

**MINISTRY OF SCIENCE AND TECHNOLOGY**

## DEMAND NO. 68

**Department of Science and Technology**

A. The Budget allocations, net of recoveries, are given below:

		<i>(In crores of Rupees)</i>								
Major Head		Budget , 2000-2001			Revised, 2000-2001			Budget, 2001-2002		
		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
	Revenue	333.27	425.87	759.14	334.03	402.70	736.73	360.20	422.04	782.24
	Capital	18.73	1.94	20.67	17.23	1.73	18.96	39.80	1.93	41.73
	<b>Total</b>	<b>352.00</b>	<b>427.81</b>	<b>779.81</b>	<b>351.26</b>	<b>404.43</b>	<b>755.69</b>	<b>400.00</b>	<b>423.97</b>	<b>823.97</b>
1. Secretariat-Economic Services	3451	0.60	18.60	19.20	0.60	19.10	19.70	0.60	20.60	21.20
<b>Other Scientific Research</b>										
<b>Survey of India</b>										
2. Direction and Administration	3425	...	28.30	28.30	...	27.02	27.02	...	28.78	28.78
	5425	1.00	1.00	2.00	1.00	0.90	1.90	2.00	1.00	3.00
	<i>Total</i>	<i>1.00</i>	<i>29.30</i>	<i>30.30</i>	<i>1.00</i>	<i>27.92</i>	<i>28.92</i>	<i>2.00</i>	<i>29.78</i>	<i>31.78</i>
3. Topographical Surveys	3425	...	59.89	59.89	...	54.45	54.45	...	93.10	93.10
4. Development Project Surveys	3425	...	37.33	37.33	...	34.06	34.06	...	...	...
5. Publication of Maps/Charts etc.	3425	...	20.20	20.20	...	16.49	16.49	...	17.75	17.75
6. Training and Research	3425	...	4.04	4.04	...	3.47	3.47	...	3.67	3.67
7. Other Schemes	3425	3.00	13.37	16.37	3.76	12.82	16.58	3.00	13.68	16.68
<b>Total-Survey of India</b>		<b>4.00</b>	<b>164.13</b>	<b>168.13</b>	<b>4.76</b>	<b>149.21</b>	<b>153.97</b>	<b>5.00</b>	<b>157.98</b>	<b>162.98</b>
<b>Science and Technology</b>										
8. National Atlas and Thematic Mapping Organisation	3425	0.57	7.00	7.57	0.57	6.90	7.47	0.60	7.30	7.90
	5425	0.33	...	0.33	0.33	...	0.33	0.40	...	0.40
	<i>Total</i>	<i>0.90</i>	<i>7.00</i>	<i>7.90</i>	<i>0.90</i>	<i>6.90</i>	<i>7.80</i>	<i>1.00</i>	<i>7.30</i>	<i>8.30</i>
9. Assistance to Scientific Bodies										
9.01 Indian Association for the Cultivation of Science, Calcutta	3425	8.00	3.10	11.10	8.00	3.10	11.10	8.10	3.25	11.35
9.02 Bose Institute, Calcutta	3425	6.00	3.27	9.27	6.00	3.27	9.27	6.10	3.40	9.50
9.03 Raman Research Institute, Bangalore	3425	6.00	3.07	9.07	6.00	3.07	9.07	6.10	3.25	9.35
9.04 Indian Institute of Astro-Physics, Bangalore	3425	19.00	3.16	22.16	19.00	3.16	22.16	19.20	3.25	22.45
9.05 Indian Institute of Geo-Magnetism, Bombay	3425	5.50	0.95	6.45	5.50	0.95	6.45	5.80	1.00	6.80
9.06 Indian Institute of Tropical Meteorology, Pune	3425	2.00	3.00	5.00	2.00	3.00	5.00	2.10	3.15	5.25
9.07 Sree Chitra Tirunal Medical Institute of Science and Technology, Trivandrum	3425	12.00	10.00	22.00	12.00	10.00	22.00	12.10	10.50	22.60
9.08 Birbal Sahni Institute of Palaeo-Botany, Lucknow	3425	3.00	1.90	4.90	3.00	1.90	4.90	3.10	2.00	5.10
9.09 S N Bose National Centre for Basic Sciences, Calcutta	3425	2.50	0.36	2.86	2.50	0.36	2.86	2.60	0.50	3.10
9.10 Agharkar Research Institute, Pune	3425	2.50	1.21	3.71	2.50	1.21	3.71	2.60	1.30	3.90
9.11 Wadia Institute of Himamlayan Geology, Dehradun	3425	3.00	1.67	4.67	3.00	1.67	4.67	3.10	1.80	4.90
9.12 Jawahar Lal Nehru Centre for Advanced Scientific Research, Bangalore	3425	7.00	...	7.00	7.00	...	7.00	7.10	...	7.10
9.13 Technology Information Forecasting Assessment Council	3425	54.00	0.09	54.09	54.00	0.09	54.09	54.00	0.10	54.10
9.14 Vigyan Prasar	3425	1.00	...	1.00	1.00	...	1.00	1.00	...	1.00
9.15 Advance Research Centre for Powder Metallurgy & New Materials	3425	6.50	...	6.50	6.50	...	6.50	6.60	...	6.60
9.16 Other Institutes/ Other Professional Bodies	3425	7.00	4.31	11.31	7.00	4.31	11.31	7.30	4.50	11.80
9.17 National Accreditation Board for Testing and Calibration Laboratory (NABL)	3425	2.00	...	2.00	2.00	...	2.00	2.10	...	2.10
9.18 National Innovation Foundation	3425	...	...	...	...	...	...	...	...	...
	<i>Total</i>	<i>147.00</i>	<i>36.09</i>	<i>183.09</i>	<i>147.00</i>	<i>36.09</i>	<i>183.09</i>	<i>149.00</i>	<i>38.00</i>	<i>187.00</i>

