

DEPARTMENT OF ATOMIC ENERGY**DEMAND NO. 5****Atomic Energy**

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

		Budget 2006-2007			Revised 2006-2007			<i>(In crores of Rupees)</i> Budget 2007-2008		
Major Head		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
Revenue		323.08	1065.33	1388.41	346.31	1175.89	1522.20	556.63	1187.71	1744.34
Capital		1297.94	484.67	1782.61	1153.69	497.33	1651.02	1590.22	462.29	2052.51
Total		1621.02	1550.00	3171.02	1500.00	1673.22	3173.22	2146.85	1650.00	3796.85
1. Secretariat-Economic Services	3451	...	14.10	14.10	...	15.82	15.82	...	16.00	16.00
2. Atomic Energy Regulatory Board	3401	1.00	8.81	9.81	1.00	10.66	11.66	1.00	12.62	13.62
	5401	3.55	...	3.55	7.69	...	7.69	2.00	...	2.00
	<i>Total</i>	<i>4.55</i>	<i>8.81</i>	<i>13.36</i>	<i>8.69</i>	<i>10.66</i>	<i>19.35</i>	<i>3.00</i>	<i>12.62</i>	<i>15.62</i>
Atomic Energy Research and Industries										
3. Bhabha Atomic Research Centre, Mumbai (BARC)	2852	...	179.14	179.14	...	199.61	199.61	...	188.84	188.84
	3401	...	413.50	413.50	...	427.72	427.72	...	411.55	411.55
	4861	190.00	...	190.00	190.00	...	190.00	229.00	5.06	234.06
	5401	370.00	...	370.00	417.00	...	417.00	400.00	7.70	407.70
Total - BARC		560.00	592.64	1152.64	607.00	627.33	1234.33	629.00	613.15	1242.15
4. Indira Gandhi Centre for Atomic Research, Kalpakkam (IGCAR)	3401	...	101.00	101.00	...	106.07	106.07	...	102.69	102.69
	4861	61.92	...	61.92	47.51	...	47.51	115.60	...	115.60
	5401	61.15	...	61.15	85.07	...	85.07	70.63	0.31	70.94
Total - IGCAR		123.07	101.00	224.07	132.58	106.07	238.65	186.23	103.00	289.23
5. Raja Ramanna Centre for Advanced Technology, Indore (RRCAT)	3401	...	45.50	45.50	...	48.70	48.70	...	47.45	47.45
	5401	67.95	...	67.95	71.84	...	71.84	67.07	0.55	67.62
Total - RRCAT		67.95	45.50	113.45	71.84	48.70	120.54	67.07	48.00	115.07
6. Variable Energy Cyclotron Centre, Kolkata (VECC)	3401	...	31.40	31.40	...	30.87	30.87	...	29.65	29.65
	5401	86.65	...	86.65	55.11	...	55.11	70.08	0.35	70.43
Total -VECC		86.65	31.40	118.05	55.11	30.87	85.98	70.08	30.00	100.08
7. Directorate of Purchase & Stores, Mumbai	3401	...	16.90	16.90	...	17.35	17.35	...	17.25	17.25
8. General Services Organisation, Kalpakkam	3401	...	29.52	29.52	...	29.73	29.73	...	29.20	29.20
9. <i>Autonomous Bodies</i>										
9.01 Tata Institute of Fundamental Research, Mumbai	3401	58.46	88.65	147.11	96.21	92.30	188.51	66.70	92.00	158.70
9.02 Tata Memorial Centre, Mumbai	3401	70.84	73.60	144.44	68.84	75.40	144.24	69.10	74.00	143.10
9.03 Saha Institute of Nuclear Physics, Kolkata	3401	22.50	24.15	46.65	21.50	25.70	47.20	49.50	23.00	72.50
9.04 Institute of Physics, Bhubaneswar	3401	4.96	9.00	13.96	0.86	7.86	8.72	32.75	7.00	39.75
9.05 Harish-Chandra Research Institute, Allahabad	3401	3.94	8.30	12.24	3.80	8.69	12.49	18.46	8.00	26.46
9.06 Institute of Mathematical Sciences, Chennai	3401	2.77	10.50	13.27	3.14	10.40	13.54	9.92	10.00	19.92
9.07 Institute for Plasma Research, Gandhinagar	3401	79.81	30.00	109.81	60.41	30.65	91.06	171.64	30.00	201.64
9.08 Atomic Energy Education Society, Mumbai	3401	13.30	15.00	28.30	13.05	15.67	28.72	17.34	15.00	32.34
Total - Autonomous Bodies		256.58	259.20	515.78	267.81	266.67	534.48	435.41	259.00	694.41

