95 percent receive High remunerations. Proportion of Low remuneration personnel in Government sector is much more (60.74 percent) than in non Government sector (50.03 percent). Similar is the case for High remunerations for which S&T personnel in Government sector are more (14.71 percent) than in non Government sector (12.26 percent).

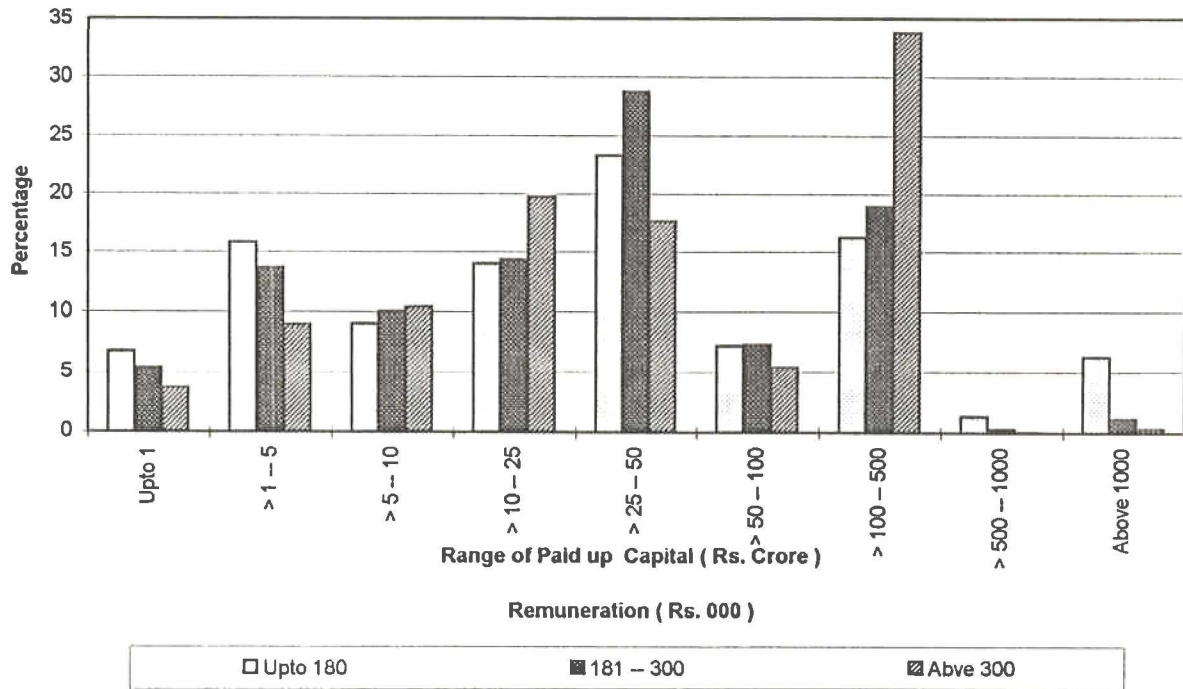
7.29 **Sector wise Distribution of S&T Personnel** shows that comparatively large proportion of S&T Personnel in Government companies receive Low remunerations. Government companies have also large proportion of High remuneration personnel. This is because of high remunerations received by the personnel in Shipping Corporation of India. If this company is excluded, Government companies have large proportion of personnel only in Low remuneration range, while non Government companies have high proportion in Medium and High remuneration ranges. Among non Government companies, while Large Houses and Multinationals have comparatively more personnel in Medium remuneration range, smaller non LH/MN companies have large proportion of their personnel in High remuneration range. This is because high salary group personnel in these companies generally represent senior management personnel from promoter groups appointed at remunerations higher than the normal salary structure of the companies.

7.30 **Age wise data for remuneration of S&T Personnel** show that there are relatively more of High remuneration S&T Personnel upto 40 years age (because of Shipping Personnel) and also beyond 60 years (because of senior managerial personnel). Comparatively, there are more Low remuneration personnel in 41-50 year age group and more of Medium remuneration personnel in 51-60 years group.

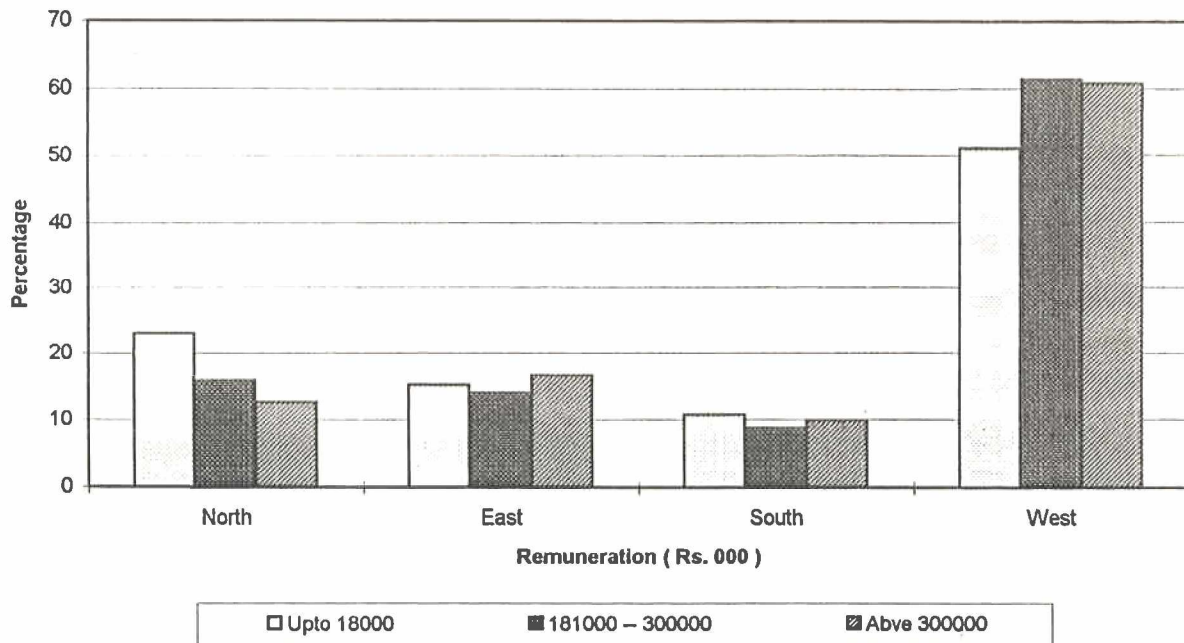
7.31 **Experience wise data for remuneration of S&T Personnel** also give similar conclusions. While there are relatively more of small experience (upto 15 years) and large experience (above 35 years) personnel in High remuneration range, Low remunerations are dominant in experience of 16-30 years range and Medium remunerations in 26-40 years range.

7.32 **Size wise data, in terms of income and investment of the employing companies,** show that generally distribution of S&T personnel among different remuneration ranges does not follow a pattern, except that the size ranges which include Shipping companies have comparatively more of high remuneration personnel.

**Remuneration wise Distribution of S&T Personnel
by Investment Ranges**



**Remuneration wise
Distribution of S&T Personnel by Regions**



7.33 Region wise data for remuneration of S&T personnel show that comparatively there are more of High remuneration personnel in Western region (where Shipping Corporation of India is located) and Eastern region (where a number of Multinational Companies are located). On the other hand there are comparatively more of Low remuneration personnel in Northern region dominated by Central Government companies.

7.34 Industry wise distribution of S&T Personnel show that proportion of personnel in High remuneration range is more in Shipping and Construction industries where number of employees have duties out side the country. On the other hand, there are more of Low remuneration personnel in Mining, Electricity, Service and Agriculture industries which are dominated by Government companies.

CHAPTER 8

ESTIMATION OF SCIENTIFIC AND TECHNICAL PERSONNEL IN CORPORATE SECTOR

8.1 Out of 6798 medium and large companies in the corporate sector, 4467 companies (65.71 percent) have been covered by the Survey. Most of the large sized companies, namely Central Government, Large House (LH) and Multinational (MN) companies, have been covered and only smaller companies could not be taken up for non availability of their annual reports.

TABLE 8.1

SURVEYED AND NON SURVEYED COMPANIES

Sector	Surveyed Companies	Non Surveyed Companies	Total	Percent Covered
			(Numbers)	(Percent)
Government				
Central	181	41	222	81.53
State	446	165	611	73.00
Total	627	206	833	75.27
Non Government				
LH/MN	619	113	732	84.56
Others	3221	2012	5233	61.55
Total	3840	2125	5965	64.38
Grand Total	4467	2331	6798	65.71

Even among the Central Government and LH/MN companies, most of the large sized companies have been covered.

8.2 As may be seen from para 3.46, there is direct correlation between size of a company in terms of investment (paid up capital), or income, and number of S&T Personnel in high salary groups employed by it. Small companies employ none, or few, personnel and their number increases along with the size of the company. There is no such linkage with any other characteristic.

8.3 Non surveyed companies have been classified according to their size in terms of investment. Paid up capital of these companies adds upto Rs.6226 crores. S&T Personnel in high salary groups employed by them have been estimated for each investment range on the bases of employment coefficient of the surveyed companies for that range. Table 8.2 gives estimates of S&T Personnel employed by non surveyed companies.

Table 8.2

**ESTIMATION OF S&T PERSONNEL IN HIGH SALARY
GROUPS FOR DIFFERENT INVESTMENT RANGES**

Paid up capital range (Rs.crores)	Surveyed Companies		Non Surveyed Companies		Estimated S&T Person- nel in Corporate Sector (Colms 2+5) (6)
	S&T Person- nel	STP Per Company	No. of Companies	Estimated S&T Person- nel (Colms 3x4) (5)	
(1)	(2)	(3)	(4)	(5)	(6)
					(Numbers)
Upto 1	1585	0.83	1141	947	2532
Above 1 - 5	3678	2.52	1029	2593	6271
Above 5 - 10	2429	5.39	93	501	2930
Above 10 - 25	3729	10.94	44	481	4210
Above 25 - 50	6350	47.75	13	620	6970
Above 51 -100	1792	23.58	8	189	1981
Above 100-500	4855	78.31	2	157	5012
Above 500-1000	210	19.09	1	19	229
Above 1000	979	57.59	0	-	979
Total	25,607		2,331	5,507	31,114

S&T Personnel employed by the 2331 companies not covered by the survey are estimated at 5,507 persons. Total S&T Personnel in high salary groups in all the medium and large sized companies are estimated at 31,114 persons.

8.4 Applying shares of different classifications/characteristics of S&T Personnel in the surveyed companies, characteristics of all the 31,114 S&T Personnel in the corporate sector have been estimated in Table 8.3.

TABLE 8.3

MAIN CHARACTERISTICS OF S&T PERSONNEL

	Surveyed	Non Surveyed	Total
	(Number of STPs)		
1. Companies	4,467	2,331	6,798
2. S&T Personnel	25,607	5,507	31,114
3. Sex Classification			
Male	25,404	5,463	30,867
Female	203	44	247
Total	25,607	5,507	31,114
4. Field of Specialisation			
Technical	19,088	4,105	23,193
Scientific	6,519	1,402	7,921
Total	25,607	5,507	31,114
5. Level of Qualifications			
Doctorates	639	138	777
Post-graduates	4021	865	4886
Graduates	16736	3599	20335
diploma holders	3344	719	4063
Certificate holders	867	186	1053
Total	25,607	5,507	31,114

8.5 Sector wise distribution of S&T Personnel has been estimated by two steps. firstly, S&T Personnel in the 2331 non surveyed companies have been estimated by multiplying employment coefficient of the surveyed companies for each sub sector with number of non surveyed companies in that sub sector. S&T Personnel in the non surveyed companies add up to 6754 persons. In second step, this figure has been reduced proportionately in each sub sector so as to give final estimate of S&T Personnel in the non surveyed companies at 5507. Estimates are shown in Table 8.4.

Table 8.4

SECTOR WISE DISTRIBUTION OF S&T PERSONNEL

Sub-Sectors	Surveyed Companies	Non Surveyed Companies	Total
Government			
Central	6,807	1,257	8,064
State	434	121	555
Total	7,241	1,378	8,619
Non Government			
Large Houses	9,107	1,520	10,627
Multinationals	4,513	311	4,824
Others	4,746	2,298	7,044
Total	18,366	4,129	22,495
Grand Total	25,607	5,507	31,114

8.6 Industry wise distribution of the S&T Personnel has been estimated by some method as adopted for sector wise estimation. The first step gives an estimate of 12,364 S&T Personnel for the non surveyed companies. This has been adjusted industry wise for the final estimate of 5507 persons. Estimates are shown in Table 8.5.

TABLE 8.5

INDUSTRY WISE DISTRIBUTION OF S&T PERSONNEL

Industry	Surveyed Companies	Non Surveyed Companies	Total
			(Number of STPs)
1. Agriculture	43	7	50
2. Mining	432	122	554
3. Manufacturing	17,538	3,953	21,491
4. Electricity	1,572	140	1,712
5. Construction	480	149	629
6. Trade & Hotels	510	138	648
7. Transport & Communications	2,846	472	3,318
8. Services	2,162	526	2,688
9. Others	24	-	24
Total	25,607	5,507	31,114

8.7 State wise distribution of the S&T Personnel has also been estimated by the same method. The first step gives an estimate of 13,604 personnel for the non surveyed companies. Adjusted estimates are given in Table 8.6.

TABLE 8.3

MAIN CHARACTERISTICS OF S&T PERSONNEL

	Surveyed	Non Surveyed	Total
	(Number of STPs)		
1. Companies	4,467	2,331	6,798
2. S&T Personnel	25,607	5,507	31,114
3. Sex Classification			
Male	25,404	5,463	30,867
Female	203	44	247
Total	25,607	5,507	31,114
4. Field of Specialisation			
Technical	19,088	4,105	23,193
Scientific	6,519	1,402	7,921
Total	25,607	5,507	31,114
5. Level of Qualifications			
Doctorates	639	138	777
Post-graduates	4021	865	4886
Graduates	16736	3599	20335
diploma holders	3344	719	4063
Certificate holders	867	186	1053
Total	25,607	5,507	31,114

8.5 Sector wise distribution of S&T Personnel has been estimated by two steps. firstly, S&T Personnel in the 2331 non surveyed companies have been estimated by multiplying employment coefficient of the surveyed companies for each sub sector with number of non surveyed companies in that sub sector. S&T Personnel in the non surveyed companies add up to 6754 persons. In second step, this figure has been reduced proportionately in each sub sector so as to give final estimate of S&T Personnel in the non surveyed companies at 5507. Estimates are shown in Table 8.4.

Table 8.4

SECTOR WISE DISTRIBUTION OF S&T PERSONNEL

Sub-Sectors	Surveyed Companies	Non Surveyed Companies	Total
Government			
Central	6,807	1,257	8,064
State	434	121	555
Total	7,241	1,378	8,619
Non Government			
Large Houses	9,107	1,520	10,627
Multinationals	4,513	311	4,824
Others	4,746	2,298	7,044
Total	18,366	4,129	22,495
Grand Total	25,607	5,507	31,114

8.6 Industry wise distribution of the S&T Personnel has been estimated by some method as adopted for sector wise estimation. The first step gives an estimate of 12,364 S&T Personnel for the non surveyed companies. This has been adjusted industry wise for the final estimate of 5507 persons. Estimates are shown in Table 8.5.

TABLE 8.5

INDUSTRY WISE DISTRIBUTION OF S&T PERSONNEL

Industry	Surveyed Companies	Non Surveyed Companies	Total
			(Number of STPs)
1. Agriculture	43	7	50
2. Mining	432	122	554
3. Manufacturing	17,538	3,953	21,491
4. Electricity	1,572	140	1,712
5. Construction	480	149	629
6. Trade & Hotels	510	138	648
7. Transport & Communications	2,846	472	3,318
8. Services	2,162	526	2,688
9. Others	24	-	24
Total	25,607	5,507	31,114

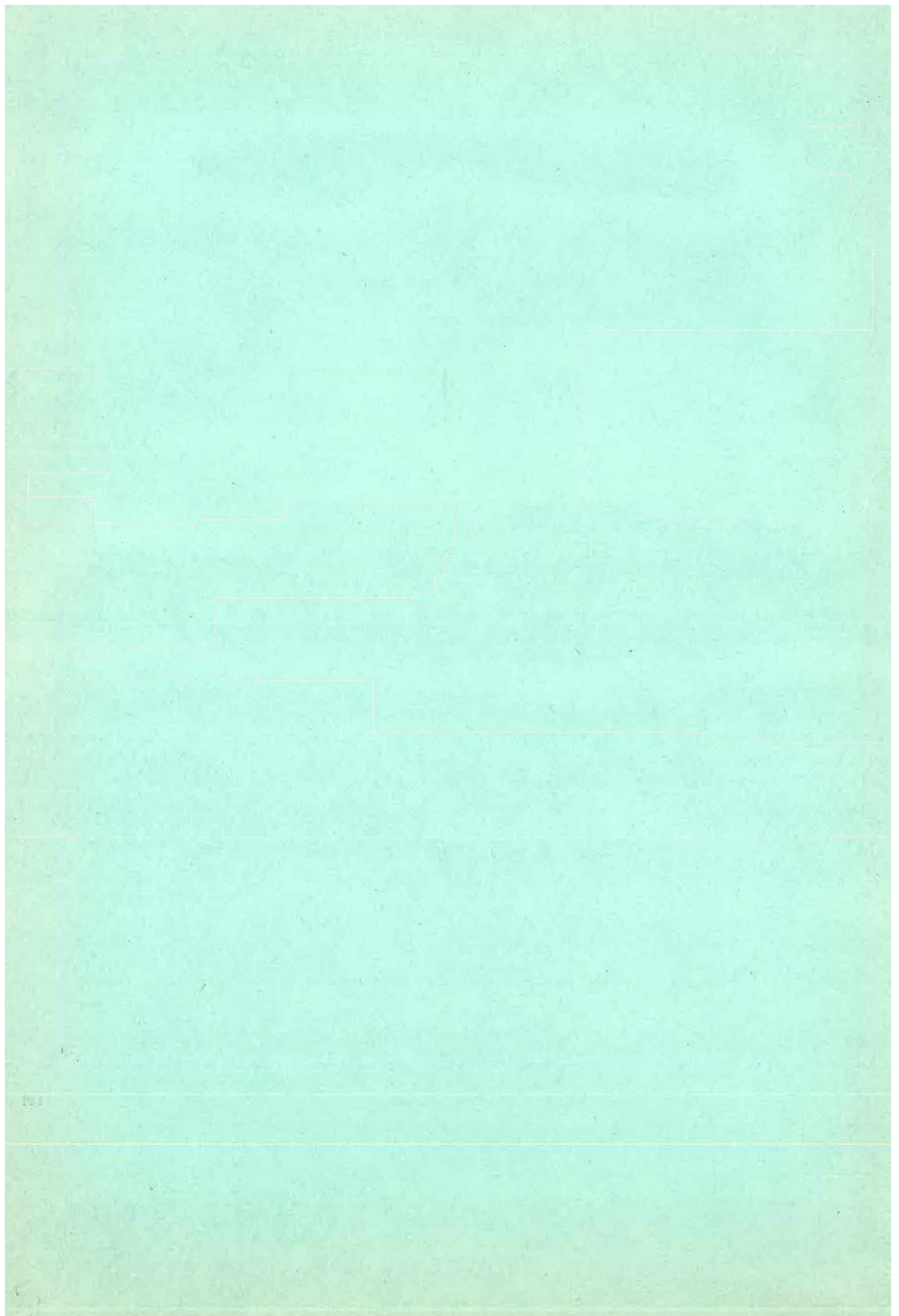
8.7 State wise distribution of the S&T Personnel has also been estimated by the same method. The first step gives an estimate of 13,604 personnel for the non surveyed companies. Adjusted estimates are given in Table 8.6.