(In crores of Rupees)

Major Head	Budget , 2000-2001			Revised, 2000-2001			Budget, 2001-2002			
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
10. Research and Development Support										
10.01 Multi-Disciplinary Research in Science and Technology (SERC)	3425	67.50	2.00	69.50	67.50	2.00	69.50	85.00	2.10	87.10
11. National R & D Programmes	3425	1.80	...	1.80	1.80	...	1.80	2.00	...	2.00
12. R & D National Facilities & Infrastructural Support	3425	2.25	1.50	3.75	2.25	1.50	3.75	2.50	1.60	4.10
13. Programmes for Special Technology Development and coordination	3425	6.60	...	6.60	6.60	...	6.60	7.50	...	7.50
14. Technology Projects in Mission Mode	3425	2.50	...	2.50	2.50	...	2.50	1.00	...	1.00
15. S & T Programmes for Socio Economic Development										
15.01 S & T Entrepreneurship Development	3425	5.85	...	5.85	5.85	...	5.85	7.50	...	7.50
15.02 Science and Society Programme	3425	5.50	...	5.50	5.50	...	5.50	6.50	...	6.50
15.03 S & T Communication & Popularisation	3425	2.50	...	2.50	2.50	...	2.50	3.00	...	3.00
15.04 State Council for Science & Technology	3425	5.00	...	5.00	5.00	...	5.00	8.00	...	8.00
15.05 Other Schemes	3425	5.55	...	5.55	5.55	...	5.55	6.50	...	6.50
<i>Total</i>		<i>24.40</i>	<i>...</i>	<i>24.40</i>	<i>24.40</i>	<i>...</i>	<i>24.40</i>	<i>31.50</i>	<i>...</i>	<i>31.50</i>
16. S & T Policy Support Programmes	3425	0.90	...	0.90	0.90	...	0.90	1.00	...	1.00
17. International Co-operation										
17.01 Integrated Long Term Programme of cooperation between India and Republics of CIS	3425	1.80	...	1.80	1.80	...	1.80	2.00	...	2.00
17.02 Indo-French Centre for Promotion of Advanced Research	3425	5.85	...	5.85	5.85	...	5.85	6.00	...	6.00
17.03 S&T Programme of Coop. with developed Countries	3425	2.70	...	2.70	2.70	...	2.70	3.00	...	3.00
17.04 S.&T. Programme of coop. with developing countries	3425	1.80	...	1.80	1.80	...	1.80	2.00	...	2.00
Development Cooperation between India and UNDP	3425	...	...	...	...	...	...	4.00	...	4.00
17.05 Others	3425	...	5.00	5.00	...	5.00	5.00	3.50	5.50	9.00
<i>Total</i>		<i>12.15</i>	<i>5.00</i>	<i>17.15</i>	<i>12.15</i>	<i>5.00</i>	<i>17.15</i>	<i>20.50</i>	<i>5.50</i>	<i>26.00</i>