No.5 /Atomic Energy

		(In crores of Rupees)								
Major Head	Budget 2006-2007			Revised 2006-2007			Budget 2007-2008			
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
10. Assistance to Universities, etc. (Grants to Other Institutions)	3401	60.94	...	60.94	62.94	...	62.94	90.22	...	90.22
11. Directorate of Construction, Services and Estate Management (DCS&EM), Mumbai	3401	...	39.65	39.65	...	38.62	38.62	...	39.05	39.05
12. <i>Housing Projects</i>										
12.01 Projects under DCS&EM	5401	29.77	...	29.77	23.33	...	23.33	24.83	...	24.83
12.02 Other Housing Projects	5401	33.16	...	33.16	21.55	...	21.55	17.05	...	17.05
Total - Housing Projects		62.93	...	62.93	44.88	...	44.88	41.88	...	41.88
13. Atomic Minerals Directorate for Exploration and Research, Hyderabad (AMDER)	3401	...	60.00	60.00	...	59.80	59.80	...	60.37	60.37
	4861	12.05	...	12.05	8.71	...	8.71	18.00	...	18.00
	5401	29.00	...	29.00	15.00	...	15.00	35.12	0.42	35.54
Total - AMDER		41.05	60.00	101.05	23.71	59.80	83.51	53.12	60.79	113.91
Nuclear Fuel										
14. <i>Nuclear Fuel Complex (NFC), Hyderabad</i>										
14.01 Fuel Fabrication Facilities:										
Gross	2852	...	455.01	455.01	...	555.80	555.80	...	559.13	559.13
Less-Receipts	0852	...	-671.64	-671.64	...	-714.74	-714.74	...	-687.36	-687.36
<i>Net</i>		...	-216.63	-216.63	...	-158.94	-158.94	...	-128.23	-128.23
14.02 Common Facilities	2852	...	19.18	19.18	...	19.42	19.42	...	21.34	21.34
14.03 Stainless Steel Tubes Plant	2852	...	17.17	17.17	...	19.28	19.28	...	21.03	21.03
14.04 Capital Outlay on NFC	4861	109.98	...	109.98	90.98	...	90.98	221.20	...	221.20
Total-Nuclear Fuel Complex		109.98	-180.28	-70.30	90.98	-120.24	-29.26	221.20	-85.86	135.34
Heavy Water										
15. <i>Heavy Water Board</i>										
15.01 Maintenance of Housing Colonies for Heavy Water Plants	2852	...	9.19	9.19	...	8.69	8.69	...	8.75	8.75
15.02 Central Office (Other Heavy Water Plants)	4861	81.62	8.80	90.42	63.66	9.11	72.77	118.31	10.51	128.82
Total-Heavy Water Projects		81.62	17.99	99.61	63.66	17.80	81.46	118.31	19.26	137.57
16. <i>Heavy Water Production</i>										
16.01 Heavy Water Plant, Baroda	4861	...	42.77	42.77	...	41.99	41.99	...	42.07	42.07
16.02 Heavy Water Plant, Kota	4861	...	96.54	96.54	...	99.85	99.85	...	93.93	93.93
16.03 Heavy Water Plant, Tuticorin	4861	...	75.61	75.61	...	72.26	72.26	...	74.98	74.98
16.04 Heavy Water Plant, Talcher	4861	...	9.88	9.88	...	12.32	12.32	...	12.46	12.46
16.05 Heavy Water Plant, Thal	4861	...	71.04	71.04	...	88.89	88.89	...	88.50	88.50
16.06 Heavy Water Plant, Hazira	4861	...	94.83	94.83	...	104.48	104.48	...	79.91	79.91
16.07 Heavy Water Plant, Manuguru	4861	...	147.35	147.35	...	147.10	147.10	...	97.67	97.67
<i>Total</i>		...	538.02	538.02	...	566.89	566.89	...	489.52	489.52
Less- Loss of Heavy Water	4861	...	-62.15	-62.15	...	-78.67	-78.67	...	-52.28	-52.28
<i>Net</i>		...	475.87	475.87	...	488.22	488.22	...	437.24	437.24
Total - Heavy Water		81.62	493.86	575.48	63.66	506.02	569.68	118.31	456.50	574.81
17. Feed Stock	4861	...	670.70	670.70	...	706.62	706.62	...	680.00	680.00
Less- Heavy Water Production	4861	...	-670.70	-670.70	...	-706.62	-706.62	...	-680.00	-680.00
Total - Feed Stock		...	...	...	...	...	...	...	...	...
18. Board for Radiation and Isotope Technology, Mumbai (BRIT)	2852	...	26.00	26.00	...	24.60	24.60	...	23.85	23.85
	4861	19.25	...	19.25	10.31	...	10.31	21.84	0.15	21.99
Total - BRIT		19.25	26.00	45.25	10.31	24.60	34.91	21.84	24.00	45.84

