

REPORT ON THE ACTIVITIES OF SCIENCE & TECHNOLOGY DEPARTMENT FOR THE YEAR 2008-09.

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1. INTRODUCTION

The Science & Technology Department is the nodal Department for the promotion of the Science & Technology in the State. The manifold scientific and technological activities are carried out by different agencies like Orissa Renewable Energy Development Agency (OREDA), Orissa Remote Sensing Application Centre (ORSAC), Orissa Bigyan Academy (OBA), Pathani Samanta Planetarium (PSP), Institute of Mathematics & Applications (IMA) and Institute of Materials Science (IMS) working under the aegis of this Department with the following objectives:-

- i) To keep abreast of the latest developments in the field of Science & Technology and to take steps for dissemination of these among institutions like industries, research laboratories, Universities and among scientists and technologists.
- ii) To co-ordinate the R&D Programmes of different departments, industrial and research institutions and to ensure scientific and technical co-operation among these institutions and agencies.
- iii) To formulate and fund, research and application programmes in the field of science and technology,
- iv) To encourage, develop and extend the use of renewable sources of energy including energy plantations.
- v) To popularize Remote Sensing Technology and make effective use of it.
- vi) To popularize science and technology among students and the people so as to inculcate in them a scientific temper and attitude.
- vii) Promote and popularize appropriate rural technologies.
- viii) Development of Library cum Documentation Centre for Science & Technology.
- ix) Science & Technology communication through awareness promotion, support to Institutions for Seminars/Workshops etc., development of Science Centres and administration of Pathani Samanta Planetarium.

- x) To conduct Science & Technology Entrepreneurship Development Programmes.
- xi) To undertake fundamental research in mathematics and its application.
- xii) To conduct basic and applied research in the frontier areas of Material Science & Engineering.

2. STATE COUNCIL ON SCIENCE & TECHNOLOGY

The State Council on Science & Technology functions as the highest policy making body for development of Science & Technology and oversees the implementation of the programmes undertaken in the field of Science and Technology in the State.

The activities pertaining to various programmes / schemes undertaken during the year 2008-09 are briefly stated below: -

2.1. Scholarship at Post Graduate Level on Basic Sciences

To promote and encourage the meritorious students to pursue their Post Graduate studies in Basic Science subjects such as Physics, Chemistry, Mathematics, Botany, Zoology and Geology, Government of Orissa in Science and Technology Department introduced a Scholarship programme @ Rs 2000/- per month for 25 students under the aegis of "The State Council on Science and Technology" from the academic year 2008-2009. The Director, Institute of Mathematics and Applications, Bhubaneswar is the Nodal agency to implement this scheme as per rules. 25 students have been selected 4 each from Physics, Chemistry, Botany, Zoology and Geology and 5 from Mathematics.

2.2. Travel Grant

The State Council on Science & Technology, Orissa has been providing partial financial support to the Scientists of the State to promote scientific temper & encourage Scientists of Orissa, to enable them to attend National / International Conferences, Seminars, Workshops, Symposiums etc. and to interact with leading International Scientists in their respective field. During 2008-09, nine Oriya Scientists have been provided partial assistance under this programme.

2.3. Assistance for Scientific Symposium, Seminar, Workshop etc.

State Council on Science & Technology has provided partial financial assistance to organize following National Seminar/Workshops.

- a. National Seminar on Recent Trends in Monitoring and Bio remediation of Mine and Industrial Environment held from 10-11, January, 2009 at North Orissa University, Baripada- Rs 25000/-
- b. National Seminar on Materials Chemistry along with 22nd Annual Conference of Orissa Chemical Society held from 27.12.08 to 28.12.08 at North Orissa University, Baripada-Rs25000/-
- c. Workshop on Cryptology & Cipher Retreat Programme held at Bhubaneswar from 5-8 December.2008 by the Institute of Mathematics and Application, Bhubaneswar in collaboration with the National Institute of Science Education and Research(NISER) Bhubaneswar- Rs 4,59,000/-.

2.4. UNESCO- Kalinga Prize

The Kalinga Prize initiated by Late Biju Pattnaik through UNESCO in 1951 for the Popularization of Science has been renamed as UNESCO- Kalinga Prize from the year 2008. The prize will be awarded on Biennial basis instead of annually. The next award will be celebrated during November-2009. The prize money has been increased to 10,000 pounds

2.5. Establishment of Sub-Regional Science Centers.

a) A Sub Regional Science Center will be established at Nrusinghnath of Bargarh District to develop scientific temper, to promote creative activities, to highlight important and relevant issues in science and technology and to popularize these for the benefit of the community specially students and young mass of Western Orissa as well as neighboring States.

The State Council on Science & Technology is taking active steps for establishment of this Sub-Regional Science Center. Rs10.00 lakh has been allotted

during the year 2008-09. NCSM Kolkata has been moved to arrange the share money of Rs 1.3 Crore. Also state Council on Science & Technology has submitted its plan proposal of allotting the required share money in the coming financial year.

b) A token provision of Rs 10.02 lakhs has been made by the State Government since 2006-07 towards establishment of Sub-Regional Science Center at Jeypore in Koraput District. Adequate response from the Collector Koraput is yet to be received regarding details of land particulars, sketch map etc. along with the detailed Project Report indicating cost of recurring and non recurring expenditure basing on the guideline for further action at this level.