18. National Centre for Medium Range Weather Forecasting	3425	5.50	4.00	9.50	5.50	3.86	9.36	6.00	4.15	10.15
<i>Total</i>	5425	<i>1.70</i>	<i>...</i>	<i>1.70</i>	<i>1.70</i>	<i>...</i>	<i>1.70</i>	<i>2.00</i>	<i>...</i>	<i>2.00</i>
<i>Total</i>		<i>7.20</i>	<i>4.00</i>	<i>11.20</i>	<i>7.20</i>	<i>3.86</i>	<i>11.06</i>	<i>8.00</i>	<i>4.15</i>	<i>12.15</i>
19. Payment to Technology Development Board	3425	...	70.00	70.00	...	63.00	63.00	...	63.00	63.00
20. Fund for improvement of Science & Technology (FIST) infrastructure in the Universities & Related Institutions	3425	17.00	...	17.00	17.00	...	17.00	35.00	...	35.00
21. Other Programmes	3425	...	0.20	0.20	...	0.18	0.18	...	0.20	0.20
<i>Total</i>	5425	<i>0.70</i>	<i>0.20</i>	<i>0.90</i>	<i>0.70</i>	<i>0.18</i>	<i>0.88</i>	<i>0.40</i>	<i>0.20</i>	<i>0.60</i>
<i>Total</i>		<i>0.70</i>	<i>0.40</i>	<i>1.10</i>	<i>0.70</i>	<i>0.36</i>	<i>1.06</i>	<i>0.40</i>	<i>0.40</i>	<i>0.80</i>
<b>Total-Science and Technology</b>		<b>290.90</b>	<b>125.99</b>	<b>416.89</b>	<b>290.90</b>	<b>118.71</b>	<b>409.61</b>	<b>344.40</b>	<b>122.05</b>	<b>466.45</b>
<b>Total- Other Scientific Research</b>										
<b>Meteorology</b>		<b>294.90</b>	<b>290.12</b>	<b>585.02</b>	<b>295.66</b>	<b>267.92</b>	<b>563.58</b>	<b>349.40</b>	<b>280.03</b>	<b>629.43</b>
22. Training	3455	0.40	1.48	1.88	0.40	1.46	1.86	0.33	1.56	1.89
23. Satellite Services	3455	2.58	8.91	11.49	2.58	8.58	11.16	2.82	9.45	12.27
24. Observatories and Weather Stations	3455	4.00	61.86	65.86	4.00	61.41	65.41	4.90	63.60	68.50
<i>Total</i>	5455	<i>10.00</i>	<i>0.67</i>	<i>10.67</i>	<i>9.00</i>	<i>0.60</i>	<i>9.60</i>	<i>28.20</i>	<i>0.67</i>	<i>28.87</i>
<i>Total</i>		<i>14.00</i>	<i>62.53</i>	<i>76.53</i>	<i>13.00</i>	<i>62.01</i>	<i>75.01</i>	<i>33.10</i>	<i>64.27</i>	<i>97.37</i>
25. Research and Development Programmes	3455	1.00	9.15	10.15	1.00	9.15	10.15	1.04	9.75	10.79
26. Other Meteorological Services	3455	4.00	26.10	30.10	4.00	25.51	29.51	4.46	26.90	31.36
27. Other Programmes	3455	1.32	10.85	12.17	1.32	10.65	11.97	1.45	11.35	12.80

(In crores of Rupees)

