

ANNUAL ACTIVITY REPORT

FOR THE YEAR 2005-2006



MASTEC Complex

MANIPUR SCIENCE AND TECHNOLOGY COUNCIL

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Annual Report for the year 2005 - 2006

Manipur Science & Technology Council (MASTEC)

1.0 Background

The Manipur Science & Technology Council (MASTEC) formerly, State Council of Science and Technology and Environment, Manipur was set up in the year 1985 with the initiatives from the Department of Science and Technology, Government of Manipur. . The Chief Minister, Manipur and the Minister in charge (S&T), Manipur are the Chairman and the Vice Chairman of the Governing Body of the Council. The Secretary ,S&T, Government of Manipur is the Member Secretary of the Council. The Council got registered as an autonomous organisation of the Department of Science & Technology, Government of Manipur in January 1996 under the Manipur Societies Registration Act, 1989 subsequent to a decision of the state cabinet.

The autonomous Council is served by its own Secretariat of 20 manpower supported by the Department of Science & Technology, GOI. The Council Secretariat operates with the grants received from DST, Government of India, DST, Government of Manipur and the funds received from various agencies through projects and programmes. The autonomous Council works in co-ordination with the State Directorate of S&T in various areas of activities.

1.1 Objectives of the Council

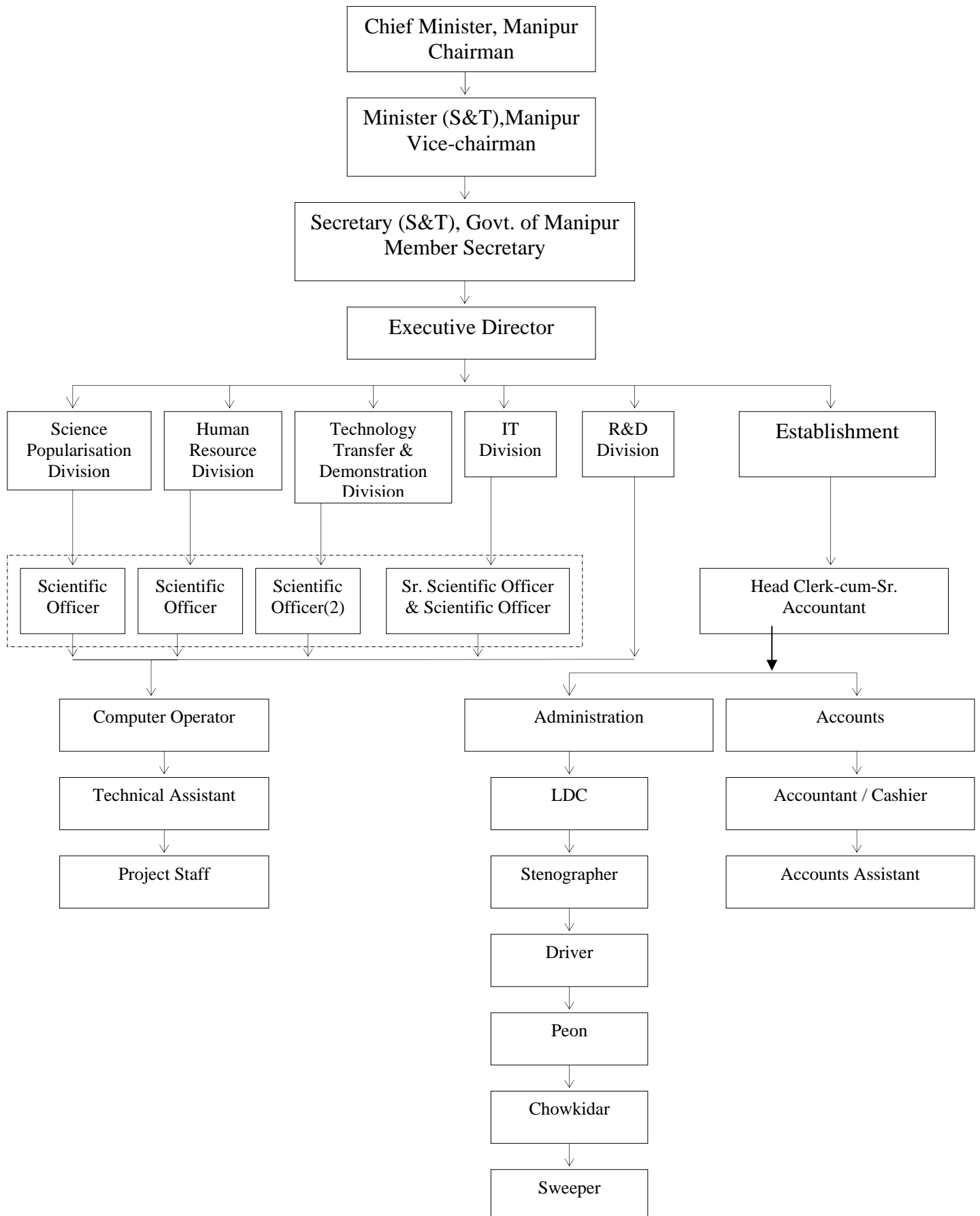
- To identify areas in which Science, Technology and Environment can be utilised for the achievement of the Socio-economic objectives of the State and in particular, tackling the problems of backwardness and underprivileged sections of Society;
- To advise on policies and measures necessary to promote Science, Technology and Environment and their utilisation for achievement of socio-economic objectives;
- To initiate, support, promote and co-ordinate Research Design and Development projects and programmes, including demonstration projects which are likely to be relevant to the problems, surveys and optimum utilisation of natural resources of the State;
- To promote and undertake activities for the popularisation of Science and Technology and the spread of a Scientific Temper and attitude among the people of the State;
- To supplement and complement the ongoing technical efforts of the State Government;
- To interact with other State, National and International Science and Technology bodies having similar or related objectives;

- To identify priority areas of Science, Technology & Environmental need for long term development of the State;
- To safeguard and promote the ecology and environment in the State of Manipur;
- To utilise Remote Sensing Techniques for planning, implementation and monitoring of development programmes with S&T inputs and to promote and support the activities of the Remote Sensing Centre;
- To promote, support and undertake the application of renewable sources of energy for the benefit of the people;
- To accept donations, raise subscriptions and receive grants, loans and subsidies from Government of India, Government of Manipur and other supportive agencies in India and abroad and to invest the resources towards the achievement of the objectives of the Council.

1.2 Organisation

The Council has a Governing Body which consists of a wide distribution of membership having expertise in various fields, with the Chief Minister as the Chairman, and the Minister in charge, S&T, Manipur as the Vice Chairman. At present there are 46 members (including project staff) in the Council. The Council has an Executive Committee to assist the activities towards achieving the objectives of the Council. The Vice-Chairman of the Governing Body of the Council heads the Executive Committee as its Chairman. The Secretary, S&T, Government of Manipur is the Member Secretary of the Council. The Member Secretary is the Chief Executive of the Council Secretariat. (See MASTEC Organisation Chart)

Organisation Chart



1.3 Existing Staff

Sl. No.	Name	Qualification	Designation
1.	Th. Surendranath Singh	M. Sc., PGDCA, LLB	Executive Director
2.	Dr. L. Dinachandra Singh	M.Sc., PGDRS, Ph. D.	Sr. Scientific Officer
3.	Dr. L. Minaketan Singh	M.Sc., PGDRS, Ph.D.	Scientific Officer
4.	Kh. Rakesh	M.Sc.	Scientific Officer
5.	Ch. Sarat Singh	B.Tech.(Civil), M.Tech.	Scientific Officer
6.	Dr. R.K. Pritamjit Singh	M.Sc., Ph.D.	Scientific Officer

Technical Staff :

7.	Ch. Shivaji	M.Sc., PGDCA	Computer Operator
8.	Mrs H. Binodini Devi	B.Sc.	Technical Assistant
9.	Y. Shyamsunder Singh	B.Sc., LLB	Technical Assistant

Ministerial Staff :