2.6. Celebration of National Science day-2009

Six proposals were received from different schools in Orissa for Celebration of National Science day-2009 with the theme "Expanding Horizon of Science". Those proposals have been forwarded to the Department of Science & Technology, Government of India for sanction. The total cost of the proposals comes to Rs 2,62,500/- and will be shared between DST and Orissa State Council on 3:1 basis

2.7. Fourth Workshop on Dimensions of Nanotechnology.

The present day world is the world of Nanotechnology. To explore new dimensions in the subject, Additional Secretary, Science & Technology Department and Secretary State Council on Science & Technology had attended the Fourth National Workshop on "Dimensions of Nanotechnology, Science, Technology, Business and Society" on behalf of Government of Orissa which was held from 9-14. February, 2009 at the National Institute of Advance Studies, (I.I.Sc. Campus) Bangalore and shared his views among the galaxy of eminent scientists.

2.8. Participation in the 96th Indian Science Congress held at Shillong from 3-7, January, 2009

State Council on Science & Technology took initiatives for participation in the 96th Indian Science Congress held at Shillong from 3-7, January, 2009 and successfully

coordinated with the personnel of Ministry of Science & Technology, Government of India and the participating Institutions (Biotechnology Cell, ORSAC, IM&A, IMS and OREDA). The Team Orissa headed by the Deputy Director, OREDA participated in the 96th Indian Science Congress .Due to excellent leadership and vision of Shri P.K.Mohapatra, I.A.S., Commissioner-Cum-Secretary, Science & Technology Department, the participation was well conceptualized, planned and presented culminating in being adjudged to get the “Best Designed Stall” prize in the “Pride of India” Science Exhibition at Shillong.

2.9. Interaction with other State Councils on Science & Technology / DST, GOI.

a) Mr. Ch.Hemanth Kumar from Andhra Pradesh State Council of Science & Technology (APCOST) had visited Orissa State Council during the 3rd week of June, 2008 to gather information on rules and activities pertaining to Orissa State Council for replication in their State Council.

b) Additional Secretary in his capacity as the Secretary, Orissa State Council on Science & Technology visited the Karnataka State Council for Science and Technology (KSCST), Bangalore to gather relevant feedback for formulating Action Plan on Orissa State Council and DPR for separate Directorate for the State Council on Science & Technology during the 1st week of September 2008.

c) One of the activity of Andhra Pradesh State Council of Science & Technology (APCOST) i.e. “Plasma Pyrolysis Plant” for treatment and disposal of Hospital Waste was considered to be replicated in Orissa as demonstration project under State council on Science & Technology. Accordingly the Senior Scientist (RS) of Science & Technology Department visited New Delhi during 2nd week of December 2008 to discuss with the Scientists in Department of Science & Technology, Government of India and gathered positive support. Scientists from DST, GoI assured to assist for the installation of Plasma Pyrolysis Plant after some final test is over before mass implementation.

2.10. Installation of Stand alone Water Purification System

Department of science & Technology, Government of India have been pleased to install suitable water filters in 20 different schools in Orissa for scientific evaluation of Water Purification System basing on the water testing report as per Indian Standard Drinking Water –Specification from a NABL accredited laboratory. Funds have been received from the DST, Gol and work is under progress.

3. DEVELOPMENT OF BIOTECHNOLOGY

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.

The State Government is developing a state of the art Biotech Pharma IT Park over an area about 64.86 acres at Mouza-Andharua, Bhubaneswar in a Public –Private Partnership (PPP) mode. The Park, the first of its kind in Orissa, envisages promotion of Biotechnology, Pharmaceuticals and Information Technology industries in the State. Orissa Industrial Infrastructure Development Corporation (IDCO) has been designated as the Nodal agency for this project.

After a competitive bidding process, the State Govt. has issued the Letter of Intent” to M/s Bharat Biotech International Ltd. as the ‘Developer’ for this prestigious project. Within this Park, over another 10 acres, a Biotechnology Incubation Centre will be developed by State Government for use by researchers, entrepreneurs and students. A proposal has been sent to the Department of Biotechnology, Government of India for sanction of instrumentation for the Biotechnology Incubation Centre.

In the 2nd Phase, after alienation of about 200 acres of land of Deras Farm is completed, a Biotechnology based industry and research corridor will be developed by IDCO.

8 Research projects on Biotechnology are being carried out in different Universities in Orissa using funds provided by Science and Technology Department.

23.450 acres of land has been identified at Mouza Gokharakuda under Chatrapur Tahasil to develop a Marine Biotechnology Park. in PPP Mode.

Programme for raising Energy Plantation and Bio-diesel production is also an activity of Biotechnology. Bio-diesel produced from vegetable sources is fast emerging as a viable alternative to fossile fuels, particularly in the face of diminishing supply and the concomitant increases in the price of fossile fuels production of Bio-diesel supplements in the economic growth by way of wasteland utilization, employment generation entrepreneurial development, augmentation of additional sources of power, increasing share of organic manure in agriculture etc. State Government in Science & Technology Department have framed a Policy Guidelines for raising of Energy Plantation and Bio-diesel Production. Much importance is being given specifically on Jatropha plantation for Bio-diesel production because of its cultivation in infertile and non-irrigated land. OREDA is acting as Nodal Agency for Bio-diesel and Bio-diesel development in the State.