TABLE 8.6

STATE WISE DISTRIBUTION OF S&T PERSONNEL

State/UT	Surveyed Companies	Non Surveyed Companies	Total
(Number of STPs)			
1. Maharashtra	11,596	2,344	13,940
2. Delhi	3,899	1,199	5,098
3. West Bengal	2,922	668	3,590
4. Gujarat	2,286	314	2,600
5. Tamil Nadu	940	255	1,195
6. Andhra Pradesh	767	113	880
7. Karnataka	665	131	796
8. Assam	343	70	413
9. Uttar Pradesh	323	77	400
10. Bihar	309	78	387
11. Madhya Pradesh	263	66	329
12. Goa	245	9	254
13. Punjab	243	51	294
14. Orissa	219	28	247
15. Rajasthan	193	20	213
16. Others	394	84	478
Total	25,607	5,507	31,114

ANNEXURES



INDEX OF TABLES

Table No	Topic	Page No
Table 3.1	Pattern of Employment	28
Table 3.2	Pattern of Employment (Ratios and Shares)	30
Table 3.3	Distribution of S&T Personnel by Fields of Specialisation	32
Table 3.4	Distribution of S&T Personnel by Levels of Qualifications	32
Table 3.5	Characteristics of S&T Personnel in Specialised Fields	34
Table 3.6	Distribution of S&T Personnel by Level of Responsibilities	38
Table 3.7	Distribution of S&T Personnel by Primary Work Activity	38
Table 3.8	Fields of Specialisation for Different Levels of Qualifications Responsibilities and Activities of S&T Personnel	40
Table 3.9	Share of S&T Personnel employed by Government Companies by Fields of Specialisation for different Levels of Qualifications Responsibilities and Activities	42
Table 3.10	Levels of Qualifications for different Disciplines Responsibilities and Activities of S&T Personnel	44
Table 3.11	Shares of S&T Personnel in Government Companies by Levels of Qualifications for different Disciplines Responsibilities and Activities	46
Table 3.12	Age Experience and Index of Mobility of S&T Personnel Different Characteristics	48
Table 3.13	Age wise distribution of S&T Personnel in Government and Non Government Companies	50
Table 3.14	Experience wise distribution of S&T Personnel in Government and Non Government Companies	50
Table 3.15	Distribution of S&T Personnel by Remuneration Ranges	52
Table 3.16	Distribution of Companies under different Investment Ranges and S&T Personnel Employed by them	54

INDEX OF TABLES

Table No	Topic	Page No
Table 3.17	Comparative Distribution of S&T Personnel in Government and Non Government Companies by different Investment Ranges	54
Table 3.18	Distribution of Companies Under different Income Ranges and S&T Personnel Employed by them	56
Table 3.19	Comparative distribution of S&T Personnel in Government and Non Government Companies under different Income Ranges	56
Table 3.20	Distribution of Companies under different Employment Groups and S&T Personnel Employed by them	58
Table 3.21	Comparative Distribution of S&T Personnel in Government and Non Government Companies according to Size of Employment	58
Table 3.22	State wise Distribution of Scientific and Technical Personnel	60
Table 3.23	Industry wise Distribution of Scientific and Technical Personnel	62
Table 4.1	Sector wise distribution of Companies and S&T Personnel	65
Table 4.2	Sector wise main Characteristics of S&T Personnel	67
Table 4.3	Sector wise main Characteristics and Distribution of Companies and S&T Personnel	69
Table 4.4	Sector wise and Age wise distribution of S&T Personnel	71
Table 4.5	Sector wise Characteristics of S&T Personnel	73
Table 4.6	Sector wise and Remuneration wise Distribution of S&T Personnel	77
Table 4.7	Sector wise and S&T Personnel Range wise Distribution of S&T Personnel	79
Table 4.8	Sector wise and Investment wise Distribution of Companies and S&T Personnel	83
Table 4.9	Sector wise and Region wise Distribution of S&T Personnel	85

INDEX OF TABLES

Table No	Topic	Page No
Table 4.10	Sector wise and Industry wise Distribution of S&T Personnel	87
Table 5.1	State wise Distribution of Companies and S&T Personnel	89
Table 5.2	State wise and Sector wise Distribution of S&T Personnel	91
Table 5.3	Region wise Distribution of S&T Personnel	93
Table 5.4	State wise and Region wise Characteristics of S&T Personnel	95
Table 5.5	Region wise and Age wise Distribution of S&T Personnel	97
Table 5.6	State wise Levels of Qualifications of S&T Personnel	99
Table 5.7	State wise Fields of Specialisation of S&T Personnel	101
Table 5.8	Region wise and Remuneration wise Distribution of S&T Personnel	103
Table 5.9	Region wise and Investment wise Distribution of S&T Personnel	103
Table 5.10	Region wise and Industry wise Distribution of S&T Personnel	105
Table 6.1	Industry wise distribution of S&T Personnel	107
Table 6.2	Industry wise Employment of S&T Personnel in Govt. Companies	109
Table 6.3	Industry wise Characteristics of S&T Personnel	111
Table 6.4	Industry wise and Age wise Distribution of S&T Personnel	113
Table 6.5	Industry wise Fields of Specialisation of S&T Personnel	115
Table 6.6	Industry wise Levels of Qualifications of S&T Personnel	117
Table 6.7	Industry wise Levels of Responsibilities of S&T Personnel	119

INDEX OF TABLES

Table No	Topic	Page No
Table 6.8	Industry wise and Primary Work Activity wise Distribution of S&T Personnel	121
Table 6.9	Industry wise and Remuneration wise Distribution of S&T Personnel	123
Table 6.10	Industry wise and Investment wise Distribution of S&T Personnel	125
Table 6.11	Industry wise and Region wise Distribution of S&T Personnel	127
Table 7.1	Sector wise Average Remuneration of S&T Personnel	129
Table 7.2	Average Remuneration for various Characteristics of S&T Personnel	129
Table 7.3	Age wise average Remuneration of S&T Personnel	135
Table 7.4	Experience wise average Remuneration of S&T Personnel	135
Table 7.5	Average Remuneration of S&T Personnel in Companies under different Income ranges	137
Table 7.6	Average Remuneration of S&T Personnel in Companies under different Investment ranges	139
Table 7.7	Average Remuneration of S&T Personnel in Companies under different S&T Employee Ranges	139
Table 7.8	State wise Remuneration of S&T Personnel	141
Table 7.9	Industry wise Remuneration of S&T Personnel	143
Table 7.10	Distribution of S&T Personnel under different Remuneration Ranges and Classifications of Companies/S&T Personnel	145

INDEX OF GRAPHS

S.No	Topic	Page No.
1.	Pattern of Employment and Average Employment per Company	31
2.	Distribution of S&T Personnel by fields of Specialization	36
3.	Distribution of S&T Personnel by Levels of Quallifications	36
4.	Distribution of S&T Personnel by Levels of Responsibility	37
5.	Distribution of S&T Personnel by Primary Work Activity	37
6.	Age wise Distribution of S&T Personnel	61
7.	Investment size wise Distribution of Companies and S&T personnel	61
8.	Sector wise Distribution of Companies and S&T Personnel	66
9.	Average paid up capital and S&T Personnel per Company Sector wise	68
10.	Distribution of S&T Personnel by Levels of Qualification, Fields of Specialisation, Levels of Responsibility, and Primary Work Activity	75
11.	Distribution of Companies by Size of S&T Personnel	81
12.	Distribution of S&T Personnel by STP. Size of Companies	81
13.	Distribution of Companies by size of Investment	82
14.	Distribution of S&T Personnel by Investment Size of Companies	82
15.	State wise Distribution of Companies and S&T Personnel	92
16.	State wise and Sector wise Distribution of S&T Personnel	94
17.	Industry wise Distribution of S&T Personnel	108
18.	Industry wise Distribution of S&T Personnel in Manufacturing Industries	108

INDEX OF GRAPHS

S.No	Topic	Page No.
19.	Industry wise and Sector wise Distribution of S&T Personnel	112
20.	Industry wise and Sector wise Distribution of S&T Personnel in Manufacturing Industries	112
21.	Industry wise Distribution of S&T Personnel in each Region	124
22.	Industry wise Distribution of S&T Personnel in Manufacturing Industries in each Region	124
23.	Sector wise Remuneration of S&T Personnel	130
24.	Age wise Remuneration of S&T Personnel	130
25.	Remuneration of S&T Personnel by Levels of Qualifications	133
26.	Remuneration of S&T Personnel by Levels of Responsibilities	133
27.	Remuneration by Employment Sizes of Companies	142
28.	Industry wise Remuneration	142
29.	Remuneration wise Distribution of S&T Personnel by Sectors	147
30.	Remuneration wise Distribution of S&T Personnel by Age Ranges	147
31.	Remuneration wise Distribution of S&T Personnel by Investment Ranges	149
32.	Remuneration wise Distribution of S&T Personnel by Regions	149

LIST OF ANNEXURES

Annexure No	Topic	Page No
Annexure - 1	Main Characteristics and sector wise Distribution of Companies and S&T Personnel employed by them	165
Annexure - 2 A	Important Characteristics of S&T Personnel in Government and Non Government Companies	167
Annexure - 2 B	Important Characteristics of S&T Personnel in Government Companies	169
Annexure - 2 C	Important Characteristics of S&T Personnel in Non Government Companies	171
Annexure - 3 A	Fields of Specialisation for different Levels of Qualifications Responsibilities and Activities of S&T Personnel in Government and Non Government Companies	173
Annexure - 3 B	Fields of Specialisation for different Levels of Qualifications Responsibilities and Activities of S&T Personnel in Government Companies	174
Annexure - 3 C	Fields of Specialisation for different Levels of Qualifications Responsibilities and Activities of S&T Personnel in Non Government Companies	175
Annexure - 4 A	Levels of Qualifications for different Disciplines Responsibilities and Activities of S&T Personnel in Government and Non Government Companies	176
Annexure - 4 B	Levels of Qualifications for different Disciplines Responsibilities and Activities of S&T Personnel in Government Companies	178
Annexure - 4 C	Levels of Qualifications for different Disciplines Responsibilities and Activities of S&T Personnel in Non Government Companies	180
Annexure - 5	Age wise distribution of S&T Personnel and their Characteristics	182
Annexure - 6	Experience wise Distribution of S&T Personnel	183
Annexure - 7	Distribution of Companies under different Investment ranges and S&T Personnel employed by them	184

LIST OF ANNEXURES

Annexure no	Topic	Page No.
Annexure - 8	Distribution of Companies under different Income ranges and S&T Personnel Employed by them	185
Annexure - 9	Distribution of Companies under different Employment ranges and S&T Personnel employed by them	186
Annexure - 10	Sector wise Characteristics of S&T Personnel	187
Annexure - 11 A	State wise distribution of S&T Personnel in Government and Non Government Companies	188
Annexure - 11 B	State wise distribution of S&T Personnel in Government Companies	189
Annexure - 11 C	State wise distribution of S&T Personnel in Non Government Companies	190
Annexure - 12 A	State wise Characteristics of S&T Personnel in Government and Non Government Companies	191
Annexure - 12 B	State wise Characteristics of S&T Personnel in Government Companies	192
Annexure - 12 C	State wise Characteristics of S&T Personnel in Non Government Companies	193
Annexure - 13	Region wise distribution of S&T Personnel in Government and Non Government Companies	194
Annexure - 14 A	State wise Levels of Qualifications of S&T Personnel in Government and Non Government Companies	195
Annexure - 14 B	State wise Levels of Qualifications of S&T Personnel in Government Companies	196
Annexure - 14 C	State wise Levels of Qualifications of S&T Personnel in Non Government Companies	197
Annexure - 15 A	State wise Fields of Specialisation of S&T Personnel in Government and Non Government Companies	198
Annexure - 15 B	State wise Fields of Specialisation of S&T Personnel in Government Companies	199

LIST OF ANNEXURE

Annexure no	Topic	Page No.
Annexure - 15 C	State wise Fields of Specialisation of S&T Personnel in Non Government Companies	200
Annexure - 16 A	Industry wise distribution of S&T Personnel in Government and Non Government Companies	201
Annexure - 16 B	Industry wise distribution of S&T Personnel in Government Companies	204
Annexure - 16 C	Industry wise distribution of S&T Personnel in Non Government Companies	207
Annexure - 17 A	Industry wise Characteristics of S&T Personnel in Government and Non Government Companies	210
Annexure - 17 B	Industry wise Characteristics of S&T Personnel in Government Companies	213
Annexure - 17 C	Industry wise Characteristics of S&T Personnel in Non Government Companies	216
Annexure - 18 A	Levels of Qualifications of S&T Personnel for different Industries in Government and Non Government Companies	219
Annexure - 18 B	Levels of Qualifications of S&T Personnel for different Industries in Government Companies	222
Annexure - 18 C	Levels of Qualifications of S&T Personnel for different Industries in Non Government Companies	225
Annexure - 19 A	Fields of Specialisation of S&T Personnel for different Industries in Government and Non Government Companies	228
Annexure - 19 B	Fields of Specialisation of S&T Personnel for different Industries in Government Companies	231
Annexure - 19 C	Fields of Specialisation of S&T Personnel for different Industries in Non Government Companies	234

ANNEXURE - 1

MAIN CHARACTERISTICS AND SECTOR WISE DISTRIBUTION OF COMPANIES AND
SCIENTIFIC AND TECHNICAL PERSONNEL EMPLOYED BY THEM

Characteristics	Government Companies			Non Government Companies			All Companies	
	Central Govt. (1)	State Govt. (2)	Total (3)	Large Houses (4)	Multi Nationals (5)	Others (6)	Total (7)	(8)
	(Numbers)							
1. Companies	181	446	627	501	118	3221	3840	4467
Paid up capital	54,016	5,842	59,858	9,319	2,166	16,992	28,477	88335
Income	161,168	17,198	178,356	77,201	40,315	224,014	341,530	519,896
	(Numbers)							
2. S&T Personnel								
Male	6,748	427	7,175	9,040	4,484	4,705	18,229	25,404
Female	59	7	66	67	29	41	137	203
Total	6,087	434	7,241	9,107	4,513	4,746	18,366	25,607
3. Non STP	3,461	316	3,777	5,029	2,784	3090	10,903	14,680
4. All Personnel	10,268	750	11,018	14,136	7,297	7,836	29,269	40,287
5. Average per company								
S&T Personnel	37.6	0.9	11.5	18.1	38.2	1.4	4.7	5.7
Non STP	19.1	0.7	6.0	10.0	23.5	0.9	2.8	3.2
All Personnel	56.7	1.6	17.5	28.2	61.8	2.4	7.6	9.0
6. Companies	(Percent)							
Numbers	4.05	9.98	14.04	11.22	2.64	72.11	85.96	100.00
Paid up Capital	61.15	6.61	67.76	10.55	2.45	19.24	32.24	100.00
Income	31.00	3.31	34.31	14.85	7.72	43.09	65.69	100.00
7. S&T Personnel								
Male	26.56	1.68	28.24	35.58	17.65	18.52	71.76	100.00
Female	29.06	3.45	32.51	33.00	14.29	20.20	67.49	100.00
Total	26.58	1.69	28.28	35.56	17.62	18.53	71.72	100.00
8. Non STP	23.58	2.15	25.73	34.26	18.96	21.05	74.27	100.00
9. All Personnel	25.49	1.86	27.35	35.09	18.11	19.45	72.65	100.00

ANNEXURE - 1
(Continued)

Characteristics	Government Companies			Non Government Companies			All Companies	
	Central Govt.	State Govt.	Total	Large Houses	Multi Nationals	Others	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
								(Numbers)
10. Remuneration (Rs. 000) S&T Personnel								
Male	223	177	220	211	223	240	221	221
Female	176	160	175	184	191	208	193	187
Total	223	177	220	210	223	240	221	221
Non STP	239	175	234	209	210	223	213	219
All Personnel	228	176	224	210	218	233	218	220
11. Age S&T Personnel (Years)								
Male	44.8	48.7	45.0	47.6	47.7	46.9	47.0	46.4
Female	45.0	46.6	45.1	47.4	42.1	41.0	44.4	44.6
Total	44.8	48.7	45.0	47.6	45.7	46.8	46.9	46.4
12. Experience S&T Personnel (Years)								
Male	20.1	23.1	20.2	24.2	23.0	23.6	23.6	22.7
Female	19.2	19.1	19.2	22.5	19.4	17.5	20.3	20.0
Total	20.1	23.1	20.2	24.2	22.9	23.6	23.7	22.7
13. Experience in last company (Years)								
Male	14.1	11.0	13.9	15.9	13.8	10.4	14.3	14.2
Female	14.6	10.0	14.2	16.4	12.5	10.5	13.8	13.9
Total	14.1	11.0	13.9	15.9	13.8	10.4	14.3	14.2
14. STP Intensity (Percent)	66.29	57.87	65.72	64.42	61.85	60.57	62.75	63.56
15. Index of nobility (Ratios)								
Male	1.43	2.10	1.45	1.52	1.67	2.27	1.65	1.60
Female	1.32	1.91	1.35	1.37	1.55	1.67	1.47	1.44
Total	1.43	2.10	1.45	1.52	1.66	2.27	1.66	1.60

ANNEXURE 2 - A

IMPORTANT CHARACTERISTICS OF SCIENTIFIC & TECHNICAL PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

Characteristics (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Percent Share (5)	Annual Remun. (Rs.000) (6)	Experience		
						Age (Years) (7)	Total (Years) (8)	In last Co. (Years) (9)
I. Field of Specialisation								
(i) Technology								
Mechanical	5719	11	5730	22.38	200	47.4	24.3	15.7
Electrical	3466	26	3492	13.34	193	46.5	23.3	16.0
Civil	908	6	914	3.57	192	50.4	27.1	16.8
Chemical	1450	1	1451	5.67	235	46.6	22.9	13.8
Computer	98	1	99	0.39	207	43.7	20.1	12.9
Others	3638	8	3646	14.24	295	42.0	17.0	10.4
Not Specified	3745	11	3756	14.67	217	45.2	21.6	12.1
Total (Technical)	19024	64	19088	74.54	222	45.8	22.2	13.9
(ii) Sciences								
(a) Agriculture	413	3	416	1.62	190	47.6	23.3	14.5
(b) Medical	588	68	656	2.56	195	47.5	20.5	14.7
(c) Natural								
Physics	110	0	110	0.43	205	47.3	23.3	13.9
Chemistry	254	1	255	1.00	221	48.3	24.5	16.7
Biology	6	1	7	0.03	176	48.0	23.4	13.9
Others	242	6	248	0.97	213	47.3	23.8	16.2
Not Specified	4767	60	4827	18.85	221	48.3	24.9	15.3
Total (c)	5379	68	5447	21.27	215	47.7	24.0	16.0
Total (Sciences)	6380	139	6519	25.46	216	48.1	24.3	15.3
Grand Total (i+ii)	25404	203	25607	100.00	221	46.4	22.7	14.2
II. Level of Qualifications								
Doctorate	632	7	639	2.50	255	49.0	23.8	11.4
Post Graduate	3974	47	4021	15.70	246	46.1	21.8	12.3
Graduate	16598	138	16736	65.36	214	47.2	23.7	14.9
Diploma	3335	9	3344	13.06	221	42.1	18.6	13.3
Others	865	2	867	3.39	205	45.8	23.3	17.1
Total	25404	203	25607	100.00	221	46.4	22.7	14.2

ANNEXURE 2-A
(Continued)

Characteristics (1)	Male	Female	Total		Annual	Age	Experience	
	(Nos) (2)	(Nos) (3)	(Nos) (4)	(Percent) (5)	(Rs.000) (6)	(Years) (7)	Total (Years) (8)	In last Co. (Years) (9)
III. Level of Responsibility								
Chairman	49	0	49	0.19	515	56.7	29.6	13.1
Managing Director	753	7	760	2.97	387	50.7	27.0	10.2
Director	869	9	878	3.43	288	51.4	27.6	12.5
General Manager	3931	11	3942	15.39	241	50.0	26.6	12.2
Dy General Manager	2124	12	2136	8.34	186	48.5	25.0	15.6
Manager	8116	40	8156	31.85	191	46.4	23.1	15.8
Asst / Dy Manager	2113	26	2139	8.35	173	45.5	22.3	18.1
Engineer	2771	8	2779	10.85	246	41.8	17.4	12.5
Scientist	26	1	27	0.11	167	43.3	18.8	10.6
Doctor	520	62	582	2.27	188	47.4	20.2	15.2
Computer Personnel	141	1	142	0.55	181	40.4	17.2	11.2
Others	3991	26	4017	15.69	245	43.4	19.5	12.7
Total	25404	203	25607	100.00	221	46.4	22.7	14.2
III. Primary Work Activity								
Senior Management	1271	13	1284	5.01	355	50.8	27.0	11.0
Plant Level	7749	26	7775	30.36	200	47.5	24.2	15.7
Marketing	3944	19	3963	15.48	209	46.2	23.1	14.2
Admn & Finance	1473	16	1489	5.81	199	47.5	24.1	13.1
R & D	966	8	974	3.80	193	48.2	24.5	15.6
Medical	559	66	625	2.44	189	47.4	20.3	15.5
Computer	535	5	540	2.11	190	43.0	19.9	12.4
Others	5544	25	5569	21.75	261	42.8	18.4	11.7
Not Specified	3363	25	3388	13.23	194	47.6	24.2	16.8
Total	25404	203	25607	100.00	221	46.4	22.7	14.2

ANNEXURE 2-B

IMPORTANT CHARACTERISTICS OF SCIENTIFIC & TECHNICAL PERSONNEL-GOVERNMENT COMPANIES

Characteristics (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Percent Share (5)	Annual	Experience		
					Remun. (Rs.000) (6)	Age (Years) (7)	Total (Years) (8)	In last Co. (Years) (9)
I. Field of Specialisation								
(i) Technology								
Mechanical	1414	6	1420	19.61	167	47.8	24.3	17.0
Electrical	702	5	707	9.76	171	47.2	23.5	15.4
Civil	429	3	432	5.97	175	49.3	26.0	16.7
Chemical	399	1	400	5.52	185	47.3	23.1	16.2
Computer	47	1	48	0.66	210	42.6	18.6	13.5
Others	1979	3	1982	27.37	326	39.8	13.8	11.1
Not Specified	1015	4	1019	14.07	199	42.9	17.8	10.3
Total (Technical)	5985	23	6008	82.97	227	44.3	19.6	13.6
(ii) Sciences								
(a) Agriculture	58	0	58	0.80	195	50.7	24.8	17.7
(b) Medical	233	33	266	3.67	178	46.9	18.6	14.8
(c) Natural								
Physics	21	0	21	0.29	169	49.4	25.2	13.4
Chemistry	32	0	32	0.44	202	48.9	24.8	15.6
Biology	0	0	0	0.00	000	00.0	00.0	00.0
Others	49	2	51	0.70	168	48.2	24.6	16.5
Not Specified	797	8	805	11.12	187	48.8	24.3	15.6
Total (c)	899	10	909	12.55	179	48.6	24.8	15.6
Total (Sciences)	1190	43	1233	17.03	185	48.4	23.2	15.5
Grand Total (i+ii)	7175	66	7241	100.00	220	45.0	20.2	13.9
II. Levels of Qualifications								
Doctorate	155	2	157	2.17	191	49.4	24.1	14.0
Post Graduate	1176	19	1195	16.50	269	46.2	20.4	13.3
Graduate	4331	42	4373	60.39	198	47.4	23.0	15.7
Diploma	1394	3	1397	19.29	251	36.0	11.2	9.1
Others	119	0	119	1.64	205	42.9	19.0	13.1
Total	7175	66	7241	100.00	220	45.0	20.2	13.9

ANNEXURE 2 - B
(Continued)

Characteristics (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Total (Percent) (5)	Annual Remun. (Rs.000) (6)	Age (Years) (7)	Experience Total (Years) (8)	Experience In last Co. (Years) (9)
III. Level of Responsibility								
Chairman	12	0	12	0.17	227	55.8	17.1	6.6
Managing Director	101	1	102	1.41	192	52.7	26.4	7.6
Director	195	1	196	2.71	178	53.7	28.5	14.7
General Manager	595	3	598	8.26	185	52.1	27.7	15.3
Dy General Manager	810	2	812	11.21	174	49.8	25.5	16.9
Manager	2079	12	2091	28.88	186	46.3	22.3	16.4
Asst / Dy Manager	253	1	254	3.51	177	44.4	20.9	16.1
Engineer	1368	7	1375	18.99	277	40.5	14.9	11.9
Scientist	4	0	4	0.06	164	47.8	21.5	14.8
Doctor	232	33	265	3.66	173	46.8	18.8	14.8
Computer Personnel	91	0	91	1.26	161	41.3	17.6	12.5
Others	1435	6	1441	19.90	283	40.0	15.0	10.1
Total	7175	66	7241	100.00	220	45.0	20.2	13.9

