

CHAPTER 17

SCIENCE AND TECHNOLOGY

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17.01 Science and Technology play vital role in the process of development and transforming the nature of an economy into more modern and vibrant. It has special relevance for Orissa, as the State is still striving to achieve a level of excellence in its process of development. Strengthening of Science & Technology infrastructure and nurturing of budding talents in the sphere of advance scientific research and high technology are two important thrusts during the Eleventh Five Year Plan.

17.02 Some of the important objectives of this sector for 2008-09 are as follows;

- *Priority to key areas like Information Technology, Bio-technology and Remote Sensing.*
- *Promotion of Science and Technology Education and Training for Human Resource Development.*
- *Promotion of Science and Technology through Application Oriented Research in the frontier areas of Mathematics and Material Science.*
- *Popularisation of Science and Technology through dissemination of its latest development and promotion of scientific temper among the public at large.*
- *Implementation of GRAMSAT pilot project to train and upgrade the skill of field level functionaries.*

STATE COUNCIL ON SCIENCE AND TECHNOLOGY

17.03 In order to promote the development of Science and Technology in the State,

'State Council on Science and Technology, Orissa' has been constituted as the highest policy making body in the State pertaining to Science and Technology Sector. Under the scheme, financial support is being provided to carry out application oriented research projects, development/ popularisation of science and technology programmes, publicity and advertisement in support to various scientific activities and its development, seminars, workshops, conferences etc. some important activities pertaining to various programmes/ schemes undertaken during 2007-08 are as follows:

- *A three-day International Workshop on "MESOSCOPIC, NANOSCOPIC & MACROSCOPIC MATERIALS" was organised in collaboration with Institute of Material Science.*
- *The Council had provided partial financial support to organise a National Symposium on "Sustainable Pest Management for Safer Environment", organised by the Society for Plant Protection and Environment, Department of Entomology, College of Agriculture: OUAT during December, 2007. The symposium was mainly focused on to avert willful application of pesticides and ensure environmental safety through adoption of systematic and amicable methods of crop protection technology.*
- *The Council supported the National Symposium on "Challenges in improving Reproductive efficiency of farm and pet Animals" which was organised in December, 2007 by Orissa Veterinary College, Bhubaneswar with an objective of sustainable production through proper management, diagnosis, treatment and control measures of reproductive disorders.*

- *The Council has proposed to conduct the state level monthly science quiz among the High School students to enhance the scientific temper and development of interest in science related matters.*
- *The State Council on Science and Technology is taking active steps for establishment of Sub-Regional Science Centre at Nrusinghanath in Bargarh district and another at Jeypore in Koraput district for popularization of science among the people in general and students in particular in western Orissa and KBK region.*

DEVELOPMENT OF BIOTECHNOLOGY

17.04 Biotechnology is a frontier area of technology with immense benefits to society in diverse areas such as Food Security, Nutritional Supplementation, Healthcare Productions and Industrial Applications. Considering the diversified resources of the State, this cutting edge technology has a potential to make a significant contribution to the economy of the State. Under this programme, the following activities were undertaken during 2007-08.

- *A Biotech Pharma IT Park, Ph-I is being developed at Mouza Andharua under Bhubaneswar Tahasil over an area of about 65 acres on PPP mode. Biotech pharma IT Park, Ph-II will be developed at Deras Agricultural Farm over an area of 200 acres. Alienation of land for both the park is in progress.*
- *A Biotechnology Incubation Centre (BTIC) will come-up over 10 acres in the premises of the Andharua Biotech Pharma IT park. The work plan for setting up BTIC has been sent to Department of Biotechnology, Government of India, New Delhi for sanction of instrumentation of the BTIC.*

17.05 It has been proposed to take up the following activities relating to BT during 2008-09 with an outlay of Rs.7.32 crore.

- i) *Financial Support to short term Research Development Project on Biotechnology.*
- ii) *Financial Support for holding of Seminar / Workshops / Symposium / Conferences / Discussion on bio-technology.*
- iii) *Advertisement/ Road Shows/ Brochure for Show- Causing Development of Bio-technology among other things.*

ORISSA BIGYAN ACADEMY

17.06 Orissa Bigyan Academy has been set up for popularization of Science & Technology in the State. The significant achievements of the Academy during the year 2007-08 are as follows.