A sum of Rs.1.00 Crore has been provided under State Plan during 2008-09. Plantation of Jatropha has been made in 5220 Acres of land till November 2008.

4. ORISSA RENEWABLE ENERGY DEVELOPMENT AGENCY (OREDA)

Orissa Renewable Energy Development Agency (OREDA), under the Department of Science & Technology, Government of Orissa is a Society constituted under Societies Registration Act-1860. The main objectives of this Agency in the development of New and Renewable Sources of Energy are:

- (i) to encourage the development and accelerated utilisation of renewable energy sources wherever they are technically and economically viable.
- (ii) to improve the access to and availability of renewable, decentralized sources of energy particularly for the rural population,
- (iii) 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,

(iv) to reduce environmental degradation resulting from deforestation.

Activities:

The important activities, which have been so far taken up and are being implemented by this Agency during 2008-09 are outlined hereunder.

4.1. State Level Renewable Energy Awareness Park.

The State Level Renewable Energy Awareness Park christened as “Biju Patnaik Energy Park” has been established in Bhubaneswar near Khandagiri. The Park would enter-alia have the following objectives.

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

Steps have been taken to attract the huge number of tourists during the year 2008-09.

4.2. Village Energy Security Programme (VESP)

The Village Energy Security Programme envisages meeting the total energy requirement for cooking, electricity and motive power of villages and communities situated on the fringes or inside forests. This programme has been launched in the MNRE, Govt. of India during the year from 2005-06. MNRE, Govt. of India have sanctioned 15 projects under this programme for the state of Orissa till 2008-09. Out of the above, 4 projects are allotted to Forest Department, Govt. of Orissa and the balance 8 projects are allotted to 6 NGOs for implementation. The works of 10 projects ie. Mahisiakada (Dhenkanal), Jamuganda (Nayagarh), Bhalupani (Mayurbhanj), Champapadar, Masipadar, Mankadiatala, Lekidiguda and Naringipadar (Koraput),

Pajikeri (Kandhamal), Siunni (Nabarangapur) have been completed. The works in balance projects are under progress.

4.3. Remote Village Electrification Programme (RVEP)

The objective of the programme is electrification of those unelectrified remote census villages and remote unelectrified hamlets of electrified census villages where grid connectivity is either not feasible or not cost effective through non-conventional sources of energy with the financial assistance of Government of India and State Government.

Electrification of 197 remote villages (Gajapati-45, Keonjhar-22, Sundargarh-60 and Kalahandi-70) sanctioned under RVEP-2006-07 were continued during the year and completed in 162 villages. The village Pajima in Chudangapur Gram Panchayat of Mohana Block in Gajapati district has not been electrified as approved under the programme since grid extension has already been made to it. The revised project proposals in respect of 10 villages (Keonjhar-1, Sundargarh-4 and Kalahandi-5) changing the mode of electrification from Biomass Gassifier system to Solar Photo Voltaic system have been recommended to MNRE, Govt. of India for according revised sanction.

Project proposals for electrification of 57 villages (Nayagarh-54 and Balasore-3) through non-conventional sources of energy have been sanctioned by MNRE, Govt. of India under RVEP-2008-09. The implementation processes for electrification of above villages are under progress.

Detail Project Reports in respect of 37 villages (Kalahandi-7, Angul-6, Kandhamal-10, Keonjhar-8, Nuapada-1 and malkangiri-5) have been submitted to MNRE, Govt. of India for sanction and release of CFA. The same is awaited.

A meeting was taken under the Chairmanship of Commissioner-cum-Secretary, S&T Deptt. on 15.12.2008 alongwith Commissioner-cum-Secretary, Deptt. of Energy, Chief Executive, OREDA and other officials on implementation of RVEP. As per the decision taken at the meeting all the distribution companies were requested by the Deptt. of Energy to finalise the list of villages covering 21 districts to be covered under RVEP jointly with district officials of OREDA. Accordingly a list of 1394 villages from 11

districts has been received with counter signature of Collector. The surveys of above identified villages are under progress. The list from other districts is awaited.

4.4. National Biogas and Manure Management Programme (NBMMP)

The National Biogas and Manure Management Programme (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. During the year 2008-09, a target of 4000 biogas plants were allotted for Orissa by MNRE, Govt. of India. The total achievement against target is 3336.

4.5. SPV Programme

The Solar Photo Voltaic (SPV) programme for the year 2007-08 of Ministry of New & Renewable Energy (MNRE), Govt. of India continued up to 31st October, 2008. Unders the programme OREDA has supplied, installed and commissioned 476 SPV Home Light Systems and 159 SPV Street Light Systems in the state.

Electrification of two remote villages namely, Udal and Tentulikhol in Kishorenagar block of Angul district have been completed during the year by OREDA with installation of SPV LED Home Lighting Systems and Street Lighting Systems with a budget provision of Rs.4.00 lakhs under State Plan during 2007-08.