IV. Primary Work Activity

Senior Management	215	2	217	3.00	189	52.8	26.8	11.4
Plant Level	1338	6	1344	18.56	184	48.2	23.9	16.4
Marketing	464	3	467	6.45	186	47.7	23.4	15.1
Admn & Finance	491	2	493	6.81	164	46.6	22.2	13.4
R & D	243	2	245	3.38	170	49.8	26.2	19.0
Medical	235	34	269	3.71	173	46.9	18.6	14.8
Computer	254	3	257	3.55	181	43.0	19.6	13.3
Others	2669	9	2678	36.98	292	40.1	14.5	10.8
Not Specified	1266	5	1271	17.55	174	48.1	24.5	17.2
Total	7175	66	7241	100.00	220	45.0	20.2	13.9

ANNEXURE 2-C

IMPORTANT CHARACTERISTICS OF SCIENTIFIC & TECHNICAL PERSONNEL
NON GOVERNMENT COMPANIES

Characteristics (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Percent Share (5)	Annual Remun. (Rs.000) (6)	Age (Years) (7)	Experience Total (Years) (8)	In last Co. (Years) (9)
I. Field of Specialisation								
(i) Technology								
Mechanical	4305	5	4310	23.47	211	47.3	24.3	15.3
Electrical	2764	21	2785	15.16	199	46.3	23.3	16.1
Civil	479	3	482	2.62	207	51.4	28.0	16.8
Chemical	1051	0	1051	5.72	254	46.3	22.8	12.9
Computer	51	0	51	0.28	205	44.8	21.6	12.4
Others	1659	5	1664	9.06	259	44.5	20.7	9.5
Not Specified	2730	7	2737	14.90	223	46.0	23.0	12.7
Total (Technical)	13039	41	13080	71.22	220	46.5	23.4	14.0
(ii) Sciences								
(a) Agriculture	355	3	358	1.95	189	47.1	23.0	14.0
(b) Medical	355	35	390	2.12	206	47.8	21.8	14.7
(c) Natural								
Physics	89	0	89	0.48	214	46.8	22.9	14.0
Chemistry	222	1	223	1.21	224	48.2	24.4	16.9
Biology	6	1	7	0.04	176	48.0	23.4	13.9
Others	193	4	197	1.07	225	47.1	23.6	16.1
Not Specified	3970	52	4022	21.90	228	48.2	25.0	15.3
Total (c)	4480	58	4538	24.71	222	47.5	23.9	16.0
Total (Sciences)	5190	96	5286	28.78	223	48.0	24.5	15.2
Grand Total (i+ii)	18229	137	18366	100.00	221	46.9	23.7	14.3
II. Level of Qualifications								
Doctorate	477	5	482	2.62	276	48.8	23.6	10.5
Post Graduate	2798	28	2826	15.39	236	46.0	22.4	11.9
Graduate	12267	96	12363	67.31	220	47.2	23.9	14.6
Diploma	1941	6	1947	10.60	200	46.6	24.0	16.3
Others	746	2	748	4.07	205	46.3	23.9	17.8
Total	18229	137	18366	100.00	221	46.9	23.7	14.3

ANNEXURE 2-C
(Continued)

Characteristics (1)	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (Percent) (4) (5)	Annual Remun. (Rs.000) (6)	Age (Years) (7)	Experience Total (Years) (8)	In last Co. (Years) (9)	
III. Level of Responsibility								
Chairman	37	0	37 0.20	609	57.0	33.6	15.2	
Managing Director	652	6	658 3.58	418	50.4	27.1	10.6	
Director	674	8	682 3.71	320	50.7	27.4	11.9	
General Manager	3336	8	3344 18.21	251	49.6	26.4	11.7	
Dy General Manager	1314	10	1324 7.21	194	47.8	24.7	14.8	
Manager	6037	28	6065 33.02	193	46.5	23.3	15.6	
Asst / Dy Manager	1860	25	1885 10.26	172	45.6	22.5	18.4	
Engineer	1403	1	1404 7.64	215	43.2	19.9	13.1	
Scientist	22	1	23 0.13	168	42.5	18.3	9.9	
Doctor	288	29	317 1.73	200	47.8	21.4	15.5	
Computer Personnel	50	1	51 0.28	218	38.8	16.5	8.9	
Others	2556	20	2576 14.03	223	45.3	21.9	14.2	
Total	18229	137	18366 100.00	221	46.9	23.7	14.3	
IV. Primary Work Activity								
Senior Management	1056	11	1067 5.81	389	50.4	27.1	11.0	
Plant Level	6411	20	6431 35.02	203	47.4	24.2	15.5	
Marketing	3480	16	3496 19.04	212	46.0	23.1	14.1	
Admn & Finance	982	14	996 5.42	216	48.0	24.8	12.9	
R & D	723	6	729 3.97	201	47.6	23.9	14.4	
Medical	324	32	356 1.94	201	47.8	21.6	15.9	
Computer	281	2	283 1.54	199	43.0	20.2	11.6	
Others	2875	16	2891 15.74	232	45.3	21.9	12.4	
Not Specified	2097	20	2117 11.53	207	47.3	24.1	16.5	
Total	18229	137	18366 100.00	221	46.9	23.7	14.3	

FIELDS OF SPECIALISATION FOR DIFFERENT LEVELS OF QUALIFICATIONS
RESPONSIBILITIES AND ACTIVITIES OF S&T PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

	Technology			Sciences		Grand Total (6)
	Mech (1)	Elec (2)	Total (3)	Natural (4)	Total (5)	
I. Levels of Qualifications (Numbers)						
Doctorate	19	21	225	370	414	639
Post Graduate	383	265	2567	1130	1454	4021
Graduate	4112	2472	12293	3749	4443	19736
Others	1216	734	4004	197	207	4211
Total	5730	3492	19089	5446	6518	25607
II. Levels of Responsibilities						
Chairman	7	1	21	28	28	49
Managing Director	142	83	466	277	294	760
Director	153	123	597	270	281	878
General Manager	902	489	2894	972	1048	3942
Dy General Manager	607	276	1670	412	466	2136
Manager	2272	1167	6106	1831	2050	8156
Asst / Dy Manager	604	449	1676	432	463	2139
Engineer	543	525	2607	169	172	2779
Scientist	0	1	6	17	21	27
Doctor	0	0	7	14	575	582
Computer Personnel	15	25	109	32	32	141
Others	485	353	2930	992	1088	4018
Total	5730	3492	19089	5446	6518	25607
III. Primary Work Activity						
Senior Management	235	146	520	446	464	1284
Plant Level	2303	1437	6398	1307	1377	7775
Marketing	819	546	2432	1291	1531	3963
Admn & Finance	333	203	857	610	632	1489
R & D	249	99	686	265	288	974
Medical	0	2	2	31	613	615
Others	835	549	5143	910	976	6119
Not Specified	956	550	2751	586	637	3388
Total	5730	3492	19089	5446	6518	25607

FIELDS OF SPECIALISATION FOR DIFFERENT LEVELS OF QUALIFICATIONS
RESPONSIBILITIES AND ACTIVITIES OF S&T PERSONNEL
GOVERNMENT COMPANIES

	Technology			Sciences		Grand Total (6)
	Mech (1)	Elec (2)	Total (3)	Natural (4)	Total (5)	
I. Levels of Qualifications (Numbers)						
Doctorate	7	7	69	80	88	157
Post Graduate	80	60	878	217	317	1195
Graduate	1131	552	3566	591	807	4373
Others	202	88	1496	20	20	1516
Total	1420	707	6009	908	1232	7241
II. Levels of Responsibilities						
Chairman	0	0	4	8	8	12
Managing Director	20	6	70	28	32	102
Director	38	23	147	45	49	196
General Manager	103	66	492	94	106	598
Dy General Manager	218	100	692	109	120	812
Manager	652	308	1761	305	330	2091
Asst / Dy Manager	77	20	185	61	69	254
Engineer	201	85	1317	57	58	1375
Scientist	0	0	2	2	2	4
Doctor	0	0	7	4	258	265
Computer Personnel	5	20	78	13	13	91
Others	106	79	1254	182	187	1441
Total	1420	707	6009	908	1232	7241
III. Primary Work Activity						
Senior Management	43	17	157	55	60	217
Plant Level	379	211	1162	177	182	1344
Marketing	64	46	261	179	206	467
Admn & Finance	141	88	365	121	128	493
R & D	83	22	201	43	44	245
Medical	0	0	0	3	263	263
Others	239	181	2709	218	232	2941
Not Specified	471	142	1154	112	117	1271
Total	1420	707	6009	908	1232	7241

FIELDS OF SPECIALISATION FOR DIFFERENT LEVELS OF QUALIFICATIONS
RESPONSIBILITIES AND ACTIVITIES OF S&T PERSONNEL
NON GOVERNMENT COMPANIES

	Technology			Sciences		Grand Total (6)
	Mech (1)	Elec (2)	Total (3)	Natural (4)	Total (5)	
I. Levels of Qualifications (Numbers)						
Doctorate	12	14	156	290	326	482
Post Graduate	303	205	1689	913	1137	2826
Graduate	2981	1920	8727	3158	3636	12363
Others	1014	646	2508	177	187	2695
Total	4310	2785	13080	4538	5286	18366
II. Levels of Responsibilities						
Chairman	7	1	17	20	20	37
Managing Director	122	77	396	249	262	658
Director	115	100	450	225	232	982
General Manager	799	423	2402	878	942	3344
Dy General Manager	389	176	978	303	346	1324
Manager	1620	859	4345	1526	1720	6065
Asst / Dy Manager	527	429	1491	371	394	1885
Engineer	342	440	1290	112	114	1404
Scientist	0	1	4	15	19	23
Doctor	0	0	0	10	317	317
Computer Personnel	10	5	31	19	19	50
Others	379	274	1676	810	901	2577
Total	4310	2785	13080	4538	5286	18366
III. Primary Work Activity						
Senior Management	192	129	663	391	404	1067
Plant Level	1924	1226	5236	1130	1195	6431
Marketing	755	500	2171	1112	1325	3496
Admn & Finance	192	115	492	489	504	996
R & D	166	77	485	222	244	729
Medical	0	2	2	28	350	352
Others	596	368	2434	692	744	3178
Not Specified	561	368	1597	474	520	2117
Total	4310	2785	13080	4538	5286	18366

ANNEXURE 4 - A

LEVELS OF QUALIFICATIONS FOR DIFFERENT DISCIPLINES RESPONSIBILITIES AND ACTIVITIES
OF S&T PERSONNEL-GOVERNMENT AND NON GOVERNMENT COMPANIES

Characteristics (1)	Doctorate		Post Graduate		Graduate		Others		Total	
	Nos (2)	Percent (3)	Nos (4)	Percent (5)	Nos (6)	Percent (7)	Nos (8)	Percent (9)	Nos (10)	Percent (11)
I. Field of Specialisation										
(i) Technology										
Mechanical	19	0.33	383	6.68	4112	71.76	1216	21.22	2730	100.00
Electrical	21	0.60	265	7.59	2472	70.79	734	21.02	3492	100.00
Civil	12	1.31	93	10.18	663	72.54	146	15.97	914	100.00
Chemical	52	3.59	245	16.90	1120	77.24	33	2.28	1450	100.00
Computer	1	1.01	42	42.42	31	31.31	25	25.25	99	100.00
Others	31	0.85	905	24.81	1445	39.61	1267	34.73	3648	100.00
Not Specified	89	2.37	634	16.88	2450	65.23	583	15.52	3756	100.00
Total (Technology)	225	1.18	2567	13.45	12293	64.40	4004	20.98	19089	100.00
(ii) Sciences										
(a) Agriculture	39	9.38	116	27.88	257	61.78	4	0.96	416	100.00
(b) Medical	5	0.76	208	31.71	437	66.62	6	0.91	656	100.00
(c) Natural										
Bio. Sciences	2	28.57	3	42.86	1	14.29	1	14.29	7	100.00
Physics	5	4.50	39	35.14	65	58.56	2	1.80	111	100.00
Chemistry	38	14.90	71	27.84	143	56.08	3	1.18	255	100.00
Others	23	9.16	131	52.19	91	36.25	6	2.39	251	100.00
Not Specified	302	6.26	886	18.37	3449	71.53	185	3.84	4822	100.00
Total (c)	370	6.79	1130	20.75	3749	68.84	197	3.62	5446	100.00
Total (Sciences)	414	6.35	1454	22.31	4443	68.16	207	3.18	6518	100.00
Grand Total (i+ii)	639	2.50	4021	15.70	16736	65.36	4211	16.44	25607	100.00
II. Level of Responsibility										
Chairman	7	14.29	11	22.45	28	57.14	3	6.12	49	100.00
Managing Director	27	3.55	147	19.34	553	72.76	33	4.34	760	100.00
Director	57	6.49	135	15.38	654	74.49	32	3.64	878	100.00
General Manager	173	4.39	729	18.49	2839	72.02	201	5.10	3942	100.00
Dy General Manager	40	1.87	375	17.56	1619	75.80	102	4.78	2136	100.00
Manager	199	2.44	1271	15.58	5873	72.01	813	9.97	8156	100.00
Asst / Dy Manager	26	1.22	217	10.14	1479	69.14	417	19.50	2139	100.00
Engineer	10	0.36	166	5.97	1543	55.52	1060	38.14	2779	100.00
Scientist	17	62.96	8	29.63	2	7.41	0	0.00	27	100.00
Doctor	2	0.34	172	29.55	405	69.59	3	0.52	582	100.00
Computer Personnel	2	1.42	42	29.79	70	49.65	27	19.15	141	100.00
Others	79	1.97	748	18.62	1670	41.57	1520	37.84	4017	100.00
Total	639	2.50	4021	15.70	16735	65.35	4211	16.44	25607	100.00

ANNEXURE 4 - A
(Continued)

Characteristics (1)	Doctorate		Post Graduate		Graduate		Others		Total	
	Nos (2)	Percent (3)	Nos (4)	Percent (5)	Nos (6)	Percent (7)	Nos (8)	Percent (9)	Nos (10)	Percent (11)
III. Primary Work Activity										
Senior Management	58	4.52	225	17.52	945	73.60	56	4.36	1284	100.00
Plant Level	140	1.80	864	11.11	5384	69.25	1387	17.84	7775	100.00
Marketing	70	1.77	564	14.23	3058	77.16	271	6.87	3963	100.00
Admn & Finance	26	1.75	247	16.59	1143	76.76	73	4.90	1489	100.00
R & D	154	15.81	209	21.46	492	50.51	119	12.22	974	100.00
Medical	2	0.33	193	31.38	412	66.99	8	1.30	615	100.00
Computer	15	2.78	160	29.63	294	54.44	71	13.15	540	100.00
Others	98	1.76	1072	19.21	2623	47.02	1786	32.01	5579	100.00
Not Specified	76	2.24	487	14.37	2385	70.40	440	12.99	3388	100.00
Total	639	2.50	4021	15.70	16736	65.36	4211	16.44	25607	100.00

ANNEXURE 4 - B

LEVELS OF QUALIFICATIONS FOR DIFFERENT DISCIPLINES RESPONSIBILITIES
AND ACTIVITIES OF S&T PERSONNEL-GOVERNMENT COMPANIES

Characteristics (1)	Doctorate		Post Graduate		Graduate		Others		Total	
	Nos (2)	Percent (3)	Nos (4)	Percent (5)	Nos (6)	Percent (7)	Nos (8)	Percent (9)	Nos (10)	Percent (11)
Field of Specialisation										
(i) Technology										
Mechanical	7	0.49	80	5.63	1131	79.65	202	14.23	1420	100.00
Electrical	7	0.99	60	8.49	552	78.08	88	12.45	707	100.00
Civil	9	2.08	50	11.57	334	77.31	39	9.03	432	100.00
Chemical	14	3.50	68	17.00	309	77.25	9	2.25	400	100.00
Computer	1	2.08	14	29.17	12	25.00	21	43.75	48	100.00
Others	14	0.71	456	23.00	667	33.64	846	42.66	1983	100.00
Not Specified	17	1.67	150	14.72	561	55.05	291	28.56	1019	100.00
Total (Technology)	69	1.15	878	14.61	3536	59.34	1496	24.90	6009	100.00
(ii) Sciences										
(a) Agriculture	8	13.79	22	37.93	28	45.28	0	0.00	58	100.00
(b) Medical	0	0.00	78	29.32	188	70.68	0	0.00	266	100.00
(c) Natural										
Bio. Sciences	0	**.**	0	**.**	0	**.**	0	**.**	0	***.**
Physics	3	14.29	11	52.38	7	33.33	0	0.00	21	100.00
Chemistry	7	21.88	13	40.62	12	37.50	0	0.00	32	100.00
Others	8	15.69	36	70.59	6	11.76	1	1.96	51	100.00
Not Specified	62	7.71	157	19.53	566	70.40	19	2.36	804	100.00
Total (c)	80	8.81	217	23.90	591	65.09	20	2.20	908	100.00
Total (Sciences)	88	7.14	317	25.73	807	65.50	20	1.62	1232	100.00
Grand Total (i+ii)	157	2.17	1195	16.50	4373	60.39	1516	20.94	7241	100.00
II. Level of Responsibility										
Chairman	4	33.33	1	8.33	7	58.33	0	0.00	12	100.00
Managing Director	5	4.90	28	27.45	69	67.65	0	0.00	102	100.00
Director	17	8.67	38	19.39	140	71.43	1	0.51	196	100.00
General Manager	34	5.69	121	20.23	427	71.40	16	2.68	598	100.00
Dy General Manager	17	2.09	150	18.47	623	76.72	22	2.71	812	100.00
Manager	46	2.20	355	16.98	1536	73.46	154	7.36	2091	100.00
Asst / Dy Manager	5	1.97	16	6.30	172	67.72	61	24.02	254	100.00
Engineer	5	0.36	57	4.15	737	53.60	576	41.89	1375	100.00
Scientist	3	75.00	1	25.00	0	0.00	0	0.00	4	100.00
Doctor	0	0.00	72	27.17	193	72.83	0	0.00	265	100.00
Computer Personnel	1	1.10	26	28.57	39	42.86	25	27.47	91	100.00
Others	20	1.39	330	22.90	430	29.84	661	45.87	1441	100.00
Total	157	2.17	1195	16.50	4373	60.39	1516	20.94	7241	100.00

ANNEXURE 4 - B
(Continued)

Characteristics (1)	Doctorate		Post Graduate		Graduate		Others		Total	
	Nos (2)	Percent (3)	Nos (4)	Percent (5)	Nos (6)	Percent (7)	Nos (8)	Percent (9)	Nos (10)	Percent (11)
III. Primary Work Activity										
Senior Management	17	7.83	45	20.74	154	70.97	1	0.46	217	100.00
Plant Level	14	1.04	146	10.86	1023	76.12	161	11.98	1344	100.00
Marketing	11	2.36	63	13.49	375	80.30	18	3.85	467	100.00
Admn & Finance	9	1.83	97	19.68	372	75.46	15	3.04	493	100.00
R & D	34	13.88	37	15.10	132	53.88	42	17.14	245	100.00
Medical	0	0.00	77	29.28	186	70.72	0	0.00	263	100.00
Computer	8	3.11	61	23.74	129	50.19	59	22.96	257	100.00
Others	24	0.89	499	18.59	1028	38.30	1133	42.21	2684	100.00
Not Specified	40	3.15	170	13.38	974	76.63	87	6.85	1271	100.00
Total	157	2.17	1195	16.50	4373	60.39	1516	20.94	7241	100.00

ANNEXURE 4 - C

LEVELS OF QUALIFICATIONS FOR DIFFERENT DISCIPLINES AND RESPONSIBILITIES
AND ACTIVITIES OF S&T PERSONNEL-NON GOVERNMENT COMPANIES

Characteristics (1)	Doctorate		Post Graduate		Graduate		Others		Total	
	Nos (2)	Percent (3)	Nos (4)	Percent (5)	Nos (6)	Percent (7)	Nos (8)	Percent (9)	Nos (10)	Percent (11)
I. Field of Specialisation										
(i) Technology										
Mechanical	12	0.28	303	7.03	2981	69.16	1014	23.53	4310	100.00
Electrical	14	0.50	205	7.36	1920	68.94	646	23.20	2785	100.00
Civil	3	0.62	43	8.92	329	68.26	107	22.20	482	100.00
Chemical	38	3.62	177	16.86	811	77.24	24	2.29	1050	100.00
Computer	0	0.00	28	54.90	19	37.25	4	7.84	51	100.00
Others	17	1.02	449	26.97	778	46.73	421	25.29	1665	100.00
Not Specified	72	2.63	484	17.68	1889	69.02	292	10.67	2737	100.00
Total (Technology)	156	1.19	1689	12.91	8727	66.72	2508	19.17	13080	100.00
(ii) Sciences										
(a) Agriculture	31	8.66	94	26.26	229	63.97	4	1.12	358	100.00
(b) Medical	5	1.28	130	33.33	249	63.85	6	1.54	390	100.00
(c) Natural Bio. Sciences	2	28.57	3	42.86	1	14.29	1	14.29	7	100.00
Physics	2	2.22	28	31.11	58	64.44	2	2.22	90	100.00
Chemistry	31	13.90	58	26.01	131	58.74	3	1.35	223	100.00
Others	15	7.50	95	47.50	85	42.50	5	2.50	200	100.00
Not Specified	240	5.97	729	18.14	2883	71.75	166	4.13	4018	100.00
Total (c)	290	6.39	913	20.12	3158	69.59	177	3.90	4538	100.00
Total (Sciences)	326	6.17	1137	21.51	3636	68.79	187	3.54	5286	100.00
Grand Total (i+ii)	482	2.62	2826	15.39	12363	67.31	2695	14.67	18366	100.00
II. Level of Responsibility										
Chairman	3	8.11	10	27.03	21	56.76	3	8.11	37	100.00
Managing Director	22	3.34	119	18.09	484	73.56	33	5.02	658	100.00
Director	40	5.87	97	14.22	514	75.37	31	4.55	682	100.00
General Manager	139	4.16	608	18.18	2412	72.13	185	5.53	3344	100.00
Dy General Manager	23	1.74	225	16.99	996	75.23	80	6.04	1324	100.00
Manager	153	2.52	916	15.10	4337	71.51	659	10.87	6065	100.00
Asst / Dy Manager	21	1.11	201	10.66	1307	69.34	356	18.89	1885	100.00
Engineer	5	0.36	109	7.76	806	57.41	484	34.47	1404	100.00
Scientist	14	60.87	7	30.43	2	8.70	0	0.00	23	100.00
Doctor	2	0.63	100	31.55	212	66.88	3	0.95	317	100.00
Computer Personnel	1	2.00	16	32.00	31	62.00	2	4.00	50	100.00
Others	59	2.29	418	16.23	1240	48.14	859	33.35	2576	100.00
Total	482	2.62	2826	15.39	12362	67.31	2695	14.67	18366	100.00