10.	K. Nara Singh	B.A.	Head clerk cum Sr.Accountant
11.	Mrs R.K. Bhanisana Devi	B.Sc.	Accountant
12.	H. Thangthianmang	B.A	L.D.C.
13.	A. Tombi Devi	B.A.	Stenographer
14.	L. Ronald Singh	M.Com.	Accounts Assistant
15.	L. Boyai Singh	VIII Passed	Driver
16.	L. Open Singh	X Passed	Peon
17.	S. Deven Singh	X Passed	Peon
18.	Jamkhanmuan	VIII Passed	Peon (Dak Runner)
19.	Mrs. Chingthanching	VIII Passed	Chowkidar
20.	Kh. Leidou Maring	VIII Passed	Sweeper

Project Staff

21.	L. Nilkumar Singh	B.F.Sc.	Research Scientist
22.	Dr. Indira Devi	Ph.D.	Research Associate
23.	O. Deepak Singh	B.E. (Mechanical)	Field Assistant
24.	Dr. Rabi Sarangthem	B.V.Sc	Project Assistant
25.	Ningchuimi Singnaisui	B.E. (Civil)	Project Engineer
26.	Th. Churjit Meetei	MCA	Computer Operator
27.	Miss W. Phajaton Devi	M.Sc.	J.R.F.
28.	L. Romen Singh	M.A. Geography	J.R.F.
29.	L. Surjit Singh	M.Sc.	J.R.F.
30.	Brojen Singh	M.Sc.	J.R.F.
31.	Ch. Priyokumar Singh	M.C.A.	Computer Operator
32.	Ph. Gopin Singh	M.Sc.	J.R.F.
33.	Th. Shyam Singh	B.Sc. (Agri)	Field Assistant
34.	L. Lolini Devi	B.Sc.	Project Assistant
35.	Miss Deeparani Devi	B.Sc.	Project Assistant
36.	Miss W. Romita Devi	Civil Engg (Dip), FRP	Artisan Grade - II
37.	Shri Manghen Vaiphei	Class VIII passed	Helper
38.	L. Hemanta Singh	Class VIII passed	Skilled Mason
39.	Mr. Tonglunthang	Class VIII passed	Skilled Mason

40	N. Jumbojit Singh	Class XII passed	Helper
41	Mr. Angam	Class VIII passed	Helper
42	Mr. Titus R. Naga	Class VIII passed	Helper
43	L. Sanajaoba Singh	Class X passed	Unskilled mason
44	N. Megha Singh	Class VIII passed	Unskilled mason
45	Ch. Ingobi Singh	Class VIII passed	Unskilled worker
46	Thangal Shingshit	Class VIII passed	Unskilled worker

1.4 Activities

The Manipur Science and Technology Council (MASTEC) organised various centrally sponsored workshops / trainings relevant to the state including science popularisation to fulfil the objectives for establishment of the Council. The Council receives overwhelming response from all sectors of the scientific community in the state while organising S&T programmes and organised with a big success.

The following were the programmes implemented by MASTEC during the year 2005- 2006.

1.4.1 Science Meet 2005

Since the year 1987, National Science Day had been observed in the country on February 28. The decision to designate such a day was taken by the Government of India in December 1986 and the choice of the date was linked to the discovery of the **Raman Effect**. The occasion is intended to instill and build in us the confidence in ourselves and in our own abilities to think of and do entirely new things on our own. Thus, efforts are made to popularize Science & Technology, estimate and nurture scientific attitudes and temperament among our people, as part of the National Science Day celebration. The Department of Science & Technology, Government of India, New Delhi announced the national theme of the year 2005 as “**Celebration of Physics**”.

India conducted 5 (five) successful underground nuclear tests on May 11 and 13, 1998 at Pokhran. May 11 is being celebrated as **National Technology Day** since 1999 in commemoration of these successful nuclear tests. The basic idea of the National Technology Day is to focus national attention especially on technology and technologists and also to stimulate and promote a technological temper among the people. Major milestones in the fields of nuclear science, defence research and aviation technology all achieved on May 11, 1998 made it easy to designate this day as the **National Technology Day**. The objective is to focus attention of the nation – students, teachers, engineers, researchers, entrepreneurs, and thinkers – on issues of technology development of the Nation.

Since the year 1997, Manipur Science & Technology Council (MASTEC) in coordination with the leading science NGOs of the state had been continuously organising state level science festival named - **Science Meet** as an annual feature. Science Meet is a multi-activity state level science festival aiming to create a common platform for students, science lovers and scientists to further the cause of Science Popularization in the State. This year MASTEC in coordination with the leading science NGOs of the state like Science Teachers Forum, Manipur (STFM), Generation De New Image (GENIM), Manipur Association for the Promotion of Science (MAPS) and Manipur Science Communicators’ Association (MASCA) organised a 5-day long **Science Meet 2005** during May 11-15, 2005 at Khuman Lampak Main Stadium, Imphal. Science Meet 2005 was organised in commemoration of the **National Science Day 2005**.

Activities of Science Meet-2005

The activities of the Science Meet 2005 included Science Quiz Competition, Painting Competition, Science Model Competition, Declamation Contest, Science Behind Miracles, Puppet Shows, Book Exhibition, Poster Exhibition, Sky Watching, Low Cost Teaching Aids, Popular Science Gallery & Model Exhibition, Face to Face, Scientific Film Shows, Science Drama, IT Shows, Best Appreciation Award

Activities of STFM

Science Teachers' Forum Manipur, Imphal, a leading science organization in the state has been a co-organiser of the Science Meet since the year 1997 and is still a part of the Meet. This year too, STFM in coordination with MASTEC took part in the activities of Popular Science Gallery and Science Model Competition, Low Cost Teaching Aids and Exhibition of stamps.

Popular Science Gallery

Popular Science Gallery or Interactive Model display was a grand success with visitors thronging the stall everyday to try their hands or to display their skills. Ten (10) models were exhibited by a team of demonstrators. The models kept for Gallery were – Photographic Science, Magnetic Cushion, Science on Stamps, Micro Hydel Project, Rubic Cube, Slide Rule, Medicinal Plants, Science of Bee Keeping and five other interesting models. Besides, Regional Research Laboratory (RRL) Sub Station Imphal also exhibited various technologies developed by them.



Science Model Gallery:SM - 2005

Science Model Competition



Honoured Guests interacting with the student Exhibitors

The competition was opened to students reading in class VIII – XII. Altogether 67 (sixty-seven) science models were exhibited by 125 (one hundred and twenty five) students consisting of 44 boys and 81 girls from various schools in the state. The models were based on varied scientific themes such as Bio-diversity, Electronic Gadgets, Scientific Principles, Health & Sanitation, Technologies/Machines, Eco-conservation etc. Shri Bijoy Koijam, Member of Legislative Assembly (M.L.A), an Honoured Guest was quiet impressed by the exhibition and he interacted with the student exhibitors

The result of the competition was as follows:

Position	Exhibitor	School	Model
1 st Position	L.Johnson	Sacred Heart School, Porompat	Electronic Security System
2 nd Position	Vengkat Naorem	Manipur Public School, Koirengei	Mat making machine for handicapped persons
3 rd Position	Nonganleima Chanu S. Nongleibi Chanu	Imphal Morning High School	Low Cost Iron removal plant from water.

Low Cost Teaching Aids

The stall was displayed with 20 models of low cost teaching aids viz. – Telegram, Origami, 49 models of Euclid elements, Soma Cube, Sectional views of the earth, artificial clay for making different models, Solar Cube, Seismograph, Electric Quiz board, World Clock, Star and Satellite path finder etc.

The models were demonstrated by a team of four resource persons. During the exhibition hour, a stall quiz was conducted and the winner was awarded with a prize. More than 400 students and visitors participated in the quiz and about 1000 visitors were benefited from this low cost teaching aids stall.



Low Cost Teaching Aids exhibition

Science on Stamps

The exhibition aims at stimulating the hobby Philately for those who are practicing it; to initiate young minds into the world of stamps and to provide insight into the world of children for one and all. Thus, the exhibition hopes to have an educational value as a low cost teaching aid. Using the postage stamps as an effective medium to teach the children and help them to appreciate the science of India and the world, it was a new item for the Science Meet – 2005. In this connection L. Jugindro Singh, Secretary, STFM released a book on Stamp which was published by STFM, Imphal.



Stamp Exhibition during SM - 2005

Activities of GENIM

Generation De New Image (GENIM), Ningthoukhong in coordination with MASTEC took part in the activities like Science Drama and Science behind Miracles and Model Rocketry Show during Science Meet 2005.