Major Head	Budget, 2000-2001			Revised, 2000-2001			Budget, 2001-2002				
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total		
5455	2.00	0.07	2.07	1.50	0.05	1.55	6.80	0.06	6.86		
<i>Total</i>	<i>3.32</i>	<i>10.92</i>	<i>14.24</i>	<i>2.82</i>	<i>10.70</i>	<i>13.52</i>	<i>8.25</i>	<i>11.41</i>	<i>19.66</i>		
<b>Total- Meteorology</b>	<b>25.30</b>	<b>119.09</b>	<b>144.39</b>	<b>23.80</b>	<b>117.41</b>	<b>141.21</b>	<b>50.00</b>	<b>123.34</b>	<b>173.34</b>		
28. Lumpsum for North East Region & Sikkim	2552	28.20	...	28.20	...	28.20	...	...	...		
	4552	3.00	...	3.00	...	3.00	...	...	...		
<i>Total</i>	<i>31.20</i>	<i>...</i>	<i>31.20</i>	<i>31.20</i>	<i>...</i>	<i>31.20</i>	<i>...</i>	<i>...</i>	<i>...</i>		
<b>Grand Total</b>	<b>352.00</b>	<b>427.81</b>	<b>779.81</b>	<b>351.26</b>	<b>404.43</b>	<b>755.69</b>	<b>400.00</b>	<b>423.97</b>	<b>823.97</b>		
<b>C. Plan Outlay*</b>	Head of Dev	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total	
1. Secretariat-Economic Services	13451	0.60	...	0.60	0.60	...	0.60	0.60	...	0.60	
2. Other Scientific Research	13425	331.10	...	331.10	331.10	...	331.10	354.40	...	354.40	
3. Meteorology	13455	30.30	...	30.30	30.30	...	30.30	55.00	...	55.00	
<b>Total</b>		<b>362.00</b>	<b>...</b>	<b>362.00</b>	<b>362.00</b>	<b>...</b>	<b>362.00</b>	<b>410.00</b>	<b>...</b>	<b>410.00</b>	
<i>*Inclusive of Works Outlay as below:-</i>											
1. Other Scientific Research											
i. Survey of India	Demand No.80	13425	1.00	...	1.00	0.24	...	0.24	1.00	...	1.00
	Demand No.81	13425	4.00	...	4.00	4.00	...	4.00	4.00	...	4.00
ii. Science and Technology											
	Demand No.81	13425	...	...	...	...	...	...	...	...	...
<i>Total</i>		<i>5.00</i>	<i>...</i>	<i>5.00</i>	<i>4.24</i>	<i>...</i>	<i>4.24</i>	<i>5.00</i>	<i>...</i>	<i>5.00</i>	
2. Meteorology											
	Demand No.80	13455	1.00	...	1.00	1.00	...	1.00	1.00	...	1.00
	Demand No.81	13455	4.00	...	4.00	5.50	...	5.50	4.00	...	4.00
<i>Total</i>		<i>5.00</i>	<i>...</i>	<i>5.00</i>	<i>6.50</i>	<i>...</i>	<i>6.50</i>	<i>5.00</i>	<i>...</i>	<i>5.00</i>	
<b>Total</b>		<b>10.00</b>	<b>...</b>	<b>10.00</b>	<b>10.74</b>	<b>...</b>	<b>10.74</b>	<b>10.00</b>	<b>...</b>	<b>10.00</b>	

1. **Secretariat - Economic Services:** It provides expenditure for Secretariat of the Department.

#### Survey of India

2. **Direction and Administration:** It provides expenditure for administration of Survey of India.

3. **Topographical Surveys:** The Survey of India, the Principal National Surveying and Mapping Organisation is mainly responsible for producing topographical maps and providing survey support to the Defence Forces and various National Development Projects in the country.

4. **Development Project Surveys:** The surveys conducted cover the areas like Canal Area Surveys, Flood Control Surveys and other large scale Project Surveys.

5. **Publication of Maps/Charts etc.:** The Department brings out departmental maps/charts on various scales and these maps/charts include topographical maps, geographical maps, State maps and guide maps etc.

6. **Training and Research:** Centre for Survey Training and Map Production at Hyderabad imparts training to Departmental/Extra Departmental/Foreign trainees in various fields of Surveying and Mapping.

#### 7. Other Schemes:

Modern Photogrammetric methods are being extensively used for topographical, irrigation schemes, Flood Management and other developmental mapping.

The recent main activities have been:

- Strengthening of Geodetic Horizontal Net by Doppler Satellite Techniques.
- High precision level Net densification.
- Geomagnetic secular change anomaly and tectonic features over Indian subcontinent.
- Analysis of difference of ocean levels between East and West Coasts.
- Recent Vertical Movements in India.
- Microgravity variation and their use for earthquake prediction.

- Digital Mapping - Creation of database and preparation of District Planning Maps.
- Design of Motoring Atlas of India in digital environment.
- Development of SOI PC/Auto CAD Photogrammetric Manplotter System
- Development of Software Package for Map-to-Map Cartographic Transformation.