MNRE have been requested for allocation of 1000 SVP Home Light System and 250 SVP Street light system to the State for the year 2008-09.

4.6. Renewable Energy Policy

Policy Guidelines on Power Generation from Non-Conventional Energy Sources have been issued vide Science & Technology Dept. Letter No. 6971/ST dated 3.12.2005. The main objectives of the Policy are to reduce dependency on conventional sources of power generation. Other objectives are,

- (i) Protecting the environment,
- (ii) Generation of employment on a large scale,
- (iii) Generation of grid quality power from NRSE, so as to reduce dependence on conventional sources of power,
- (iv) Encourage entrepreneurial investment in NRSE,

- (v) Provide such rational fiscal and promotional incentives so as to provide conducive atmosphere to attract private investment.

OREDA is the State Nodal Agency for Power Generation from Non-Conventional Energy Sources and functions as the single window for promotion and facilitation of all projects.

4.7. Small & Mini Micro Hydro Projects

The 110 kW capacity Mini Hydel Project at Sunei in the district of Mayurbhanj and the 2x20 KW Micro Hydel Project at Badaghaghra in Keonjhar district commissioned by OREDA are in successful operation and feeding power to the state grid.

4.8. Wind Energy

ORISSA has a wind power potential of 1700 MW. This has been estimated basing on the Wind Resource Assessment studies carried out in six (6) potential sites namely Gopalpur, Chatrapur, Puri, Chandipur, Paradeep and Damanjodi identified in the state for harnessing this power by IITM, Bangalore. To begin with, OREDA has taken up steps for setting up of one 2-MW demonstration Wind Power Project at Damanjodi in Koraput district to demonstrate techno-commercial feasibility of such projects with a view to attract private investment in the sector. The project proposal for the above demonstration power project has been submitted to Ministry of New and Renewable Energy, Govt. of India for sanction.

Wind Resource Assessment studies are being taken up in eight new sites at Damanjodi North and South, Nawarangpur, Gopalpur, Puri, Paradeep, Chandipur and Dhamara. Further the Center for Wind Energy Technology (C-WET), Govt. of India have identified the sites to take up Wind Resource Assessment in Sambalpur, Ganjam and Keonjhar districts.

4.9. Energy Plantation & Bio-Diesel Production

The resolution on policy guidelines for raising energy plantations and bio-diesel production has been issued vide letter No.5345 dated 23.8.2007 of Science & Technology Department, Govt. of Orissa.

OREDA is nominated by Govt. of Orissa as the State Nodal Agency for bio-diesel development in the state and function as the single window for promotion and facilitation of all such projects.

Plantation of Jatropha Curcus in 912 Acres of land in Rayagada district, 1870 Acres in Ganjam district, 1483 Acres in Kalahandi district and 955 Acres in Keonjhar district have been taken up.

14 Nos. of district level workshop, 70 Nos. of block level workshop, alongwith farmers' training programmes have been organized under IEC activities.

District level monitoring cells in 8 KBK districts and 12 non-KBK districts have been formed.

Enumeration of Tree Borne Oil seeds in 8 KBK districts have been made.

4.10. Electrification through Bio-fuel

OREDA has taken up electrification of the Jakham village of Thuamul Rampur block in Kalahandi district with power generation through 3.5 KW power generating system run on Straight Vegetable Oil with the financial assistance of Govt. of Orissa. The electrification work is being completed in the current year. More such projects are being proposed. Setting up of each project on an average costs about Rs.7.00 lakhs.

4.11. Solid Waste Management

OREDA has been appointed as Business Development Associate by H & UD Department, Government of Orissa for management of Municipal Solid Waste in the state.

OREDA has already prepared the model DPRs for management of MSW in all Urban Local Bodies of the state and finalized the vendors for supply of different collection and transportation equipments.

DPR for Solid Waste Management in Puri and Bhubaneswar Municipalities as per the JNNURM norms have been prepared through M/S Center for Environment Education (CEE), Ahmedabad and submitted to H & UD Dept., Govt. of Orissa.

4.12. Battery Operated Vehicle:

OREDA has successfully launched operation of two 10-seated battery operated three-wheeler vehicles at Nandankanan Zoological Park for Zoo rides, which is silent, and non-pollutant. The vehicles are in operation and attract tourists.

4.13. Clean Development Mechanism (CDM) Project

OREDA is designated as the State level Agency by the 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 (PIN) and Project Designs Documents (PDD). 3 Project Design Documents (PDD) on Wind Power Project, Hydel and RVEP have been submitted to MOEF, Govt. of India for consideration. Besides another CDM activity report is also under preparation for accessing IDBI, World Bank carbon trading Funds.

4.14. Aditya Solar Shop

For easy accessibility of Renewable Energy Technologies to the public, already 4 Aditya Solar Shops at Bhubaneswar, Berhampur, Cuttack and Semiliguda have been established.

4.15 Workshops / Trainings

Four orientation and awareness camps under the Information and Public Awareness Programme were organized in Bhubaneswar. Besides, awareness camps in 11 districts, namely, Koraput, Rayagada, Ganjam, Gajapati, Keonjhar, Sundargarh, Kalahandi, Khurda, Bolangir, Sonapur and Nuapada were organized.