ANNEXURE 4 - C
(Continued)

Characteristics (1)	Doctorate		Post Graduate		Graduate		Others		Total	
	Nos (2)	Percent (3)	Nos (4)	Percent (5)	Nos (6)	Percent (7)	Nos (8)	Percent (9)	Nos (10)	Percent (11)
III. Primary Work Activity										
Senior Management	41	3.84	180	16.87	791	74.13	55	5.15	1067	100.00
Plant Level	126	1.96	718	11.16	4361	67.81	1226	18.09	6431	100.00
Marketing	59	1.69	501	14.33	2683	76.74	253	7.24	3496	100.00
Admn & Finance	17	1.71	150	15.06	771	77.41	58	5.82	996	100.00
R & D	120	16.46	172	23.59	360	49.38	77	10.56	729	100.00
Medical	2	0.57	116	32.95	226	64.20	8	2.27	352	100.00
Computer	7	2.47	99	34.98	165	58.30	12	4.24	283	100.00
Others	74	2.56	573	19.79	1595	55.09	653	22.56	2895	100.00
Not Specified	36	1.70	317	14.97	1411	66.65	353	16.67	2117	100.00
Total	482	2.62	2826	15.39	12363	67.31	2695	14.67	18366	100.00

ANNEXURE 5

AGE WISE DISTRIBUTION OF S&T PERSONNEL AND THEIR CHARACTERISTICS

Age group (Years) (1)	S&T Personnel				Average Remun. (Rs.000) (6)	Average Age (Years) (7)	Average Experience		
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Total (Percent) (5)			Total (Years) (8)	In last Co. (Years) (9)	
I. GOVERNMENT AND NON GOVERNMENT COMPANIES									
Upto	20	15	0	15	0.06	228	18.4	3.0	2.3
21 -	30	1318	12	1330	5.19	235	26.6	4.9	3.3
31 -	40	4429	53	4482	17.50	222	36.5	14.4	8.8
41 -	50	10925	86	11011	43.01	212	45.8	21.9	13.9
51 -	60	8174	51	8225	32.12	223	54.7	30.3	19.2
Above	60	543	1	544	2.12	317	63.5	38.7	19.4
Total	25404	203	25607	100.00	221	46.4	22.7	14.2	
II. GOVERNMENT COMPANIES									
Upto	20	10	0	10	0.14	230	19.5	1.2	1.2
21 -	30	719	2	721	9.96	258	25.7	3.0	2.9
31 -	40	1141	14	1155	15.95	271	36.8	12.9	11.1
41 -	50	3118	37	3155	43.57	207	45.9	21.0	15.0
51 -	60	2170	13	2183	30.15	199	54.4	28.7	17.6
Above	60	17	0	17	0.23	391	63.1	32.3	14.9
Total	7175	66	7241	100.00	220	45.0	20.2	13.9	
III. NON GOVERNMENT COMPANIES									
Upto	20	5	0	5	0.03	225	16.2	6.6	4.6
21 -	30	599	10	609	3.32	209	27.6	7.2	3.7
31 -	40	3288	39	3327	18.11	204	36.4	14.8	8.0
41 -	50	7807	49	7856	42.77	215	45.8	22.2	13.4
51 -	60	6004	38	6042	32.90	232	54.8	30.8	19.5
Above	60	526	1	527	2.87	315	63.5	38.9	19.5
Total	18229	137	18366	100.00	221	46.9	23.7	14.3	

EXPERIENCE WISE DISTRIBUTION OF S&T PERSONNEL
AND THEIR CHARACTERISTICS

Experience group (Years) (1)	S&T Personnel			Total (Nos) (4)	Total (Percent) (5)	Average Remun. (Rs.000) (6)	Average Age (Years) (7)	Average Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)					Total (Years) (8)	In last Co. (Years) (9)
I. GOVERNMENT AND NON GOVERNMENT COMPANIES									
Upto	5	1141	7	1148	4.48	267	30.0	2.7	2.5
6	-	10	14	1177	4.60	230	32.5	8.4	5.5
11	-	15	20	1287	5.03	247	37.1	12.8	10.2
16	-	20	72	6391	24.96	212	41.9	17.3	10.4
21	-	25	46	5659	22.10	207	46.8	23.0	14.7
26	-	30	26	4809	18.78	210	51.1	28.0	17.8
31	-	35	12	3638	14.21	227	55.1	32.7	20.5
36	-	40	5	1235	4.82	247	58.5	37.3	22.2
Above	40	262	1	263	1.03	351	63.8	43.5	21.4
Total		25404	203	25607	100.00	221	46.4	22.7	14.2
II. GOVERNMENT COMPANIES									
Upto	5	943	2	945	13.05	271	30.1	2.7	2.6
6	-	10	2	303	4.18	309	38.5	8.1	7.8
11	-	15	17	818	11.30	270	39.4	13.2	11.8
16	-	20	14	1176	16.24	221	43.5	18.1	14.8
21	-	25	22	1600	22.10	193	47.1	23.0	16.2
26	-	30	6	1372	18.95	185	51.3	28.0	17.9
31	-	35	3	867	11.97	194	54.9	32.7	18.0
36	-	40	0	157	2.17	196	57.0	36.8	18.9
Above	40	3	0	3	0.04	403	65.0	41.0	12.0
Total		7175	66	7241	100.00	220	45.0	20.2	13.9
III. NON GOVERNMENT COMPANIES									
Upto	5	198	5	203	1.11	251	29.3	2.7	2.0
6	-	10	12	874	4.76	202	30.5	8.4	4.7
11	-	15	3	469	2.55	207	33.2	12.2	7.4
16	-	20	58	5215	28.39	210	41.8	17.2	9.4
21	-	25	24	4059	22.10	213	46.7	23.0	14.0
26	-	30	20	3437	18.71	220	51.1	28.8	17.7
31	-	35	9	2771	15.09	237	55.1	32.8	21.2
36	-	40	5	1078	5.87	254	58.7	37.4	22.7
Above	40	259	1	260	1.42	350	63.8	43.6	21.5
Total		18229	137	18366	100.00	221	46.9	23.7	14.3

ANNEXURE 7

DISTRIBUTION OF COMPANIES UNDER DIFFERENT INVESTMENT RANGES
AND S&T PERSONNEL EMPLOYED BY THEM

Paid Up Capital Range (Rs. Crore)		Companies		Total Paid Up Capital		S&T Personnel	
		Nos	Percent	(Rs. Crore)	Percent	Nos	Percent
I. Government and Non Government Companies							
Upto	1	1915	42.87	1351	1.53	1585	6.19
2	- 5	1461	32.71	3668	4.15	3678	14.36
6	- 10	451	10.10	3236	3.66	2429	9.49
11	- 25	341	7.63	5287	5.98	3729	14.56
26	- 50	133	2.98	4627	5.24	6350	24.80
51	- 100	76	1.70	5386	6.10	1792	7.00
101	- 500	62	1.39	13402	15.17	4855	18.96
501	- 1000	11	0.25	7146	8.09	210	0.82
Above	1000	17	0.38	44232	50.07	979	3.82
Total		4467	100.00	88335	100.00	25607	100.00
II. Government Companies							
Upto	1	133	21.21	97	0.16	323	4.46
2	- 5	240	38.28	575	0.96	1175	16.23
6	- 10	56	8.93	410	0.69	166	2.29
11	- 25	67	10.69	1089	1.82	652	9.00
26	- 50	42	6.70	1572	2.63	672	9.28
51	- 100	29	4.63	2117	3.54	156	2.15
101	- 500	35	5.58	8368	13.98	2938	40.57
501	- 1000	10	1.59	6491	10.84	210	2.90
Above	1000	15	2.39	39137	65.38	949	13.11
Total		627	100.00	59858	100.00	7241	100.00
III. Non Government Companies							
Upto	1	1782	46.41	1254	4.40	1262	6.87
2	- 5	1221	31.80	3093	10.86	2503	13.63
6	- 10	395	10.29	2826	9.92	2263	12.32
11	- 25	274	7.14	4198	14.74	3077	16.75
26	- 50	91	2.37	3053	10.72	5678	30.92
51	- 100	47	1.22	3269	11.48	1636	8.91
101	- 500	27	0.70	5034	17.68	1917	10.44
501	- 1000	1	0.03	655	2.30	0	0.00
Above	1000	2	0.05	5095	17.89	30	0.16
Total		3840	100.00	28477	100.00	18366	100.00

DISTRIBUTION OF COMPANIES UNDER DIFFERENT INCOME RANGES
AND S&T PERSONNEL EMPLOYED BY THEM

Income Ranges (Rs. Crore)		Companies		Total Income (Rs. Crore)		S&T Personnel	
		Nos	Percent	(Rs. Crore)	Percent	Nos	Percent
I. Government and Non Government Companies							
Upto	1	1310	29.33	293	0.06	998	3.90
2	- 5	831	18.60	2177	0.42	330	1.29
6	- 10	422	9.45	3131	0.60	364	1.42
11	- 25	614	13.75	10003	1.92	772	3.01
26	- 50	406	9.09	14328	2.76	1628	6.36
51	- 100	353	7.90	25116	4.83	2150	8.40
101	- 500	408	9.13	84323	16.22	9217	35.99
501	- 1000	66	1.48	47066	9.05	3653	14.27
Above	1000	57	1.28	333459	64.14	6495	25.36
Total		4467	100.00	519896	100.00	25607	100.00
II. Government Companies							
Upto	1	118	18.82	41	0.02	21	0.29
2	- 5	125	19.94	317	0.18	32	0.44
6	- 10	69	11.00	488	0.27	168	2.32
11	- 25	76	12.12	1268	0.71	88	1.22
26	- 50	60	9.57	2223	1.25	120	1.66
51	- 100	51	8.13	3546	1.99	219	3.02
101	- 500	78	12.44	16233	9.10	2517	34.76
501	- 1000	20	3.19	15025	8.42	478	6.60
Above	1000	30	4.78	139225	78.06	3598	49.69
Total		627	100.00	178366	100.00	7241	100.00
III. Non Government Companies							
Upto	1	1192	31.04	252	0.07	977	5.32
2	- 5	706	18.39	1859	0.54	298	1.62
6	- 10	353	9.19	2644	0.77	196	1.07
11	- 25	538	14.01	8735	2.56	684	3.72
26	- 50	346	9.01	12105	3.54	1508	8.21
51	- 100	302	7.86	21569	6.32	1931	10.51
101	- 500	330	8.59	68090	19.94	6700	36.48
501	- 1000	46	1.20	32042	9.38	3175	17.29
Above	1000	27	0.70	194234	56.87	2897	15.77
Total		3840	100.00	341530	100.00	18366	100.00

DISTRIBUTION OF COMPANIES UNDER DIFFERENT EMPLOYMENT GROUPS
AND S&T PERSONNEL EMPLOYED BY THEM

Range of S&T Employee	Companies		S&T Personnel	
	Numbers	Percent	Numbers	Percent
I. Government and Non Government Companies				
0	3027	67.76	0	0.00
1 - 5	930	20.82	1985	7.75
6 - 10	162	3.63	1380	5.39
11 - 25	178	3.98	2795	10.61
26 - 50	77	1.72	2615	10.21
51 - 100	46	1.03	3046	11.90
101 - 250	33	0.74	5000	19.53
Above 250	14	0.31	8786	34.31
Total	4467	100.00	25607	100.00
II. Government Companies				
0	441	70.33	0	0.00
1 - 5	92	14.67	249	3.44
6 - 10	25	3.99	165	2.28
11 - 25	33	5.26	475	6.56
26 - 50	13	2.07	434	5.99
51 - 100	6	0.96	420	5.80
101 - 250	13	2.07	1841	25.42
Above 250	4	0.64	3657	50.50
Total	627	100.00	7541	100.00
III. Non Government Companies				
0	2586	67.34	0	0.00
1 - 5	838	21.82	1736	9.45
6 - 10	137	3.57	1215	6.62
11 - 25	145	3.78	2320	12.63
26 - 50	64	1.67	2181	11.88
51 - 100	40	1.04	2626	14.30
101 - 250	20	0.52	3159	17.20
Above 250	10	0.26	5129	27.93
Total	3840	100.00	18366	100.00

ANNEXURE 10

SECTOR WISE CHARACTERISTICS OF S&T PERSONNEL

Characteristics (1)	Government Companies			Non Government Companies			Grand Total (9)	
	Central Govt (2)	State Govt (3)	Total (4)	Large Houses (5)	Multi Nationals (6)	Others (7)		Total (8)
1. Level of Qualifications (Number of STP)								
Doctorate	140	17	157	180	180	122	482	639
Post Graduate	1099	96	1195	1238	708	880	2826	4021
Graduate	4066	307	4373	6066	3013	3284	12363	16736
Others	1502	14	1516	1623	612	460	2695	4211
Total	6807	434	7241	9107	4513	4746	18366	25607
2. Field of Specialisation								
(i) Technology								
Mechanical	1346	74	1420	2377	1017	916	4310	5730
Electrical	616	91	707	1478	605	702	2785	3492
Total Technology	5680	328	6008	6842	2916	3322	13080	19088
(ii) Sciences								
Natural	799	90	889	1653	1438	1256	4347	5236
Total Sciences	1127	106	1233	2265	1597	1424	5286	6519
Grand Total (i+ii)	6807	434	7241	9107	4513	4746	18366	25607
3. Level of Responsibility								
Top Management	250	60	310	350	178	849	1377	1687
Middle Management	1227	183	1410	2197	833	1638	4668	6078
Jr. Management	2191	154	2345	4112	2532	1306	7950	10295
Non-Managerial	3139	37	3176	2448	970	953	4371	7547
Total	6807	434	7241	9107	4513	4746	18366	25607
4. Primary work activity								
Senior Management	167	50	217	282	108	677	1067	1284
Plant Level	1247	97	1344	3477	1581	1373	6431	7775
Marketing	377	90	467	1409	1319	768	3496	3963
Administration	454	39	493	442	251	303	996	1489
Others	3340	124	3464	2281	1114	1155	4550	8014
Not Specified	1222	34	1256	1216	140	470	1826	3082
Total	6807	434	7241	9107	4513	4746	18366	25607

ANNEXURE 11 - A

STATEWISE DISTRIBUTION OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

State/UT (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel		STP Intensity (9)
	Nos (2)	Percent (3)	Nos (4)	Percent (5)		Nos (7)	Percent (8)	
Andhra Pradesh	365	8.17	767	3.00	751	1518	3.77	50.53
Andaman Nikobar	1	0.02	2	0.01	0	2	0.00	100.00
Arunachal Pradesh	8	0.18	2	0.01	0	2	0.00	100.00
Assam	109	2.44	343	1.34	155	498	1.24	68.88
Bihar	53	1.19	309	1.21	23	332	0.82	93.07
Chandigarh	35	0.78	14	0.05	113	127	0.32	11.02
Delhi	474	10.61	3899	15.23	1572	5471	13.58	71.27
Goa	43	0.96	245	0.96	119	364	0.90	67.31
Gujarat	371	8.31	2286	8.93	847	3133	7.78	72.97
Haryana	57	1.28	157	0.61	107	264	0.66	59.47
Himachal Pradesh	26	0.58	28	0.11	21	49	0.12	57.14
Jammu & Kashmir	12	0.27	1	0.00	0	1	0.00	100.00
Karnataka	209	4.68	665	2.60	191	856	2.12	77.69
Kerala	122	2.73	168	0.66	97	265	0.66	63.40
Madhya Pradesh	105	2.35	263	1.03	88	351	0.87	74.93
Maharashtra	1049	23.48	11596	45.28	7086	18682	46.37	62.07
Manipur	5	0.11	0	0.00	0	0	0.00	**.**
Meghalaya	8	0.18	11	0.04	6	17	0.04	64.71
Mizoram	1	0.02	0	0.00	0	0	0.00	**.**
Nagaland	9	0.20	2	0.01	0	2	0.00	100.00
Orissa	71	1.59	219	0.86	123	342	0.85	64.04
Pondicherry	23	0.51	9	0.04	3	12	0.03	75.00
Punjab	83	1.86	243	0.95	119	362	0.90	67.13
Rajasthan	105	2.35	193	0.75	112	305	0.76	63.28
Tamil Nadu	376	8.42	940	3.67	532	1472	3.65	63.86
Tripura	2	0.04	0	0.00	0	0	0.00	0.00
Uttar Pradesh	216	4.84	323	1.26	156	479	1.19	67.43
West Bengal	529	11.84	2922	11.41	2459	5381	13.36	54.30
Total	4467	100.00	25607	100.00	14680	40287	100.00	63.56

ANNEXURE 11 - B

STATEWISE DISTRIBUTION OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT COMPANIES

State/UT (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel		STP Intens (9)	ity
	Nos (2)	Percent (3)	Nos (4)	Percent (5)		Nos (7)	Percent (8)		
Andhra Pradesh	33	5.26	308	4.25	480	788	7.15	39.09	
Andaman Nikobar	1	0.16	2	0.03	0	2	0.02	100.00	
Arunachal Pradesh	3	0.48	1	0.01	0	1	0.01	100.00	
Assam	15	2.39	237	3.27	59	296	2.69	80.07	
Bihar	27	4.31	286	3.95	12	298	2.70	95.97	
Chandigarh	13	2.07	5	0.07	105	110	1.00	4.55	
Delhi	49	7.81	2435	33.63	847	3282	29.79	74.19	
Goa	11	1.75	1	0.01	0	1	0.01	100.00	
Gujarat	29	4.63	612	8.45	176	788	7.15	77.66	
Haryana	10	1.59	19	0.26	15	34	0.31	55.88	
Himachal Pradesh	12	1.91	14	0.19	8	22	0.20	63.64	
Jammu & Kashmir	9	1.44	0	0.00	0	0	0.00	**.**	
Karnataka	44	7.02	123	1.70	77	200	1.82	61.50	
Kerala	52	8.29	35	0.48	10	45	0.41	77.78	
Madhya Pradesh	19	3.03	87	1.20	9	96	0.87	90.62	
Maharashtra	58	9.25	2357	32.55	1411	3768	34.20	62.55	
Manipur	5	0.80	0	0.00	0	0	0.00	**.**	
Meghalaya	4	0.64	11	0.15	6	17	0.15	64.71	
Mizoram	1	0.16	0	0.00	0	0	0.00	**.**	
Nagaland	3	0.48	1	0.01	0	1	0.01	100.00	
Orissa	20	3.19	40	0.55	19	59	0.54	67.80	
Pondicherry	10	1.59	0	0.00	1	1	0.01	0.00	
Punjab	9	1.44	56	0.77	25	81	0.74	69.14	
Rajasthan	20	3.19	60	0.84	10	70	0.64	85.71	
Tamil Nadu	54	8.61	208	2.87	187	395	3.59	52.66	
Tripura	1	0.16	0	0.00	0	0	0.00	0.00	
Uttar Pradesh	50	7.97	25	0.35	13	38	0.34	65.79	
West Bengal	65	10.37	318	4.39	307	625	5.67	50.88	
Total	627	100.00	7241	100.00	3777	11018	100.00	65.72	

ANNEXURE 11 - C

STATEWISE DISTRIBUTION OF SCIENTIFIC AND TECHNICAL PERSONNEL
NON GOVERNMENT COMPANIES

State/UT (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel		STP Intensity (9)
	Nos (2)	Percent (3)	Nos (4)	Percent (5)		Nos (7)	Percent (8)	
Andhra Pradesh	332	8.65	459	2.50	271	730	2.49	62.88
Andaman Nikobar	0	0.00	0	0.00	0	0	0.00	**.**
Arunachal Pradesh	5	0.13	1	0.01	0	1	0.00	100.00
Assam	94	2.45	106	0.58	96	202	0.69	52.48
Bihar	26	0.68	23	0.13	11	34	0.12	67.65
Chandigarh	22	0.57	9	0.05	8	17	0.06	52.94
Delhi	425	11.07	1464	7.97	725	2189	7.48	66.88
Goa	32	0.83	244	1.33	119	363	1.24	67.22
Gujarat	342	8.91	1674	9.11	671	2345	8.01	71.39
Haryana	47	1.22	138	0.75	92	230	0.79	60.00
Himachal Pradesh	14	0.36	14	0.08	13	27	0.09	51.85
Jammu & Kashmir	3	0.08	1	0.01	0	1	0.00	100.00
Karnataka	165	4.30	542	2.95	114	656	2.24	82.62
Kerala	70	1.82	133	0.72	87	220	0.75	60.45
Madhya Pradesh	86	2.24	176	0.96	79	255	0.87	69.02
Maharashtra	991	25.81	9239	50.30	5675	14914	50.95	61.95
Manipur	0	0.00	0	0.00	0	0	0.00	**.**
Meghalaya	4	0.10	0	0.00	0	0	0.00	**.**
Mizoram	0	0.00	0	0.00	0	0	0.00	**.**
Nagaland	6	0.16	1	0.01	0	1	0.00	100.00
Orissa	51	1.33	179	0.97	104	283	0.97	63.25
Pondicherry	13	0.34	9	0.05	2	11	0.04	81.82
Punjab	74	1.93	187	1.02	94	281	0.96	66.55
Rajasthan	85	2.21	133	0.72	102	235	0.80	56.60
Tamil Nadu	322	8.39	732	3.99	345	1077	3.68	67.97
Tripura	1	0.03	0	0.00	0	0	0.00	0.00
Uttar Pradesh	166	4.32	298	1.62	143	441	1.51	67.57
West Bengal	464	12.08	2604	14.18	2152	4756	16.25	54.75
Total	3840	100.00	18366	100.00	10903	29269	100.00	62.75