- *“Bigyan Diganta”, the Monthly Oriya Science Magazine, specially designed for school students and for their parents and other rural people has been continuously published by the Orissa Bigyan Academy since, 1993. During 2007-08 eleven issues of “Bigyan Diganta” have been released and distributed to high schools of the G.P. Headquarters free of cost.*
- *The Academy is also publishing an abridged version of “Bigyan Diganta” for visually handicapped students of the state. The magazine brought out as a quarterly publication, is distributed to the blind students and their institutions. During 2007-08, three issues of the abridged version of popular science magazine “Bigyan Diganta”, printed in Braille Oriya script were released.*
- *Orissa Bigyan Academy organised the different popular science programme viz. Science Exhibition, Science based essay/ debate/ quiz/ sit and draw competitions, seminars etc. among the school children in collaboration with different Organization/ Institutions of the state.*
- *Experts were invited from different parts of India to select the name for Samanta Chandrasekhar Award, Orissa Young Scientist Award, Popular Science Writer Award, and Felicitation to Senior Scientist of the State for the year 2006 and honouring eminent scientists posthumously for the year 2007. They have selected four awardees including*

one from outside the state category for Samanta Chandrasekhar Award, two awardees for Orissa Young Scientist Award, three awardees for popular Science Writer Award, two for Felicitation of the Senior Scientist of the State and three awardees for honouring Eminent Scientist posthumously. This has been approved by the Executive Council of the Academy and Government of Orissa in Science and Technology Department.

- *Orissa Bigyan Academy organised the i ceremony of Biju Pattanaik Award for Scientific Excellence for the year 2006.*

PATHANI SAMANT PLANETARIUM

17.07 Pathani Samanta Planetarium is the Premier Institution of the State. The main objective and function of the Planetarium is to bring to the public the awe and wonders of the Universe through the Planetarium shows. It aims at creating awareness on Astronomy, Astrophysics and Space Science among the common mass in general and the young students in particular. Since its inception in 1990, it has attracted more than one lakh visitors every year. Number of visitors visited the Planetarium and revenue collected since 2004-05 is given below at Table 17.1

Table- 17.1

Visitors and Revenue collection of Pathani Samant Planetarium

Year	No. of visitors	Revenue collection (in Rs.)
2004-05	92903	854652
2005-06	93522	848580
2006-07	133289	1219350
2007-08	112056	1336369

Source: Pathani Samant Planetarium, BBSR

17.08 During 2007-08, Night Sky Watch Programmes were conducted for 24 days which were witnessed by 2500 viewers. Besides, 7 nos. of slide shows and 12 nos. of popular talks were conducted under Audio Visual Programmes.

ECONOMIC SURVEY

17.09 Light, Sound and Water Programme and Astronomy Park were inaugurated in the premises of the Planetarium. The basic feature of this programme is based on use of (i) Laser Projector, (ii) Water Screen, (iii) Intelligent Moving Head Projector and (iv) Eight Channel Audio Track. Musical Fountains are the most attractive features of this programme. During 2007-08, 158 nos. of Light, Sound and Water Programme were conducted which were witnessed by 11,907 visitors.

17.10 The Astronomy Park established in the premises of the Planetarium is enriched with some beautiful models like PSLV Rockets, Solar System, Jupiter, Mars and their Satellites, Swing as Pendulum, see through the Wall etc. attracts the visitors a lot.

17.11 Planetarium organises a talent search in Astronomy among school students. This event is being organised to popularize excellent contribution of the legionary Pathani Samanta in the field of Astronomy and secondly to spot and encourage young talent in the field of Astronomy and space science among school going children.

17.12 Foundation day of Pathani Samnta Planetarium was celebrated on 8th January, 2008.

ORISSA REMOTE SENSING APPLICATION CENTRE (ORSAC)

17.13 Orissa Remote Sensing Application Centre (ORSAC) acts as an apex

organization to promote Remote Sensing Technology in the State. Remote Sensing data are used in various fields for forecast of agricultural crop acreage and production for the entire State along with water-shed management. ORSAC has rendered commendable service by undertaking several projects for the Central Government as well as State Government. The important achievements of ORSAC during 2007-08 are as follows.

- *Forecasts on acreage and production of kharif paddy, groundnut, jute and ragi has been made under Forecasting Agricultural Output Using Space Agrometeorology and Land Based Observation (FASAL) Programme during August – November, 2007. The results have been made available to the user departments of Central and State Government.*
 - *Land use/ land cover mapping of coastal districts of Orissa has been taken up under coastal studies project.*
 - *Road maps of all 30 districts of the State have been prepared and submitted to district administration for ownership and surface status verification and validation.*
 - *Land utilization map and statistics are being developed for 30 districts of Orissa under “National Resource Census of Orissa” programme.*
 - *Remote sensing and GIS based land-use maps have been generated for Bhubaneswar– Cuttack urban complex region for perspective plan preparation.*
 - *Mouza– Village wise digital cadastral datasets has been generated for all the 357 villages of BCUC Region. Plot level land use map of 302 villages/ mouza has been completed.*
 - *The potential fishing zone advisory received from INCOIS, Hyderabad have been disseminated to the users of coastal Orissa for guiding the fishermen community to catch more marine fish.*
 - *The livestock GIS data base generation for 23 districts has been completed.*
- *The flood maps of Orissa during July– August, 2007 indicating the villages in undated roads and culverts submerged etc. have been prepared and submitted to Government for taking appropriate measures on flood relief.*

GRAMSAT / EDUSAT Project:

17.14 GRAMSAT Pilot Project– Orissa Scheme has been introduced in 2000-01 with the assistance of Department of Space, GOI to train and upgrade the skills of field level functionaries of different Departments like Panchayati Raj, W & CD etc. This system will have the capability of data transfer between the State Headquarters at Bhubaneswar, 30 districts, 314 blocks through V-sat network and 1190 ‘Receive Only Terminals’ (ROTs). This enabling to telecast various developmental programmes of the State Government to the people in 1190 GPs of KBK districts. Another 147 GPs of KBK districts will also be covered with DRS network in the next phase. EDUSAT hubs have been installed at ORSAC for educational broad -casting.