One International Seminar on “Renewable Energy in Climate Change Mitigation “ was organized by OREDA at Hotel Swosti Plaza, Bhubaneswar on 22.10.2008.

Team Orissa comprising of the Biotech Cell of S&T Deptt., OREDA, ORSAC and Institute of Mathematics and Application led by OREDA participated in the mega science exhibition “Pride of India” in the 96th Indian Science Congress held at North Eastern Hill University (NEHU) Shillong, Meghalaya from 3rd to 7th January 2009. “Team Orissa” bagged the prize for the “Best Designated Stall “ in the exhibition.

4.16 Renewable Energy Club

In order to create awareness about New & Renewable Sources of Energy, its various systems and devices amongst the students, Renewable Energy Clubs in 12 Engineering Colleges have been set up in the State.

4.17 Celebration of Rajiv Gandhi Akshaya Urja Diwas (RGAUD)

The Rajiv Gandhi Akshaya Urja Diwas was celebrated as Renewable Energy Day on 20.08.08 in the State Capital of Orissa followed with a Mass Rally / Run, Exhibition women football match, different competitions among the students, panel discussions on renewable energy programme in Regional Kendra of Doordarshan, Bhubaneswar and seminar. Besides, district level celebrations were also organized by the district administration.

4.18 Awareness Generation, Publicity & Exhibition during the year 2008-09

3 nos. of video films under Bio-Energy & Solar Energy Programmes prepared earlier were telecasted from time to time in Interactive Training Programme under Gram-sat Pilot Project being organized by ORSAC authorities for the State of Orissa.

One documentary film of 10 minutes duration on step-by-step construction of Biogas and its benefits prepared earlier by this Agency were also telecasted on Gram-sat Evening Transmission Programme.

The Interactive Training Programme under Gram-sat network is being held in every month by this Agency.

The Radio jingles on renewable energy have also been broadcasted in All India Radio, Cuttack.

OREDA has also been participating in several different Melas / festivals in different important festive occasions of Orissa by organizing NRSE Exhibitions for popularization of NRSE devices as well as programmes.

OREDA participated in the state level exhibition in Adivasi Mela-2009 at Bhubaneswar held from 26.1.2009 to 1.2.2009 by organizing NRSE Exhibition and bagged the 2nd. Prize for its content and presentation among Govt. stalls.

Under Print Media, advertisements (both classified & displayed) in colour and black & white in different news papers (both National & Regional), magazines, souvenirs, journals have been issued for wide publicity.

4.19 ISO CERTIFICATION

OREDA has taken steps for streamlining systems and procedures with the aim to increase organizational effectiveness so as to get Integrated Management System certified to ISO 9001-2000 and 14001-2004. Suggestions of the auditors and the certifying registrar have been incorporated to improve all round efficiency.

The server and other computers with LAN have been put in place. Finger printing identification for attendance of the employees, internal messaging and file digitization of OREDA has been established.

All the office processes are being carried out through Office Automation Software.

5 ORISSA SPACE APPLICATION CENTRE (ORSAC)

Important Activities of ORSAC for the year 2008-09 are as follows:

5.1. FASAL

Three forecasts on acreage and production of Kharif paddy ragi, groundnut and jute have been made during August, September and November 2008. The paddy acreage has been estimated through the analysis of multi-date RADARSAT SAR data and yield forecast is based on agro-meteorological models. The results have been made available to the user departments of State and Central Govt. for decision making on procurement storage, transport and price fixation of food grains.

5.2 COSTAL STUDIES PROJECTS

Landuse/land cover maps on 1:25,000 scales have been prepared for the entire coast. Landuse studies from 2001-2006 satellite data have been taken up and change

detection has been made on Chilika Wildlife Sanctuary, Balukhand Sanctuary and Bhitarkanika Reserve Forest area.

5.3 COMPREHENSIVE DEVELOPMENT PLAN (CDP) PREPARATION FOR BHUBANESWAR – CUTTACK URBAN COMPLEX.

Comprehensive Development plan has been prepared for Bhubaneswar – Cuttack Urban Complex using georeferenced cadastral maps and high-resolution satellite data.

5.4. NR CENSUS OF ORISSA STATE

Landuse mapping for all 30 districts of the State has been completed.

5.5. NATIONAL WASTELAND MONITORING MISSION PROJECT.

Wasteland mapping for all 30 districts of the State has been completed.

5.6. RAJIV GANDHI NATIONAL DRINKING WATER MISSION

Groundwater prospect maps for Uttarakand state has been prepared for 20 sheets (15000 Sq. KM approximately) and submitted to National Remote Sensing Centre, Hyderabad.

5.7. ROAD GIS DATABASE OF ORISSA

Road maps for 11 districts of the State has been completed and submitted to C-DAC , Pune for web enabling.

5.8. ASSEMBLY CONSTITUTENCY MAPPING

Maps of new Assembly Constituencies of the State have been prepared after the delimitation of boundaries and submitted to the Chief Electoral Officer, Orissa.

5.9. NATIONAL URBAN INFORMATION SYSTEM PROJECTS

Geo-database generation for Baripada and Balasore towns has been completed and submitted to National Remote Sensing Centre, Hyderabad.