ANNEXURE 12 - A

STATE WISE CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

State/UT (1)	S&T Personnel			Total (Nos) (4)	Average Remun. (Rs.000) (6)	Average Age (Years) (7)	Average Experience	
	Male (Nos) (2)	Female (Nos) (3)	(Percent) (5)				Total (Years) (8)	In last Co (Years) (9)
Andhra Pradesh	757	10	767	3.00	222	46.9	23.5	12.4
Andaman Nikobar	2	0	2	0.01	170	48.0	24.0	3.0
Arunachal Pradesh	2	0	2	0.01	172	55.0	10.5	7.5
Assam	337	6	343	1.34	171	47.0	22.8	17.8
Bihar	305	4	309	1.21	166	49.5	26.4	18.8
Chandigarh	14	0	14	0.05	163	47.6	0.0	0.0
Delhi	3873	26	3899	15.23	199	46.9	23.5	12.6
Goa	245	0	245	0.96	269	44.4	20.4	12.0
Gujarat	2282	4	2286	8.93	195	47.4	23.9	15.7
Haryana	157	0	157	0.61	222	48.6	25.9	10.1
Himachal Pradesh	28	0	28	0.11	198	45.7	21.4	5.1
Jammu & Kashmir	1	0	1	0.00	185	57.0	38.0	23.0
Karnataka	661	4	665	2.60	191	48.7	25.1	17.4
Kerala	167	1	168	0.66	224	48.2	24.5	13.0
Madhya Pradesh	255	8	263	1.03	223	47.2	23.2	11.5
Maharashtra	11496	100	11596	45.28	230	45.3	21.5	15.3
Manipur	0	0	0	0.00	0	00.0	00.0	00.0
Meghalaya	11	0	11	0.04	179	49.8	27.3	12.1
Mizoram	0	0	0	0.00	0	00.0	00.0	00.0
Nagaland	2	0	2	0.01	165	51.0	23.5	3.0
Orissa	218	1	219	0.86	208	50.6	27.3	12.5
Pondicherry	9	0	9	0.04	253	48.9	25.6	6.6
Punjab	238	5	243	0.95	194	46.6	23.4	9.3
Rajasthan	192	1	193	0.75	194	48.0	24.2	10.3
Tamil Nadu	934	6	940	3.67	244	46.8	23.2	11.6
Tripura	0	0	0	0.00	0	00.0	00.0	00.0
Uttar Pradesh	322	1	323	1.26	248	48.0	24.4	8.2
West Bengal	2896	26	2922	11.41	242	47.1	23.6	13.5
Total	25404	203	25607	100.00	221	46.4	22.7	14.2

ANNEXURE 12 - B

STATE WISE CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT COMPANIES

State/UT (1)	S&T Personnel			Total (Nos) (4)	Average Remun. (Rs.000) (6)	Average Age (Years) (7)	Average Experience	
	Male (Nos) (2)	Female (Nos) (3)	(Nos) (Percent) (5)				Total (Years) (8)	In last Co (Years) (9)
Andhra Pradesh	304	4	308	4.25	170	44.8	21.5	13.9
Andaman Nikobar	2	0	2	0.03	170	48.0	24.0	3.0
Arunachal Pradesh	1	0	1	0.01	180	65.0	2.0	2.0
Assam	231	6	237	3.27	163	46.1	22.4	18.5
Bihar	282	4	286	3.95	162	49.4	26.2	19.4
Chandigarh	5	0	5	0.07	169	55.2	0.0	0.0
Delhi	2417	18	2435	33.63	186	48.2	24.4	14.7
Goa	1	0	1	0.01	158	42.0	16.0	3.0
Gujarat	611	1	612	8.45	173	48.4	24.6	17.3
Haryana	19	0	19	0.26	168	49.6	25.6	16.2
Himachal Pradesh	14	0	14	0.19	170	45.3	22.6	2.3
Jammu & Kashmir	0	0	0	0.00	000	00.0	00.0	00.0
Karnataka	122	1	123	1.70	176	51.4	23.2	17.5
Kerala	35	0	35	0.48	155	50.9	25.6	18.5
Madhya Pradesh	79	8	87	1.20	190	46.8	20.4	12.0
Maharashtra	2346	11	2357	32.55	297	39.3	13.3	11.1
Manipur	0	0	0	0.00	0	00.0	00.0	00.0
Meghalaya	11	0	11	0.15	179	49.8	27.3	12.1
Mizoram	0	0	0	0.00	0	00.0	00.0	00.0
Nagaland	1	0	1	0.01	152	56.0	32.0	2.0
Ori Ssa	40	0	40	0.55	146	49.5	25.7	12.4
Pondicherry	0	0	0	0.00	000	00.0	00.0	0.0
Punjab	54	2	56	0.77	182	44.3	20.7	9.0
Rajasthan	59	1	60	0.83	160	49.1	24.5	18.3
Tamil Nadu	208	0	208	2.87	178	42.5	17.9	10.9
Tripura	0	0	0	0.00	0	00.0	00.0	00.0
Uttar Pradesh	25	0	25	0.35	176	49.9	21.2	10.2
West Bengal	308	10	318	4.39	178	46.9	20.4	16.1
Total	7175	66	7241	100.00	220	45.0	20.2	13.9

ANNEXURE 12 - C

STATE WISE CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL
NON GOVERNMENT COMPANIES

State/UT (1)	S&T Personnel			Total (Nos) (4)	Average Remun. (Rs.000) (6)	Average Age (Years) (7)	Average Experience	
	Male (Nos) (2)	Female (Nos) (3)	(Nos) (5)				Total (Years) (8)	In last Co (Years) (9)
Andhra Pradesh	453	6	459	2.50	257	48.4	24.8	11.3
Andaman Nikobar	0	0	0	0.00	000	00.0	00.0	0.0
Arunachal Pradesh	1	0	1	0.01	165	45.0	19.0	13.0
Assam	106	0	106	0.58	188	49.2	23.6	16.2
Bihar	23	0	23	0.13	218	51.3	29.6	11.3
Chandigarh	9	0	9	0.05	180	43.3	0.0	0.0
Delhi	1456	8	1464	7.97	221	44.8	21.9	9.1
Goa	244	0	244	1.33	269	44.4	20.4	12.0
Gujarat	1671	3	1674	9.11	203	47.0	23.6	15.1
Haryana	138	0	138	0.75	230	48.5	25.9	9.2
Himachal Pradesh	14	0	14	0.08	185	46.1	20.1	7.9
Jammu & Kashmir	1	0	1	0.01	185	57.0	38.0	23.0
Karnataka	539	3	542	2.95	195	48.1	25.5	17.4
Kerala	132	1	133	0.72	242	47.4	24.2	11.5
Madhya Pradesh	176	0	176	0.96	240	47.4	24.6	11.3
Maharashtra	9150	89	9239	50.30	213	46.9	23.6	16.3
Manipur	0	0	0	0.00	0	00.0	00.0	00.0
Meghalaya	0	0	0	0.00	0	00.0	00.0	00.0
Mizoram	0	0	0	0.00	0	00.0	00.0	00.0
Nagaland	1	0	1	0.01	178	46.0	15.0	4.0
Orissa	178	1	179	0.97	222	50.8	27.6	12.5
Pondicherry	9	0	9	0.05	253	48.9	25.6	6.6
Punjab	184	3	187	1.02	197	47.3	24.2	9.4
Rajasthan	133	0	133	0.72	209	47.6	24.0	6.8
Tamil Nadu	726	6	732	3.99	235	48.0	24.7	11.8
Tripura	0	0	0	0.00	0	00.0	00.0	00.0
Uttar Pradesh	297	1	298	1.62	254	47.9	24.7	8.0
West Bengal	2588	16	2604	14.18	250	47.1	24.0	13.2
Total	18229	137	18366	100.00	221	46.9	23.7	14.3

ANNEXURE 13

REGION WISE DISTRIBUTION OF S&T PERSONNEL IN
GOVERNMENT AND NON GOVERNMENT COMPANIES

Region/State (1)	Companies			S&T Personnel			Share of Govt Companies in	
	Govt (2)	Non Govt (3)	Total (4)	Govt (5)	Non Govt (6)	Total (7)	Cos. (8)	STP (9)
	(Numbers)						(Percent)	
North								
Delhi	49	425	474	2435	1464	3899	10.34	62.45
Uttar Pradesh	50	166	216	25	298	323	23.15	7.74
Madhya Pradesh	19	86	105	87	176	263	18.10	33.08
Punjab	9	74	83	56	187	243	10.84	23.05
Haryana	10	47	57	19	138	157	17.54	12.10
Himachal Pradesh	12	14	26	14	14	28	46.15	50.00
Chandigarh	13	22	35	5	9	14	37.14	35.71
Jammu & Kashmir	9	3	12	0	1	1	75.00	0.00
Total	71	837	1008	2641	2287	4928	16.96	53.59
East								
West Bengal	65	464	529	318	2604	2922	12.29	10.88
Assam	15	94	109	237	106	343	13.76	69.10
Bihar	27	26	53	286	23	309	50.94	92.56
Orissa	20	51	71	40	179	219	28.17	18.26
Meghalaya	4	4	8	11	0	11	50.00	100.00
Arunachal Pradesh	3	5	8	1	1	2	37.50	50.00
Andman Nikobar	1	0	1	2	0	2	**,**	**,**
Nagaland	3	6	9	1	1	2	33.33	50.00
Tripura	1	1	2	0	0	0	50.00	**,**
Mizoram	1	0	1	0	0	0	100.00	**,**
Manipur	5	0	5	0	0	0	100.00	**,**
Total	45	651	796	896	2914	3810	18.22	23.52
South								
Tamil Nadu	54	322	376	208	732	940	14.36	22.13
Andhra Pradesh	33	332	365	308	459	767	9.04	40.16
Karnataka	44	165	209	123	542	665	21.05	18.50
Kerala	52	70	122	35	133	168	42.62	20.83
Pondicherry	10	13	23	0	9	9	43.48	0.00
Total	93	902	1095	674	1875	2549	17.63	26.44
West								
Maharashtra	58	991	1049	2357	9239	11596	5.53	20.33
Gujarat	29	342	371	612	1674	2286	7.82	26.77
Goa	11	32	43	1	244	245	25.58	0.41
Rajasthan	20	85	105	60	133	193	19.05	31.09
Total	118	1450	1568	3030	11290	14320	7.53	21.16
Total	627	3840	4467	7241	18366	25607	14.04	28.28

STATEWISE LEVELS OF QUALIFICATIONS OF S&T PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

State/UT	Doctorate	Post Graduate	Graduate	Others	Total
	(Number of STP)				
Andhra Pradesh	24	171	485	87	767
Andaman Nikobar	0	2	0	0	2
Arunachal Pradesh	0	0	2	0	2
Assam	8	41	283	11	343
Bihar	4	36	262	7	309
Chandigarh	0	1	13	0	14
Delhi	76	670	2812	341	3899
Goa	3	47	160	35	245
Gujarat	67	240	1665	314	2286
Haryana	4	33	107	13	157
Himachal Pradesh	2	6	18	2	28
Jammu & Kashmir	0	0	1	0	1
Karnataka	14	85	429	137	665
Kerala	4	32	125	7	168
Madhya Pradesh	6	41	200	16	263
Maharashtra	289	1781	6783	2743	11596
Manipur	0	0	0	0	0
Meghalaya	0	1	10	0	11
Mizoram	0	0	0	0	0
Nagaland	1	0	1	0	2
Orissa	5	36	171	7	219
Pondicherry	0	0	8	1	9
Punjab	6	39	166	32	243
Rajasthan	5	21	152	15	193
Tamil Nadu	15	150	636	139	940
Tripura	0	0	0	0	0
Uttar Pradesh	14	67	225	17	323
West Bengal	92	521	2022	287	2922
Total	639	4021	16739	4211	25607

ANNEXURE 14 - B

STATEWISE LEVELS OF QUALIFICATIONS OF S&T PERSONNEL
GOVERNMENT COMPANIES

State/UT	Doctorate	Post Graduate	Graduate	Others	Total
	(Number of STP)				
Andhra Pradesh	6	65	175	62	308
Andaman Nikobar	0	2	0	0	2
Arunachal Pradesh	0	0	1	0	1
Assam	6	25	197	9	237
Bihar	4	33	244	5	286
Chandigarh	0	0	5	0	5
Delhi	57	390	1821	167	2435
Goa	0	0	1	0	1
Gujarat	26	63	443	80	612
Haryana	0	9	8	2	19
Himachal Pradesh	2	4	6	2	14
Jammu & Kashmir	0	0	0	0	0
Karnataka	8	24	82	9	123
Kerala	1	5	28	1	35
Madhya Pradesh	0	15	70	2	87
Maharashtra	24	445	800	1088	2357
Manipur	0	0	0	0	0
Meghalaya	0	1	10	0	11
Mizoram	0	0	0	0	0
Nagaland	1	0	0	0	1
Orissa	2	4	33	1	40
Pondicherry	0	0	0	0	0
Punjab	6	15	33	2	56
Rajasthan	2	6	49	3	60
Tamil Nadu	1	41	103	63	208
Tripura	0	0	0	0	0
Uttar Pradesh	3	4	18	0	25
West Bengal	8	44	246	20	318
Total	157	1195	4373	1516	7241

ANNEXURE 14 - C

STATEWISE LEVELS OF QUALIFICATIONS OF S&T PERSONNEL
NON GOVERNMENT COMPANIES

State/UT	Doctorate	Post Graduate	Graduate	Others	Total
	(Number of STP)				
Andhra Pradesh	18	106	310	25	459
Andaman Nikobar	0	0	0	0	0
Arunachal Pradesh	0	0	1	0	1
Assam	2	16	86	2	106
Bihar	0	3	18	2	23
Chandigarh	0	1	8	0	9
Delhi	19	280	991	174	1464
Goa	3	47	159	35	244
Gujarat	41	177	1222	234	1674
Haryana	4	24	99	11	138
Himachal Pradesh	0	2	12	0	14
Jammu & Kashmir	0	0	1	0	1
Karnataka	6	61	347	128	542
Kerala	3	27	97	6	133
Madhya Pradesh	6	26	130	14	176
Maharashtra	265	1336	5983	1655	9239
Manipur	0	0	0	0	0
Meghalaya	0	0	0	0	0
Mizoram	0	0	0	0	0
Nagaland	0	0	1	0	1
Orissa	3	32	138	6	179
Pondicherry	0	0	8	1	9
Punjab	0	24	133	30	187
Rajasthan	3	32	138	6	179
Tamil Nadu	14	109	533	76	732
Tripura	0	0	0	0	0
Uttar Pradesh	11	63	207	17	298
West Bengal	84	477	1776	267	2604
Total	482	2826	12363	2695	18366

ANNEXURE 15 - A

STATE WISE FIELDS OF SPECIALISATION OF S&T PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

State/UT (1)	Technology			Sciences		Grand Total (Nos) (7)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (5)	Total (Nos) (6)	
Andhra Pradesh	138	111	528	193	239	767
Andaman Nikobar	0	0	0	2	2	2
Arunachal Pradesh	1	0	2	0	0	2
Assam	107	30	221	67	122	343
Bihar	127	47	281	21	28	309
Chandigarh	0	4	11	2	3	14
Delhi	1127	535	3190	617	709	3899
Goa	45	43	177	35	68	245
Gujarat	524	359	1577	597	709	2286
Haryana	33	18	119	28	38	157
Himachal Pradesh	3	7	23	5	5	28
Jammu & Kashmir	0	0	1	0	0	1
Karnataka	211	136	538	122	127	665
Kerala	31	14	92	68	76	168
Madhya Pradesh	62	30	179	29	84	263
Maharashtra	2340	1716	8851	2323	2745	11596
Manipur	0	0	0	0	0	0
Meghalaya	0	2	9	2	2	11
Mizoram	0	0	0	0	0	0
Nagaland	1	0	2	0	0	2
Orissa	58	26	161	55	58	219
Pondicherry	1	3	8	1	1	9
Punjab	51	31	186	52	57	243
Rajasthan	35	27	136	50	57	193
Tamil Nadu	223	65	678	234	262	940
Tripura	0	0	0	0	0	0
Uttar Pradesh	70	25	214	102	109	323
West Bengal	542	263	1904	841	1018	2922
Total	5730	3492	19088	5447	6519	25607

ANNEXURE 15 - B

STATE WISE FIELDS OF SPECIALISATION OF S&T PERSONNEL
GOVERNMENT COMPANIES

State/UT (1)	Technology			Sciences		Grand Total (Nos) (7)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (5)	Total (Nos) (6)	
Andhra Pradesh	24	66	225	47	53	308
Andaman Nikobar	0	0	0	2	2	2
Arunachal Pradesh	1	0	1	0	0	1
Assam	93	24	182	23	55	237
Bihar	118	45	265	14	21	286
Chandigarh	0	0	3	1	2	5
Delhi	736	343	2079	294	356	2435
Goa	0	0	1	0	0	1
Gujarat	157	83	434	166	166	178
Haryana	4	2	12	4	7	19
Himachal Pradesh	1	7	11	3	3	14
Jammu & Kashmir	0	0	0	0	0	0
Karnataka	20	16	86	32	37	123
Kerala	14	2	28	6	7	35
Madhya Pradesh	14	7	28	4	59	87
Maharashtra	131	61	2155	144	202	2357
Manipur	0	0	0	0	0	0
Meghalaya	0	2	9	2	2	11
Mizoram	0	0	0	0	0	0
Nagaland	1	0	1	0	0	1
Orissa	16	2	33	7	7	40
Pondicherry	0	0	0	0	0	0
Punjab	0	9	43	12	13	56
Rajasthan	11	12	45	12	15	60
Tamil Nadu	21	10	149	51	59	208
Tripura	0	0	0	0	0	0
Uttar Pradesh	2	3	20	5	5	25
West Bengal	56	13	168	78	150	318
Total	1420	707	6008	909	1233	7241

STATE WISE FIELDS OF SPECIALISATION OF S&T PERSONNEL
NON GOVERNMENT COMPANIES

State/UT (1)	Technology			Sciences		Grand Total (Nos) (7)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (5)	Total (Nos) (6)	
Andhra Pradesh	114	45	273	146	186	459
Andaman Nikobar	0	0	0	0	0	0
Arunachal Pradesh	0	0	1	0	0	1
Assam	14	6	39	44	67	106
Bihar	9	2	16	7	7	23
Chandigarh	0	4	8	1	1	9
Delhi	391	192	1111	323	353	1464
Goa	45	43	176	35	68	244
Gujarat	367	276	1143	430	531	1674
Haryana	29	16	107	24	31	138
Himachal Pradesh	2	0	12	2	2	14
Jammu & Kashmir	0	0	1	0	0	1
Karnataka	191	120	452	90	90	542
Kerala	17	12	64	62	69	133
Madhya Pradesh	48	23	151	25	25	176
Maharashtra	2209	1655	6696	2179	2543	9239
Manipur	0	0	0	0	0	0
Meghalaya	0	0	0	0	0	0
Mizoram	0	0	0	0	0	0
Nagaland	0	0	1	0	0	1
Orissa	42	24	128	48	51	179
Pondicherry	1	3	8	1	1	9
Punjab	51	22	143	40	44	187
Rajasthan	24	15	91	38	42	133
Tamil Nadu	202	55	529	183	203	732
Tripura	0	0	0	0	0	0
Uttar Pradesh	68	22	194	97	104	298
West Bengal	486	250	1736	763	868	2604
Total	4310	2785	13080	4538	5286	18366

INDUSTRY WISE DISTRIBUTION OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

Industry (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel		S&T Intensity (9)
	Nos (2)	Percent (3)	Nos (4)	Percent (5)		Nos (7)	Percent (8)	
1. Agricultural, Forestry and Fishing	78	1.75	43	0.17	28	71	0.18	60.56
2. Mining and Quarrying								
(i) Mining of Coal, Lignite and Peat	26	0.58	237	0.93	36	273	0.68	86.81
(ii) Extraction of Crude Oil	8	0.18	79	0.31	35	114	0.28	69.30
(iii) Others	44	0.99	116	0.45	26	142	0.35	81.69
Total 2	78	1.75	432	1.69	97	529	1.31	81.66
3. Manufacturing								
(i) Food Products								
Sugar	37	0.83	69	0.27	36	105	0.26	65.71
Vanaspathi	21	0.47	35	0.14	24	59	0.15	59.32
Vegetable oils	44	0.99	13	0.05	10	23	0.06	56.52
Others	190	4.25	642	2.51	551	1193	2.96	53.81
Total (i)	292	6.54	759	2.96	621	1380	3.43	55.00
(ii) Beverages & Tobacco								
Alcoholic Beverages	26	0.58	463	1.81	356	819	2.03	56.53
Others	29	0.65	17	0.07	19	36	0.09	47.22
Total (ii)	55	1.23	480	1.87	375	855	2.12	56.14
(iii) Textiles								
Cotton Textiles	218	4.88	879	3.43	534	1413	3.51	62.21
Wool, Silk & Man-made	101	2.26	273	1.07	147	420	1.04	65.00
Jute and Other Veg. Fibre	26	0.58	19	0.07	13	32	0.08	59.38
Textiles Products	42	0.94	32	0.12	18	50	0.12	64.00
Total (iii)	387	8.66	1203	4.70	712	1915	4.75	62.82
(iv) Wood & Wood Products	35	0.78	54	0.21	8	62	0.15	87.10
(v) Paper, Paper Products and Printing								
Paper, paper board	57	1.28	91	0.36	78	169	0.42	53.85
Others	60	1.34	286	1.12	246	532	1.32	53.76
Total (v)	117	2.62	377	1.47	324	701	1.74	53.78
(vi) Leather and Products	32	0.72	61	0.24	83	144	0.36	42.36
(vii) Chemicals and related Products								
Basic Chemical and Chemical Products	269	6.02	1862	7.27	993	2855	7.09	65.22
Fertilizers and Pesticides	55	1.23	1472	5.75	873	2345	5.82	62.77
Drugs & Medicine	127	2.84	954	3.73	717	1671	4.15	57.09
Total (vii)	451	10.10	4288	16.75	2583	6871	17.06	62.41

ANNEXURE 16 - A
(Continued)

Industry (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel Nos (7)	S&T Personnel Percent (8)	S&T Intensity (9)
	Nos (2)	Percent (3)	Nos (4)	Percent (5)				
(viii) Soap, Cosmetics & Toilet Preparation	19	0.43	572	2.23	430	1002	2.49	57.09
(ix) Rubber, Plastic & Petroleum Products								
Rubber Goods	34	0.76	254	0.99	101	355	0.88	71.55
Refined Petroleum Products	22	0.49	373	1.46	114	487	1.21	76.59
Others	78	1.75	126	0.49	75	201	0.50	62.69
Total (ix)	134	3.00	753	2.94	290	1043	2.59	72.20
(x) Nuclear Fuels	2	0.04	7	0.03	23	30	0.07	23.33
(xi) Coke Oven products	5	0.11	7	0.03	0	7	0.02	100.00
(xii) Glass & glass Products	22	0.49	56	0.22	259	315	0.78	17.78
(xiii) Non Structural Ceramic Ware	15	0.34	19	0.07	6	25	0.06	76.00
(xiv) Cement, Lime and Plaster	80	1.79	506	1.98	333	839	2.08	60.31
(xv) Non-Metallic Mineral Products	84	1.88	162	0.63	54	216	0.54	75.00
(xvi) Metals & Products								
Basic Metals and Alloys	269	6.02	2409	9.41	697	3106	7.71	77.56
Metal Products	135	3.02	164	0.64	65	229	0.57	71.62
(xvii) Machinery & Equipments								
Agricultural Mach. and Equipments	10	0.22	109	0.43	32	141	0.35	77.30
Mach. and Equip. used by Construction and Mining	3	0.07	0	0.00	0	0	0.00	*****
Boiler, Steam Generation Plants nuclear reactor & Prime movers	3	0.07	6	0.02	2	8	0.02	75.00
Other Industrial Machinery	24	0.54	85	0.33	33	118	0.29	72.03
Machine Tools	33	0.74	67	0.26	18	85	0.21	78.82
Office, Computing & Accounting Machinery	6	0.13	5	0.02	1	6	0.01	83.33
Electrical And Electronic Machinery	249	5.57	1590	6.21	973	2563	6.36	62.04
Equipment for radio, television radar apparatus etc.	25	0.56	116	0.45	43	159	0.39	72.96
Others	116	2.60	1024	4.00	492	1516	3.76	67.55
Total (xvii)	469	10.50	3002	11.72	1594	4596	11.41	65.32