Science Drama

The artists of GENIM were performing a Science Drama entitled “**Vigyangee Anisuba para**”. The science drama was dedicated to the **World Year of Physics** to inculcate scientific temper and awareness to the young minds and exposing the attitude of science teachers and students of the state in particular and the nation as a whole. The message of the short play was to adopt science as a way of life and a way of looking at reality, where lies the solution of every problems of our day to day life. The drama was written by R.K.Brijit Singh and directed by R.K.



Performing Science Drama

Pholmani, supported by eight artist of GENIM. About 700 audiences enjoy the short play. The main theme of the drama was on Environmental protection.

Science Behind Miracles

Miracles or magics are age-old human activities, which make people wonder or confuse and in many cases mislead the general public. The expert members of GENIM demonstrated many items of science behind miracles during Science Meet 2005 and the scientific backgrounds of the shows were also explained. Some of the items are Water from the Heaven, Illusion of Touch Optical Illusion, Burning Money, Match Tricks, Magnetic hand, Joining without knot, Vibhuti, Lightning candle without match, Killing Spirit, Fire Spirit writes without pen, Bleeding without injury, Shape of Water, Spirit sucking blood, Reserve bank, Coin in the Heaven

Model Rocketry Demonstration

Model Rocketry was introduced for the first time in the Manipur Science Meet – 2005 by the Generation De New Image (GENIM), H.O. Ningthoukhong to impart the knowledge of space and rocketry science as hobby education and to quench the thirst of creativity of the young minds. The exhibition of the model rocketry was inaugurated by Shri Bijoy Koijam, Hon'ble MLA. A software for the simulation of the model rocketry and electronic ignition device has been developed by the GENIM to facilitate further the model. The model has been witnessed by more than 3500 students and various people from different walk of life and were excited by the simple working Model of the rocket. Rocket designed was single stage engine which can attained upto 100 mts. of height. To calculate the height achieved by the rocket, a scale fixed with a protector is used to measure the angle of elevation. About 100 rocketry models were developed and 77 of them have been launched successfully and 33 of them failed to take off from the launching pad due to the failure of the engine. The failure was due to the expiry of the engine fuel. Students coming from different school and colleges of the state had actively participated with enthusiasm to fabricate the model demonstrated by the members of the GENIM. The GENIM could not publish the booklet on model rocketry which will benefit the students due to the constraints of the budget.



Model Rocketry Demonstration

Activities of MASTEC

Manipur Science & Technology Council (MASTEC) organised the activities of IT Show, Face-to-Face, Poster Exhibition, Book Exhibition, Scientific Film Show, Declamation Contest and Sky Watching during the Science Meet 2005.

Book Exhibition

A Scientific Book Exhibition was also kept as an activity during the 5 (five) day long Science Meet 2005. A good number of students and teachers paid visit at the book exhibition stalls. Two local book stores/library participated in the book exhibition.

- | | |
|---|--|
| 1. Sharma Book Store
Paona Bazar, Imphal | : A leading book store of scientific books, journals and newspapers. |
| 2. Job Centre
Babupara, Imphal | : A leading book store in the books of competitive examinations and also the information centre of competitive examinations and employment news. |

IT Show

The revolution of Information Technology (IT) has been the most important development in the world during the last few decades. Events in any part of the world can directly influence the events in the remotest areas. Internet has transformed the entire perspective of communication. Science Meet is an occasion where we can introduce IT to our students in a very effective way and hence MASTEC invited local computer institutes/firms to participate in the IT show during SM-2005. Four local computer institutes participated in the IT show during SM-2005. They displayed many IT shows and interacted with the visitors. Hundreds of students and teachers witnessed the IT shows and many people appreciated this activity.

The computer institutions that took part in the IT show were SWIFT infotech, Imphal, Laishram Softwares, Emoinu Computers, CDAC, Imphal.

Face-to-Face

A face-to-face interaction programme with distinguished scientists was organised during the 5-day Science Meet 2005. Three local scientists were invited in the face-to-face programme to interact with the students on the topics of their specialized fields. The programme was kept for 3 days of 1 hour duration daily during the 5-day SM-2005. The speakers were giving lecture for about 20 minutes and then invited questions/quarries from the audience. Hundreds of students took part in the interaction session of the programme and they could gain maximum knowledge. The topics were –

1. **International year of Physics** by Prof. H.N.K.Sarma, Physics Dept., Manipur University, Canchipur
2. **Earthquake prediction** by Shri Ch.Rajendra Singh, Selection Grade Lecturer, Imphal College, Imphal
3. **Nuclear programme in India** by Dr. S. Priyokumar Singh, Retd. Reader.

Poster Exhibition

A scientific poster exhibition was also kept as one of the activities during Science Meet-2005. Many posters on science were exhibited during SM-2005. The posters developed (nationally) under the year of scientific Awareness Programme – 2004 were also exhibited during the Meet.

Sky Watching

In association with the Department of Physics, Manipur University, we set-up one observatory unit with the help of a 6” Telescope at the venue of the Science Meet to observe the Stars and Planets during the Meet. Many students and visitors had witnessed the positions of the Stars and Planets. Viewers commented this programme as one of the best activities of the Meet.

Scientific Film Shows

A one hour duration scientific film show was kept on all 5 days of Science Meet-2005. Altogether 8 (eight) scientific films were screened viz Imphal Battle – 1944, King of Spices – Chilli, Women Vendors of Manipur, Asian Theatre Festival, Our Sun, GSLV Launch, Conspiracy Theory, Kauna , The Club Rush

Other Activities of MASTEC organized with the support from other NGOs

In co-ordination with Manipur Association for Promotion of Science, Imphal, the following activities were also organized.

Science Quiz Competition

The competition was for students currently reading in class XI-Degree in Science/ Technology. 8 (eight) teams from schools and colleges registered for the competition. Each team comprises of two students from the same school/ college. Preliminary written Quiz was held on May 15, 2005 at 9.30 a.m. and four teams were selected for the final round. The final Quiz competition was held on May 15, 2005 at 12.00 noon and in the final competition there were oral as well as audio and visual rounds. The Quiz was on the subjects pertaining to science and technology. The result of the Quiz competition was as follows:



Science Quiz; SM-2005

Position	Name	Class	School
First	M. Kiran Singh Ningthoujam Premananda Singh	B. Sc. IInd B. Sc. IInd	D. M. College of Science, Imphal
Second	Wangkhem Hemchand Meetei H. Bankim Singh	XII XII	Harvard School, Ghari
Third	S. Ammo Singh S. Biju	XII XII	Manipur Public School, Imphal
Fourth	Lekhajit Laishram Pipiksana Sougrakpam	XII XII	Kanan Devi Memorial Sr. Secondary School, Pangei

Declamation Contest

The competition was opened to students currently reading in class XI-Degree in Science/Technology streams. The declamation contest was in 3(three) topics viz.,

- 1) 2005 - International Year of Physics
- 2) India in Space Technology
- 3) Physics and Human Civilization

Fourteen students from various institutions participated in the competition and the competition was held on May 13, 2005 at 12.00 noon. The result of the competition was as follows:

Position	Name	Class	School
First	Yaikhomba Chingangamba	XII	Sainik School Imphal
Second	Thoudam Rubina Devi	XII	Manipur Public School, Koirengei
Third	Yengkhom Myrtle Zest	XII	Kanan Devi Memorial Sr. Sec. School, Pangei

In addition to the above activities, MASTEC also organized the activities cited below with the support from Manipur Science Communicators' Association (MASCA), Imphal.

Science Drama

The artists of MASCA were performing a Science Dram entitled "Sardhanjali". The main theme of the drama was on achievement of Science and Technology particularly in Physics.

Spot Painting Competition

The competition was consisting of 3(three) groups viz., i) Sub-Junior Group (Class III–V) ii) Junior Group (Class VI–VIII) and iii) Senior Group (Class IX–X). The competitions were held on May 14, 2005 at 10.00 a.m. at the Khuman Lampak Main Stadium, Imphal.