5.10. TRAFFIC MANAGEMENT OF CUTTACK CITY.

Road maps with all traffic related information for Cuttack city have been prepared.

5.11. FLOOD MAPPING.

Flood Mapping of Orissa during June and September 2008 have been prepared and submitted to Government for taking appropriate measures on flood relief.

5.12. NATIONAL WETLAND INVENTORY & ASSESSMENT PROJECT

Wetland boundaries from Pre and post – monsoon satellite data have been interpreted and a digital database has been created for the State.

5.13. BLOCK LEVEL RESOURCES ATLAS AND GIS DATABASE GENERATION.

Database generation on natural resources and demography for 234 blocks of 22 districts (Non KBK districts) of the State has been prepared.

5.14. GRAMSAT PROJECT

Development programmes of various Govt. Departments have been transmitted in all week days from 5.30 p.m. to 7.15 p.m. except Sunday when transmission have been made from 3.00 p.m. to 7.15 p.m. 141 Interactive training programmes have been conducted by the user departments from January to December 2008. Television based News magazine programmes are being conducted and telecast through private channel under programme title “Swopnara Orissa” and “Sunara Orissa” . 27 episodes each for “Swapnar Orissa “ and Sunar Orissa has been telecast during the year.

5.15. TRAINING PROGRAMMES CONDUCTED

- i) One day training programme on RS Technology application in development for OAS Officers - 18th April 2008.
- ii) Training on RS & GIS for sustainable development to IAS probationer from Gopabandhu Academy of Administration – 11th and 12th June 2008.
- iii) Two days workshop on National Urban Information System (NUIS) –22nd and 23rd August 2008.

- iv) SIT operation training to High School teachers – 27th & 28th November 2008.
- v) Two weeks training programme on “Use Aspects of RS & GIS” for the officers of the Directorate of Groundwater Survey and Investigation –13th to 23rd January 2009.
- vi) Edusat training programme on content generation for the secondary school teachers –24th to 28th February 2009.

6. PATHANI SAMANTA PLANETARIUM (PSP)

(a) Activity:

- i. With active participation of staff of Pathani Samanta Planetarium the monthly meeting of SCAAA was held in premises of Pathani Samanta Planetarium on 12th April, 11th May, 15th June, 13th July, 10th Aug, 14th Sept, 12th Oct. 9th Nov. 14th Dec. 2008, 11th Jan 2009, 15th February 2009 and 15th March 2009. Eminent scientists delivered lectures on various astronomical events in the meeting.
- ii. A programme called “Learning Mathematics through Problem Solving” was organized on 4th, 11th, 18th May, 1st, 8th, 15th, 22nd, 29th June, 6th, 13th, 20th, 27th July, 3rd, 10th, 17th, 24th, 31st Aug, 7th, 14th, 21st, 28th Sept, and 5th, 12th, 19th, 26th Oct. 2nd, 9th, 16th, 23rd, and 30th Nov. 7th, 14th, 21st, and 28th Dec. 2008 and 4th, 11th, 18th, 25th Jan 2009, 1st, 8th, 15th and 22nd February 2009 in collaboration with The Book Point in PSP for Class IV & V students.
- iii. Night Sky Watch Programme was held on 11th to 13th April, 9th to 11th May, 07th to 10th June, 6th to 8th July 2008 and 31st March 2009 . People observed celestial objects like Venus, Mars, Saturn, Jupiter and Moon through Telescope.
- iv. On 10th May 2008, special arrangement was made for observation of occultation of Mars and Moon. More than Five Hundred witnessed the programme.
- v. A live Programme was telecasted on the above subject in OTV, where, Deputy Director, PSP participated.
- vi. A painting competition was held on 18th May 2008 by a group called Itikili Mitikili in the premises of Pathani Samanta Planetarium. More than Two Hundred students

participated in the competition. A special Planetarium show was organized for them followed by a lecture by the Deputy Director (Tech.).

- vii. On 22nd May, 2008 about two hundred students from ITER +2 college visited PSP with their teacher, special astronomy classes and Telescope programme were organized for them.
- viii. As per the direction of Governor of Orissa, Top ten students and their parents visited PSP and a special show was organized for them. Deputy Director (Tech.) delivered a talk to them.
- ix. Arrangements were made for safe viewing of partial Solar Eclipse on 01.08.2008. About 5000 people observe this rare celestial event through projection from telescope and binocular. Other equipments like Mylar sheet, Solar Specks were also provided to the visitors. The event was quietly circulated to the general public through Newspaper and Electronic Media.
- x. On 28th September, about one hundred NSS volunteers from Center for Catalyzing Community visited planetarium. They were briefed about Astronomy Park and Deputy Director (Tech.) explained them various models. After viewing the Planetarium show a question answer session was arranged. Director and Dy. Director, PSP answered all the queries from the student.
- xi. Zonal Camp of Young Astronomer Talent Search (YATS-2008) was organized at following places. Around 100 students in each place display models on Chandrayana- 1. 100 students were selected to participate in the state level Camp to be held at PSP on 12th & 13th Dec. – 08.