ANNEXURE 16 - A
(Continued)

Industry (1)	Companies Nos Percent (2) (3)		S&T Personnel Nos Percent (4) (5)		Non STP Nos (6)	All Personnel Nos (7)	Personnel Percent (8)	S&T Intensity (9)
(xviii) Computers & Computer based System	24	0.54	347	1.36	88	435	1.08	79.77
(xix) Manufacture of Transport Equipment and parts	120	2.69	1972	7.70	556	2528	6.27	78.01
(xx) Other Manufacturing Industries	169	3.78	340	1.33	236	576	1.43	59.03
(xxi) Repair of Capital Goods	1	0.02	0	0.00	0	0	0.00	***
Total 3	2915	65.26	17538	68.49	9314	26852	66.65	65.31
4. Electricity, Gas & Water								
Electricity Generation and Distribution	21	0.47	1545	6.03	754	2299	5.71	67.20
Others	4	0.09	27	0.11	7	34	0.08	79.41
Total 4	25	0.56	1572	6.14	761	2333	5.79	67.38
5. Construction	95	2.13	480	1.87	118	598	1.48	80.27
6. Wholesale and Retail Trade and Restaurants & Hotels	356	7.97	510	1.99	578	1088	2.70	46.88
7. Transport, Storage & Communication								
Land Transport	40	0.90	32	0.12	18	50	0.12	64.00
Water Transport	15	0.34	2296	8.97	1090	3386	8.40	67.81
Air Transport	2	0.04	75	0.29	77	152	0.38	49.34
Others	29	0.65	443	1.73	664	1107	2.75	40.02
Total 7	86	1.93	2846	11.11	1849	4695	11.65	60.62
8. Financing, Insurance, Real Estate and Business Services	693	15.51	2119	8.28	1849	3968	9.85	53.40
9. Community, Social and Personnel Services	99	2.22	43	0.17	26	69	0.17	62.32
10. Activity not adequately defined	42	0.94	24	0.09	60	84	0.21	28.57
Grand Total (1 - 10)	4467	100.00	25607	100.00	14680	40287	100.00	63.56

ANNEXURE 16 - B

INDUSTRY WISE DISTRIBUTION OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT COMPANIES

Industry (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel		S&T Intensity (9)
	Nos (2)	Percent (3)	Nos (4)	Percent (5)		Nos (7)	Percent (8)	
1. Agricultural, Forestry and Fishing	32	5.10	7	0.10	1	8	0.07	87.50
2. Mining and Quarrying								
(i) Mining of Coal, Lignite and Peat	10	1.59	224	3.09	27	251	2.28	89.24
(ii) Extraction of Crude Oil	2	0.32	17	0.23	0	17	0.15	100.00
(iii) Others	21	3.35	84	1.16	19	103	0.93	81.55
Total 2	33	5.26	325	4.49	46	371	3.37	87.60
3. Manufacturing								
(i) Food Products								
Sugar	6	0.96	1	0.01	2	3	0.03	33.33
Vanaspathi	2	0.32	0	0.00	0	0	0.00	**, **
Vegetable oils	1	0.16	0	0.00	0	0	0.00	**, **
Others	28	4.47	7	0.10	3	10	0.09	70.00
Total (i)	37	5.90	8	0.11	5	13	0.12	61.54
(ii) Beverages & Tobacco								
Alcoholic Beverages	3	0.48	0	0.00	1	1	0.01	0.00
Others	2	0.32	0	0.00	0	0	0.00	**, **
Total (ii)	5	0.80	0	0.00	1	1	0.01	0.00
(iii) Textiles								
Cotton Textiles	31	4.94	38	0.52	6	44	0.40	86.36
Wool, Silk & Man-made	8	1.28	2	0.03	0	2	0.02	100.00
Jute and Other Veg. Fibre	3	0.48	0	0.00	0	0	0.00	*****
Textiles Products	3	0.48	1	0.01	3	4	0.04	25.00
Total (iii)	45	7.18	41	0.57	9	50	0.45	82.00
(iv) Wood & Wood Products	4	0.64	0	0.00	0	0	0.00	**, **
(v) Paper, Paper Products and Printing								
Paper, paper board	6	0.96	7	0.10	2	9	0.08	77.78
Others	3	0.48	39	0.54	12	51	0.46	76.47
Total (v)	9	1.44	46	0.64	14	60	0.54	76.67
(vi) Leather and Products	16	2.55	0	0.00	0	0	0.00	**, **
(vii) Chemicals and related Products								
Basic Chemical and Chemical Products	12	1.91	576	7.95	203	779	7.07	73.94
Fertilizers and Pesticides	14	2.23	316	4.36	511	827	7.51	38.21
Drugs & Medicine	13	2.07	34	0.47	19	53	0.48	64.15
Total (vii)	39	6.22	926	12.79	733	1659	15.06	55.82

ANNEXURE 16 - B
(Continued)

Industry (1)	Companies		S&T Personnel		Non STP	All Personnel	S&T	
	Nos	Percent	Nos	Percent	Nos	Nos	Percent	Intensity
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(viii) Soap, Cosmetics & Toilet Preparation	1	0.16	0	0.00	0	0	0.00	**. **
(ix) Rubber, Plastic & Petroleum Products								
Rubber Goods	2	0.32	0	0.00	0	0	0.00	**. **
Refined Petroleum Products	7	1.12	329	4.54	100	429	3.89	76.69
Others	1	0.16	28	0.39	23	51	0.46	54.90
Total (ix)	10	1.59	357	4.93	123	480	4.36	74.38
(x) Nuclear Fuels	1	0.16	6	0.08	22	28	0.25	21.43
(xi) Coke Oven products	3	0.48	1	0.01	0	1	0.01	100.00
(xii) Glass & glass Products	2	0.32	0	0.00	0	0	0.00	**. **
(xiii) Non Structural Ceramic Ware	3	0.48	0	0.00	0	0	0.00	**. **
(xiv) Cement, Lime and Plaster	5	0.80	24	0.33	10	34	0.31	70.59
(xv) Non-Metallic Mineral Products	3	0.48	0	0.00	0	0	0.00	**. **
(xvi) Metals & Products								
Basic Metals and Alloys	19	3.03	277	3.83	61	338	3.07	81.95
Metal Products	8	1.28	4	0.06	1	5	0.05	80.00
(xvii) Machinery & Equipments								
Agricultural Mach. and Equipments	0	0.00	0	0.00	0	0	0.00	**. **
Mach. and Equip. used by Construction and Mining	0	0.00	0	0.00	0	0	0.00	**. **
Boiler, Steam Generation Plants nuclear reactor & Prime movers	0	0.00	0	0.00	0	0	0.00	**. **
Other Industrial Machinery	1	0.16	0	0.00	0	0	0.00	**. **
Machine Tools	4	0.64	0	0.00	0	0	0.00	**. **
Office, Computing & Accounting Machinery	1	0.16	0	0.00	0	0	0.00	**. **
Electrical And Electronic Machinery	39	6.22	81	1.12	26	107	0.97	75.70
Equipment for radio, television radar apparatus etc.	12	1.91	26	0.36	12	38	0.34	68.42
Others	12	1.91	19	0.26	5	24	0.22	79.17
Total (xvii)	69	11.00	126	1.74	43	169	1.53	74.56

ANNEXURE 16 - B
(Continued)

Industry (1)	Companies Nos Percent (2) (3)		S&T Personnel Nos Percent (4) (5)		Non STP Nos (6)	All Personnel Nos Percent (7) (8)		S&T Intensity (9)
(xviii) Computers & Computer based System	3	0.48	238	3.29	48	286	2.60	83.22
(xix) Manufacture of Transport Equipment and parts	16	2.55	105	1.45	3	108	0.98	97.22
(xx) Other Manufacturing Industries	7	1.12	1	0.01	11	12	0.11	8.33
(xxi) Repair of Capital Goods	0	0.00	0	0.00	0	0	0.00	**,**
Total 3	304	48.48	2160	29.83	1062	3222	29.24	67.04
4. Electricity, Gas & Water Electricity Generation Transmission and Distribution	12	1.91	654	9.03	63	717	6.51	91.21
Others	2	0.32	0	0.00	0	0	0.00	**,**
Total 4	14	2.23	654	9.03	63	717	6.51	91.21
5. Construction	24	3.83	300	4.14	53	353	3.20	84.99
6. Wholesale and Retail Trade and Restaurants & Hotels	58	9.25	181	2.50	313	494	4.48	36.64
7. Transport, Storage & Communication								
Land Transport	21	3.35	3	0.04	2	5	0.05	60.00
Water Transport	3	0.48	1990	27.48	1011	3001	27.24	66.31
Air Transport	1	0.16	28	0.39	66	94	0.85	29.79
Others	4	0.64	19	0.26	6	25	0.23	76.00
Total 7	29	4.63	2040	28.17	1085	3125	28.36	65.28
8. Financing, Insurance, Real Estate and Business Services	109	17.38	1540	21.27	1097	2637	23.93	58.40
9. Community, Social and Personnel Services	20	3.19	10	0.14	3	13	0.12	76.92
10. Activity not adequately defined	4	0.64	24	0.33	54	78	0.71	30.77
Grand Total (1 - 10)	627	100.00	7241	100.00	3777	11018	100.00	65.72

ANNEXURE 16 - C

INDUSTRY WISE DISTRIBUTION OF SCIENTIFIC AND TECHNICAL PERSONNEL
NON GOVERNMENT COMPANIES

Industry (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel Nos (7)	Personnel Percent (8)	S&T Intensity (9)
	Nos (2)	Percent (3)	Nos (4)	Percent (5)				
1. Agricultural, Forestry and Fishing	46	1.20	36	0.20	27	63	0.22	57.14
2. Mining and Quarrying								
(i) Mining of Coal, Lignite and Peat	16	0.42	13	0.07	9	22	0.08	59.09
(ii) Extraction of Crude Oil	6	0.16	62	0.34	35	97	0.33	63.92
(iii) Others	23	0.60	32	0.17	7	39	0.13	82.05
Total 2	45	1.17	107	0.58	51	158	0.54	67.72
3. Manufacturing								
(i) Food Products								
Sugar	31	0.81	68	0.37	34	102	0.35	66.67
Vanaspathi	19	0.49	35	0.19	24	59	0.20	59.32
Vegetable oils	43	1.12	13	0.07	10	23	0.08	56.52
Others	162	4.22	635	3.46	548	1183	4.04	53.68
Total (i)	255	6.64	751	4.09	616	1367	4.67	54.94
(ii) Beverages & Tobacco								
Alcoholic Beverages	23	0.60	463	2.52	355	818	2.79	56.60
Others	27	0.70	17	0.09	19	36	0.12	47.22
Total (ii)	50	1.30	480	2.61	374	854	2.92	56.21
(iii) Textiles								
Cotton Textiles	187	4.87	841	4.58	528	1369	4.68	61.43
Wool, Silk & Man-made	93	2.42	271	1.48	147	418	1.43	64.83
Jute and Other Veg. Fibre	23	0.60	19	0.10	13	32	0.11	59.38
Textiles Products	39	1.02	31	0.17	15	46	0.16	67.39
Total (iii)	342	8.91	1162	6.33	703	1865	6.37	62.31
(iv) Wood & Wood Products	31	0.81	54	0.29	8	62	0.21	87.10
(v) Paper, Paper Products and Printing								
Paper, paper board	51	1.33	84	0.46	76	160	0.55	52.50
Others	57	1.48	247	1.34	234	481	1.64	51.35
Total (v)	108	2.81	331	1.80	310	641	2.19	51.64
(vi) Leather and Products	16	0.42	61	0.33	83	144	0.49	42.36
(vii) Chemicals and related Products								
Basic Chemical and Chemical Products	257	6.69	1286	7.00	790	2076	7.09	61.95
Fertilizers and Pesticides	41	1.07	1156	6.29	362	1518	5.19	76.15
Drugs & Medicine	114	2.97	920	5.01	698	1618	5.53	56.86
Total (vii)	412	10.73	3362	18.31	1850	5212	17.81	64.50

ANNEXURE 16 - C
(Continued)

Activity (1)	Companies		S&T Personnel		Non STP Nos (6)	All Personnel		S&T Intensity (9)
	Nos (2)	Percent (3)	Nos (4)	Percent (5)		Nos (7)	Percent (8)	
(viii) Soap, Cosmetics & Toilet Preparation	18	0.47	572	3.11	430	1002	3.42	57.09
(ix) Rubber, Plastic & Petroleum Products								
Rubber Goods	32	0.83	254	1.38	101	355	1.21	71.55
Refined Petroleum Products	15	0.39	44	0.24	14	58	0.20	75.86
Others	77	2.01	98	0.53	52	150	0.51	65.33
Total (ix)	124	3.23	396	2.16	167	563	1.92	70.34
(x) Nuclear Fuels	1	0.03	1	0.01	1	2	0.01	50.00
(xi) Coke Oven products	2	0.05	6	0.03	0	6	0.02	100.00
(xii) Glass & glass Products	20	0.52	56	0.30	259	315	1.08	17.78
(xiii) Non Structural Ceramic Ware	12	0.31	19	0.10	6	25	0.09	76.00
(xiv) Cement, Lime and Plaster	75	1.95	482	2.62	323	805	2.75	59.88
(xv) Non-Metallic Mineral Products	81	2.11	162	0.88	54	216	0.74	75.00
(xvi) Metals & Products								
Basic Metals and Alloys	250	6.51	2132	11.61	636	2768	9.46	77.02
Metal Products	127	3.31	160	0.87	64	224	0.77	71.43
(xvii) Machinery & Equipments								
Agricultural Mach. and Equipments	10	0.26	109	0.59	32	141	0.48	77.30
Mach. and Equip. used by Construction and Mining	3	0.08	0	0.00	0	0	0.00	***.**
Boiler, Steam Generation Plants nuclear reactor & Prime movers	3	0.08	6	0.03	2	8	0.03	75.00
Other Industrial Machinery	23	0.60	85	0.46	33	118	0.40	72.03
Machine Tools	29	0.76	67	0.36	18	85	0.29	78.82
Office, Computing & Accounting Machinery	5	0.13	5	0.03	1	6	0.02	83.33
Electrical And Electronic Machinery	210	5.47	1509	8.22	947	2456	8.39	61.44
Equipment for radio, television radar apparatus etc.	13	0.34	90	0.49	31	121	0.41	74.38
Others	104	2.71	1005	5.47	487	1492	5.10	67.36
Total (xvii)	400	10.42	2876	15.66	1551	4427	15.13	64.96

ANNEXURE 16 - C
(Continued)

Activity (1)	Companies		S&T Personnel		Non STP	All Personnel	S&T	
	Nos	Percent	Nos	Percent	Nos	Nos	Percent	Intensity
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(xviii) Computers & Computer -based System	21	0.55	109	0.59	40	149	0.51	73.15
(xix) Manufacture of Transport Equipment and parts	104	2.71	1867	10.17	553	2420	8.27	77.15
(xx) Other Manufacturing Industries	162	4.22	339	1.85	225	564	1.93	60.11
(xxi) Repair of Capital Goods	1	0.03	0	0.00	0	0	0.00	**.**
Total 3	2611	67.99	15378	83.73	8252	23630	80.73	65.08
4. Electricity, Gas & Water								
Electricity Generation Transmission and Distribution	9	0.23	891	4.85	691	1582	5.41	56.32
Others	2	0.05	27	0.15	7	34	0.12	79.41
Total 4	11	0.29	918	5.00	698	1616	5.52	56.81
5. Construction	71	1.85	180	0.98	65	245	0.84	73.47
6. Wholesale and Retail Trade and Restaurants & Hotels	298	7.76	329	1.79	265	594	2.03	55.39
7. Transport, Storage & Communication								
Land Transport	19	0.49	29	0.16	16	45	0.15	64.44
Water Transport	12	0.31	306	1.67	79	385	1.32	79.48
Air Transport	1	0.03	47	0.26	11	58	0.20	81.03
Others	25	0.65	424	2.31	658	1082	3.70	39.19
Total 7	57	1.48	806	4.39	764	1570	5.36	51.34
8. Financing, Insurance, Real Estate and Business Services	584	15.21	579	3.15	752	1331	4.55	43.50
9. Community, Social and Personnel Services	79	2.06	33	0.18	23	56	0.19	58.93
10. Activity not adequately defined	38	0.99	0	0.00	6	6	0.02	0.00
Grand Total (1 - 10)	3840	100.00	18366	100.00	10903	29269	100.00	62.75

ANNEXURE 17 - A

INDUSTRY WISE CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT AND NON GOVERNMENT COMPANIES

Industry (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	(%) (6)			Total (Years) (9)	In last Co (Years) (10)
1. Agricultural, Forestry and Fishing	43	0	43	0.17	172	46.4	20.5	6.8
2. Mining and Quarrying								
(i) Mining of Coal, Lignite and Peat	218	19	237	0.93	176	47.9	19.6	14.1
(ii) Extraction of Crude Oil	79	0	79	0.31	311	45.7	22.7	9.4
(iii) Others	115	1	116	0.45	176	50.7	25.3	16.2
Total 2	412	20	432	1.69	201	48.2	21.7	13.8
3. Manufacturing								
(i) Food Products								
Sugar	69	0	69	0.27	407	54.5	31.2	17.0
Vanaspathi	35	0	35	0.14	218	50.8	27.3	6.4
Vegetable oils	13	0	13	0.05	190	44.6	21.3	6.7
Others	637	5	642	2.51	248	45.0	21.7	10.0
Total (i)	754	5	759	2.96	260	46.1	22.8	10.4
(ii) Beverages & Tobacco								
Alcoholic Beverages	448	15	463	1.81	226	44.7	21.8	13.3
Others	17	0	17	0.07	206	46.8	23.4	10.4
Total (ii)	465	15	480	1.87	225	44.8	21.9	13.2
(iii) Textiles								
Cotton Textiles	876	3	879	3.43	211	46.8	23.8	11.2
Wool, Silk & Man-made	273	0	273	1.07	211	48.1	24.6	10.8
Jute and Other Veg. Fibre	19	0	19	0.07	212	44.1	21.5	8.3
Textiles Products	31	1	32	0.12	442	46.8	23.7	11.0
Total (iii)	1199	4	1203	4.70	217	47.1	23.9	11.0
(iv) Wood & Wood Products	51	3	54	0.21	194	52.7	28.9	12.6
(v) Paper, Paper Products and Printing								
Paper, paper board	90	1	91	0.36	232	52.2	28.9	12.5
Others	282	4	286	1.12	209	48.9	24.7	14.4
Total (v)	372	5	377	1.47	221	46.4	22.7	14.3
(vi) Leather and Products	60	1	61	0.24	227	49.6	27.1	19.9
(vii) Chemicals and related Products								
Basic Chemical and Chemical Products	1861	1	1862	7.27	217	48.2	24.8	14.4
Fertilizers and Pesticides	1465	7	1472	5.75	185	47.3	23.2	17.5
Drugs & Medicine	946	8	954	3.73	231	48.4	25.2	17.2
Total (vii)	4272	16	4288	16.75	209	47.9	24.3	16.1

ANNEXURE 17 - A
(Continued)

Activity (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	(%) (6)			Total (Years) (9)	In last Co (Years) (10)
(viii) Soap, Cosmetics & Toilet Preparation	564	8	572	2.23	275	43.9	20.5	12.8
(ix) Rubber, Plastic & Petroleum Products								
Rubber Goods	253	1	254	0.99	256	47.8	25.1	10.4
Refined Petroleum Products	367	6	373	1.46	172	47.0	22.8	17.0
Others	126	0	126	0.49	192	47.0	22.9	10.3
Total (ix)	746	7	753	2.94	204	47.2	23.6	13.6
(x) Nuclear Fuels	7	0	7	0.03	189	47.9	25.3	21.4
(xi) Coke Oven products	7	0	7	0.03	275	50.3	28.6	2.9
(xii) Glass & glass Products	56	0	56	0.22	315	49.0	26.4	12.3
(xiii) Non Structural Ceramic Ware	19	0	19	0.07	184	52.7	28.5	20.3
(xiv) Cement, Lime and Plaster	505	1	506	1.98	221	46.2	22.6	14.1
(xv) Non-Metallic Mineral Products	161	1	162	0.63	305	49.5	26.4	14.0
(xvi) Metals & Products								
Basic Metals and Alloys	2373	36	2409	9.41	190	49.3	25.2	19.3
Metal Products	163	1	164	0.64	270	48.5	25.1	10.8
(xvii) Machinery & Equipments								
Agricultural Mach. and Equipments	109	0	109	0.43	199	44.6	22.2	15.6
Mach. and Equip. used by Construction and Mining	0	0	0	0.00	0	0.0	0.0	0.0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	6	0	6	0.02	203	52.0	28.7	3.5
Other Industrial Machinery	85	0	85	0.33	229	49.3	26.4	9.6
Machine Tools	67	0	67	0.26	219	48.4	24.7	11.9
Office, Computing & Accounting Machinery	5	0	5	0.02	184	50.2	27.6	13.8
Electrical And Electronic Machinery	1584	6	1590	6.21	202	46.5	23.7	15.8
Equipment for radio, television radar apparatus etc.	116	0	116	0.45	181	47.4	24.0	15.0
Others	1023	1	1024	4.00	208	47.5	24.6	14.3
Total (xvii)	2995	7	3002	11.72	204	47.0	24.1	14.9