TRAINING PROGRAMME:

17.15 Decision Makers Level and Supervisory Level Training Programme on Remote Sensing and GIS Applications in town and country planning and orientation programme on ‘Bigyan Prasar’ were conducted by ORSAC. Besides, one training workshop on Wetland Inventory and Assessment was conducted in January, 2008.

ORISSA RENEWABLE ENERGY DEVELOPMENT AGENCY (OREDA)

17.16 Orissa Renewable Energy Development Agency (OREDA) is a Society constituted under Societies Registration Act, 1860, functioning under Science & Technology Department, Government of Orissa. It is functioning as the State Nodal Agency for promotion of various renewable energy systems and energy saving devices. The main objectives of this agency are :

- *To encourage the development and accelerated utilization of renewable energy sources, wherever they are, technically and economically viable;*
- *To improve the access to and availability of renewable, decentralized sources of energy particularly for the rural population.*
- *To contribute towards balanced rural and urban development as well as development of backward, hilly and tribal areas by enabling the use of locally available decentralized renewable energy sources and to create gainful employment opportunities with due importance for ensuring greater access to woman and other disadvantage groups to employment opportunities.*
- *To reduce environmental degradation resulting from deforestation.*

RENEWABLE ENERGY POLICY

17.17 Policy Guidelines were issued on matters relating to promotional and fiscal incentives for power generation from Non-Conventional Energy Sources in the State. The main objective of the Policy is to reduce dependency on conventional sources of power generation. Other objectives are-

- *Protecting the environment*
- *Generation of employment on a large scale*
- *Generation of grid quality power from NCSE, so as to reduce dependence on conventional sources of power*

- *Encourage entrepreneurial investment in NCSE*
- *Provide rational fiscal and promotional incentives so as to provide an atmosphere conducive to attract private investment.*

17.18 The important activities undertaken by OREDA during 2007-08 are as follows:

(i) STATE LEVEL RENEWABLE ENERGY AWARENESS PARK:

17.19 The State Level Renewable Energy Awareness Park christened as "Biju Pattanaik Energy Park" has been established near Khandagiri, Bhubaneswar which attracted huge number of tourist during 2007-08. The Park has the following objectives.

- *Create awareness about renewable energy and its application in daily life among all categories of people.*
- *Educate common people about energy conservation practices.*
- *Attract entrepreneurs towards renewable energy based business.*
- *Provide students and researchers pertinent data about history and development of renewable energy resources and devices.*

(ii) REMOTE VILLAGE ELECTRIFICATION PROGRAMME (RVEP):

17.20 The Remote Village Electrification Programme (RVEP) entails electrification of remote un-electrified census villages through non-conventional energy sources. During 2006-07 project proposal for electrification of 197 villages was sanctioned by Ministry of New and Renewable Energy, Government of India with total Central Financial Assistance of Rs.10.69 crore, out of which Rs.7.48 crore has been released by the end of 2007-08 along with Rs.3.35 crore State shares. Out

of 197 villages to be electrified, 106 villages have been electrified through supply and installation of SPV Home Light System and APV Street Light System. Besides, project proposal for electrification of 58 villages through non-conventional sources have been submitted to Ministry of New and Renewable Energy (MNRE), Government of India for sanction.

(iii) VILLAGE ENERGY SECURITY PROGRAMME (VESP):

17.21 This programme, initiated by Ministry of New and Renewable Energy (MNRE), Government of India, came into existence in 2005-06. The aim of this programme is to meet the energy requirement of remote villages in the state. Government of India has sanctioned 12 projects (4 projects allotted to Forest Department and 8 projects allotted to 6 NGOs) for implementation. Out of these, 10 projects have been commissioned and supply of electricity started to the villagers.

(iv) NATIONAL BIOGAS AND MANURE MANAGEMENT PROGRAMME (NBMMP):

17.22 NBMMP is a high priority Central Sector Scheme, and a part of the 20-Point Programme. The biogas can be used for cooking and lighting purposes. The residues also provide rich organic manure. Against the target of 4000 biogas plants, 3895 plants have been completed during 2007-08. With this the total number of Biogas plants constructed by OREDA till 2007-08 mounted to 2, 05, 381.