#### 8. National Atlas and Thematic Mapping Organisation:

The Organisation set up in 1956 primarily aims at preparing National Atlas of India. Subsequently, its scope and activities were extended to new fields of geographical research, thematic mapping covering all the academic and applied aspects of geography and allied subjects.

Its functions are:

- Preparation of the National Atlas of India in English and Hindi.
- Preparation of National Atlas maps in different regional languages.
- Preparation of thematic maps based on research studies on environmental aspects and their impact on social and economic development.
- Preparation and compilation of Land use and Land-capability maps of India on 1:1M scale and on larger scale and
- Geographical researches.

#### 9. Assistance to Scientific Bodies:

9.01 **Indian Association for Cultivation of Science (IACS), Calcutta:** The Indian Association for the Cultivation of Science, Calcutta is one of the oldest research institutions engaged in fundamental research in frontline areas of Physics and Chemistry and some inter-disciplinary areas.

9.02. **Bose Institute, Calcutta:** Bose Institute founded in 1917 by Acharya Jagdish Chandra Bose is devoted to research in Fundamental and Applied Sciences with emphasis in the area of Biology. The Institute has attained major achievements in several areas of Physical and Biological Sciences. Improvements of plant productivity, nitrogen fixation and photosynthesis using modern

Biotechnology and plant breeding; studies of plants and marine organisms, investigation on the interaction of nuclear and other radiations with matter and studies in structure, function and dynamics of bio-molecules; studies on ecology, environmental pollution and related health problems and/or microbes and parasites for industrial and medical application.

Regional Sophisticated Instrumentation Centre (RSIC) functioning in the Institute provides Analytical Instrumentation Services to the users in the region.

**9.03. Raman Research Institute, Bangalore** The Raman Research Institute (RRI) founded by Prof. C V Raman in 1948 in Bangalore became a grants-in-aid institution aided by the Government of India in 1972. The main fields of research at the Institute are Astronomy, Astrophysics and Liquid Crystals.

**9.04. Indian Institute of Astro-Physics, Bangalore** Indian Institute of Astrophysics (IIA) is a research institution devoted to the science of Astronomy and Astrophysics.

**9.05. Indian Institute of Geo-Magnetism, Bombay:** The Institute is devoted to give impetus to the growth of geomagnetism and allied fields in the country.

**9.06. Indian Institute of Tropical Meteorology, Pune:** It functions as a National Centre for basic and applied research in tropical meteorology including weather modification with special reference to the tropics and sub-tropics.

**9.07. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum:** It was declared as an Institute of National Importance by Act of Parliament in March, 1981 with the main objectives of developing biomedical engineering and technology, providing and demonstrating high standards of patient care in advanced medical specialities and developing postgraduate training programmes of the highest quality in advanced medical specialities and bio-medical engineering and technology.

**9.08. Birbal Sahni Institute of Palaeo-Botany, Lucknow** The Institute was founded in 1948 in memory of the world renowned Indian Palaeobotanist, Prof. Birbal Sahni. It conducts applied and fundamental research on the varied aspects of plant fossils and disseminates the advanced palaeobotanical knowledge.

**9.09. S N Bose National Centre for Basic Sciences, Calcutta:** It was established in June, 1986 with the objective of promotion of advanced studies in select branches of basic sciences and other basic sciences in frontier areas, including challenging theoretical studies of future applications.

**9.10 Agharkar Research Institute, Pune:** Founded in 1946, it has been engaged in the research activities in the field of biological sciences.

**9.11 Wadia Institute of Himalayan Geology, Dehradun:** The institute founded by Prof. D N Wadia in 1968, has been carrying out fundamental research in the fields of structural geology, metamorphicigneous petrology, geochemistry, sedimentology, geomorphology and palaeontology in Himalayan region. The programmes of the Institute are oriented towards understanding the mountain building process and geodynamics of the Himalayas.

**9.12 Jawahar Lal Nehru Centre for Advanced Scientific Research, Bangalore:** The Centre established by the Government of India during the Centenary Year of Jawahar Lal Nehru, is devoted to scientific research at the highest level in frontier areas.

**9.13 Technology Information Forecasting and Assessment Council, New Delhi:** The Council set up in February, 1988 pursues activities towards setting up of specialised sub-groups for examining and evaluating the existing state-of-art of

technology and direction of future technological developments in various cross-sectoral areas as well as in other sectors of the economy, both in India and abroad and of preparing technology forecasting reports, covering 10 years or longer periods, specially in production areas involving:

- a. Substantial investments of financial resources and
- b. Large volume of production.