ANNEXURE 17 - A
(Continued)

Activity (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Total (%) (6)			Total (Years) (9)	In last Co (Years) (10)
(xviii) Computers & Computer based System	341	6	347	1.36	182	41.3	18.5	10.7
(xix) Manufacture of Transport Equipment and parts	1966	6	1972	7.70	203	48.1	25.2	16.8
(xx) Other Manufacturing Industries	339	1	340	1.33	212	47.1	24.4	9.6
(xxi) Repair of Capital Goods	0	0	0	0.00	0	0.0	0.0	0.0
Total 3	17415	123	17538	68.49	212	47.5	24.1	15.1
4. Electricity, Gas & Water								
Electricity Generation Transmission and Distribution	1532	13	1545	6.03	172	46.6	23.5	16.9
Others	27	0	27	0.11	214	47.3	24.4	14.6
Total 4	1559	13	1572	6.14	173	46.6	23.5	16.9
5. Construction	472	8	480	1.87	231	49.4	25.2	12.6
6. Wholesale and Retail Trade and Restaurants & Hotels	504	6	510	1.99	228	45.5	22.3	11.6
7. Transport, Storage & Communication								
Land Transport	32	0	32	0.12	206	45.1	23.8	10.3
Water Transport	2296	0	2296	8.97	326	37.3	11.3	8.5
Air Transport	75	0	75	0.29	269	46.7	23.2	2.9
Others	439	4	443	1.73	272	40.6	17.0	5.0
Total 7	2842	4	2846	11.11	314	38.2	12.6	7.8
8. Financing, Insurance, Real Estate and Business Services	2091	28	2119	8.28	207	47.3	23.8	15.1
9. Community, Social and Personnel Services	42	1	43	0.17	242	49.3	25.5	10.9
10. Activity not adequately defined	24	0	24	0.09	185	53.0	28.0	25.6
Grand Total (1 - 10)	25404	203	25607	100.00	221	46.4	22.7	14.3

ANNEXURE 17 - B

INDUSTRY WISE CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL
GOVERNMENT COMPANIES

Industry (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	(%) (6)			Total (Years) (9)	In last Co (Years) (10)
1. Agricultural, Forestry and Fishing	7	0	7	0.10	167	54.4	14.6	2.1
2. Mining and Quarrying								
(i) Mining of Coal, Lignite and Peat	205	19	224	3.09	175	47.8	19.1	14.2
(ii) Extraction of Crude Oil	17	0	17	0.23	211	46.9	23.4	10.3
(iii) Others	83	1	84	1.16	163	51.8	25.2	19.1
Total 2	305	20	325	4.49	173	48.8	20.9	15.3
3. Manufacturing								
(i) Food Products								
Sugar	1	0	1	0.01	264	39.0	21.0	5.0
Vanaspathi	0	0	0	0.00	0	0.0	0.0	0.0
Vegetable oils	0	0	0	0.00	0	0.0	0.0	0.0
Others	7	0	7	0.10	150	54.7	22.6	14.9
Total (i)	8	0	8	0.11	165	52.8	22.4	13.6
(ii) Beverages & Tobacco								
Alcoholic Products	0	0	0	0.00	0	0.0	0.0	0.0
Others	0	0	0	0.00	0	0.0	0.0	0.0
Total (ii)	0	0	0	0.00	0	0.0	0.0	0.0
(iii) Textiles								
Cotton Textiles	38	0	38	0.52	172	51.5	28.8	12.6
Wool, Silk & Man-made	2	0	2	0.03	150	52.5	26.5	14.0
Jute and Other Veg. Fibre	0	0	0	0.00	0	0.0	0.0	0.0
Textiles Products	1	0	1	0.01	159	48.0	14.0	14.0
Total (iii)	41	0	41	0.57	170	51.4	28.3	12.7
(iv) Wood & Wood Products	0	0	0	0.00	0	0.0	0.0	0.0
(v) Paper, Paper Products and Printing								
Paper, paper board	7	0	7	0.10	137	48.9	27.1	9.9
Others	38	1	39	0.54	162	50.6	17.0	17.0
Total (v)	45	1	46	0.64	220	45.0	20.2	13.9
(vi) Leather and Products	0	0	0	0.00	0	0.0	0.0	0.0
(vii) Chemicals and related Products								
Basic Chemical and Chemical Products	576	0	576	7.95	173	48.6	24.8	17.8
Fertilizers and Pesticides	313	3	316	4.36	170	50.2	24.5	20.8
Drugs & Medicine	33	1	34	0.47	243	48.9	19.2	13.6
Total (vii)	922	4	926	12.79	175	49.1	24.5	18.7

ANNEXURE 17 - B
(Continued)

Industry (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	(%) (6)			Total (Years) (9)	In last Co (Years) (10)
(viii) Soap, Cosmetics & Toilet Preparation	0	0	0	0.00	0	0.0	0.0	0.0
(ix) Rubber, Plastic & Petroleum Products								
Rubber Goods	0	0	0	0.00	0	0.0	0.0	0.0
Refined Petroleum Products	323	6	329	4.54	170	46.4	22.6	18.0
Others	28	0	28	0.39	164	46.4	22.8	15.0
Total (ix)	351	6	357	4.93	169	46.4	22.6	17.7
(x) Nuclear Fuels	6	0	6	0.08	195	49.5	26.8	24.7
(xi) Coke Oven products	1	0	1	0.01	146	54.0	33.0	2.0
(xii) Glass & glass Products	0	0	0	0.00	0	0.0	0.0	0.0
(xiii) Non Structural Ceramic Ware	0	0	0	0.00	0	0.0	0.0	0.0
(xiv) Cement, Lime and Plaster	24	0	24	0.33	156	51.5	28.6	12.1
(xv) Non-Metallic Mineral Products	0	0	0	0.00	0	0.0	0.0	0.0
(xvi) Metals & Products								
Basic Metals and Alloys	271	6	277	3.83	157	52.4	27.8	21.0
Metal Products	4	0	4	0.06	150	53.3	32.5	6.0
(xvii) Machinery & Equipments								
Agricultural Mach. and Equipments	0	0	0	0.00	0	0.0	0.0	0.0
Mach. and Equip. used by Construction and Mining	0	0	0	0.00	0	0.0	0.0	0.0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	0	0	0	0.00	0	0.0	0.0	0.0
Other Industrial Machinery	0	0	0	0.00	0	0.0	0.0	0.0
Machine Tools	0	0	0	0.00	0	0.0	0.0	0.0
Office, Computing & Accounting Machinery	0	0	0	0.00	0	0.0	0.0	0.0
Electrical And Electronic Machinery	80	1	81	1.12	169	45.6	22.0	13.4
Equipment for radio, television radar apparatus etc.	26	0	26	0.36	181	48.3	24.0	11.0
Others	19	0	19	0.26	167	51.1	26.9	17.1
Total (xvii)	125	1	126	1.74	171	47.0	23.2	13.5
(xviii) Computers & Computer based System	236	2	238	3.29	174	42.6	19.4	12.9

ANNEXURE 17 - B
(Continued)

Industry (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	(%) (6)			Total (Years) (9)	In last Co (Years) (10)
(xix) Manufacture of Transport Equipment and parts	105	0	105	1.45	197	50.3	26.9	17.6
(xx) Other Manufacturing Industries	1	0	1	0.01	159	52.0	31.0	5.0
(xxi) Repair of Capital Goods	0	0	0	0.00	0	0.0	0.0	0.0
Total 3	2140	20	2160	29.83	172	48.4	24.1	17.5
4. Electricity, Gas & Water								
Electricity Generation Transmission and Distribution	649	5	654	9.03	162	46.9	23.3	10.9
Others	0	0	0	0.00	0	0.0	0.0	0.0
Total 4	649	5	654	9.03	162	46.9	23.3	10.9
5. Construction	293	7	300	4.14	241	48.4	24.2	13.5
6. Wholesale and Retail Trade and Restaurants & Hotels	178	3	181	2.50	202	45.7	22.2	14.6
7. Transport, Storage & Communication								
Land Transport	3	0	3	0.04	194	48.7	26.0	4.7
Water Transport	1990	0	1990	27.48	329	36.8	10.6	9.1
Air Transport	28	0	28	0.39	175	48.5	25.8	6.1
Others	17	2	19	0.26	188	49.1	25.6	7.4
Total 7	2038	2	2040	28.17	325	37.1	10.9	9.0
8. Financing, Insurance, Real Estate and Business Services	1531	9	1540	21.27	182	48.1	24.6	16.3
9. Community, Social and Personnel Services	10	0	10	0.14	167	52.5	28.1	18.6
10. Activity not adequately defined	24	0	24	0.33	185	53.0	28.0	25.6
Grand Total (1 - 10)	7175	66	7241	100.00	220	45.0	20.2	13.9

ANNEXURE 17 - C

INDUSTRY WISE CHARACTERISTICS OF SCIENTIFIC AND TECHNICAL PERSONNEL
NON GOVERNMENT COMPANIES

Industry (1)	S&T Personnel			Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience		
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)			(%) (6)	Total (Years) (9)	In last Co (Years) (10)
1. Agricultural, Forestry and Fishing	36	0	36	0.20	173	44.8	21.6	7.7
2. Mining and Quarrying								
(i) Mining of Coal, Lignite and Peat	13	0	13	0.07	198	49.2	27.7	11.4
(ii) Extraction of Crude Oil	62	0	62	0.34	338	45.4	22.5	9.1
(iii) Others	32	0	32	0.17	211	47.9	25.6	8.6
Total 2	107	0	107	0.58	283	46.6	24.0	9.3
3. Manufacturing								
(i) Food Products								
Sugar	68	0	68	0.37	409	54.7	31.4	17.2
Vanaspathi	35	0	35	0.19	218	50.8	27.3	6.4
Vegetable oils	13	0	13	0.07	190	44.6	21.3	6.7
Others	630	5	635	3.46	249	44.9	21.7	9.9
Total (i)	746	5	751	4.09	261	46.1	22.8	10.3
(ii) Beverages & Tobacco								
Alcoholic Beverages	448	15	463	2.52	226	44.7	21.8	13.3
Others	17	0	17	0.09	206	46.8	23.4	10.4
Total (ii)	465	15	480	2.61	225	44.8	21.9	13.2
(iii) Textiles								
Cotton Textiles	838	3	841	4.58	213	46.6	23.6	11.1
Wool, Silk & Man-made	271	0	271	1.48	212	48.1	24.6	10.7
Jute and Other Veg. Fibre	19	0	19	0.10	212	44.1	21.5	8.3
Textiles Products	30	1	31	0.17	451	46.8	24.0	10.9
Total (iii)	1158	4	1162	6.33	219	46.9	23.8	11.0
(iv) Wood & Wood Products	51	3	54	0.29	194	52.7	28.9	12.6
(v) Paper, Paper Products and Printing								
Paper, paper board	83	1	84	0.46	240	52.4	29.0	12.7
Others	244	3	247	1.34	216	48.7	26.0	14.0
Total (v)	327	4	331	1.80	221	46.9	23.7	14.4
(vi) Leather and Products	60	1	61	0.33	227	49.6	27.1	19.9
(vii) Chemicals and related Products								
Basic Chemical and Chemical Products	1285	1	1286	7.00	236	48.1	24.8	12.9
Fertilizers and Pesticides	1152	4	1156	6.29	189	46.5	22.9	16.7
Drugs & Medicine	913	7	920	5.01	231	48.4	25.4	17.4
Total (vii)	3350	12	3362	18.31	218	47.6	24.3	15.4

ANNEXURE 17 - C
(Continued)

Industry (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	(%) (6)			Total (Years) (9)	In last Co (Years) (10)
(viii) Soap, Cosmetics & Toilet Preparation	564	8	572	3.11	275	43.9	20.5	12.8
(ix) Rubber, Plastic & Petroleum Products								
Rubber Goods	253	1	254	1.38	256	47.8	25.1	10.4
Refined Petroleum Products	44	0	44	0.24	188	51.0	24.4	9.6
Others	98	0	98	0.53	201	47.2	22.9	8.9
Total (ix)	395	1	396	2.16	235	48.0	24.5	10.0
(x) Nuclear Fuels	1	0	1	0.01	150	38.0	16.0	2.0
(xi) Coke Oven products	6	0	6	0.03	296	49.7	27.8	3.0
(xii) Glass & glass Products	56	0	56	0.30	315	49.0	26.4	12.3
(xiii) Non Structural Ceramic Ware	19	0	19	0.10	184	52.7	28.5	20.3
(xiv) Cement, Lime and Plaster	481	1	482	2.62	224	45.9	22.3	14.2
(xv) Non-Metallic Mineral Products	161	1	162	0.88	305	49.5	26.4	14.0
(xvi) Metals & Products								
Basic Metals and Alloys	2102	30	2132	11.61	194	48.9	24.9	19.1
Metal Products	159	1	160	0.87	273	48.4	25.0	10.9
(xvii) Machinery & Equipments								
Agricultural Mach. and Equipments	109	0	109	0.59	199	44.6	22.2	15.6
Mach. and Equip. used by Construction and Mining	0	0	0	0.00	0	0.0	0.0	0.0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	6	0	6	0.03	203	52.0	28.7	3.5
Other Industrial Machinery	85	0	85	0.46	229	49.3	26.4	9.6
Machine Tools	67	0	67	0.36	219	48.4	24.7	11.9
Office, Computing & Accounting Machinery	5	0	5	0.03	184	50.2	27.6	13.8
Electrical And Electronic Machinery	1504	5	1509	8.22	204	46.6	23.8	15.9
Equipment for radio, television radar apparatus etc.	90	0	90	0.49	180	47.1	24.1	16.1
Others	1004	1	1005	5.47	209	47.4	24.6	14.2
Total (xvii)	2870	6	2876	15.66	206	47.0	24.1	15.0

ANNEXURE 17 - C
(Continued)

Industry (1)	S&T Personnel				Annual Remun. (Rs.000) (7)	Average Age (Years) (8)	Experience	
	Male (Nos) (2)	Female (Nos) (3)	Total (Nos) (4)	Total (%) (%) (6)			Total (Years) (9)	In last Co (Years) (10)
(xviii) Computers & Computer based System	105	4	109	0.59	199	38.4	16.4	5.9
(xix) Manufacture of Transport Equipment and parts	1861	6	1867	10.17	203	48.0	25.1	16.8
(xx) Other Manufacturing Industries	338	1	339	1.85	212	47.1	24.4	9.6
(xxi) Repair of Capital Goods	0	0	0	0.00	0	0.0	0.0	0.0
Total 3	15275	103	15378	83.73	217	47.3	24.1	14.8
4. Electricity, Gas & Water								
Electricity Generation Transmission and Distribution	883	8	891	4.85	180	46.4	23.6	21.3
Others	27	0	27	0.15	214	47.3	24.4	14.6
Total 4	910	8	918	5.00	181	46.4	23.6	21.1
5. Construction	179	1	180	0.98	216	51.3	26.9	11.2
6. Wholesale and Retail Trade and Restaurants & Hotels	326	3	329	1.79	241	45.4	22.3	9.9
7. Transport, Storage & Communication								
Land Transport	29	0	29	0.16	208	44.7	23.5	10.9
Water Transport	306	0	306	1.67	305	40.7	15.8	4.5
Air Transport	47	0	47	0.26	324	45.7	21.7	1.1
Others	422	2	424	2.31	275	40.2	16.6	4.9
Total 7	804	2	806	4.39	287	40.9	16.9	4.7
8. Financing, Insurance, Real Estate and Business Services	560	19	579	3.15	273	45.1	21.8	11.7
9. Community, Social and Personnel Services	32	1	33	0.18	265	48.4	24.8	8.6
10. Activity not adequately defined	0	0	0	0.00	0	0.0	0.0	0.0
Grand Total (1 - 10)	18229	137	18366	100.00	221	46.9	23.7	14.4

ANNEXURE 18 - A

LEVELS OF QUALIFICATIONS OF S&T PERSONNEL FOR DIFFERENT INDUSTRIES
GOVERNMENT AND NON GOVERNMENT COMPANIES

Industry	Doctorate	Post Graduates	Graduates	Others	Total
(1)	(Nos) (2)	(Nos) (3)	(Nos) (4)	(Nos) (5)	(Nos) (6)
1. Agricultural, Forestry and Fishing	2	3	25	13	43
2. Mining and Quarrying					
(i) Mining of Coal, Lignite and Peat	0	45	184	8	237
(ii) Extraction of Crude Oil	1	17	49	12	79
(iii) Others	3	17	88	8	116
Total 2	4	79	321	28	432
3. Manufacturing					
(i) Food Products					
Sugar	0	8	50	11	69
Vanaspathi	0	10	24	1	35
Vegetable oils	0	0	12	1	13
Others	12	135	465	30	642
Total (i)	12	153	551	43	759
(ii) Beverages & Tobacco					
Alcoholic Beverages	16	106	284	57	463
Others	0	3	13	1	17
Total (ii)	16	109	297	58	480
(iii) Textiles					
Cotton Textiles	15	123	543	198	879
Wool, Silk & Man-made	7	40	190	36	273
Jute and Other Veg. Fibre	0	3	16	0	19
Textiles Products	1	8	19	4	32
Total (iii)	23	174	768	238	1203
(iv) Wood & Wood Products	0	2	52	0	54
(v) Paper, Paper Products and Printing					
Paper, paper board	3	10	70	8	91
Others	2	35	185	64	286
Total (v)	5	45	255	72	377
(vi) Leather and Products	0	8	47	6	61
(vii) Chemicals and related Products					
Basic Chemical and Chemical Products	117	278	1269	198	1862
Fertilizers and Pesticides	32	176	1091	173	1472
Drugs & Medicine	64	195	650	45	954
Total (vii)	213	649	3010	416	4288
(viii) Soap, Cosmetics & Toilet Preparation	72	116	356	28	572
	219				

ANNEXURE 18 - A
(Continued)

Industry	Doctorate	Post Graduates	Graduates	Others	Total
(1)	(Nos) (2)	(Nos) (3)	(Nos) (4)	(Nos) (5)	(Nos) (6)
(ix) Rubber, Plastic & Petroleum Products					
Rubber Goods	7	32	199	16	254
Refined Petroleum Products	10	49	295	19	373
Others	5	28	38	5	126
Total (ix)	22	109	512	40	753
(x) Nuclear Fuels	0	1	6	0	7
(xi) Coke Oven products	0	1	6	0	7
(xii) Glass & glass Products	0	4	42	10	56
(xiii) Non Structural Ceramic Ware	0	3	16	0	19
(xiv) Cement, Lime and Plaster	13	66	315	112	506
(xv) Non-Metallic Mineral Products	18	36	99	9	162
(xvi) Metals & Products					
Basic Metals and Alloys	41	297	1784	287	2409
Metal Products	1	25	126	12	164
(xvii) Machinery & Equipments					
Agricultural Mach. and Equipments	0	5	84	20	109
Mach. and Equip. used by Construction and Mining	0	0	0	0	0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	0	0	6	0	6
Other Industrial Machinery	2	8	73	2	85
Machine Tools	6	4	52	5	67
Office, Computing & Accounting Machinery	0	0	5	0	5
Electrical And Electronic Machinery	35	176	1101	278	1590
Equipment for radio, television radar apparatus etc.	3	20	76	17	116
Others	13	130	727	154	1024
Total (xvii)	59	343	2124	476	3002
(xviii) Computers & Computer based System	7	78	196	66	347
(xix) Manufacture of Transport Equipment and parts	20	251	1420	281	1972

ANNEXURE 18 - A
(Continued)

Industry	Doctorate	Post Graduates	Graduates	Others	Total
(1)	(Nos) (2)	(Nos) (3)	(Nos) (4)	(Nos) (5)	(Nos) (6)
(xx) Other Manufacturing Industries	9	56	247	28	340
(xxi) Repair of Capital Goods	0	0	0	0	0
Total 3	531	2526	12299	2182	17538
4. Electricity, Gas & Water					
Electricity Generation Transmission and Distribution	14	213	967	351	1545
Others	0	3	24	0	27
Total 4	14	216	991	351	1572
5. Construction	8	83	335	54	480
6. Wholesale and Retail Trade and Restaurants & Hotels	13	80	367	50	510
7. Transport, Storage & Communication					
Land Transport	0	9	23	0	32
Water Transport	7	489	594	1206	2296
Air Transport	0	4	24	47	75
Others	1	136	173	133	443
Total 7	8	638	814	1386	2846
8. Financing, Insurance, Real Estate and Business Services	56	377	1548	138	2119
9. Community, Social and Personnel Services	3	12	27	1	43
10. Activity not adequately defined	0	7	9	8	24
Grand Total (1 - 10)	639	4021	16736	4211	25607

LEVELS OF QUALIFICATIONS OF S&T PERSONNEL FOR DIFFERENT INDUSTRIES
GOVERNMENT COMPANIES

Industry	Doctorate	Post Graduates	Graduates	Others	Total
(1)	(Nos) (2)	(Nos) (3)	(Nos) (4)	(Nos) (5)	(Nos) (6)
1. Agricultural, Forestry and Fishing	0	0	7	0	7
2. Mining and Quarrying					
(i) Mining of Coal, Lignite and Peat	0	45	172	7	224
(ii) Extraction of Crude Oil	0	9	8	0	17
(iii) Others	3	15	59	7	84
Total 2	3	69	239	14	325
3. Manufacturing					
(i) Food Products					
Sugar	0	0	1	0	1
Vanaspathi	0	0	0	0	0
Vegetable oils	0	0	0	0	0
Others	1	1	5	0	7
Total (i)	1	1	6	0	8
(ii) Beverages & Tobacco					
Alcoholic Beverages	0	0	0	0	0
Others	0	0	0	0	0
Total (ii)	0	0	0	0	0
(iii) Textiles					
Cotton Textiles	0	5	26	7	38
Wool, Silk & Man-made	0	1	1	0	2
Jute and Other Veg. Fibre	0	0	0	0	0
Textiles Products	0	0	1	0	1
Total (iii)	0	6	28	7	41
(iv) Wood & Wood Products	0	0	0	0	0
(v) Paper, Paper Products and Printing					
Paper, paper board	1	0	5	1	7
Others	1	2	35	1	39
Total (v)	2	2	40	2	46
(vi) Leather and Products	0	0	0	0	0
(vii) Chemicals and related Products					
Basic Chemical and Chemical Products	27	54	405	90	576
Fertilizers and Pesticides	8	34	258	16	316
Drugs & Medicine	1	12	19	2	34
Total (vii)	36	100	682	108	926

ANNEXURE 18 - B
(Continued)