(v) SOLAR PHOTO VOLTAIC (SPV) PROGRAMME:

17.23 The SPV programme of MNRE, Government of India continued up to 31st October, 2008. Under this programme OREDA has supplied, installed and commissioned 441 SPV Home Light Systems and 159 SPV Street Light System by the state. The cumulative achievement under this programme are as follows:

<i>Solar Lanterns</i>	<i>9603 nos.</i>
<i>SPV Home Light System</i>	<i>5121 nos.</i>
<i>SPV Street Light System</i>	<i>5471 nos.</i>
<i>SPV Power Plants</i>	<i>26/74.516 KWP</i>

(vi) SMALL & MINI MICRO HYDRO PROJECTS –

17.24 A Mini-Hydel Project at Sunei in Mayurbhanj district of 110 KW capacity has been commissioned by OREDA in August, 2008 which is operating successfully and feeding power to State grid.

(vii) WIND ENERGY -

17.25 Orissa has estimated Wind Power Potential of 1,700 MW. Six potential sites have been identified in the State viz. Gopalpur, Chhatrapur, Puri, Chandipur, Paradeep and Damanjodi for harnessing this power. To begin with, OREDA has taken steps for setting up a 2-MW demonstration Wind Power Project at Damanjodi in Koraput district to demonstrate techno-commercial feasibility of such project with a view to attract private investment in the Sector. The project proposal has been submitted to MNRE, Government of India for sanction. Besides, wind resource assessment studies

are being taken-up in 8 new sites in the State. Further, the Centre for Wind Energy Technology, Government of India have been requested to take up Wind Resource Assessment in Sambalpur, Ganjam and Keonjhar district.

(viii)CONSULTANCY,TRAINING PROGRAMMES, WORKSHOPS ETC. -

17.26 OREDA has taken up consultancy, training, workshops etc for optimum use of energy with an objective to create energy efficiency. OREDA has created facility for providing energy audit service to Government / Private / Industrial Establishments.

(ix) SOLID WASTE MANAGEMENT

17.27 OREDA has been appointed as Business Development Associate by H & U.D. Department, Government of Orissa for setting up of Municipal Solid Waste (MSW) based power project in the State. OREDA has prepared the model DPRs for management of MSW in all ULBs of the State.

(x) ENERGY PLANTATION AND BIO-DIESEL PRODUCTION:

17.28 OREDA is nominated by Government of Orissa as the State National Agency for bio-diesel development in the State and function as the single window for promotion and facilitation of all such projects. The Ministry of Rural Development, Department of Land Resources, Government of India have sanctioned financial assistance of Rs.4.00 crore for raising Jatropha Nurseries. Target has been fixed to raise 66 lakh

seedlings. Besides, Government in S&T Department have sanctioned and released Rs.2.00 crore during 2007-08 for Jatropha Plantation in 8 KBK districts. Plantation of Jatropha in 904 Ac in Rayagada district, 327 Ac in Ganjam, 1482.45 Ac in Kalahandi districts have been taken up.

(xi) CLEAN DEVELOPMENT MECHANISM (CDM) PROJECT

17.29 OREDA is the designated State Level Agency of UNDP – MOEF for development of Small Scale Clean Development Mechanism (CDM) Projects in the State. CDM is a mechanism under the Kyoto Protocol that enables the developing Nations to trade certified Emission Reductions resulting from Renewable Energy, Energy efficiency and carbon sequestration projects to prospective buyers of the developed World. The CDM cell, OREDA is actively involved in the preparation of project idea notes and project designs documents.

(xii) AWARENESS GENERATION, PUBLICITY & EXHIBITION -

17.30 During 2007-08, three video films under Bio-Energy and Solar Energy programmes were telecasted. Besides, one documentary film of 10 minutes duration of step by step construction of Bio-gas and its benefit was also telecasted on Gramsat Evening Transmission Programme. The Interactive Training Programme under Gramsat Network is being done regularly each month. The radio jingles prepared on NBMMP programme in Sambalpuri dialect have been broadcasted from Sambalpur and

Bhawani Patna Stations and in Cuttacki dialect from Cuttack and Jeypore in their rural programme for a period of 30 days. Further, a newly produced Jingle in Renewable Energy has also been broadcasted for 30 days in the State News of prime time of AIR, Cuttack.

17.31 OREDA has also participated in several Mela/ Festivals on different festive occasions for popularization of NRSE devices as well as programmes.

17.32 To create awareness on use of renewable energy, the mobile Exhibition Van has also been sent to different places of Orissa as demonstration unit. In order to create mass awareness/ publicity on renewable energy in the State, 15 nos. of orientation and awareness camps under information and public awareness programme were organised in the capital city of Orissa as well as in eleven other districts.

INSTITUTE OF MATERIAL SCIENCE (IMS)

17.33 The Institute of Material Science came into force in 1996-97. The basic objective of the institute is to provide facilities for research in the frontier areas of material science and to conduct inter-disciplinary research on special materials.