#### 9.14 Vigyan Prasara:

Set up to undertake large-scale science communication and popularisation activities.

**9.15 Advanced Research Centre for Powder Metallurgy & New Materials, Hyderabad (ARC):** The Centre was set up to carry out R&D on futuristic products and processes; to develop and produce components and devices on demonstration plant scale and to establish plant facilities for prototype production/technology demonstration, to provide training and establish modern technical information centre and for technology transfer and commercialisation. Initially the Centre was funded by the Integrated Long Term Programme for Co-operation in Science and Technology between the Republics of CIS and India. Now the Planning Commission has granted approval to bring it under the Autonomous Scientific Institutions.

#### 9.16. Other Institutes/Other Professional Bodies and S&T Seminar/Symposia and Seminar Complex:

The Other Professional Bodies Scheme was initiated in the Department with the objective of encouraging active involvement of professional bodies and science academies extensively in the national S&T activities including formulation and implementation of S&T programmes. Motivating the scientific professional bodies and academies for promotion of cohesive integrated scientific community, fermentation of new ideas in S&T and innovative approach to application of science and technology for national development constitute the other objectives.

S&T Seminar/Symposia is also envisaged to support organisation of S&T seminar/symposia as this is an accepted mechanism for exchange of ideas between the scientists working in frontier and emerging areas of science and technology and a critical exposure of the results is essential for further progress in such cases.

**9.17 National Accreditation Board for Testing & Calibration Laboratories (NABL), New Delhi:** The broad objectives of the scheme are to ensure and improve the quality of industrial products, provide consumer protection, promote export of Indian goods and monitor the quality of imported goods.

**9.18 National Innovation Foundation:** The scheme has been initiated to help India become an innovative and creative society and a global leader in sustained technologies by scouting, spawning and promoting grassroots innovations.

#### 10. Research & Development Support

##### 10.01. Multi-Disciplinary Research in Science and Technology (SERC):

The Department of Science and Technology, as a part of its S&T promotional activity has been supporting R&D programmes under Science and Engineering Research Council (SERC). The objectives of the SERC are as under:

- i. To promote research in newly emerging and frontline areas of Science and Engineering including multidisciplinary fields;
- ii. To selectively promote general research capability in relevant areas of Science and Engineering taking into account existing research capabilities of the host institution; and
- iii. To encourage young scientists to take up challenging research and development activities.

### 11. National R&D Programmes:

The programme includes:

**Instrument Development Programme:** The objective is to undertake national programmes on Instrument Development involving Users, R&D Institutions and Industries leading to establishment of a base for design, development and production of instruments in the Country.

**Seismicity Programme:** This Programme is aimed at promoting and improving assessment of the seismic status through application of S&T in an integrated manner and at minimising the loss of life and property. Studies on seismicity, gravity, magnetic and geodetic aspects are undertaken.

### 12. R&D National Facilities and Infrastructural Support:

**12.01. Regional Sophisticated Instrumentation Centres (RSIC):** The scheme of RSICs was initiated during 1974-75 with the main objective of providing sophisticated instrument facilities to the scientific community. Seven RSICs and five Sophisticated Instrumentation Facilities (SIFs) are supported under this programme.

**12.02. Assistance to Indian Scientists going Abroad for Participation in International Conferences:** The objective of the scheme is to provide financial assistance to Indian Scientists to participate in the International Conferences/Seminars/Symposia held abroad to exchange ideas on the latest developments in Science and Technology with their counterparts abroad.

**13. Programme for Special Technology Development & Coordination:** The programme is aimed at developing indigenous technology through joint projects with industry and socio-economic Ministries.

**Drugs & Pharmaceuticals Research:** New drug research is a challenging area of research due to complexity of the biological system and disease process. India already had established some research groups involved in design and development of new molecules as well as development of alternative processes. Some initiatives on new drug design have already started with the association of drug companies. The major objective is now to vigorously develop new drugs with the involvement of drug companies. The approach being considered is a project-based support with product and target oriented efforts between national research laboratories/academic institutions and drug companies.