		(In crores of Rupees)								
Major Head	Budget 2006-2007			Revised 2006-2007			Budget 2007-2008			
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
19. Other Programmes										
19.01 Management Services Group	2852	...	0.30	0.30	...	0.30	0.30	...	0.30	0.30
19.02 O & M of Thorium Plant, Trombay	2852	...	...	...	...	...	...	15.00	15.00	15.00
19.03 International Atomic Energy Agency	3401	...	7.00	7.00	...	6.66	6.66	...	6.00	6.00
Total-Other Programmes		...	7.30	7.30	...	6.96	6.96	...	21.30	21.30
20. DAE Projects										
20.01 R & D Projects	3401	...	4.40	4.40	...	4.26	4.26	...	4.00	4.00
	5401	3.25	...	3.25	4.38	...	4.38	1.59	...	1.59
	<i>Total</i>	3.25	4.40	7.65	4.38	4.26	8.64	1.59	4.00	5.59
20.02 I & M Projects	2852	...	...	...	...	...	...	20.00	2.00	22.00
	4861	29.30	...	29.30	11.35	...	11.35	87.90	...	87.90
	<i>Total</i>	29.30	...	29.30	11.35	...	11.35	107.90	2.00	109.90
Total - DAE Projects		32.55	4.40	36.95	15.73	4.26	19.99	109.49	6.00	115.49
21. Grants-in-aid										
21.01 Electronics Corporation of India Limited	2852	4.56	...	4.56	4.56	...	4.56	...	...	...
21.02 Uranium Corporation of India Ltd.	2852	...	...	...	10.00	...	10.00	10.00	...	10.00
Total - Grants-in-aid		4.56	...	4.56	14.56	...	14.56	10.00	...	10.00
22. Write-off of equity to Uranium Corporation of India Limited										
Less Receipt	0852	...	...	...	...	9.67	9.67	...	...	...
<i>Net</i>		...	...	...	...	-9.67	-9.67	...	...	...
23. Investments in Public Enterprises										
23.01 Electronics Corporation of India Ltd.	4859	9.34	...	9.34	8.49	...	8.49	...	...	...
23.02 Uranium Corporation of India Ltd.	4861	100.00	...	100.00	21.71	...	21.71	90.00	...	90.00
Total-Investment in Public Enterprises		109.34	...	109.34	30.20	...	30.20	90.00	...	90.00
Total-Atomic Energy Research and Industries										
		1616.47	1527.09	3143.56	1491.31	1646.74	3138.05	2143.85	1621.38	3765.23
Grand Total		1621.02	1550.00	3171.02	1500.00	1673.22	3173.22	2146.85	1650.00	3796.85
B. Investment in Public Enterprises										
	Head of Dev	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total
1. Electronics Corporation of India Ltd.	12859	9.34	30.00	39.34	8.49	30.00	38.49	...	30.00	30.00
2. Uranium Corporation of India Ltd.	12861	100.00	192.36	292.36	21.71	169.91	191.62	90.00	129.29	219.29
3. Indian Rare Earths Ltd	12861	...	80.79	80.79	...	107.44	107.44	...	136.00	136.00
Total		109.34	303.15	412.49	30.20	307.35	337.55	90.00	295.29	385.29
C. Plan Outlay										
1. Telecommunication and Electronics Industries	12859	9.34	30.00	39.34	8.49	30.00	38.49	...	30.00	30.00
2. Atomic Energy Industries	12861	608.68	273.15	881.83	458.79	277.35	736.14	931.85	265.29	1197.14
3. Atomic Energy Research	13401	1003.00	...	1003.00	1032.72	...	1032.72	1215.00	...	1215.00
Total		1621.02	303.15	1924.17	1500.00	307.35	1807.35	2146.85	295.29	2442.14