02.11.08	Govt. Boys High school, Jeypore
04.11.08	Ganjam Kalaparishad, Berhampur
06.11.08	B.R. High School, Belpahar
08.11.08	Model School, Dhabalagiri, J.K. Road
09.11.08	Municipality Kalyan Mandap, Keonjhar
10.11.08	Joda West Recreation Club, Joda
16.11.08	Pathani Samanta Planetarium, Bhubaneswar

- xii. With active co-operation from staff of PSP special arrangement were made to conduct Planetarium shows from 9 am to 9 pm from 16th December 2008 to 1st

January 2009. Record number of visitors visited PSP in the month of December 2008 with all time highest collection in a single month.

- xiii.** State Level Camp of Young Astronomer Talent Search (YATS-2008) was held at PSP on 12th and 13th December. 102 students of different places display their models on **Chandrayana- 1**. Out of them best 20 models are awarded by the Hon'ble Chief Minister of Orissa on the 174th Birth Anniversary of Mahamahopadhyaya Samanta Chandrasekhar Harichandan Mohapatra. Many dignitaries, scientists and students attended the function.
- xiv.** Deputy Director (Tech.), PSP attended the 8th Circle Level Science Teachers Conference held at Puri on 23.12.08 as resource person and delivered a talk on Chandrayana- 1 followed by discussion on astronomy.
- xv.** A night sky watch programme through telescope was organized for Physical Challenged Children at Adivasi Ground on 27.12.08 organized by Anjali. Around 500 children enjoyed the Programme.
- xvi.** On 31st December special arrangements were made to view the Moon and Venus coming nearer in the sky through telescope. Around 400 people observe this rare celestial event in the premises of Planetarium.
- xvii.** Annual Day of PSP was celebrated on 8th January 2009.
- xviii.** Due to Machinery Problem Planetarium Show was stopped from 7th to 28th January.
- xix.** On 25.01.09 Centre for Environmental Studies & Environment Department, Govt. of Orissa organized a state level Sit & Draw competition for school and college students for the World Environment Day at PSP premises. About 300 students from different area participated in this competition.
- xx.** Arrangements were made for safe viewing of partial Solar Eclipse on 26.01.2009. About 1000 people observe this rare celestial event through projection from telescope.
- xxi.** A TV serial named "Vigyan Guru" was telecasted in Tarang Channel on 15th, 22nd and 29th March 2009.

- xxii.** Two groups of SC and ST students from schools located in TSP zone of Orissa visited PSP on 17.2.2009 and 25.2.2009 respectively under exposure visit conducted by ST&SC Dev. Department and Science & Technology Department.

B. VISITORS & REVENUE COLLECTION:

	PSP Show	Light & Sound Show
Total Show	1014	136
No. of Adult Visited	42259	7337
No. of Child Visited	26693	13730
Total No. of Person Visited	68952	21067
Total ammount collected (In Rs.)	795954.00	301655.00

7. ORISSA BIGYAN ACADEMY (OBA)

During the Year 2008-09 Orissa Bigyan Academy has organised different popular science programme as follows:

7.1. "Bigyan Diganta", the monthly Science Magazine, specially designed for school students and for their parents and other rural people is being continuously published by the Orissa Bigyan Academy since 1993. During 2008-09 twelve issues of "Bigyan Diganta" have been released. The "Bigyan Diganta" has been distributed mainly to the High Schools of the Gram Panchayat headquarters of the State free of cost.

7.2. Orissa Bigyan Academy is also publishing an abridged version of "Bigyan Diganta" for visually handicapped students of the State. The magazine is brought out as a quarterly publication and distributed to the blind students and their institutions. During 2008-09 four issues of the abridged version of popular science magazine "Bigyan Diganta", have been printed in braille Oriya script and released.

7.3. Honour & Awards:

(a) Samanta Chandra Sekhar Award for the year 2006 has been given to four eminent scientists.

(b) Orissa Young Scientists Award has also given to two young scientists of the state for the year 2006.

(c) Popular Science Writers Award has also given to three Authors of the state for the year 2006.

(d) Felicitated two Senior Eminent Scientists of the state for the year 2006 and

(e) Honouring three Eminent Scientists of Orissa posthumously for the year 2007.

Apart from this Orissa Bigyan Academy have received Nominations for different Awards namely Biju Patnaik Award for Scientific Excellence, Samanta Chandra Sekhar Award, Orissa Young Scientists Award, Popular Science Writers Award and Nomination of Senior Scientists for felicitation for the year 2007. Steps have already been taken to finalise the name of the Awardees.

7.4. Orissa Bigyan Academy has organised a workshop on science writing from 25.11.2008 to 28.11.2008 at Sundargarh. This programme was catalyzed and supported by Rashtriya Vigyan Evam Prodyogiki Sanchar Parishad (RVSP), Department of Science & Technology, Govt. of India, New Delhi.

7.5. OBA in collaboration with Regional Science Centre, Bhubaneswar has organized an inter school science fair on 5th Feb 2009 on the occasion of International Year of Astronomy 2009 at Regional Science Centre premises. As many as 30 working science projects from 4 nearby education circle of Khurda, Puri, Cuttack and Ganjam based on various frontier of Sc & Technology and its application to solve various problems threatening our spaceship earth was displayed.