17.34 Following Research and Development Programmes have been taken up by IMS during 2007-08:

1. Material Preparation

17.35 (i) Nano-powders of La-Ca-Mn-O, Ho (x=0.03 and 0.06) doped La-Ca-Mn-O

samples, Y-Ba-Cu-O and Co-doped YBCO samples are prepared by pyrophoric technique using the (IMS) Nano Chamber Facility as well as by Conventional Solid State Sintering Route. Mg and Ti doped Al-Zr samples of various compositions were prepared by solid state reaction route to study the microstructure by Electron Probe Microstructure Analysis. The Bulk Pellets of La-Ca-Mn-O were sintered by Thermal Plasma using the Plasma Sintering Facility of RRL Bhubaneswar by varying plasma sintering time from 2 minutes to 5 minutes.

(ii) With continuation to above sample preparation procedure, ZnO and LCMO thin films were prepared using spray pyrolysis set up by changing various parameters like substrate temperature, distance between spray nozzle and the substrate as well as core temperature of the furnace and annealed at 800-900^o C.

2. Experimental Characterization undertaken

17.36 XPS experiments of Ti / Mg doped Al-Zr composites, Plasma sintered LCMO and Conventional sintered LCMO samples were done using the facility of Institute of Physics facility to know the metal constituent in the sample. With consideration to this, EPMA experiments were carried out using the facility of RRL – Bhubaneswar to know the phase and distribution of grains in the sample. AFM experiments of 3 minutes plasma sintered La-Ca-Mn-O sample were done in the institute during the

demonstration given in the institute by INFUSIL demonstrators.

3. Utilisation of Coconut Waste for Production of Activated and Pharma grade Carbon

17.37 IMS has already started preliminary research work for synthesis of activated carbon from coconut waste and bamboo using existing materials processing furnace. Attempt has been taken for preparation of pharma grade carbon from coconut waste using a clean transparent quartz tube furnace with controlled atmosphere. Microscopic analysis of samples were tested by PIXE and XPS studies and compared with the pharma grade sample obtained from Moscow by Prof. S. N. Behera, Director, IMS. Only after achieving encouraging findings and results, a project proposal may be formulated for external funding to IMS. It is proposed to set up a semi pilot plant at Tarini Temple located at Ghatagaon, Keonjhar at the Government level with the existing technical know-how of DST, GOI which needs initiation. In this connection, Director, IMS has already contacted DST, GOI Officers/ Scientists, at a personal level.

4. Theoretical studies

17.38 Theoretical studies completed and published are as follows:

- *Science and Technology of Nano-materials*
- *Band Jahn-Teller distortion and super conducting excitations in Raman Spectra*
- *Model study of Physical properties of Manganite system*
- *Electronics Properties of ordered and disordered linear clusters of atoms and molecules.*

- *Model of Interplay of Band J-T Effect on Magnetic order mediated by exchange interaction.*
- *Effect of Jahn-Teller distortion on the super conducting gap*
- *“Some Recent development on Magnetism” in “Physics of Solids Nuclei and Particles”.*
- *IMS jointly with the Drexel University, Philadelphia, USA has organised an international workshop on MESOSCOPIC, NANOSCOPIC and Macroscopic materials in January, 2008.*

INSTITUTE OF MATHEMATICS AND APPLICATIONS (IMA)

17.39 This institute has started functioning during 1999-2000 with the following objectives:

- *To undertake fundamental research in Mathematics and its Applications.*
- *To undertake and support interdisciplinary research for interaction between mathematicians & physical / biological / engineering /social scientists.*
- *To organise reorientation and refresher programmes for teachers/research scholars with a view to upgrade their teaching /research skills.*
- *To organise publication of research monographs / journals/ proceedings/ papers on Mathematics and its Applications.*
- *To nurture talent in mathematics.*
- *To establish interaction with other institutions/ Universities/ Academic Societies of high learning, both at the national and international level.*
- *To provide guidance in research for doctoral students and to render technical advice and service to Government and other Institutions.*

17.40 Few activities undertaken by the Institute of Mathematics and Applications in 2007-08 are as follows.

17.41 **(A) Course Programmes:** This Institute has started since the Academic

year, 2006-07, with the following course programmes-

- **B.Sc (Hons) in Mathematics and Computing** – This course is offered by the Institute to impart quality Mathematics Education at undergraduate level which shall equip them with a level of mathematics to qualify in the entrance tests for them to pursue Ph. D in prestigious institutions of India and abroad. Eight students in the academic session 2006 and 13 students in 2007 have taken admission into this programme.
- **MA/ M.Sc. in Computational Finance** – This is a course first of its kind in India. Utkal University accorded affiliation to this course. Students passing out of this course will get lucrative jobs in Financial Institutions. Fifteen students have taken admission into this programme in the academic session 2007-08.