### 14. Technology Projects in Mission Mode

i. *Mission Mode Project on Sugar Production Technologies:* This mission mode project has been initiated to accomplish sharper and focussed technological upgradation in sugar factories inter alia, the cost effectiveness of sugar production, lesser use of energy and efficient utilisation of by-products and to produce demonstration effect.

ii. *Technology Project in Mission Mode on Advanced Composites:* Strategic inputs are needed for overall development of composites. Specific products will be taken up for design, prototype development, technology diffusion and for the commercial exploitation.

iii. *Technology Projects in Mission Mode on Fly Ash Disposal and Utilisation:* The objective of the project is to enhance safe disposal and gainful utilisation of Fly Ash.

iv. *Mission Mode project on Seismic Observation (Seismological Instrumentation Upgradation and related geophysical studies in peninsular shield area):* The objectives of this project are to improve the detection and locational capability of the seismic network by lowering the threshold of detection-cum-location to magnitude 3 earthquakes in the Peninsular Shield; determination of near-source characteristics and seismic signal and intensity attenuation laws for designing of cost-effective

earthquake resistant structures; to provide better communication links for quicker data transmission for near-real time data compilation, processing and analysis.

*Other Mission Mode Projects:* Based on the TIFAC report Vision 2020, new areas for Mission Mode Projects are being identified for implementation.

### 15. S&T Programmes for Socio Economic Development:

**15.01 S&T Entrepreneurship Development:** The main objective of the National Science and Technology Entrepreneurship Development Board (NSTEDB) is to deal with, on a sustained basis, the problem of unemployment and inappropriate employment among S&T persons through the instrument of Entrepreneurship Development Programmes such as setting up of Science and Technology parks and training facilities, etc.

**15.02 Science and Society Programme:** This scheme is aimed at improving the living conditions and removal of drudgery from rural population, weaker sections of the society and women. The expertise of retired scientists is also to be used for application of S&T development. The scheme is also intended to encourage research-oriented activities involving the new generation of scientists.

**15.03 Science and Technology Communication and Popularisation:** The National Council for Science and Technology Communication (NCSTC) has been charged with Policy and Plan-making responsibilities in respect of the broad twin objectives of popularisation of Science and Technology (S&T), and inculcation of S&T temper among people.

**15.04 State Councils for S&T:** The objective is to establish and support State Councils for S&T to act as focal points in the States and Union Territories for planning, guiding, evaluating, monitoring, co-ordinating and in general spreading Science and Technology activities at State level.

### 15.05 Other Schemes:

a. **Special Component Plan for the Development of Scheduled Castes:** Under this scheme activities relating to survey of scientists, technical impacts studies of engineering and scientists, appropriate technology generation, dissemination, demonstration and field trials are envisaged.

b. **Tribal Sub-plan:** Programmes relating to S&T intervention for improving the living conditions and earning capacity through skill development are being supported.

c. **Natural Resources Data Management System:** The objectives of this programme are to:

- Promote R&D in spatial data management.
- Develop pilot scale integrated databases on natural resources and socio-economic parameters to cater to micro level planning.
- Demonstrate the efficacy of database approach for management and conservation of natural resources with emphasis on location specific problems.
- Build spatial resource profiles at different hierarchical units of planning.

### 16. S&T Policy Support Programmes:

*National Science and Technology Management Information System (NSTMIS):* The objectives of the scheme are to study the mismatch between employment and output of S&T personnel, estimation of short term and long term requirement of S&T manpower, creation of databases on R&D projects, etc.

### 17. International Co-operation

**17.01 Integrated Long Term Programme of Cooperation in Science and Technology between India and the Republics of CIS:** The objective of the programme is to undertake

collaborative projects in the identified thrust areas in frontiers of S&T; related areas of Science for basic research and to explore other possible areas for future co-operation.

**17.02 Indo-French Research Centre for Promotion of Advanced Research (IFCPAR), New Delhi:** The principal objectives of the Centre are to promote co-operation in advanced areas of fundamental and applied scientific research between India and France to develop co-operation, through identification of Scientists and Scientific institutions of India and France likely to co-operate in a profitable way, to provide assistance in the form of grants and equipment as well as other appropriate means of support for pursuit of advanced research and to researchers of both the countries.

**17.03 S&T Programme of co-operation with Developed Countries:** Thrust would be placed on such programmes as would attract the inflow of technical assistance in forms compatible with the immediate national needs.