1. **DAE Secretariat** - DAE Secretariat is the apex body administering the constituent units, PSUs and aided institutions spread all over the country carrying out the various activities of the Department. In the Department of Atomic Energy, there are five R&D Units, three industrial units, three service organisations and five PSUs apart from eight aided institutions. It has also a Branch Secretariat at New Delhi.

2. **Atomic Energy Regulatory Board (AERB)** - AERB is an independent body under Atomic Energy Commission and enforces radiological safety stipulations and is assisted by Safety Review Committee for Operating Plants (SARCOP), Safety Review Committee (SRC) for applications for radiation and other committees in carrying out its mandate in prescribing radiological, nuclear and industrial safety regulations.

3. Bhabha Atomic Research Centre - Bhabha Atomic Research Centre (BARC), a multidisciplinary organisation, pursues comprehensive research and development programmes for harnessing nuclear energy and also its utility for the benefit of the society. These R&D efforts are concentrated in the fields of nuclear sciences, engineering & technology, basic sciences and allied fields and geared for exploitation of atomic energy for power generation and application of radiation technology in the areas of agriculture, health care and industry. The centre is engaged in the research and development of front line technologies. The interaction with academic institutions and international cooperation in related advanced areas of research is being continuously strengthened. BARC continues to give R&D support to all other units of DAE and provide necessary support to ensure national security and self-reliance.

4. Indira Gandhi Centre for Atomic Research - Indira Gandhi Centre for Atomic Research [IGCAR], one of the major R&D units of the Department, has been engaged in the design and development of liquid sodium cooled fast breeder reactors in the country, as a part of the Nuclear Power Programme Stage 2, backed by fuel fabrication and reprocessing. The Centre has R&D activities, encompassing hydraulic studies and reactor engineering studies of reactor components, sodium instrumentation, material development and characterization. IGCAR plan to optimise the design concepts and to provide inputs for the design of future FBRs. Structural mechanics experiments will be continued to validate innovative design features of future FBRs in the field of high temperature, fatigue, buckling and seismic design.

IGCAR has carried out an extensive range of R&D Programmes in support of PFBR and it is expected that all the major R&D required for providing inputs to the design and construction will be completed by 2007. The technology for production of enriched boric acid and the conversion of boric acid to elemental boron have been developed at IGCAR.

5. Raja Ramanna Centre for Advanced Technology - Raja Ramanna Centre for Advanced Technology (RRCAT), Indore, is engaged in the development of particle accelerators and lasers along with their applications, besides carrying out substantial activities in cryogenics and materials research. RRCAT has assembled a 2.5 GeV Synchrotron Radiation Source (SRS) Indus 2, in the area of particle accelerators which was dedicated to the nation by the Prime Minister. In addition, smaller accelerators, such as, 300-700 KeV, 10 KW and 2.5 MeV, 100 KW DC electron accelerators for their irradiation applications. RRCAT has built two types of Cryo-coolers and a Cryo-pump. Under the laser programme, it has also built new lasers and laser based systems, including that given to Nuclear Power Corporation of India Limited for use in Narora Atomic Power Station. It has also joined in new collaborative activities with European Council for Nuclear Research (CERN) like making modulator for LINAC-4 which is the front-end of the SPL (Superconducting Proton Linac) Project.

6. Variable Energy Cyclotron Centre - Variable Energy Cyclotron Centre (VECC) at Kolkata has been operating the nation's largest and the first indigenously built cyclotron in the country providing charge particle beams of various energies. Backed by a group of physicists both in theoretical and experimental research, high speed computing facility and reasonably fast cyber connectivity, VECC has emerged as a national facility for carrying out accelerator based on basic and applied research. The Superconducting Cyclotron was operated

round the clock for about one year. During this period, extensive magnetic field mapping was done at different current, data analysed and field correction devices provided.