17.42 (B) Search & Nurture of Mathematical Talents:

- The Institute organised Rural Mathematics Training Camp of 2005 batch from 30th January– 5th February, 2008 at Sambalpur B.Ed. College.

- 30 students selected through Regional Mathematics Olympiad held on Winter Mathematics Training Camp were trained in a camp organised from 27th to 31st December, 2007.
- The Institute has conducted two training programmes under RMTS programme. First programme was conducted for 80 selected students and their guide teachers at B.Ed. College, Sambalpur from 31st January, 2008 to 5th February, 2008 and the second programme was conducted for 85 students and their teachers at Sri Aurobindo School, Sundargarh from 23rd February to 29th February, 2008.

17.43 (C) Programme for SC/ ST Children:

The Institute has conducted Training Camp for SC/ ST students and also conducted Training Programme for Mathematics Teachers at SC/ ST Research and Training Institute, Bhubaneswar during 2007-08.

INFORMATION TECHNOLOGY (IT)

INFORMATION TECHNOLOGY

17.44 Information Technology is a fast growing segment of the Indian Socio-economic Scenario. The State Government has recognized Information Technology as a thrust area and priority sector, mainly due to its potential for generation of employment and earning of foreign exchange. The Industrial Policy Resolution-2001 has identified Electronics, Telecommunication, Information Technology and IT-enabled Service as the "Priority Sector". The establishments and enterprises concerning

the aforesaid priority sector have been declared as 'Public Utility Services'.

17.45 Since 15th March, 2000 the State Government has created a separate Department namely "Department of Information Technology". It is entrusted with all matters relating to computer communication and electronics, both software and hardware. It also acts as the nodal department for National Informatics Centre (NIC) and Software Technology Park of India (STPI), established in Bhubaneswar. The Department of IT also plays an enabling role in promotion, development and

implementation of IT related e-Governance projects for different sectors of Government.

17.46 The Department of Information Technology has formulated the Information and Communication Technology (ICT) Policy, 2004, which will help IT to reach the common citizen so as to narrow down the Digital Divide. The ICT policy will look after the following aspects.

- ☞ *Inexpensive access to Information,*
- ☞ *Transparency in Governance Practice,*
- ☞ *Door-step delivery of Host Services,*
- ☞ *Increased Employment, and*
- ☞ *High Export turnover and Economic Growth*

17.47 Orissa Computer Application Centre (OCAC), an agency under the administrative control of the Department of Information Technology, has been designated to function as the Technical Directorate. OCAC has been bestowed with the responsibility of system development in Government, Government agencies and PSUs for promotion of various need-based e-Governance activities in the State. It also undertakes various prestigious schemes, programmes and projects viz: Local Area Network (LAN), Information Technology Enabled Service (ITES), State Government Portal (SGP) and Common Service Centre (CSC) etc.

IT ENABLED SERVICES (ITES)

17.48 This is an ongoing scheme being implemented since 2004-05 with aims at

providing a broad range of IT-enabled services to the people of Orissa by taking benefits from the emerging global opportunities in the field of IT enabled services. The cheap capital investment, availability of IT professionals, better law and order environment, excellent infrastructure like data connectivity and business space like Info City and Fortune Tower are some attractive features that are expected to encourage potential investors to invest in a big way for setting up of Call Centers, Information Kiosks, Internet Dhabas and other establishments.

17.49 The scheme has already yielded a good result in providing network connectivity. Orissa Computer Application Centre, the implementing agency, has concentrated more on providing IT Enabled Services by undertaking important items of work viz. network connectivity, hardware/ software, infrastructure development and its application in a systematic manner. As the 'State Government Portal' forms an integral part under the scheme, OCAC has taken up the responsibilities of development and maintenance of ITES applications for the Portal.

Expansion of Secretariat LAN:

17.50 IT Infrastructure for Orissa Secretariat is proposed to upgrade with the following points in mind.

- *The present campus LAN serves 500 data users. The up-gradation should be able to handle traffic for 1000 data users.*

- Primary backbone should be of ring type for which 100% redundancy can be achieved.
- The upgraded IT infrastructure must be State-of-the-art and must be able to handle voice video and data.
- During up-gradation process, restructuring of the present LAN network should also be taken-up.
- The plan is to establish connectivity with other Department Heads whose offices are spread across Bhubaneswar and Cuttack.
- The network must be highly secured, fast and manageable.
- The network must be designed keeping in mind the cost effectiveness, scalability and reliability.

Promotion & Facilitation of IT Industries:

17.51 The scheme aims at ensuring participation of IT Departments, Government of Orissa in various prestigious National/ International Mega Events, Seminars, Fairs, Exhibition etc. to highlight the IT strength, IT opportunities available in the State. Participation of State Government in events like INFOCOM, NASSCOM and IITF etc. has become result-oriented and IT companies with national/ international reputation have already signed MoU with State Government for setting up of their Development Centres at Bhubaneswar.

