CHAPTER 17

SCIENCE AND TECHNOLOGY

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17.01 Science and Technology play a vital role in the process of development and transforming the nature of an economy into a more modern and vibrant one. It has special relevance for Orissa, as the State is still striving to achieve a level of excellence in its process of development. In regard to Science and Technology, the State has the following objectives:

- *To keep abreast of the latest developments in the field of science and technology and to take necessary steps for dissemination of developments to industries, research laboratories, Universities as well as among scientists and technologists.*

- *To co-ordinate R&D Programmes of different departments, Industrial and research institutions and to ensure scientific and technical co-operation among these institutions and agencies.*

- *To formulate and finance research and application programs in the field of science and technology.*

- *To encourage, develop and extend the use of renewable sources of energy including energy plantations.*

- *To popularize Remote Sensing Technology and its effectiveness.*

- *To popularize science and technology among the people in general and students in particular to inculcate in them a scientific temper and attitude.*

- *To conduct basic and applied research in the frontier areas of Material Science and Engineering.*

- *To enhance scientific and technological communication through awareness promotion, support to institutions for seminars/workshops, development of science centers and administration of Pathani Samant Planetarium (PSP).*

- *To conduct Science & Technology Entrepreneurship Development Programs (STEDP).*

- *To promote and popularize appropriate rural technologies.*

- *To undertake fundamental research in Mathematics and its applications.*

STATE COUNCIL ON SCIENCE AND TECHNOLOGY

17.02 The State Council on Science & Technology functions as the highest policy-making body to promote the development of Science & Technology in the State. The council undertakes a number of programmes such as funding of application oriented research projects, seminars, workshops etc. Some important activities pertaining to various programmes / schemes undertaken during 2006-07 are as fallows:-

(i) Establishment of Astronomy Park

17.03 An Astronomy Park has been established in the premises of Pathani Samanta Planetarium with an objective to motivate students to handle the practical aspect of science and to develop scientific curiosity in young mind. The park was inaugurated in May, 2006.

(ii) Holding of Orissa Bigyan Congress

17.04 The 10th Orissa Bigyan Congress was organised by the Bhubaneswar Chapter of Indian Science Congress Association in

collaboration with Orissa University of Agriculture and Technology (OUAT) on 4th and 5th November, 2006. More than 250 Scientists of the state attended the Congress and participate in the technical session wherein research papers on various disciplines of science were presented by the Scientists.

(iii) Establishment of a Satellite Based Interactive Network

17.05 The State Council on Science and Technology in association with Vigyan Prasar (an autonomous organization under DST, Government of India) has established a Satellite Based Interactive Network (EDUSAT Network) for science communication at Orissa Remote Sensing Application Centre (ORSAC), Bhubaneswar. Several science based programmes such as Popular Science Lecture Programme, Group Discussion, Quiz Contest, etc. are being conducted through above network regularly.

(iv) Conducting Entrepreneurship Development Programme

17.06 The State Council has played a catalytic role in organizing Entrepreneurship Development Training Programmes for persons with scientific and technical background for their self employment by way of setting up enterprises. State Council on Science and Technology has provided financial assistance to SYNERGY Institute of Engineering and Technology, Dhenkanal to conduct one Entrepreneurship Development Training programme during 2006-07.

(v) Holding of National Symposium

17.07 The State Council on Science & Technology has provided partial financial assistance to College of Veterinary Science and Animal Husbandry, OUAT, Bhubaneswar to organise one National Symposium on Prospective Role of Veterinary Public health in Integrated Rural Development on 7th and 8th December, 2006.

(vi) Development of Biotechnology

17.08 Biotechnology is a frontier area of technology with immense benefits to society in diverse areas such as Food Security, Nutritional Supplementation, Health Care 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 2006-07.