Industry	Doctorate	Post Graduates	Graduates	Others	Total
(1)	(Nos) (2)	(Nos) (3)	(Nos) (4)	(Nos) (5)	(Nos) (6)
(viii) Soap, Cosmetics & Toilet Preparation	0	0	0	0	0
(ix) Rubber, Plastic & Petroleum Products					
Rubber Goods	0	0	0	0	0
Refined Petroleum Products	10	36	266	17	329
Others	2	7	18	1	28
Total (ix)	12	43	284	18	357
(x) Nuclear Fuels	0	1	5	0	6
(xi) Coke Oven products	0	0	1	0	1
(xii) Glass & glass Products	0	0	0	0	0
(xiii) Non Structural Ceramic Ware	0	0	0	0	0
(xiv) Cement, Lime and Plaster	0	5	19	0	24
(xv) Non-Metallic Mineral Products	0	0	0	0	0
(xvi) Metals & Products					
Basic Metals and Alloys	9	31	230	7	277
Metal Products	0	0	4	0	4
(xvii) Machinery & Equipments					
Agricultural Mach. and Equipments	0	0	0	0	0
Mach. and Equip. used by Construction and Mining	0	0	0	0	0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	0	0	0	0	0
Other Industrial Machinery	0	0	0	0	0
Machine Tools	0	0	0	0	0
Office, Computing & Accounting Machinery	0	0	0	0	0
Electrical And Electronic Machinery	8	18	54	1	81
Equipment for radio, television radar apparatus etc.	3	7	14	2	26
Others	0	2	16	1	19
Total (xvii)	11	27	84	4	126
	223				

ANNEXURE 18 - B
(Continued)

Industry (1)	Doctorate (Nos) (2)	Post Graduates (Nos) (3)	Graduates (Nos) (4)	Others (Nos) (5)	Total (Nos) (6)
(xviii) Computers & Computer based System	5	51	121	61	238
(xix) Manufacture of Transport Equipment and parts	1	11	84	9	105
(xx) Other Manufacturing Industries	0	0	1	0	1
(xxi) Repair of Capital Goods	0	0	0	0	0
Total 3	77	278	1589	216	2160
4. Electricity, Gas & Water					
Electricity Generation Transmission and Distribution	8	128	506	12	654
Others	0	0	0	0	0
Total 4	8	128	506	12	654
5. Construction	6	60	204	30	300
6. Wholesale and Retail Trade and Restaurants & Hotels	6	30	136	9	181
7. Transport, Storage & Communication					
Land Transport	0	1	2	0	3
Water Transport	7	385	497	1101	1990
Air Transport	0	3	18	7	28
Others	0	5	12	2	19
Total 7	7	394	529	1110	2040
8. Financing, Insurance, Real Estate and Business Services	48	227	1148	117	1540
9. Community, Social and Personnel Services	2	2	6	0	10
10. Activity not adequately defined	0	7	9	8	24
Grand Total (1 - 10)	157	1195	4373	1516	7241

LEVELS OF QUALIFICATIONS OF S&T PERSONNEL FOR DIFFERENT INDUSTRIES
NON GOVERNMENT COMPANIES

Industry (1)	Doctorate (2)	Post Graduates (3)	Graduates (4)	Others (5)	Total (6)
1. Agricultural, Forestry and Fishing	2	3	18	13	36
2. Mining and Quarrying					
(i) Mining of Coal, Lignite and Peat	0	0	12	1	13
(ii) Extraction of Crude Oil	1	8	41	12	62
(iii) Others	0	2	29	1	32
Total 2	1	10	82	14	107
3. Manufacturing					
(i) Food Products					
Sugar	0	8	49	11	68
Vanaspathi	0	10	24	1	35
Vegetable oils	0	0	12	1	13
Others	11	134	460	30	635
Total (i)	11	152	545	43	751
(ii) Beverages & Tobacco					
Alcoholic Beverages	16	106	284	57	463
Others	0	3	13	1	17
Total (ii)	16	109	297	58	480
(iii) Textiles					
Cotton Textiles	15	118	517	191	841
Wool, Silk & Man-made	7	39	189	36	271
Jute and Other Veg. Fibre	0	3	16	0	19
Textiles Products	1	8	18	4	31
Total (iii)	23	168	740	231	1162
(iv) Wood & Wood Products	0	2	52	0	54
(v) Paper, Paper Products and Printing					
Paper, paper board	2	10	65	7	84
Others	1	33	150	63	247
Total (v)	3	43	215	70	331
(vi) Leather and Products	0	8	47	6	61
(vii) Chemicals and related Products					
Basic Chemical and Chemical Products	90	224	864	108	1286
Fertilizers and Pesticides	24	142	833	157	1156
Drugs & Medicine	63	183	631	43	920
Total (vii)	177	549	2328	308	3362
(viii) Soap, Cosmetics & Toilet Preparation	72	116	356	28	572

ANNEXURE 18 - C
(Continued)

Industry (1)	Doctorate (2)	Post Graduates (3)	Graduates (4)	Others (5)	Total (6)
(ix) Rubber, Plastic & Petroleum Products					
Rubber Goods	7	32	199	16	254
Refined Petroleum Products	0	13	29	2	44
Others	3	21	70	4	98
Total (ix)	10	66	298	22	396
(x) Nuclear Fuels	0	0	1	0	1
(xi) Coke Oven products	0	1	5	0	6
(xii) Glass & glass Products	0	4	42	10	56
(xiii) Non Structural Ceramic Ware	0	3	16	0	19
(xiv) Cement, Lime and Plaster	13	61	296	112	482
(xv) Non-Metallic Mineral Products	18	36	99	9	162
(xvi) Metals & Products					
Basic Metals and Alloys	32	266	1554	280	2132
Metal Products	1	25	122	12	160
(xvii) Machinery & Equipments					
Agricultural Mach. and Equipments	0	5	84	20	109
Mach. and Equip. used by Construction and Mining	0	0	0	0	0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	0	0	6	0	6
Other Industrial Machinery	2	8	73	2	85
Machine Tools	6	4	52	5	67
Office, Computing & Accounting Machinery	0	0	5	0	5
Electrical And Electronic Machinery	27	158	1047	277	1509
Equipment for radio, television radar apparatus etc.	0	13	62	15	90
Others	13	128	711	153	1005
Total (xvii)	48	316	2040	472	2876
(xviii) Computers & Computer based System	2	27	75	5	109
(xix) Manufacture of Transport Equipment and parts	19	240	1336	272	1867
(xx) Other Manufacturing Industries	9	56	246	28	339
(xxi) Repair of Capital Goods	0	0	0	0	0
Total 3	454	2248	10710	1966	15378

ANNEXURE 18 - C
(Continued)

Industry (1)	Doctorate (2)	Post Graduates (3)	Graduates (4)	Others (5)	Total (6)
4. Electricity, Gas & Water					
Electricity Generation Transmission and Distribution	6	85	461	339	891
Others	0	3	24	0	27
Total 4	6	88	485	339	918
5. Construction	2	23	131	24	180
6. Wholesale and Retail Trade and Restaurants & Hotels	7	50	231	41	329
7. Transport, Storage & Communication					
Land Transport	0	8	21	0	29
Water Transport	0	104	97	105	306
Air Transport	0	1	6	40	47
Others	1	131	161	131	424
Total 7	1	244	285	276	806
8. Financing, Insurance, Real Estate and Business Services	8	150	400	21	579
9. Community, Social and Personnel Services	1	10	21	1	33
10. Activity not adequately defined	0	0	0	0	0
Grand Total (1 - 10)	482	2826	12363	2695	18366

FIELDS OF SPECIALISATION OF S&T PERSONNEL FOR DIFFERENT INDUSTRY
GOVERNMENT AND NON GOVERNMENT COMPANIES

Industry (1)	Technology			Sciences		Grand Total (Nos) (8)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (6)	Total (Nos) (7)	
1. Agricultural, Forestry and Fishing	9	4	18	15	25	43
2. Mining and Quarrying						
(i) Mining of Coal, Lignite and Peat	20	10	77	17	160	237
(ii) Extraction of Crude Oil	36	10	63	14	16	79
(iii) Others	23	3	87	20	29	116
Total 2	79	23	227	51	205	432
3. Manufacturing						
(i) Food Products						
Sugar	20	6	46	19	23	69
Vanaspathi	9	4	22	13	13	35
Vegetable oils	1	2	8	5	5	13
Others	91	41	326	246	316	642
Total (i)	121	53	402	283	357	759
(ii) Beverages & Tobacco						
Alcoholic Beverages	88	30	221	170	242	463
Others	0	0	11	6	6	17
Total (ii)	88	30	232	176	248	480
(iii) Textiles						
Cotton Textiles	131	117	667	198	212	879
Wool, Silk & Man-made	45	25	188	82	85	273
Jute and Other Veg. Fibre	3	2	13	6	6	19
Textiles Products	5	1	18	14	14	32
Total (iii)	184	145	886	300	317	1203
(iv) Wood & Wood Products	21	14	51	3	3	54
(v) Paper, Paper Products and Printing						
Paper, paper board	31	12	67	23	24	91
Others	135	36	240	42	46	286
Total (v)	166	48	307	65	70	377
(vi) Leather and Products	6	4	26	35	35	61

ANNEXURE 19-A
(Continued)

Industry (1)	Technology			Sciences		Grand Total (Nos) (8)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (6)	Total (Nos) (7)	
(vii) Chemicals and related Products						
Basic Chemical and Chemical Products	337	177	1197	615	665	1862
Fertilizers and Pesticides	316	156	966	324	506	1472
Drugs & Medicine	66	31	239	663	715	954
Total (vii)	719	364	2402	1602	1886	4288
(viii) Soap, Cosmetics & Toilet Preparation	88	27	319	127	253	572
(ix) Rubber, Plastic & Petroleum Products						
Rubber Goods	47	21	153	95	101	254
Refined Petroleum Products	129	31	287	49	86	373
Others	28	22	88	37	38	126
Total (ix)	204	74	528	181	225	753
(x) Nuclear Fuels	2	0	5	2	2	7
(xi) Coke Oven products	3	1	5	2	2	7
(xii) Glass & glass Products	16	4	41	15	15	56
(xiii) Non Structural Ceramic Ware	7	3	14	5	5	19
(xiv) Cement, Lime and Plaster	140	75	352	142	154	506
(xv) Non-Metallic Mineral Products	44	26	127	33	35	162
(xvi) Metals & Products						
Basic Metals and Alloys	641	317	1820	373	589	2409
Metal Products	55	22	125	38	39	164
(xvii) Machinery & Equipments						
Agricultural Mach. and Equipments	72	9	102	4	7	109
Mach. and Equip. used by Construction and Mining	0	0	0	0	0	0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	3	2	6	0	0	6
Other Industrial Machinery	36	11	78	5	7	85
Machine Tools	22	8	54	13	13	67
Office, Computing & Accounting Machinery	2	0	4	1	1	5
Electrical And Electronic Machinery	306	591	1312	272	278	1590
Equipment for radio, television radar apparatus etc.	6	71	101	14	15	116
Others	400	106	813	197	211	1024
Total (xvii)	847	798	2470	506	532	3002

ANNEXURE 19-A
(Continued)

Industry (1)	Technology			Sciences		Grand Total (Nos) (8)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (6)	Total (Nos) (7)	
(xviii) Computers & Computer based System	29	82	282	64	65	347
(xix) Manufacture of Transport Equipment and parts	856	207	1639	286	333	1972
(xx) Other Manufacturing Industries	95	39	242	96	98	340
(xxi) Repair of Capital Goods	0	0	0	0	0	0
Total 3	4332	2333	12275	4434	5263	17538
4. Electricity, Gas & Water						
Electricity Generation Transmission and Distribution	367	703	1392	130	153	1545
Others	7	0	20	7	7	27
Total 4	374	703	1412	137	160	1572
5. Construction	71	37	374	94	106	480
6. Wholesale and Retail Trade and Restaurants & Hotels	111	49	317	177	193	510
7. Transport, Storage & Communication						
Land Transport	5	2	14	16	18	32
Water Transport	67	55	2269	27	27	2296
Air Transport	15	3	58	16	17	75
Others	14	42	415	28	28	443
Total 7	101	102	2756	87	90	2846
8. Financing, Insurance, Real Estate and Business Services	646	234	1670	428	449	2119
9. Community, Social and Personnel Services	4	3	19	20	24	43
10. Activity not adequately defined	3	4	21	3	3	24
Grand Total (1 - 10)	5730	3492	19089	5446	6518	25607

FIELD OF SPECIALISATION OF S&T PERSONNEL FOR DIFFERENT INDUSTRIES
GOVERNMENT COMPANIES

Industry (1)	Technology			Sciences		Grand Total (7)
	Mech (2)	Elec (3)	Total (4)	Natural (5)	Total (6)	
1. Agricultural, Forestry and Fishing	2	0	2	3	5	7
2. Mining and Quarrying						
(i) Mining of Coal, Lignite and Peat	18	9	73	9	151	224
(ii) Extraction of Crude Oil	3	5	12	5	5	17
(iii) Others	11	3	63	14	21	84
Total 2	32	17	148	28	177	325
3. Manufacturing						
(i) Food Products						
Sugar	1	0	1	0	0	1
Vanaspathi	0	0	0	0	0	0
Vegetable oil	0	0	0	0	0	0
Others	0	0	3	4	4	7
Total (i)	1	0	4	4	4	8
(ii) Beverages & Tobacco						
Alcoholic Beverages	0	0	0	0	0	0
Others	0	0	0	0	0	0
Total (ii)	0	0	0	0	0	0
(iii) Textiles						
Cotton Textiles	3	6	32	6	6	38
Wool, Silk & Man-made	0	0	1	1	1	2
Jute and Other Veg. Fibre	0	0	0	0	0	0
Textiles Products	0	0	1	0	0	1
Total (iii)	3	6	34	7	7	41
(iv) Wood & Wood Products	0	0	0	0	0	0
(v) Paper, Paper Products and Printing						
Paper, paper board	4	0	4	2	3	7
Others	9	9	30	8	9	39
Total (v)	13	9	34	10	12	46
(vi) Leather and Products	0	0	0	0	0	0
(vii) Chemicals and related Products						
Basic Chemical and Chemical Products	142	77	396	169	180	576
Fertilizers and Pesticides	76	42	232	47	84	316
Drugs & Medicine	0	0	9	10	25	34
Total (vii)	218	119	637	226	289	926
(viii) Soap, Cosmetics & Toilet Preparation	0	0	0	0	0	0

ANNEXURE 19 - B
(Continued)

Industry (1)	Technology			Sciences		Grand Total (7)
	Mech (2)	Elec (3)	Total (4)	Natural (5)	Total (6)	
(ix) Rubber, Plastic & Petroleum Products						
Rubber Goods	0	0	0	0	0	0
Refined Petroleum Products	120	25	252	42	77	329
Others	2	3	16	12	12	28
Total (ix)	122	28	268	54	89	357
(x) Nuclear Fuels	2	0	4	2	2	6
(xi) Coke Oven products	0	0	1	0	0	1
(xii) Glass & glass Products	0	0	0	0	0	0
(xiii) Non Structural Ceramic Ware	0	0	0	0	0	0
(xiv) Cement, Lime and Plaster	6	4	22	1	2	24
(xv) Non-Metallic Mineral Products	0	0	0	0	0	0
(xvi) Metals & Products						
Basic Metals and Alloys	79	29	226	27	51	277
Metal Products	3	1	4	0	0	4
(xvii) Machinery & Equipments						
Agricultural Mach. and Equipments	0	0	0	0	0	0
Mach. and Equip. used by Construction and Mining	0	0	0	0	0	0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	0	0	0	0	0	0
Other Industrial Machinery	0	0	0	0	0	0
Machine Tools	0	0	0	0	0	0
Office, Computing & Accounting Machinery	0	0	0	0	0	0
Electrical And Electronic Machinery	10	21	59	21	22	81
Equipment for radio, television radar apparatus etc.	2	10	22	3	4	26
Others	3	7	15	4	4	19
Total (xvii)	15	38	96	28	30	126
(xviii) Computers & Computer based System	12	58	202	36	36	238
(xix) Manufacture of Transport Equipment and parts	25	3	66	35	39	105
(xx) Other Manufacturing Industries	0	0	1	0	0	1
(xxi) Repair of Capital Goods	0	0	0	0	0	0
Total 3	499	295	1599	430	561	2160

ANNEXURE 19 - B
(Continued)

Industry (1)	Technology			Sciences		Grand Total (7)
	Mech (2)	Elec (3)	Total (4)	Natural (5)	Total (6)	
4. Electricity, Gas & Water						
Electricity Generation Transmission and Distribution	203	172	580	65	74	654
Others	0	0	0	0	0	0
Total 4	203	172	580	65	74	654
5. Construction	38	19	222	69	78	300
6 Wholesale and Retail Trade and Restaurants & Hotels	38	4	104	70	77	181
7. Transport, Storage & Communication						
Land Transport	0	0	3	0	0	3
Water Transport	60	28	1984	6	6	1990
Air Transport	7	3	16	11	12	28
Others	0	6	17	2	2	19
Total 7	67	37	2020	19	20	2040
8. Financing, Insurance, Real Estate and Business Services	536	158	1304	220	236	1540
9. Community, Social and Personnel Services	2	1	9	1	1	10
10. Activity not adequately defined	3	4	21	3	3	24
Grand Total (1 - 10)	1420	707	6009	908	1232	7241

ANNEXURE 19 - C

FIELDS OF SPECIALISATION OF S&T PERSONNEL FOR DIFFERENT INDUSTRY
NON GOVERNMENT COMPANIES

Industry (1)	Technology			Sciences		Grand Total (Nos) (8)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (6)	Total (Nos) (7)	
1. Agricultural, Forestry and Fishing	7	4	16	12	20	36
2. Mining and Quarrying						
(i) Mining of Coal, Lignite and Peat	2	1	4	8	9	13
(ii) Extraction of Crude Oil	33	5	51	9	11	62
(iii) Others	12	0	24	6	8	32
Total 2	47	6	79	23	28	107
3. Manufacturing						
(i) Food Products						
Sugar	19	6	45	19	23	68
Vanaspathi	9	4	22	13	13	35
Vegetable oils	1	2	8	5	5	13
Others	91	41	323	242	312	635
Total (i)	120	53	398	279	353	751
(ii) Beverages & Tobacco						
Alcoholic Beverages	88	30	221	170	242	463
Others	0	0	11	6	6	17
Total (ii)	88	30	232	176	248	480
(iii) Textiles						
Cotton Textiles	128	111	635	192	206	841
Wool, Silk & Man-made	45	25	187	81	84	271
Jute and Other Veg. Fibre	3	2	13	6	6	19
Textiles Products	5	1	17	14	14	31
Total (iii)	181	139	852	293	310	1162
(iv) Wood & Wood Products	21	14	51	3	3	54
(v) Paper, Paper Products and Printing						
Paper, paper board	27	12	63	21	21	84
Others	126	27	210	34	37	247
Total (v)	153	39	273	55	58	331
(vi) Leather and Products	6	4	26	35	35	61
(vii) Chemicals and related Products						
Basic Chemical and Chemical Products	195	100	801	446	485	1286
Fertilizers and Pesticides	240	114	734	277	422	1156
Drugs & Medicine	66	31	230	653	690	920
Total (vii)	501	245	1765	1376	1597	3362

ANNEXURE 19-C
(Continued)

Industry (1)	Technology			Sciences		Grand Total (Nos) (8)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (6)	Total (Nos) (7)	
(viii) Soap, Cosmetics & Toilet Preparation	88	27	319	227	253	572
(ix) Rubber, Plastic & Petroleum Products						
Rubber Goods	47	21	153	95	101	254
Refined Petroleum Products	9	6	35	7	9	44
Others	26	19	72	25	26	98
Total (ix)	82	46	260	127	136	396
(x) Nuclear Fuels	0	0	1	0	0	1
(xi) Coke Oven products	3	1	4	2	2	6
(xii) Glass & glass Products	16	4	41	15	15	56
(xiii) Non Structural Ceramic Ware	7	3	14	5	5	19
(xiv) Cement, Lime and Plaster	134	71	330	141	152	482
(xv) Non-Metallic Mineral Products	44	26	127	33	35	162
(xvi) Metals & Products						
Basic Metals and Alloys	562	288	1594	346	538	2132
Metal Products	52	21	121	38	39	160
(xvii) Machinery & Equipments						
Agricultural Mach. and Equipments	72	9	102	4	7	109
Mach. and Equip. used by Construction and Mining	0	0	0	0	0	0
Boiler, Steam Generation Plants nuclear reactor & Prime movers	3	2	6	0	0	6
Other Industrial Machinery	36	11	78	5	7	85
Machine Tools	22	8	54	13	13	67
Office, Computing & Accounting Machinery	2	0	4	1	1	5
Electrical And Electronic Machinery	296	570	1253	251	256	1509
Equipment for radio, television radar apparatus etc.	4	61	79	11	11	90
Others	397	99	798	193	207	1005
Total (xvii)	832	760	2374	478	502	2876

ANNEXURE 19-C
(Continued)

Industry (1)	Technology			Sciences		Grand Total (Nos) (8)
	Mech (Nos) (2)	Elec (Nos) (3)	Total (Nos) (4)	Natural (Nos) (6)	Total (Nos) (7)	
(xviii) Computers & Computer based System	17	24	80	28	29	109
(xix) Manufacture of Transport Equipment and parts	831	204	1573	251	294	1867
(xx) Other Manufacturing Industries	95	39	241	96	98	339
(xxi) Repair of Capital Goods	0	0	0	0	0	0
Total 3	3833	2038	10676	4004	4702	15378
4. Electricity, Gas & Water						
Electricity Generation Transmission and Distribution	164	531	812	65	79	891
Others	7	0	20	7	7	27
Total 4	171	531	832	72	86	918
5. Construction	33	18	152	25	28	180
6. Wholesale and Retail Trade and Restaurants & Hotels	73	45	213	107	116	329
7. Transport, Storage & Communication						
Land Transport	5	2	11	16	18	29
Water Transport	7	27	285	21	21	306
Air Transport	8	0	42	5	5	47
Others	14	36	398	26	26	424
Total 7	34	65	736	68	70	806
8. Financing, Insurance, Real Estate and Business Services	110	76	366	208	213	579
9. Community, Social and Personnel Services	2	2	10	19	23	33
10. Activity not adequately defined	0	0	0	0	0	0
Grand Total (1 - 10)	4310	2785	13080	4538	5286	18366