Business Process Outsourcing (BPO) Complex:

17.52 The scheme aims at providing a Central Incubator facility for new and tiny BPO firms for their growth and self-sustainability. Under this programme, State Government is providing rent subsidy to the local BPO companies meeting the eligibility criteria under provision in ICT policy, 2004.

Implementation of e-Governance Projects as per the National e-Governance Programme:

17.53 The National e-Governance Programme (NeGP) envisages a Three Pillar Model for delivery of “Web-enabled Anytime, Anywhere Access” to information and services in rural India. These are-

- i) Orissa State Wide Area Network (OSWAN)
- ii) Common Services Centres (CSC)
- iii) State Data Centre (SDC)

17.54 The State Data Centre (SDC) and Common Services Centres (CSC) are to be implemented by Orissa Computer Application Centre (OCAC). SWAN and Data Centres would act as core e-Governance infrastructure of the State to deliver multiple services through one-stop-shop i.e. CSC. Under this initiative e-Governance Road Map (e-GRM) has been prepared under the guidance of NISG – WIPRO covering 15 Departments as Mission Mode Project which would deliver 200 identified services in the first phase. State Information Technology Services Board (SITSB), District Information Services Council (DISC), State e-Gov. Mission Team (SeMT) have been setup to promote the e-Governance initiative as per the National e-Governance Programme.

Orissa On-line Information System:

17.55 To deliver multiple services through one-stop-shop, it is proposed to start Orissa On-line Information System Project (Jana Seva Kendra). This will function in Public-Private Partnership mode. The goal of the scheme would be to align to the priorities of

service delivery and the needs of the citizens of Orissa which will be achieved by maximizing reach, generating employment among educated group, empowering women and SHGs to achieve self-sustainability.

Secretariat Automation System:

17.56 As a part of ongoing Administrative Reforms Programmes and Associated Initiatives, State Government has decided to induct IT tools and technologies to improve the efficiency and transparency in the Secretariat. The system is intended to automate the function of the State Government Departments.

District Information Service Council (DISC):

17.57 This is an ongoing District Sector Scheme which aims at providing advisory services to the District Offices to make all the e-Governance initiatives successful.

e-SEVA:

17.58 Government of India has approved the National e-Governance Plan (NeGP) that seeks to lay the foundation for the long-term growth of e-Governance in the Country. NeGP is aimed at improving the quality, accessibility and effectiveness of Government Services to citizens and business with the help of Information and Communication Technology (ICT). State Government has been taking several initiatives towards modernizing the service delivery. As a part of e-Governance Roadmap (e-GRM), certain priority Departments have been selected for

participation in the Road map. To create wide spread deployment of e-Governance in Orissa, State Government has requested NISG, Hyderabad to provide consultancy support to them in taking up initiative in an integrated and coordinated manner in three cities viz Bhubaneswar, Cuttack and Berhampur. Twenty services from 10 Departments shall be selected to be launched in the three aforesaid cities.

17.59 NISG has expressed its interest to undertake responsibilities for conceptualization, design, bid process management and selection of implementing agencies for the above mentioned initiatives in response to the request of Government of Orissa.

E-Procurement:

17.60 State Government has taken special efforts for bringing in a complete transparent and efficient system of tendering and procurement. It has been decided to implement e-Procurement in place of traditional procurement system and as per the recommendation of High Power Committee, NIC is engaged as consultant for implementation in the State. As per decision of Government, e-Procurement will be taken up in four Engineering Departments viz Works, Rural Development, Water Resources and H&UD Department. The Pilot Project will be implemented in National Highway wing of Works Department for project cost of above Rs.3.00 crore. A dedicated e-Procurement Mission Team is functioning with representatives from the

above four Engineering Departments and Orissa Computer Application Centre (OCAC). A Secretariat Level Committee under the Chairmanship of Principal Secretary, Water Resource Department is reviewing the progress of the Scheme regularly.

SOFTWARE TECHNOLOGY PARK OF INDIA (STPI)

17.61 Software Technology Park of India (STPI) is an Autonomous Society under the Ministry of Communication and Information Technology, Government of India to promote export of IT Software and Services from the Country. With this aim, the STPI Centres at Bhubaneswar and Rourkela are working in the State of Orissa. The Bhubaneswar Centre of STPI which is one of the Premier Centers in the Country has come a long way and achieved major milestones in the IT sector of the State, spearheading the Country's mission to fulfill the National Dream of global leadership in Software Exports. Its dream of making Bhubaneswar a Silicon City is gradually becoming a reality. STPI offers various incentives like 100% foreign equity permission, 100% exemption on custom duty on import of capital goods, total exemption on excise duty on indigenous procurement of capital goods, permission for importing second hand capital goods, full reimbursement of Central Sales Tax, exemption from Corporate Income Tax on export earning etc. to the software exporters under its regulatory services.