- *A Biotech Pharma IT Park, Ph-I is being developed at Mouza Andharua under Bhubaneswar Tahasil over an area of about 65 acres. Construction of compound wall, gate, cutting, leveling of land and sinking of a tube well has already been completed. A detailed work plan has been submitted to DBT, Govt. of India, and selection of Private Developer for setting up the park on PPP mode is in process. Biotech pharma IT Park, Ph-II will be developed at Deras Agricultural Farm over an area of 200 acres. Alienation of land is in process.*

- *Two project proposals titled 'Transfer Mushroom Technology to Entrepreneurs for development and self employment' submitted by Narayani Mahila Mandal, Jatni and another titled "Mushroom Spawn Production and Cultivation Training Centre' submitted by centre for Rural Development, Kendrapara have been submitted to DBT, Govt. of India for consideration and approval.*

- *The State Government have approved six nos. of R & D proposals pertaining to biotechnology inclusive of one proposal for development of Medicinal Plant garden at Patrapara, Bhubaneswar for a total sanction of Rs.23,18,500.which has been released to carry out the R.D. projects for the followings:*

  (i) *Isolation and characterization of active principle in selected Medicinal Plants of Similipal Biosphere reserve and evaluation of antimicrobial and anti Carcinogenic properties in mice model.*

  (ii) *Evaluation of germplasm and 'invitro' cloning of Gerbera under Bhubaneswar condition.*

  (iii) *Collection and evaluation of 'Rose cultivators' under Bhubaneswar condition.*

  (iv) *Development of Biju Pattanaik Medicinal Plant Garden at Patrapara, Bhubaneswar.*

  (v) *Screening Isolation and Characterization of Commercially Important anti-oxidant compounds and marketable Agar from Seaweeds of Chilika Lake.*

  (vi) *Production and utilization of Agro Bacterium Transformed Hairy Root Culture of some important Medicinal plants in Orissa as a source of Pharmaceutical compounds.*

- *Financial assistance in shape of one time grant of Rs.10.00 lakh to be provided in two equal installments s has been sanctioned and out of this Rs.5.00 lakh has been released towards first installment in favour of the Head of Department, BJB (Autonomous)College, Bhubaneswar for setting up of Biotechnology Laboratory for Biotechnology (+2 level) Course at BJB (Autonomous) College, Bhubaneswar.*

- *Publishing of Newsletter on 'Biotechnology in Orissa' is in process.*

ORISSA BIGYAN ACADEMY

17.09 Orissa Bigyan Academy is the nodal agency for popularization of Science in the State. The Academy has been publishing a monthly popular Science magazine in Oriya namely "Bigyan Diganta" with an objective of making science intelligible among the students in particular and common masses in general. The significant achievements of the Academy during the year 2006-07 are as fallows.

- *"Bigyan Diganta", the monthly 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 2006-07 twelve issues of "Bigyan Diganta' have been released*

- *Orissa Bigyan 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 2006-07 four issues of the abridged version of popular science magazine "Bigyan Diganta", printed in Braille Oriya Script, has been 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.*

- *Orissa Bigyan Academy organised the investiture ceremony of Samanta Chandrasekhar Award, Orissa Young Scientists Award, Popular Science Writers Award and Felicitation of Senior Scientists of the state for the year 2004 and 2005 at Jaydev Bhawan, Bhubaneswar.*

- *The National Science Day – 2007 was celebrated by Orissa Bigyan Academy at Angul High School, Angul on 27.02.2007*

and 28.02.2007. In this occasion, science based project exhibition and science based debate quiz, essay and sit and draw competitions were conducted. Around 600 school children and teachers of different schools of the Dhenkanal Circle participated in this function. About 105 numbers of different science projects were displayed in the science exhibition held in the premises of the school.