7.6. Orissa Bigyan Academy has celebrated National Science Day-2009 on 27.02.2009 and 28.02.2009 at Jyotivihar High School, Burla of Sambalpur district. In this occasion science based projects exhibitions, essays and seat and draw

competitions and science quiz competition were conducted. School children and teachers of different High Schools participated in this function.

8. INSTITUTE OF MATERIAL SCIENCES (IMS)

8.1. Attempts have been made by the Institute to create a dedicated experimental research laboratory for the young researchers to pursue their research work leading to Ph. Degree in physics in the frontier research field of Colossal Magneto Resistance (CMR), Diluted Magnetic Semiconductors Multiferroics Materials. One CSIR NET research fellow completed his Ph.D programme in the field of CMR and now working in Nuclear science Center, New Delhi.

8.2. Research Programme based on utilization of waste coconut shell for the production of high value added activated carbon has been initiated by the Institute with the collaboration of Naval Research Laboratory, Washington, DC, USA and under supervision of Padma Bhusan Dr. B.B. Rath (Associate Director) of NRL, USP.

8.3. Book release ceremony of International Workshop on Mesoscopic , Nanoscopic and Macroscopic Materials (IWMNMM-08) proceeding was held on IMS on 17th January-2009.

8.4. Research work based on microscopic analysis ores available in different mines of Orissa has been initiated to create a database by the Institute.

9. INSTITUTE OF MATHEMATICS AND APPLICATION (IM&A)

9.1 Research Activity

- a) The Following Research Fellows have to pursue their research to complete their Ph.D (i) Kedar Nath Senapathy (ii) Prashant Kumar Behera
- b) Mr.Chitta Ranjan Mishra of this Institute has been offered fellowship for research at Belegium University.
- c) New areas of research to be taken up.
 - i) Cryptography: This is a challenging area of research, which is at the interface of Mathematics and Computer Science. The Institute has already applied for projects on this and going to collaborate with NISER in this regard.
 - ii) Stochastic Filtering and its Applications to Signal Process: many students have done their Ph. D in Stochastic Processes and Random Fourier

Series under the guidance of the Director of Institute. This has a promise for further development for application to industry to achieve international standard.

- iii) Application of Stochastic Process to Mathematical Finance: This is an upcoming area of research. IM&A have already achieved a measure of competence in this. Some students in the present course as M. Sc in Computational Finance being offered by the Institute have expressed their desire to continue to do their Ph. D in this area. One student is already going to Europe to do his Ph. D. The Institute Proposes to pursue the area which will be challenging mathematically and its fruits would be beneficial to business.

9.2. Seminar/Conference/Symposium

It has been planned to hold National level Conference/Seminar/Symposium on

- i) Harmonic Analysis
- ii) Stochastic Analysis
- iii) Graph Theory

Teaching Programmes: - The Institute offers a Master Level Course in Computational Finance. This is the first of its kind in India. This has already started attracting financial institute. Our students have already got lucrative job offers even before their result are published. We shall continue to offer the course, which has enormous job potential.

9.3. The Institute offers a B.Sc (Hons) in Mathematics & Computing. The aim of the course is to orient a student to take up a research course in mathematics. There are only four such courses in India. These children shall be able to go directly for their Ph.D after the B.Sc (Hons) in Mathematics & Computing. The National Board for Higher Mathematics, Department of Atomic Energy, Govt. of India has already given us a grant to give five of such students a monthly scholarship of rupees 2500 per month till they complete their B.Sc (Hons). The number will be enhanced depending on what these children do after their B.Sc.

9.4. The Institute proposes to offer a Diploma course in quantitative Finance, which is in high demand. That would be a value additional course.

9.5. The Institute has already a proposal for a Bachelor programme in econometrics and Computing. B.Sc (Hons) in Statistics & Computing.

9.6. Search & Nurture Programme

As of now IM&A are selecting only 200 children from all over rural Orissa and proposed to increase this to 500 children. This is highly to have a demonstration effect on other children of rural schools and so help stem trend of dropout.

- i) The Institute is holding a class for school children every Sunday to motivate children to do mathematics. This has been very enthusiastically received by children in and around. Children even come from places like Jatni by trains/hired auto rickshaws to attend these classes. Looking at the enthusiasm and we wish to continue this with a greater seriousness.
- ii) Orientation of math teachers for schools will be held more frequently to upgrade the standard of mathematics teaching.
- iii) Interactive training camp for B.Sc students of the state will be held to prepare the undergraduate mathematics students as per national & international level.
- iv) Special training for SC/ST students and their teachers will be organized to upgrade the standard of Mathematics for them.
- v) Special training/ coaching for 52 tribal student of KBK district admitted in 1st year +2 Science class will be organized to prepare them for IIT/NISER/NIT etc tests.

9.7. Programme for SC/ST students: Special training programme will be taken for few special training programmes will be taken for few non performing schools of KBK districts to enhance their formance.

9.8. Library: A good set of standard books and journals may be procured in the Institute of Mathematics & Applications, Bhubaneswar library to make it a reputed library of advanced study in Mathematics & Applications.

9.9. Infrastructure will be made such that it will be of international standard.

9.10. Institute of Mathematics & Applications, Bhubaneswar as a nodal agency coordinator for the scholarship programme for students perusing P.G. in Basic Sciences under the State Council on Science & Technology.