7. Directorate of Purchase & Stores - The objective of Directorate of Purchase & Stores (DPS) is to ensure availability of quality material at right time and at right place. In the process, DPS should also ensure that the material is procured at right price. The materials required by the R&D Units of the Department are of developmental nature, hence DPS is also entrusted with the work of locating the right sources for manufacturing of complicated precision equipment required for Atomic Energy Programme. Over the years, DPS has also identified large number of suppliers for developmental nature of jobs and in this process helped the DAE to attain self-sufficiency.

8. General Services Organisation - General Services Organisation (GSO) is one of the service organisations under the Department and the Unit is providing services such as residential accommodation, health services under CHSS, transport services, educational facilities and is also responsible for the maintenance of public buildings, roads within the colony, maintenance of water supply, etc. to all the Units located at Kalpakkam such as Indira Gandhi Centre for Atomic Research, Bhabha Atomic Research Centre (Facilities), Nuclear Power Corporation of India Limited, Central Industrial Security Force, etc.

9. Autonomous Bodies

9.01 Tata Institute of Fundamental Research - Tata Institute of Fundamental Research (TIFR) is primarily an Institute for basic research, but in this process, it also develops new technologies and creates a pool of scientific and technical manpower. The research activities of the Institute are organized under three Schools: (1) School of Mathematics (2) School of Natural Sciences and (3) School of Technology and Computer Science. The School of Natural Sciences has seven departments at Mumbai (Theoretical Physics, Astronomy & Astrophysics, High Energy Physics, Nuclear & Atomic Physics, Condensed Matter Physics & Material Science, Chemical Sciences and Biological Sciences), and three national Centres: (a) The National Centre for Radio Astrophysics (NCRA) at Pune, with the cylindrical radio telescope at Ootacamund and the Giant Meterwave length Radio Telescope (GMRT) at Khodad (near Pune); (b) The National Centre for Biological Sciences at Bangalore, and (c) The Homi Bhabha Centre for Science Education at Mankhurd, Mumbai. The School has also set up several field stations for various research facilities, which include the National Balloon Facility (in collaboration with ISRO) at Hyderabad, the Gamma Ray Astronomy & High Energy Physics Laboratories at Ootacamund and Pachmarhi (MP) and the Gravitational Laboratory at Gauribidnur (Karnataka). TIFR has also been conferred the status of Deemed University by the University Grant Commission.

9.02 Tata Memorial Centre - Tata Memorial Centre (TMC) comprises Tata Memorial Hospital (TMH) and Advanced Centre for Treatment, Research and Education in Cancer (ACTREC). Tata Memorial Hospital was established in 1941 for the treatment and cure of cancer and allied diseases. To facilitate rapid development and expansion of the facilities, the administrative control was transferred from the Ministry of Health to the Dept. of Atomic Energy. TMC has the responsibility to set standards of therapy for treatment modalities and is a Centre to train doctors, scientists and para-medical staff in the field. Cancer Research Institute (CRI) established in 1952, is one of the units

of TMC and conducts basic, community-based and clinically oriented research on multiple facets of cancer, focusing on the cancers prevalent in India. These include cancers of oral cavity, cervix, leukemia and lymphomas and tobacco related cancers. CRI has now been relocated to Navi Mumbai with the commissioning of Advanced Centre for Treatment, Research and Education in Cancer (ACTREC).

9.03 Saha Institute of Nuclear Physics - Saha Institute of Nuclear Physics since 1949 has a two-fold objective to carry out basic research in various areas of physical and biophysical sciences and to impart manpower training in these fields.

Saha Institute of Nuclear Physics has been a pioneering institute for over five decades in the area of research and manpower training. Founded in 1949 it is the first establishment in the country to initiate studies in nuclear physics and other areas. It has the oldest NMR Lab, a working Tokamak, a most sophisticated unit for surface studies and two strong groups for studies in theoretical physics and statistical mechanics. It has offered the world a very important chip (MANAS) to help detect dimuons at CERN. The Post-MSc Teaching Programme (introduced in 1952), which is recently backed by an undergraduate training programme and the CARE project, is the first training programme of the kind in the country and abroad.