Incubation Facility:

17.62 The STPI, Bhubaneswar and Rourkela, have set up incubating infrastructure and provide the facility based on the member unit requirement, underlying the philosophy to give one-stop and non-stop services to the software industries and consequently leaving other mundane but important aspects of operationalisation to STPI. In addition to the Satellite Earth Stations at Bhubaneswar and Rourkela to provide high speed data links with Foreign Countries, STPI has also installed its second International Gateway at Bhubaneswar and Rourkela for providing 100% reliable data communication. It is also exploring the IT potential at Berhampur, Puri etc. STPI is also offering customized solutions in the field like network design and architecture, international connectivity, local loops, facility management, feasibility study, project management and implementation etc.

17.63 The STPI, Bhubaneswar has designed a comprehensive Course Module in various fields to keep abreast the student of the changing trend and technology. The STPI, Bhubaneswar is also promoting IT-enabled services, namely- Medical Transcription, Manpower Intensive GIS and Digitizing Jobs as well as call centre operations. STPI, Bhubaneswar has made every effort for promoting and enhancing the export share from the State.

NATIONAL INFORMATICS CENTRE (NIC)

17.64 As a Nodal S&T organization, NIC is providing network backbone and

e-Governance support to the Central Government Departments, States, UTs and District Administrations in the Country. It offers a wide range of ICT services and wider transparency of National and Local Governments and assists in implementing Information Technology Projects in close collaboration with Central and State Governments.

17.65 NIC, Orissa State Unit, has been playing a catalytic role in promoting IT Culture for effective Governance at the State and District levels since 1986. The whole range of services provided by NIC, Orissa include-

- ◆ *Internet/ Intranet Access, Video-conferencing, E-mail, Software design, development and Hosting, Training, Consultancy.*
- ◆ *Major projects implemented and operational in various Departments and other offices are:*
 - i) *Land Records Computerization has been implemented in 166 Tahasils of the State. Online ROR data are being provided.*
 - ii) *Orissa Registration Information System has been implemented at 14 DSR/ SR offices.*
 - iii) *Finance: Annual and Supplementary Budget information system.*
 - iv) *Urban Development: Birth and Death Registration System, Urban BPL and Citizen centric Grievance Monitoring system.*
 - v) *SC & ST: e-Governance suite covering Scheme Monitoring, Education, Scholarship, Vocational Training etc. has been implemented in all 21 ITDAs of Orissa.*
 - vi) *Panchayat Raj: Portals of all 3-tier PRIs have been created using e-NRICH developed by NIC.*

- vii) *General Administration: Softwares for CCR monitoring of all State Government Employees, Land Mapping system to monitor Government Lease and freehold details and quarters vacancy, allotment and rent monitoring system.*
- viii) *Planning & Coordination: Web-enabled system for monitoring Annual Plan Expenditure of all Departments.*
- ix) *Transport: Sarathi (for issue of Driving License using smart card) and Vahan (for total RTO Administration) softwares have been implemented in all RTO Offices of Orissa.*
- x) *Agriculture: National Horticulture Mission Project for monitoring all schemes under National Horticulture Mission in 24 Mission Districts and AGRISNET project facilitating to monitor all farmer centric activities.*
- xi) *Rural Development: Web based MIS for RWSS, Transparency and Accountability System for monitoring the details about the implementation of different programmes at district level.*
- xii) *Portal: The objective of Portal Group of NIC is to create and maintain both static and dynamic websites for different Departments and other State Government Offices.*
- xiii) *State Museum: National Manuscripts Mission Project for facilitating entry and transfer of data relating to manuscripts of State Museum, to Government of India, NIC (HQ) and creating a database of digital manuscripts which will be available at State Museum.*

Other major projects:

- *One-Stop Solution Services: e-Sahayata has been implemented in 5 districts. E-Grama – the rural information gateway has been implemented in 70 Villages KIOSKS, 22 Block Offices, 3 Sub Collectors Offices of Ganjam district as well as in the KBK districts.*

JANAVANI; e-Governance Oriented Public Grievance Redressal Initiative whose objective is to provide an Internet Based Grievance Redress and Information interface for the citizens has been implemented in Khurda district on pilot basis.

- *Water & Sewerage Billing & Information System for billing, collection and KIOSK based customers' query has been provided for Bhubaneswar.*
- *Directorate of Industry: Entrepreneur Memorandum online has been implemented.*
- *Web based GIS application for Orissa along with 30 districts have been developed and hosted in public domain.*

- *GIS Help desk for Kendrapara district has been implemented successfully.*

Orissa Registration Information System (ORIS)

17.66 ORIS is being implemented in the Office of the District Registrar, Khurda as the Pilot District and in 13 district Sub-Registrar Offices, which can minimize the loss of State Government revenue as well as providing transparency in the system and faster processing of documents .