- *A new award namely, "Biju Pattanaik Award for Scientific Excellence" has been introduced from the year, 2006. Advertisement for this award for the year 2006 has already been published in the newspapers, inviting nominations.*

PATHANI SAMANT PLANETARIUM

17.10 The Planetarium, named after the great Oriya luminary in astronomy, was established at Bhubaneswar in 1990 with a view to inculcate interest in the celestial Environment and with the aim of creating awareness in astronomy, astrophysics and space science among the people in general and among the students in particular. During 2006-07, the Planetarium conducted 1562 shows, which were witnessed by 133289 viewers. Besides, Night sky watch programmes were conducted at PSP during every month after the new moon for three days. Visitors from different nooks and corners were thrilled to observe the celestial bodies with the naked eyes and through the telescopes. During 2006-07, Night Sky Watch Programme were conducted for 46 days which was witnessed by 3115 viewers. Besides, 5 nos. of slide shows, one radio talk and five popular talks were conducted under Audio Visual Programme. An amount of Rs.12.19 lakh have been collected from all the shows during 2006-07. Planetarium programme for 2006-07 is given below.

Particulars	Planetarium programme	Light, sound & water programme	Astronomy park
Total no. of shows	1429	133	-
No. of adults visited	59461	3640	9016
No. of children visited	50583	5319	5270
Total no. of persons visited	110044	8959	14286
Total amount colleted (in Rs.)	966182	215580	37588

ORISSA REMOTE SENSING APPLICATION CENTRE (ORSAC)

17.11 Orissa Remote Sensing Application Centre (ORSAC) acts as an apex organization to promote remote sensing technology in the State. ORSAC has rendered commendable service by undertaking several projects for the Central Government as well as State Government.

17.12 The important achievements of ORSAC during 2006-07 are as follows.

(i) Disaster Management Study:

17.13 The flood maps of Orissa indicating villages inundated, roads and culverts submerged, etc. (August and September, 2006) have been prepared and submitted to Government for taking appropriate measures on flood relief.

(ii) Forecasting Agricultural Output using Space Agro meteorology and Land based Observations (FASAL):

17.14 Four forecasts on district wise area, yield and production of Kharif paddy has been made during the Kharif season. The information is very much helpful for planning and decision making on procurement,

storage, transport, price fixation for the governments at state and central level.

(iii) Preparation of Groundwater Potential Maps under Rajiv Gandhi National Drinking Water Mission:

17.15 Ground water prospects maps for the entire state has been prepared to find water source for problem villages of Orissa and providing technical help for safe drinking water to all villages of Orissa.

(iv) Preparation of Block level Resource Atlas and GIS database for KBK district:

17.16 The Block Level Resource Atlas and GIS database for 80 blocks of KBK districts have been prepared and submitted to Planning & Coordination Department, Government of Orissa. This atlas will be the basis for block level resources and infrastructure appraisal, planning and development of KBK region.

(v) Road Network Database of the State:

17.17 Road network database generation for Khurda district has been completed and submitted to the district administration. Road network maps of ten districts have been prepared and submitted to the district authorities for identification of ownership and surface status classification.

(vi) Gramsat Pilot Project

17.18 Development programmes on various Government Departments have been transmitted from 5.30 p.m. to 7.15 p.m. except Sundays where the transmission has been made from 3.00 p.m. to 7.15 p.m. 114 Interactive Training Programmes have been conducted by the User Departments during 2006-07.

(vii) EDUSAT Programme

17.19 ORSAC has been entrusted the responsibility of conducting EDUSAT programme for Primary Schools and High Schools of the state. A hub will be installed at ORSAC for which the equipments have been received. The Antenna for the purpose has been erected in the campus.