9.04 Institute of Physics - The Institute of Physics, Bhubaneswar promotes fundamental research in the frontier areas of Physics. Research is carried out in theoretical as well as experimental areas, viz. Condensed Matter Physics, High Energy Physics, Nuclear Physics, and accelerator based sciences. In Experimental Physics, one of the main facilities is the Ion Beam Laboratory (IBL), which has a 3 million volt Pelletron accelerator. This facility is used by scientists from within the Institute, as well as by scientists from other research institutes and universities in India for carrying out research in surface science, implantation studies, accelerator mass spectroscopy etc. Experimental research is also carried out in the areas of surface studies, clusters and nanomaterials, relativistic heavy-ion collisions etc. The responsibility of setting up NISER at Bhubaneswar is entrusted to IOP.

9.05. Harish-Chandra Research Institute - The main objective of Harish-Chandra Research Institute (HRI) is to conduct fundamental research in various fields of mathematics, theoretical physics and allied topics.

9.06. Institute of Mathematical Sciences - The Institute of Mathematical Sciences (IMSc), which had its inception in 1962, is a National Institute of higher learning with primary objective to foster high quality fundamental research in frontier disciplines of the Mathematical Sciences.

The research output of the institute has received international recognition and has led to several collaborative research projects with foreign scientists. The research output is disseminated primarily as refereed journal articles as well as articles in conference proceedings. Academic members of the Institute participate extensively in large number of National and International Scientific Meetings. The Institute plays host to a large number of Short-Term and Long-Term Visitors.

The Institute has an outstanding Scientific Library, and an excellent computing environment including a recently commissioned Teraflops Cluster Computer (KABRU) and a dedicated high speed network.

9.07. Institute for Plasma Research - The institute has a broad charter of objectives to carry out experimental and theoretical research in plasma science with emphasis on the physics of magnetically confined plasmas and certain aspects of non-linear phenomena. The Institute also has a mandate to stimulate plasma research and development activities in the Universities and the Industrial sector. It is also expected to contribute in the training of plasma physicists and technologists in the country. Since its inception the Institute has pursued these goals in an active manner and made effective contributions. India has joined International Thermonuclear Experimental Reactor (ITER) as one of the seven full partners, the other being China, European Union, Japan, Korea, Russia and USA. IPR is fully associated with this project.

9.08. Atomic Energy Education Society - Atomic Energy Education Society (AEES) runs 30 schools and junior colleges at 16 different centers with more than 28000 students on its rolls. Society also assists three special schools runs by Charitable Organizations for the handicapped children of DAE employees at Kalpakkam, Mumbai and Indore. The main objectives of AEES are as follows: -

- (a) To establish and run educational institutions such as schools, Jr. colleges etc., to educate the children of the employees of the constituent units, aided units and PSUs of DAE, from preparatory to standard XII and vocational education through the media of instruction adopted by the society from time to time.
- (b) To assist special schools through charitable organizations for the handicapped children of the employees of the constituent and aided units of DAE.

10. Assistance to Universities - The research-education linkage has been always nurtured by DAE. Extra-mural funding from DAE to universities/institutions/ national laboratories is channeled through the Board of Research in Nuclear Sciences (BRNS). National Board for Higher Mathematics (NBHM) has initiated several schemes like helping the development of mathematical centres, giving scholarships to research fellows, travel assistance to young mathematicians for attending conferences/seminars, support to libraries etc. The Department also funds cancer hospitals in the country which support primarily small projects and radiation related equipment for cancer treatment.

To nurture nuclear technology, the endeavour of the Department covers training programme for its scientists/engineers, programme under the inter-university consortium for utilisation of DAE research facility, enrichment of higher science education through intervention of its experts with university system, and training facilities/fellowships extended to countries through IAEA or under the bilateral agreements. As part of human resource development, a number of training courses, seminars, symposia and workshops are regularly conducted by the DAE units.

With the objective to deliver the technologies developed in the DAE laboratories to the people around the nuclear establishments, the Department has initiated the Neighborhood Welfare Programme. Welfare activities such as eye camps, health check-ups, renovation of primary schools, providing educational facilities, distribution of high yield seeds and arranging plant visits are carried out by the atomic power stations at different sites.

11. Directorate of Construction, Services & Estate Management - Directorate of Construction, Services & Estate Management (DCSEM) has been constituted to look after the construction activities of the Department including housing for its employees. In addition, DCSEM executes construction works for constituent units like AMD, VECC, and the aided Institutions under the administrative control of DAE viz. TIFR, TMC, IOP. It is also responsible for operation, maintenance and upgradation of various services of residential flats and utility buildings and estate management for the DAE estates in Mumbai.