Spot Painting Competition

Sub-Junior Group

Altogether 50 students from 10 different schools took part in the competition. The result was as follows:

Position	Name	Class	School
First	Nikita Laishram	V	Maria Montessori School, Koirengei
Second	T. Surbala	IV	Maria Montessori School, Koirengei
Third	Susi Yensenbam	V	Maria Montessori School, Koirengei

Junior Group

Altogether 140 students participated in the competition. The result of the competition was as follows:

Position	Name	Class	School
First	Laishram Bigyananda Meitei	VIII	Free Progress Academy, Uyumpok
Second	Thiyam Devajit Meitei	VIII	Oriental Art Guide Centre Keibi Heirol Mapal
Third	Waikhom Jackey Singh	VIII	The K.M. Blooming English School, Khangabok, Thoubal

Senior Group

The competition was for the students currently reading in class IX-X on the theme. 26 students from 12 schools participated in the competition and the result of the competition was as follows:

Position	Name	Class	School
First	Ksh. Johnson Singh	IX	Shantilata Memorial School, Paona Bazar
Second	Shagolsem Rojit Singh	X	The K.M. Blooming English School, Khangabok
Third	Millan Maibam	IX	Standard Robarth English School, Canchipur

Puppet Show

The art of puppetry is very effective for communicating science to our people. Members of MASCA presented 3(three) science based puppet shows during Science Meet 2005. The titles of the shows were:

1. **Durgagi Shaap** (based on Environment & Forest Conservation)
2. **Nambul Kanshi** (based on Water Conservation)
3. **Leimarembi Anopheles** (based on Health & Nutrition)

These puppet shows were much impressive and visitors could realize how puppetry can take key role as a medium of S & T communication in the society.

Best Appreciation Award

The most prestigious award of Science Meet, **Best Appreciation Award** was kept on the last day of the SM-2005. The award was introduced by MASTEC since the year 1997 to be given to the individual student who proves to have gained the maximum knowledge of science through the Meet as judged by questionnaire response and personal interview. The Best Appreciation Award 2005 for SM-2005 was given to **Mr. Achom Thunder** of Maria Montessori School, Imphal. The award carries a certificate of merit with a cash prize of **Rs. 1000/-**

Closing Function

The closing function of the 5-day long Science Meet 2005 was held on May 15, 2005 at 3.00 p.m. at Khuman Lampak Main Stadium, Imphal with Shri T. Meinya Singh, Hon'ble M.P, Manipur as the Chief Guest, Prof. H.N.K. Sarma, Dept. of Physics, Manipur University as Guest of Honour and Shri Th.Surendranath Singh, Executive Director, MASTEC as the President of the valedictory function.



Closing and Prize distribution function

Shri T. Meinya Singh in his speech at the closing function expressed his hope of organizing the next Science Festival in a bigger one. He said that Science Meet is such a festival which can groom the young talents of the state. Prof. H.N.K. Sarma in his speech mentioned about needs for inculcating scientific temper among the students. Shri Th. Surendranath Singh in his presidential remarks thanked the co-organisers and other individuals who had extended help towards successful organization of the Science Meet – 2005.

Cash prizes with citations for the various competitions, awards were distributed to the prize-winning students during the closing function by the Chief Guest, Guest of Honour and President of the closing function. The President gave the concluding remarks of the Science Meet 2005 expressing the Science Meet 2005, the state level science festival organised by MASTEC in commemoration of the **National Science Day 2005** can help the state for promotion and popularization of Science & Technology. Thus ended the 5-day long Science Meet 2005 organised in commemoration of **National Science Day 2005** under the banner of **International Year of Physics**.

1.4.2 World Year of Physics -2005

The year 2005 has been designated the “World Year of Physics (WYP) - 2005” by United Nations. The programme envisages celebration of 100 years of Theory of Relativity by Albert Einstein in 1905 and Golden Decade (1895 – 1905) in which momentous discoveries and inventions were made, like; X-rays (1895), Radioactivity and Zeeman Effect (1896), the Electron (1897), Quantum Theory (1900) and Explanation of Photoelectric Effect and Relativity (1905). Einstein’s seminal paper entitled “On the Electrodynamics of Moving Bodies” appeared in Annalen der Physik in 1905. His other monumental contributions include the explanations of the Photoelectric Effect and the Theory of Brownian in the same year.

Since the year 1997, Manipur Science & Technology Council (MASTEC) in coordination with the leading science NGOs of the state had been continuously organising different science popularisation activities at district and state level. MASTEC has a mandate of promoting science and bringing appropriate technologies to the State for socio-economic applications. As a part of WYP-2005, MASTEC under the catalysation and support of National Council for Science and Technology Communication (NCSTC), Department of Science & Technology, Govt. of India, New Delhi had taken up various programmes for the science teachers, students and general public at district and state level.

The main objectives of this programme are;

- i) to make people aware about the life and contributions of the scientists,
- ii) to enthuse, motivate and inculcate amongst the students and younger generation, a positive approach and scientific outlook,
- iii) to promote the method of science amongst the common people

Resource Persons Training Programme:

A 3 day State Level Resource Persons Training Programme on World Year of Physics – 2005 was held during December 20-22, 2005 at Hotel Imphal. About 24 (twenty-four) school and college science teachers and science graduates from different parts of the state participated the 3 day training programme. The training was conducted with the help of the 3 trained Master Resource Persons, 2 local experienced Resource Persons. We had an opportunity to share with Dr. A.K. Hanjura, Scientist - F of National Physical Laboratory (NPL), New Delhi during his stay in Imphal. He delivered a lecture on Tele-Clock. The Master Resource Persons and Invited/Visiting Resource Persons delivered lectures on the topics shown below.



Master Resource Persons in Training Programme

i) Master Resource Persons

Sl. No.	Name & Designation	Topics
1	Shri M. Gobinda Singh , Lecturer (SG), Department of Physics, D.M. College of Science, Imphal	1. World Year of Physics 2. A stroll in the life of Einstein and 4 dimensional space and time 3. An Indigenous Scientist- Raman and Raman Effect 4. Demonstration/Experiment
2	Md. Abdul Gaffar , Lecturer (SG), Department of Physics, G.P. Women College, Imphal	1. Radio Propagation 2. X – Rays 3. Demonstration/Experiment
3	Shri N. Robindro Singh , Lecturer, Department of Physics, Biramangol College, Imphal	1. Discovery of electron 2. Demonstration/Experiment

ii) Invited/Visiting Resource Persons

Sl. No.	Name & Designation of the Resource Person	Topics
1	Dr. A.K. Hanjura , Scientist – F, National Physical Laboratory (NPL), New Delhi	1. Digital Satellite Tele-Clock
2	Prof H.N.K. Sarma , Department of Physics, Manipur University, Canchipur	1. Physics from Newton to Einstein

3	Shri Ch. Rajendro Singh , Lecturer (SG), Department of Physics, Imphal College, Imphal	1. The Rise of Quantum Theory
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Extensive Lecture/Demonstration Programme:

With the help of the Master Resource Persons and Trained Resource Persons, Extensive Lecture/ Demonstration Programme on the topics related to WYP-2005 were delivered in different schools/colleges, community etc. from January 5, 2006 to February 7, 2006. We invited through print & electronic media and personal visits to colleges/schools and local clubs who are willing to organise lecture/demonstration on the topics related to WYP-2005. We received a good number of intimation from schools/colleges, clubs requesting to organise the lecture/demonstration. After examining/screening, we select only 20 spots so that at least it can cover the 9 districts as we are limited to only 20 lectures/spots. The formal launching programme was held on Royal Academy of Science, Imphal on January 5, 2006 with Shri Th. Surendranath Singh Executive Director, MASTEC, Shri Pravikumar, Principal, Royal Academy of Science as Chief Guest and President. Master Resource Persons Shri M. Gobinda Singh and Md. Abdul Gaffar delivered lecture and demonstrate the scientific principles of physics respectively. During the lecture/demonstration students were enjoying and also interacting with our resource persons. During our visits, we present books on different topics to the head of the institutions/organisation as a complementary copy for their library.



Demonstration of Scientific Principles

Written Science Quiz Competitions

i) State Level Competition for College Students:

State Level Written Science Quiz Competition for College students reading in B.Sc. 1st yr – B.Sc. 3rd yr on the topic “**World Year of Physics – 2005**” was held on 29th January, 2006 at G.P. Women College, Imphal. About 40 students from different colleges of the state took part in the competition. Booklets, Citation and Cash prizes of Rs. 3000/-, Rs. 2000/- and Rs. 1000/- were awarded to the first, second and third position holders respectively on March 2, 2006, the National Science Day-2006 Celebration.