ORISSA RENEWABLE ENERGY DEVELOPMENT AGENCY (OREDA)

17.20 Orissa Renewable Energy Development Agency (OREDA) functions 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 opportunity with due importance for ensuring greater access to woman and other disadvantage groups to employment opportunities.*

- *To reduce environmental degradation resulting from deforestation.*

17.21 The important activities which have been so far taken up and are being implemented by this Agency are as under.

(i) Renewable Energy Policy

17.22 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 objectives of the Policy are 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 conducive atmosphere to attract private investment.*

(ii) Renewable Energy Awareness / Education Park (REAP), Bhubaneswar

17.23 REAP; Bhubaneswar has been christened as **"Biju Patnaik Energy Park"**. 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.*

(iii) Electrification Programme (RVEP):

17.24 The Remote Village Electrification Programme (RVEP) entails electrification of remote un-electrified census villages through non-conventional energy sources. During 2006-07, MNRE, Govt. of India has sanctioned funds to the tune of Rs.10.69 crore for electrification of 197 remote census villages through non conventional sources of energy, out of which Rs.4.92 crore has been released in favour of OREDA. Action has been initiated for implementation of the programme.

(iv) Village Energy Security Programme (VESP)

17.25 The aim of this programme is to meet the energy requirement of remote villages in the state. During 2006-07 Government of India has sanctioned 10 projects (3 projects allotted to Forest Department and 7 projects allotted to 5 NGOs) for implementation. Out of these, 5 projects have been completed. During 2006-07, another 50 villages were proposed to be taken up under the programme.

(v) National Biogas and Manure Management Programme (NBMMP):

17.26 NBMMP is a high priority Central Sector Scheme, and a part of the 20-Point Programme. It can be used for cooking and lighting purposes. It also provides rich organic manure. 1.96 lakhs Biogas Plants have been constructed in the State. During the year 2006-07, 3922 nos. of Biogas plants have been constructed.

(vi) Integrated Rural Energy Planning (IREP):

17.27 IREP was previously being implemented by taking a Block as a Unit of implementation which has been modified to District as a Unit. District Energy plans were prepared for eight nos. of districts. During

2006-07, the programme was implemented in Koraput district with installation of Renewable Energy Saving devices, Biogas plants, improved chullahs and SVP lighting system.

(vii) Small & Mini Micro Hydro Projects –

17.28 OREDA commissioned second unit of 20 KW Mini Micro Hydel Project at Badaghagara in Keonjhar district. Another project of 110 KW MHP at Sunei in Mayurbhanj district has been revived and trial run has been completed.

(viii) Wind Energy -

17.29 Orissa has Wind Power potential of 1,700 MW. Six potential sites have been identified in the State for harnessing this power. To begin with, 2-MW demonstration Wind Power Project is being set up at Damanjodi in Koraput district to demonstrate techno-commercial feasibility of such project with a view to attract private investment in the Sector. Steps have been taken to establish a demonstration 7 MW capacity wind energy project at Paradeep and M/S centre for Wind Energy Technology, Government of India enterprise has been entrusted to prepare the project report.

(ix)Consultancy,TrainingProgrammes, Workshops etc. -

17.30 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.

(x) Solid Waste Management

17.31 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. Solid Waste Management Plan for 15 Urban Local Bodies have been prepared.

(xi) Clean Development Mechanism (CDM) Project

17.32 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 -

17.33 During 2006-07, three video films under Bio Energy and Solar Energy programme 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 Gram-sat Evening Transmission Programme. The Interactive Training Programme under Gram-sat 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 station and in Cuttack dialect from Cuttack and Jeypore in their rural programme for a period of 30 days.

17.34 OREDA has also participated in several Mela / Festivals on different festive occasions for popularization of NCSE devices as well as programmes. During 2006-07, state level exhibitions at Paradeep, Dhenkanal, Bolangir, Cuttack, Puri, Baragarh and Bhubaneswar were organised under the financial assistance of Ministry of New and Renewable Energy (MNRE) Government of India on different occasion. Besides, to create awareness on use of renewable energy, the mobile exhibition van has also been sent to different places of Orissa as demonstration unit. Also, funds were placed with eleven districts for organizing awareness camps during 2006-07.

INSTITUTE OF MATERIAL SCIENCE (IMS)

17.35 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.

17.36 Following Research and Development Programmes have been taken up by IMS during 2006-07:

1. Material Preparation

17.37 (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 our (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^{0}C.