13. Atomic Minerals Directorate for Exploration & Research - Atomic Minerals Directorate for Exploration & Research (AMD) carries out survey, prospecting and exploration of atomic minerals required for the nuclear power programme of the country. The activities include assessment, analysis, evaluation, characterisation and categorisation of atomic minerals, design and fabrication of radiometric instruments and development of ore extraction flow sheets with the aid of state-of-the-art equipment.

14. Nuclear Fuel Complex - Nuclear Fuel Complex (NFC) is responsible for manufacturing zirconium alloy clad, natural and enriched uranium oxide fuel assemblies for all the Pressurised Heavy Water Reactors (PHWRs) and the Boiling Water Reactors (BWRs) respectively. It also manufactures zirconium alloy structural components for these reactors including Calandria and Pressure Tubes for PHWRs and Square Channels for BWRs. In addition, NFC produces Seamless Stainless Steel and Special Alloy Tubes of international standards for Nuclear and Non-Nuclear applications and Special and High Purity Materials for strategic use.

15. Heavy Water Board - Heavy Water Board was set up in the year 1989 to manage the operation of the Heavy Water Plants of the Department. Heavy Water Board is operating six Heavy Water Plants located at Baroda, Tuticorin, Kota, Manuguru, Thal and Hazira. While the four Heavy Water Plants operating at Baroda, Tuticorin, Kota & Manuguru are run departmentally, Heavy Water Plants at Thal and Hazira are operated and maintained by M/s. RCF & M/s. KRIBHCO respectively. HWP(Talcher) is being preserved along with some diversified activities such as production of D2EHPA and TBP for meeting the requirement of BARC, NFC. A Solvent Extraction Test Facility has been setup at HWP, Talcher.

As part of its diversification activities, HWB has undertaken various projects such as Heavy Water Clean up Facility, Sodium Metal Plant, Boric Acid Enrichment Plant, Boron Enrichment by Distillation Process, Centralised Uranium Oxide Conversion Facility, etc. HWB is setting up a Technology Demonstration Plant for Recovery of Rare Metals from WPA used by Phosphoric Fertilizer Industry. All the operating plants have implemented Quality Management System and Environmental Management System and have got the certificates for ISO-9001 and ISO-14001.

18. Board of Radiation and Isotope Technology - Board of Radiation and Isotope Technology (BRIT), a constituent unit of the Department of Atomic Energy is responsible for production and supply of radioisotope products, radiation technology

equipment and rendering radiation processing services for medical products, spices, condiments and other products. BRIT is propagating radiation technology and providing facilitation services to private entrepreneurs to set up commercial gamma radiation processing plants.

Radioisotopes produced in the research reactors in Bhabha Atomic Research Centre and also in the power reactors of NPCIL are processed and formulated into a variety of products in the laboratories of BRIT and supplied to a large number of institutions in the country as well as abroad for use in Industry, healthcare, agriculture and supporting research in life sciences and bio sciences.

19. Other Programmes - Management Services Group (MSG) provides information services and computer systems support at the DAE Secretariat. The group has set up a Local Area Network which functions on round the clock basis.

India has been a member of the Board of Governors of the International Atomic Energy Agency (IAEA) since its inception, making available the services of the departmental scientists for expert assignments besides participation in international symposia and other fellowship exchange programmes. The provision under IAEA takes care of the contribution made by the Department to the international body.

20. DAE Projects - The Department undertakes a few projects which are jointly executed by the constituent units in different sectors or by the PSUs on behalf of the Department.

23. Investment in Public Enterprises

23.01. Electronic Corporation of India Ltd. - Electronic Corporation of India Ltd. was incorporated on 11th April 1967. The objectives of the company is to strengthen its status as a valued technological asset to the Nation in the area of strategic electronics meeting the requirement of Atomic Energy, Defence, Space, Civil Aviation, Security and such other sectors of strategic, economic and social importance.

23.02. Uranium Corporation of India Limited - Uranium Corporation of India Limited (UCIL), Jaduguda was incorporated in 1967. The objectives of the company is to mine and refine uranium ore, produce concentrate and recover by-products at the most economic cost and market them efficiently. It is also the responsibility of the company to evaluate new deposits for opening up new mines and process plants. The provision included is for investment in on-going Plan Schemes.