State Level Written Science Quiz Competition

The Prize Winners were

Position	Name of the Student	Class	Name of the College
1 st	Nirupama Ahanthem	B.Sc. IIInd Yr.	G.P Women College, Imphal
2 nd	Pangambam Bijoy Singh	B.Sc. IIIrd Yr.	D.M. College of Science, Imphal
3 rd	i) Moirangthem Kiran Singh ii) Sanoujam Dhiren Meitei	B.Sc. IIIrd Yr. -----do-----	D.M. College of Science, Imphal -----do-----

ii) District Level Competition for School Students:



District Level Written Science Quiz Competition

District Level Written Science Quiz Competition for school students at two categories i.e. Category 1: Class IX–X standard and Category 2: Class XI–XII standard on the topics “**G.K and Physics**” and “**Golden Decade: 1895–1905**” respectively were organised in 6 (six) clusters covering the entire state.

The name of the clusters, venue and date are;

Sl. No.	Name of the Cluster	Venue	Date
1	Ukhrul District	Little Angel’s English School, Ukhrul	16 th January, 2006
2	Imphal East and Imphal West Districts	G.P. Women College, Imphal	29 th January, 2006
3	Thoubal and Chandel Districts	Kakching Higher Secondary School, Kakching	29 th January, 2006
4	Bishnupur and Churachandpur Districts	L.C.M. High School, Moirang	31 st January, 2006
5	Tamenglong District	United Builder’s School, Tamenglong	8 th February, 2006
6	Senapati District	H.M. Higher Secondary School, Keithelmanbi	25 th February, 2006

Booklets, Citation and Cash prizes of Rs. 1500/-, Rs. 1000/- and Rs. 500/- were awarded to the first, second and third position holders respectively on March 2, 2006, the National Science Day-2006 Celebration.

Category 1: Class IX-X

Rank	Name of the Student	Class	Name of the School	District
1 st	P. Rakeshchand Singh	X	L.C.M. High School, Moirang	Bishnupur and Churachandpur
2 nd	N. Gyaneshwor Singh	X	Little Bird School, Moirang	-----do-----
3 rd	Moirangthem Maya Devi	X	L.C.M. High School, Moirang	-----do-----
1 st	Dp. Jackson	X	St. Paul High School, Liwachangning	Thoubal and Chandel
2 nd	Y. Gyani Devi	X	Padma Ratna English School, Kakching	-----do-----
3 rd	Ksh. Nelson Singh	IX	-----do-----	-----do-----
1 st	Albert Rajkumar	X	Maria Montessori School, Koirengei, Imphal	Imphal East and Imphal West
2 nd	Thounaojam Angamba	X	Bal Vikash Kendra, Top Khongnang Makhong, Porompat	-----do-----
3 rd	Khoisnam Chingkhel Khaba	X	Kanan Devi Memorial School	-----do-----
1 st	Ngazipmi Chahong		United Public School	Ukhrul
2 nd	Wungchanso As		Sacred Heart Hr. Sec. School,	-----do-----
3 rd	I. Korap Malue II. Wortimla R.S. III. Masopam Kasar		United Public School Sacred Heart Hr. Sec. School St. John Bosco School	-----do-----

Rank	Name of the Student	Class	Name of the School	District
1 st	Duanthaoliu Panmei	X	United Builder School, Tamenglong	Tamenglong
2 nd	I. Akhailiu Rimai II. Meihuanlung Pamei	X X	United Builder School -----do----- --	-----do-----
3 rd	A. Lozaanba Khumbah	X	Trinity Public School Utopia	-----do-----
1 st	Sawan Ratna	X	St. Francis De Sales School, Kangpokpi	Senapati
2 nd	Pf. Lophro	X	-----do-----	-----do-----
3 rd	Bona Seigouhao Khongsai	IX	-----do-----	-----do-----

Category 2: Class XI-XII

Rank	Name of the Student	Class	Name of the School	District
1 st	Salam Rebika Devi	XI	Moirang College, Moirang	Bishnupur and Churachanpur
2 nd	Aribam Gangarani Devi	XI	-----do-----	-----do-----
3 rd	Salam Scientist Singh	XI	Moirang Multipurpose Higher Secondary School, Moirang	-----do-----
1 st	T. Kothilngam Maring	XII	Padma Ratna English School, Kakching	Thoubal and Chandel
2 nd	i) N. Johnson Singh ii) M. Shymananda Singh	XI XI	P.R. English School, Kakching Kakching Hr. Sec. School, Kakching	-----do-----
3 rd	i) Ksh. Santosh Singh ii) M. Dhanakumar Singh	XI XI	Kakching Hr. Sec. School, South Eastern Manipur College, Komlathabi	-----do-----
1 st	Md. Rizwan Sheikh	XI	Manipur Public School, Koirengei, Imphal	Imphal East and Imphal West
2 nd	Laishram Chittaranjan Singh	XI	Manipur Public School, Koirengei, Imphal	-----do-----
3 rd	Sougaijam Daren Singh	XII	South Point School of Science, Langthabal, Chanchipur	-----do-----
1 st	Somishan Ragui		Alice Christain Hr. Sec. School, Ukhrul	Ukhrul
2 nd	Ramsen A.S.		Sacred Heart Hr. Sec. School, Ukhrul	-----do-----
3 rd	i) Rawochan Kasomwoshi ii) C. Nimshimmi Ruth		Alice Christain Hr. Sec. School -----do-----	-----do-----
1 st	Guikhamlung Gonmei	XII	Tamenglong Govt. Hr. Sec. School, Tamenglong	Tamenglong
2 nd	Wisidinliu Abonmai	XI	-----do-----	-----do-----
3 rd	Francis Gangmei	XII	-----do-----	-----do-----

Edu-Sat Programme

Vigyan Prasar (VP), an autonomous organisation of Department of Science & Technology, Government of India, New Delhi in association with Development and Educational Communication Unit (DECU)/ISRO has established a two way audio-video interactive network for science & technology communication in the country using EduSat – the satellite for Education, Science & Technology launched by ISRO in 2004. For the first phase DECU/ISRO has setup 1 teaching end terminal at Vigyan Prasar and 20 nos. of class room end terminals (SITs) covering the entire country. MASTEC has been recognised as one of the SITs and also installation works (Disk Antenna & other equipments) have been completed at MASTEC Complex, Takyelpat, Imphal. Transmission of programmes has already begun on a trial basis.

The mode of the interaction would be:

- Experience sharing – between various parts of the Network
- Training – using distance education mode
- Access to quality – interaction with the experts in various fields to distant and far-away places in the country
- Sharing of resource materials – by way of file transferring

The main target groups (TG) will be:

- Science clubs, teachers
- School students & children
- Young adults (College students and higher)
- General public like – women, industrial labours, rural audience etc.

1.4.3 Training Workshop on Science Writing / Journalism

The four day Training Workshop on Science Writing / Journalism for four districts namely **Imphal West, Bishnupur, Senapati and Imphal East Districts** was organised during May 19-22, 2005 at the Conference Hall of the State Youth Centre at Khman Lampak, Imphal, Manipur. Altogether 34 participants (Science teachers in High Schools/ Hr. Sec. Schools/ Colleges, Science Popularisation activists, NGOs, Reporters/ Journalists, interested individuals etc participated in the training workshop. The training was catalysed and supported by NCSTC, Department of Science and Technology (DST), Govt. of India. The training was inaugurated by Dr. I.S. Khaidem, Former Vice Chancellor, Manipur University, Imphal and Former Chairman, Manipur Public Service Commission as the Chief Guest and Shri Binod Kispotta, Commissioner (S&T), Government of Manipur presided over the inaugural function of the training workshop. Dr. Manoj K Patariya Director, National Council for Science and Technology Communication (NCSTC), Department of Science & Technology (DST), Govt. of India, New Delhi attended the function as the Guest of honour.

In his key note address, Dr. M. Patariya of NCSTC, DST, New Delhi highlighted in brief the schemes/ programmes on science popularisation being encouraged by NCSTC Division of DST, Govt. of India. He further elaborated why NCSTC promoted the activities of science writing /journalism in regional languages in the country.



Dr. Manoj Patariya, Director, NCSTC, DST, New Delhi giving key note address

In his inaugural speech, Dr. I.S. Khaidem mentioned about the needs to develop science scripts for various forms of media in regional languages using the most understandable words in such a way that the common people can easily pick up the matter. He appealed to the teacher participants to spread the scientific ideas he or she had through available media (print / electronic) for the benefit of the common people. He further said that the writers should motivate the readers. The key role of media in making science reach to the common people is enormous, he further added.