2. Experimental Characterization undertaken

17.38 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

17.39 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

17.40 Theoretical studies completed and published during the period 2006-07 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 f Jahn-Teller distortion on the super conducting gap*
- *"Some Recent development on Magnetism" in "Physics of Solids Nuclei and Particles".*

INSTITUTE OF MATHEMATICS AND APPLICATIONS (IMA)

17.41 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 programs 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.*

17.42 Few activities undertaken by the Institute of Mathematics and Applications in 2006-07 are as follows.

(A) 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 under graduate 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.*

- ***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.*

(B) Search & Nurture of Mathematical Talents:

- *The institute of Mathematics cooperated with Orissa Mathematical Society to organise Junior Mathematics Olympiad (for Class VI, VII and VIII), Regional Mathematics Olympiad (for class IX, X, XI, XII)and Senior Mathematics Olympiad for under graduates in Orissa.*

- *The Institute organised Prize Distribution on 11.06.2006 for 250 Mathematics Olympians where the Hon'ble Chief Minister of Orissa distributed, Four Gold Medals, 33 Silver Medals, Prize and Certificates.*

- *By continuous effort of Institute of Mathematics and Applications, Orissa has a very honorable place in Mathematics Olympiad movements in India. Six students in 2003, two students in 2004, two students in 2005 and one student in 2006 from Orissa were in the top 30 students in Indian National Mathematics Olympiad conducted by NBHM.*

- *A Summer Mathematics Training Camp was organised by Institute of Mathematics and Applications from 28th May, 2006 to 11th June, 2006. More than 110 students and 25 teachers from about 50 schools duly selected through Mathematics Olympiad attended the camp.*

- *The institute of Mathematics and Applications organised Rural Mathematics Training Camp for 165 selected rural mathematics talents of 2005 batch from the 4th April, 2006 to 15th April, 2006.*

- *The institute of Mathematics and Applications organised Rural Mathematics Training Camp for 100 selected rural mathematics talents of 2004 batch from the 21st January, 2007 to 27th January, 2007 at SIRD campus, Bhubaneswar.*

(C) Programme for SC / ST children

17.43 The Rural Mathematics Talent Search Examination for SC/ST students was held on the 3rd December, 2006. 47 students were selected out of 464 for training programme. Training programme for SC/ST teachers of Tribal schools was organised by Institute of Mathematics and Applications in collaboration with SC/ST Research Training Institute from 4th January, 2007 to 17th January, 2007.

INFORMATION TECHNOLOGY (IT)

INFORMATION TECHNOLOGY

17.44 Information Technology is a fast growing segment of the Indian socio economic scenario. The State Government have 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 concerns.

17.45 The State Government have created a separate department namely "Department of Information Technology" with effect from 15.03.2000. It is entrusted with all matters relating to Computer Communication and Electronics, both Software and Hardware. Orissa Computer Application Centre (OCAC) and Orissa State Electronics Development Corporation Ltd. (OSEDC) are functioning as nodal agencies for promotion and development of Information Technology in the State. The Department of IT 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.

In order to encourage IT enabled service activities, a new scheme titled "IT Enabled Service" (ITES) is being implemented since 2004-05.

17.46 The Department of Information Technology has formulated the Information and Communication Technology (ICT) Policy, 2004, which will help IT 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*

IT ENABLED SERVICES (ITES)

17.47 This scheme 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.

17.48 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.

DISTRICT INFORMATION SERVICE COUNCIL (DISC)

17.49 DISC are being constituted to provide a forum and a mechanism for overall co-ordination and monitoring of IT & ITES sectors in the district along with the mandate of IT services for good governance. It will promote IT uses and bridge the digital divide between regions, peoples and classes within the district.

ORISSA COMPUTER APPLICATION CENTRE (OCAC)

17.50 The OCAC, an Agency under IT Department is entrusted with the responsibility of systems development and computerization in government offices and Undertakings and training of manpower on system operation and has now established itself as one of the leading IT consultancy organizations in the State. The significant activities taken by OCAC are as follows.