**17.04 S&T Programme of co-operation with Developing Countries (STPCDC):** The objectives are to build S&T capability through programmes devoted to training, basic and applied research, consultancy, etc., to set up joint ventures, development and production programmes.

A Centre for S&T for Non-aligned and other Developing Countries with the objectives of strengthening S&T co-operation; promoting mutually beneficial collaborative programmes; serving as clearing-house for information of technology capabilities to promote future co-operation; preparation of state-of-the-art reports through special panels of experts.

#### 17.05 Others:

(a) International Co-operation includes payment of annual subscription to UN, International Council of Scientific Union and its affiliated Unions/bodies and expenditure in four offices of Science Counsellors in Bonn, London, Moscow and Tokyo.

(b) Indo-US Science and Technology Forum: The Forum is envisaged to facilitate and promote interaction of government, academia and industry between India and the United States in Science, Technology and other related areas.

**18. National Centre for Medium Range Weather Forecasting:** The aim of the programme is to develop global circulation model for preparing weather forecasts upto 3 days in advance and issuing agro-meteorological advisories to farmers for facilitating agricultural operations. Towards this objective a National Centre for Medium Range Weather Forecasting with Super Computing facilities has been established. Setting up of more agrometeorological centres in different agroclimatic zones with suitable communication network is also envisaged.

**19. Payment to Technology Development Board:** The provision is for payment to Technology Development Board against net proceeds of cess realised under Technology Development Board Act, 1995. The Board has been set up to help the indigenously developed technologies reach the stage of commercial application and for grafting imported technologies for wider domestic applications.

**20. Fund for Improvement of Science and Technology (FIST) Infrastructure in Universities & Related Institutions:** In India's quest for competitive advantage in the emerging new world, SAC-C has observed that our universities will have to play a meaningful role as providers of high calibre human resources and as repositories of the nation's intellectual wealth in the S&T sector.

In order to meet these diverse challenges, there is an urgent need for strengthening/revamping the existing S&T support systems in the universities and other educational and related institutions, in terms of infrastructure, quantum of funding as well as operational structures and mechanisms. Considering the present state of the S&T sector in the universities and other educational institutions, a major new initiative to rebuild the science and engineering departments is urgently called for. This would involve providing basic infrastructure and the enabling facilities and environment for providing basic infrastructure and the enabling facilities and environment for promoting research and development in the new/emerging areas and attracting fresh talent in the university system and other related institutions.

#### 21. Other Programmes:

**Information Technology:** This is a new scheme initiated on the recommendations of the Expert Group constituted by the Department of Administrative Reforms and Public Grievances for adoption of automation, computerisation and Information Technology (IT).

#### Meteorology

**22. Training:** The training sections at Pune, New Delhi and Calcutta impart training in meteorology and in operation, maintenance and servicing of radio meteorological instruments and telecommunications. The meteorological training unit at Civil Aviation Training Centre, Bamrauli serves the training requirements of the air traffic personnel of the Civil Aviation Department.

**23. Satellite Services:** IMD participated in space programme since the launching of the first Indian National Geo-stationary Satellite IA by ISRO in 1982 valuable data & cloud imageries are being received since then. With the deployment of second generation INSAT II A in August 1992 there has been much improvement in the quality of data and cloud imageries. Secondary data utilisation centre has been established to receive and process satellite cloud imageries directly at the other main forecasting offices from MDUC New Delhi. A total of 216 Nos. disaster warning receivers under different programmes using INSAT have been deployed so far at the cyclone prone coastal stations to forewarn public & other agencies against impending bad weather including cyclones.

**24. Observatories and Weather Stations:** The activities consist of recording of observatories and equipping ships, maintenance of inland and overseas meteorological telecommunication network for quick exchange of weather information reception of satellite weather. Information to user interests like aviation, shipping, agriculture and flood control, issue of warnings against cyclones, etc. for protection of life and property.

**25. Research and Development Programmes:** The Research and Development activities of the department cover experimental work and research on basic and applied meteorology and seismology including design and development of the instruments.

**26. Other Meteorological Services:** The activities consist of manufacture, supply and maintenance of meteorological instruments and production of hydrogen gas at Departmental Workshops and supply of these to the upper air observatories. Meteorological data are processed into climatological statistics for application to nation building activities.

**27. Other Programmes:** These Include payments of India's annual contribution to World Meteorological Organisation and the International Seismological Centre.