In the Presidential remarks, Shri Binod Kispotta said that science can not be kept away from human development. People have had science since birth though it could not be properly utilised due to ignorance he further said. A person or writer who could not communicate to another person of any level in appropriate words could not become a good communicator. He further said that if the scientific knowledge is not passed on to the people in the nook and corner of the state, the knowledge would be of no value. Communication break down whether in a family or a society might lead to a problem. Hence, effective communication is essential he further added. He said that communication should be simple, appealing and catchy he further shared. He asked the science teachers to interact with the resource persons who had specialisations in different disciplines and work dedicatedly to become a real science writer/communicator.

Shri S. Madhu Sudan Singh highlighted the role of MASTEC specially in science popularisation activities during the last few years in the state. Earlier Th. Surendranath Singh, Executive Director while welcoming all the participants, guests, invitees, media etc. deliberated upon the goal of the workshop. A vote of thanks was proposed by Dr. L. Dinachandra Singh, Sr. Scientific Officer, MASTEC.

During the course of the training, ten resource persons imparted in-depth training on various aspects on science communication to the participants. The course structure included series of lectures, hands on practicals on script development and presentation by participants etc. followed by interaction and plenary session. The invited resource persons from outside the state included Professor Mukulchand Pandey, Lucknow University, U.P. and Dr. D.C. Goswami, Scientist- G, Regional Research Laboratory (RRL), Jorhat (Assam). Dr. Manoj Patariya, Scientist F and Director, NCSTC, DST, Govt. of India.- Honorary Secretary, ISWA also attended as DST Official cum expert. Included among the resource persons drawn from the state were Prof. H.N.K. Sarma, Physics Department, Manipur University, Shri Meghachandra Kongbam, District Information Officer of the Directorate of



A section of participants



Prof. Ak. Manihar delivering a lecture on scripting for multi media

Information and Public Relations (DIPR), Govt. of Manipur, Shri Ch. Rajendro Singh (Selection Grade Lecturer in Physics, Imphal College, Imphal) – A science writer cum columnist of local News paper in regional language, Shri Dilip Mayengbam, Programme Executive (science section) All India Radio, Imphal, Ak. Khogendro Singh, DDK, Imphal, Kh. Rajen Singh, Scientist, NIC, Govt. of India, Imphal, Professor Ak. Manihar Singh, Former Director, Audio Visual Research Centre, Manipur University, N. Sanatomba Singh, Editor, Manipur Mail (a local news paper of English version).

During the technical sessions, Ch. Rajendro Singh delivered a lecture on the topic Need for popularisation of science and technology in regional language and its trend in the state. Prof. Ak. Manihar spoke in brief on Science scripting for multi media. Prof. Mukulchand Pandey spoke on the topic entitled Role of science writers in the popularisation of S&T in the society and interacted with the participants. Shri Meghachandra Kongbam shared his knowledge on the topic Writing for News Paper. Dilip Mayengbam read out two scripts on the topics 1) Science Writers and Opportunities at All India Radio, Imphal and 2) Making Science Communication Effective and interacted with the participants. Kh. Rajen Singh delivered a lecture on the topic Inputs of S&T in developmental programmes with reference to IT. Ak. Khogendro Singh shared on the topic Developing a script for TV documentary. N. Sanatomba delivered on the topic Print Media's role in science popularisation. Dr. D.C. Goswami delivered and interacted on the topics 1) Techniques of science writing, 2) Science coverage in mass media and Prof. H.N.K. Sarma delivered a lecture on the topic Science popularisation for development of a society.



Prof. M. Pandey, Prof. N. Rajmuhon Dr. Manoj Patairiya interacting with the participants

As a programme of visiting media organisation, the participant team visited the laboratory of the Audio visual research centre (AVRC) of Manipur University where a tele-film entitled Local Wine was screened. Dr. Th. Jekendra Singh, Head, AVRC explained the various steps how a science script be converted into a science documentary film. He further elaborated on writing a script for a UGC programme.

During the course of the workshop, the participants prepared and presented scripts on various themes of importance for various forms of media such as print and electronic media etc.. A competition amongst the participants on best script development was held to encourage the young writer participants during which all the participants were given chances to read out the science scripts developed by themselves during the course of the workshop before a panel of experts. The expert members consisted of Dilip Mayengbam of AIR, Imphal, N. Sanatomba Singh, Editor, Manipur Mail (Local Daily), Prof. H.N.K. Sarma of Manipur University, Dr. Manoj Patairiya, NCSTC, DST, GoI., Mr. Brojendro Ningombam, Editor, Yakairol Daily (Manipuri Publication), AK. Khogendro Singh of DDK, Imphal and K. Madhu Mangol Singh, Editor, ISTV local cable network, Imphal.

The following were identified first, second and third best scripts respectively.

Sl. No.	Name of the writer participant	Name of the science topic	Media
1.	Dr (Mrs A. Radhapyari Devi	Arsenic in the Ground water	Electronic media (Radio)
2.	H. Manoranjan Sharma	Medicinal Plants for treatment of Diabetis	Electronic media (Radio)
3.	I. Bikram Singh	Modern Food	Radio

The activities of the four day programme were reported in most of the local News papers, AIR and ISTV Local Cable Network etc.

In the valedictory function, Dr. L. Dinachandra Singh, Senior Scientific Officer, MASTEC expressed happiness over the enthusiasm of the participants. Some participants representing male and ladies group highlighted what they had achieved from attending the programme. The invited resource persons said that they were impressed by the enthusiasm of the participants. During the function, Dr. L. Minaketan Singh, Scientific Officer cum programme in-charge, MASTEC read out a summary report of the 4 day programme. He further read out some common comments/suggestions submitted by the participants as follows.

1. To organise similar training workshop in all the districts of the state.
2. To increase the duration of the programme
3. To give more emphasis on practical on script development
4. To reduce number of lectures from the resource persons.

The workshop concluded with a great success with a note of serious commitments from the participants to become an active science writer / communicator.

1.4.4 Training Workshop for Resource Persons on Hands on Experiments

The four day long **Training Workshop for Resource Persons on Hands on Experiment** was organised by Manipur Science & Technology Council (MASTEC) during October 26-29, 2005 at the Conference Hall of the State Youth Centre, Khuman Lampak, Imphal. Shri L.P. Gonmei, Commissioner (S&T), Govt. of Manipur inaugurated the training workshop as the Chief Guest. Shri S. Madhu Sudan Singh, Director (S&T), Govt. of Manipur presided over the inaugural function and Shri Th. Surendranath Singh, Executive Director, MASTEC was the Guest of Honour of the inaugural function. The programme was catalysed and supported by National Council for Science and Technology Communication (NCSTC), Department of Science & Technology (DST), Govt. of India, New Delhi.

In the key note address, Shri Nripen Saikia emphasised on “learning by doing”. He highlighted in brief about his 15 years experience as a maker of low cost scientific



*Nripen Saikia demonstrating
low cost scientific teaching aids*

teaching aids. He said that equipment worth Rs. 1,000/- in the market may be constructed at a reduced cost of Rs. 20/- only using easily available materials. Experiments such as oxygen preparation, explaining centripetal force, human lung system etc. were demonstrated before the Chief Guest and invitees during the inaugural function. For the above demonstration experiments, except chemical, all the materials were available at home.

The main objective of the workshop was to motivate science teachers to develop and teach science using easily available materials.

In his inaugural address, L.P. Gonmei said that the programme on hands on experiment is very appropriate for a financially poor state like Manipur. He further said that due to financial constraints, Government may not be able to provide scientific equipment to the Govt. as well as semi Govt. schools. Science teachers are to initiate themselves to develop teaching aids using easily available materials for teaching science to their students he further said. He thanked MASTEC for initiating such programmes at the right time. He appealed to the participants to gain maximum knowledge from the workshop and transfer the same to their colleagues for teaching students.

Shri Madhu Sudan Singh, in his presidential remarks, mentioned about the key role of MASTEC in implementing science popularisation activities in the state. He said that developing a scientific teaching aid to be followed by related experiment using the developed low cost equipment will be the right approach to make a person or a student fully aware of a science lesson. Considering the specific needs in the state, MASTEC has organised the workshop he further said.