(i) Information Kiosks

17.51 In the year 2003-04, Government of Orissa has launched the Self Employment Scheme – Information KIOSK with an objective to create self employment opportunities for unemployed youth of the State. The average unit cost of the scheme ranges between Rs.1.50 lakh to Rs.2.50 lakh. The scheme has a subsidy of 25% of the unit cost subject to a maximum of Rs.25000/-. Till date, 180 KIOSKs have been set up and subsidy @ Rs.25000/- have been released to 101 entrepreneurs.

(ii) Business Process Outsourcing (BPO) Complex

17.52 In order to provide employment opportunities to the unemployed educated youth, Govt. of Orissa, through I.T. Department and OCAC, have set up Business Process out-sourcing BPO units in providing 300 Sq. ft. of space at free of cost for initial three years in Fortune Tower and Tower 2000 at Bhubaneswar which has all required infrastructural facilities for IT industries.

(iii) Bhasa development – in Oriya language

17.53 A MoU was signed between OCAC and Microsoft Corporation Pvt. for development of Bhasas in Oriya language under UNICODE system. Oriya script will be incorporated in script in windows operating system and in Microsoft office through this system. It is also decided to translate the classic books like Ramayan, Sarala Mahabharat, Oriya Bhagabat etc. into UNICODE Oriya for hosting in web in

association with Orissa Sahitya Academy, Utkal University, Sarala Sahitya Sansad etc.

(iv) Project e-sishu, Orissa Primary Education Programme Authority (OPEPA)

17.54 A scheme is being executed by OPEPA in association with OCAC to provide education to all the children in the age group of 6-14 years. A database is being developed through Intelligent Character Recognition (ICR) technology for all the children which will help in getting information on schools, child segment, village etc.

(v) Computer Training for School Children

17.55 The scheme is funded by 11th Finance Commission. OCAC had undertaken this project during the year 2003 for providing Computer and necessary peripheral to the 425 schools under School & Mass Education and SC & ST Development Departments. The computer, printer, software, CBT and books were supplied. Training to Teachers (TOT) has been completed.

(vi) e-Governance Road Map and Capacity Building.

17.56 The State Government has appointed National Institute of Smart Governance (NISG) / Wipro as consultant for preparation of e-Governance Road Map and Capacity Building Road Map for the State. It will help as a long term vision for implementation of e-Governance Road Map and Capacity Building Road Map of different Departments. Senior Officials of WIPRO, NISG and members of the e-Governance Mission Team constituted by the State Government are co-coordinating the work.

(vii) Industry Facilitation and IT promotion Cell

17.57 In order to attract IT entrepreneurs of the country as well as from abroad, State Government has set up a Industry Facilitation and IT promotion cell at OCAC in 2005. It will provide single window facilities to IT companies for establishment of their units in Orissa. Major IT companies like WIPRO and TCS have signed MoU with the Govt. of Orissa to set up their units at Bhubaneswar and acquired lands in the Infocity. Other two firms like Hexaware and Mind Tree consulting Pvt. Ltd. have also shown their interest for opening their software units.

(viii) State Wide Area Network (SWAN)

17.58 The State Government has also got the approval from Department of IT, Govt. of India for setting up of a state Wide Area Network (SWAN) which would connect the State Headquarters with all District Headquarters, Subdivision Headquarters, Blocks and Tahasils with a 2 mpbs dedicated line. This SWAN is a core e-Governance infrastructure which will facilitate the Government in door step delivery of various citizen centric services.

(ix) e-Procurement

17.59 IT Department through OCAC, intends to make the procurement process transparent and efficient. A committee under the Chairmanship of Chief Secretary, Orissa has been constituted for implementation of

the project. A three days workshop was organized at NISG, Hyderabad in which senior officials of works Department, H & UD Department, Rural Development Department, Water Resource Department and OCAC participated.

(x) Establishing of State Internet Exchange of India (SIXI)

17.60 It has been proposed to set up a State Internet Exchange of India (SIXI) in the pattern of National Internet Exchange of India (NIXI) as a Central Plan Scheme. OCAC has been declared as the implementing agency in association with Software Technology Park of India (STPI) and Department of Information and Technology will function as Nodal Department. SIXI will focus on facilitating the handing over domestic internet traffic among the peering Internet Service Provider (ISP) members. It is expected that through this peering facility, a lot of international band width can be used in a mode which will have a positive impact in the internet users as well as ISPs.

ORISSA STATE ELECTRONICS DEVELOPMENT CORPORATION (OSEDC)

17.61 OSEDC, established in 1981, has been engaged for promotion of Electronic industries both in the field of hardware and software. It has promoted 5 hardware and software projects with/without equity investment. The significant achievements include the following:

(i) **Website of Government of Orissa:** *The Website of Government of Orissa (WWW.orissagov.nic.in) has been launched with the help of NIC. The Website is bringing about qualitative improvement in information dissemination to the citizens. All forms, tender papers etc. are available in the Government website for use by public/organizations.*

(ii) **INFOCITY:** *An IT Park named "INFO CITY" has been established at Bhubaneswar through IDCO for growth of IT in Orissa. It covers an area of 205 acres of land. The park has infrastructure and communication facilities to attract software companies to set up their units. Major software houses including INFOSYS and Industrial Development Corporation of Orissa have already set up their units in it.*

SOFTWARE TECHNOLOGY PARK OF INDIA (STPI)

17.62 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 centre 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:

17.63 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.

17.64 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)

17.65 National Informatics Centre (NIC) is the nodal S&T organization 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. It endeavors to ensure that the latest technology in all areas of IT is available to the user.

17.66 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:*

  ▪ *Land Records computerization has been implemented in 166 tahasils of the state. Online ROR data are being provided.*

  ▪ *Orissa Registration Information System has been implemented at 14 DSR/SR offices.*

  ▪ *Finance: Annual and Supplementary Budget information system.*

  ▪ *Urban Development: Birth and Death Registration System,*

Urban BPL and Citizen centric Grievance Monitoring system.

- *SC & ST: e-Governance suite covering scheme monitoring, Education, Scholarship, vocational training etc. has been implemented in all 21 ITDAs of Orissa.*

- *Panchayat Raj: Portals of all 3-tier PRIs have been created using e-NRICH developed by NIC.*

- *General Administration: Soft wares 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.*

- *Planning & Coordination: Web-enabled system for monitoring Annual Plan Expenditure of all departments.*

- *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.*

- *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.*

- *Rural Development: Web based MIS for RWSS, Transparency and Accountability System for monitoring the details about the implementation of different programmes at district level.*

- *Portal: The objective of Portal Group of NIC is to create and maintain both static and dynamic web sites for different departments and other state government offices.*

- *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 at 5 districts. E-grama – the rural information gateway has been implemented in 70 village 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 and other 30 districts of Orissa have been developed and hosted in public domain.*

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

Road ahead………

17.67 Panchayati Raj Department looks ahead to extend its e-Governance Programme to village / GP / Block level with the implementation of Gramsat Pilot Project (GPP) throughout the State with VSAT modes at 314 blocks and 30 district headquarters. Further, National e-Governance Plan (NeGP) comprises of eight components with twenty seven Mission Mode Projects out of which State will implement eleven projects. Under backbone

of NeGP, Government of Orissa is planning for implementation of State Wide Area Net Work (SWAN) connecting 8558 Common Service Centre (CSC) at Gram Panchayats @ a kiosk for 6 villages with State Data Centre (SDC). Overall, the Panchayati Raj Department aims to find out a solution where the District, Block and Gram Panchayats have to function online in a seamless environment with a double connecting mode i.e. VSAT and SWAN).

Orissa Registration Information System (ORIS)

17.68 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.

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