Shri Th. Surendranath Singh said that sophisticated science equipment are not required for teaching science at the school level. Instead, very low cost teaching aids may be used for performing experiments to inculcate the scientific knowledge to the students, he further said. Earlier, Dr. L Dinachandrt Singh, Senior Scientific Officer, MASTEC while welcoming the guests, invitees, participants gave a brief introduction about the programme. Dr. R.K.Pritamjit Singh, Scientific Officer proposed vote of thanks. The programme was reported in media organisations like All India Radio, DDK News, ISTV Cable Network and most of the local News Papers (Annexure I & II)



Participants making low cost scientific equipment



Preparation of oxygen by teacher participant



Construction of microscope

Altogether forty science teachers including eleven lady science teachers attended the training. Shri Ch. Rajendro Singh, Selection Grade lecturer in Physics, Imphal College, Imphal delivered a lecture on the topic “Importance of Hands on Experiments for teaching science”. Shri Nripen Saikia, invited resource person from DIET, Lakhimpur, Govt. of Assam imparted in-depth training to the participants on development of a number of very low cost scientific equipments using easily available materials which may be used in teaching science in the schools. Altogether thirty three (33) number of experiments were preformed during the course of the training. The following experiments were successfully carried out by the participants.

i) Preparation of oxygen gas, ii) Preparation of Hydrogen gas, iii) Preparation of Carbon dioxide, iv) Chemical reaction and physical and chemical changes, v) Studying density of various substance with handmade separation funnel, vi) Determining specific density of liquid (Kerosene oil etc.), vii) Studying action of lung (Lung Model), viii) Looking at cells with handmade microscope, ix) Measuring liquid with handmade litre container (in c.c.), x) Studying heartbeats with handmade stethoscope, xi) Studying principle of electromagnet, xii) Studying magnetic effect of electric current, xiii) Studying properties of light (Reflection), xiv) Studying properties of refraction of light, xv) Study of dispersion of light, xvi) Studying formation of rainbow by water prism, xvi) Studying centripetal and centrifugal force, xvii) Studying action of spray apparatus (Bernoulli's principle), xviii) Studying expansion of solid, xix) Study of expansion of liquid, xx) Expansion of gas, xxi) Constructing pinhole camera, xxii) Studying rainbow in soap bubbles, xxiii) Verifying the Archimedes' principle, xxiv) Studying property of surface film, xxv) Studying phenomenon of transformation of heat energy, xxvi) Measuring volume of shapeless body, xxvii) Studying pattern of veins in different leaves, xxviii) Testing food materials for starch, xxix) Determination of Hardness of water, xxx) Action of air jack, xxxi) Filtration of mixture and xxxii) Molecular theory of magnets.

List of materials procured for the training

Spring balance, pliers, scissor, hammer, hack saw, poker, chisel, glass cutter, file, razor blade, battery, flexible wire, balloon, straw pipe, filter paper, iron fillings, wire holder, spirit lamp, spirit, injection bottle, ribbon, knife, grease proof paper, adhesive gum (Araldite), baking soda, vinegar, lemon, aluminium pieces, Zinc pieces, Copper pieces, Kerosene oil, Glycerine, Salt, Sugar, Candle, Washing soda, Drink cans/ kitchen foil, Alpine, Incense stick, Plastic bottles, Saline tube, Rubber band, Valve tube, Nails, Funnel, Jar, Iodine, Dropper, Hibiscus flowers, Shampoo, Needle, Cello tape, Plastic sheet, Carry bag, Rubber ball, Plastic tube, Glass slides, Magnet, Cartoon box, Black drawing paper, Tissue paper, Door viewer, Film can (black), Thermometer, ICE Torch bulb, KMnO_4 , NaHCO_3 , NH_4Cl , CaO , NaOH solution, Tile, Cotton thread (of Stove), Metal tube (of spirit lamp), Lids, Dropper, Beaker (with measuring level), Plastic scale, Sampapory containers, Nails of different sizes, Ply board pieces, Metal wires, Drawing sheet (white), Silver paper, Dry cells etc.

Feed backs / Interaction:

A discussion / interaction of the participants with the resource person and MASTEC officials was held on the last day of the workshop. Shri Th. Surendranath Singh, Executive Director chaired the session. Dr. L. Dinachandra Singh, Senior Scientific Officer and Dr. L. Minaketan Singh Scientific Officer cum Programme Co-ordinator also took part in the session. Most of the participants were given opportunity to share their views about the four day programme. The comments given by the participants were almost identical. Some of the common points suggested by the participants for incorporation in the future programmes were as follows.

1. The workshop on Hands on experiment should be organised at district levels covering all the districts including hill districts. MASTEC should take the initiatives in this regard. MASTEC officials reacted to the participants that MASTEC would submit proposals for district level programmes to DST, GoI, New Delhi for consideration for financial support.
2. The duration of workshop should be increased to one week, if possible, with incorporation of more number of experiments.

Prize distribution and Closing function

The closing function was held at 4 p.m. of October 29, 2005 with the Executive Director of Manipur Science & Technology Council (MASTEC) as the Chief Guest. The



Certificate distribution ceremony



Resource person being given letter of appreciation

Chief Guest distributed participation certificates to the teacher participants. The invited resource person (Nripen Saikia) was also awarded a letter of appreciation for conducting the training workshop. Shri. Ch. Sarat Singh, Scientific Officer (Engineer) presented a brief summary of the activities of the four days programme. He appreciated the resource person for his ability to guide participants and construct 33 numbers of teaching aids using easily available materials with full satisfaction to all the participants. Thus, ended the four days long training workshop for resource persons on hands on experiment with a few remarks from the Chief Guest of the function.

1.4.5 Contact Programme for Talented School Students

The 5 day long Contact Programme for the Talented School Students (Science Motivation programme) was organized for the first time of its kind in Manipur by Manipur Science and Technology Council (MASTEC) during February 21-25, 2006 at the conference hall of the State Youth Centre, Khuman Lampak, Imphal. The programme was inaugurated by Shri M.A. Sattar, Commissioner (S&T), Govt. of Manipur and Shri S. Madhu Sudan Singh, Director (S&T), Govt. of Manipur presided over



Commissioner(S&T), Govt. of Manipur giving inaugural address

the inaugural function. The programme was catalysed and supported by National Council for Science and Technology Communication (NCSTC), Department of Science and Technology (DST), Govt. of India, New Delhi. The programme aimed at giving the participants an Exposure to the exciting world of science and Motivating them to take up science as career.

Altogether 40 students including six girl students and eight science teachers from selected eight schools in the state attended the programme. The programme included visits to various laboratories, science popular talks, hands on experiments (demonstration), science elocution competition, face to face with scientists etc.



Meeting the Agriculture scientists at Lecture hall of Central Agricultural University



Scientist of Central Agricultural University, Imphal interacting with the students in the field.

On the first day, the participants visited various laboratories of the Central Agricultural University (CAU). Dr. N. Brojen Singh, Asst. Professor, CAU highlighted in brief to the participants about R&D activities of the scientists of CAU. Dr. L. Joykumar of CAU explained to them about the tissue culture and also interacted with the participants. Dr. Chaoba Singh, Associate Professor Horticulture Department, CAU took the student participants to the field and highlighted about the floriculture activities being carried out and interacted with them.

On the second day, the 22nd February 2006, Shri G.Tomba Sharma, Head of Chemistry Department, D. M. College of Science, Imphal delivered a lecture on the topic “Food Adulteration” and interacted with the students. The same day, Dr. H. Nandiram Sharma, Retired Reader (Botany), D.M.C. of Science delivered a lecture on “Garbage Management”. He suggested to the students to make proper use of the easily available garbage at home. Dr. Th. Tomcha Singh, Professor and Head, Radiotherapy Department, Regional Institute of Medical Sciences, Govt. of India, Imphal delivered a lecture on “Medical Sciences in the 21st Century” and interacted with the participants.



Medical specialist answering to the Enthusiastic student participants

He further highlighted to the participants about the contributions of Medical professionals to the society.

In the afternoon, the participants were taken to the Loktak Lake (about 45 km. from Imphal) – a Ramsar site of the Wetlands of the International importance. The participants



Scientist delivering lecture on the bank of the Loktak lake

gathered at the bank of the Loktak Lake (biggest fresh water lake in the North Eastern India) and Dr. Kh. Shamungou Singh, a Zoologist cum Environmentalist explained about the importance of the Lake to the people of the region. He further added about the migratory birds coming from Siberian region to the lake every year. He also further interacted with the participants about the environmental degradation of the lake and its impact to the economic conditions of the people of the surrounding area.

On the third day, the 23rd February 2006, Shri G.Tomba Sharma interacted with the participants about the merits and demerits of some of the commonly used cosmetics. The participants visited the laboratories of the Earth Sciences Department including remote sensing and GIS lab. and seismic observatory of the Manipur University, Imphal. Dr. S. Ibotombi Singh, Head, Earth Sciences Department, M.U. highlighted in brief about land slides, mud flows, earthquakes which have been commonly occurring phenomenon of the region. Dr. Manichandra Sanoujam, Scientist B demonstrated how seismic waves are recorded in the systems in the seismological observatory when earthquake occurred.

The visit to Earth Sciences Laboratories was followed by visit to the laboratories of the Physics Department. The students met the scholars working in the laboratories such as X-ray diffraction lab, superconductivity lab., general lab., thermo- luminescence lab, etc. Dr. Th. Jekendra Singh, Prof and Head, Physics Department, M.U. taught to the participants how sound is produced. The participant team visited the Manipur Institute of Technology



Participants team and carrier Bus in the field



Visit to the laboratory of Physics Department, Manipur University and interaction with scientist

the same day in the afternoon. On the 4th day, the 24th February, 2006, the participants were given total awareness about Information Technology by delivering a lecture on the topic “**Computer World**” by Shri L. Shyamjit Singh, PSA, National Informatics Centre (NIC), Imphal.



Students' science elocution competition

The science elocution competition for the students was held on February 24, 2006. Two students constituted a team and spoke on a science topic, which was already distributed, to them well in advance. The objective was to know whether the student of the particular standard has got the real understanding of the topic of his or her choice. Dr. Th. Bhimo Singh, Professor in Medicine, RIMS, Imphal, Prof. H.N.K. Sarma, Physics Department, Manipur University, Shri G. Tomba Sharma, Head, Chemistry Department, D.M. College of Science, Imphal, Dr. S. Ibotombi Singh, Head, Earth Sciences Department, Manipur University, Imphal and Shri Ch. Rajendro Singh, Selection Grade Lecturer,, Imphal College were the invited experts of the science elocution competition. Altogether sixteen teams contested for the competition. The following teams were placed First, Second and third of the **Science Elocution Competition** respectively.

Sl.No	Name of Students	Name of School	Position
1.	Th. Wangam K. Korousen	St Josephs' School	First position
2.	Ch. Bilmolchand W. Jayanta	Don Bosco High School	Second position
3.	Diugailung Gonmei Namkhelakliu Chawang	United Builders School, Tamenglong	Third position



A Section of student participants at Face-to-Face with scientists



Scientists (from L to R):

Prof. HNK Sarma, G.T. Sharma, Dr. Ibotombi, Dr. Dhaneswar, Dr. Nandiram, Sharma Th. Surendranath (E.D., MASTEC), L.P. Sharma

In the afternoon session of February 24, 2006, there held a programme **“Face to Face with Scientists”**. Invited scientists of various disciplines for the face to face programme included 1) Professor H.N.K.Sarma (Physics group), 2) Dr. S. Ibotombi Singh (Earth Science group), 3) G.Tomba Sharma (Environment and Chemistry group), 4) Dr. M. Dhaneswar Singh (Animal Sciences group), 5) Dr. H. Nandiram Sharma (Plant sciences group), 6) L. Premchand Sharma (Computer Science). Altogether 45 (forty five) numbers of questions were put by the participants and resource persons of the appropriate fields answered and also interacted with them.

On the fifth day, the 25th February 2006, Shri M.A. Gaffar, Selection Grade Lecturer in Physics, G.P. Women’s College performed 10 (ten) experiments related to physics using very low cost equipments and interacted with the participants. The activities of the science motivation oriented contact programme were covered in many of the local news papers both Manipuri and English versions (Annexure - 1 to 4).

A feed back session was held on the last day just after the lunch break. During the session, representatives of all the school teams (one student and one teacher of each school team) were given opportunity to say a few words to comment on the programme whether good or bad. Most of the participants were of the view that they were really benefited from the programme. Many of them suggested to organize similar programme at least once in a year in the interest of the students of the region. They further suggested to increase the duration of the programme to seven day programme instead of five days.

The valedictory session/Closing function was chaired by Th. Surendranath Singh, Executive Director, MASTEC. The participants were distributed certificates by the Executive Director, MASTEC. The winners of the science elocution competition were also given cash awards. Dr. L. Minaketan Singh, Programme Co-ordinator highlighted in brief the summary of the five day long programme. Thus, the



Feed back session

contact programme concluded very successfully with a concluding remarks from the Executive Director, Manipur Science and Technology Council (MASTEC), Imphal

1.4.6 National Science Day (NSD) -2006

The country is celebrating the National Science Day on February 28 every year since the year 1987. The decision to designate such a day was taken by the Government of India in December 1986, and the choice of date is linked to the discovery of the “Raman Effect” by the great Indian Scientist Prof. C.V. Raman in 1928. The occasion is intended to instill and build in the confidence in us and in our own abilities to think of and do entirely new things of our own. Thus, efforts are made to popularise Science & Technology, estimate and nurture scientific attitudes and temperament among our people, as part of the National Science Day Celebration

Manipur Science and Technology Council (MASTEC) has a mandate of promoting Science and bringing appropriate technologies to the State for Socio-economic applications. Since, the year 1997, MASTEC has been continuously observing the National Science Day (NSD) by organising activity on February 28 and organising a state level science festival called “Science Meet” under the banner of National Science Day. The theme of the NSD-2006 as identified by Dept. of science & Technology, Govt. of India is **Nurture Nature for our Future.**

This year too, MASTEC under the financial support of NCSTC, DST, Govt. of India, and Department of Science & Technology, Govt. of Manipur has observed the National Science Day- 2006 on March 2, 2006 at Manipur Science Centre, Takyelpat, Imphal. The NSD – 2006 could not be observed on February 28, 2006 as there was General Strike in the entire state called by various organisations of the state. Painting competitions, National Science Day – 2006 observation function and prize distribution ceremony were the main activities of the day.

Painting competitions on the theme “Nurture Nature for our future” were organised



NSD – 2006: Sub Junior Painting Competition



NSD –2006 Junior Painting Competition

at two Categories – 1) Sub Junior (Class: III-V) and 2) Junior (Class VI-VIII) as a part of the activity of NSD - 2006. The duration of the competition was 1 hour. In the Sub junior category, 60 students from various schools of the state participated in the competition and 46 participants took part in the Junior category. Two Judges from Imphal Art College, Imphal namely Shri Th. Tombi Singh and Shri Y. Jugindro Singh were engaged for examining the performance of the participants. After careful examination, the following students were declared as the prize winners. Grading of marks was considered on the basis of the chosen theme as well as the drawing skill of the participants.

Sub Junior

Position	Name	Class	School	Prize
1 st	Rahul Yumlembam	V	Brighter Academy, New Checkon, Imphal	Rs.3000/- + Gift hamper
2 nd	Monish Sapam	V	Manipur Public School, Koirengei, Imphal	Rs.2000/- + Gift hamper
3 rd	Naoroibam Anand	IV	Tiny Tots Unique School, Imphal	Rs.1000/- + Gif hamper

Junior

Position	Name	Class	School	Prize
1 st	Ksh. Rojesh Singh	VII	Shantilata Memorial School, Imphal	Rs.3000/- + Gift hamper
2 nd	Bedani Yumlembam	VIII	Bal Vidya Mandir Hr. Sec. School, Imphal	Rs.2000/- + Gift hamper
3 rd	Waikhom Apollo Singh	VI	Assam Rifles Jr. High School, Imphal	Rs.1000/- + Gift Hamper

A National Science Day Observation function and prize distribution ceremony was also held on the same day ie 2nd March 2006 at Manipur Science Centre, Takyelpat, Imphal with Commissioner, Science & Technology, Govt. of Manipur as the Chief Guest, Dr. Kh. Shamungou Singh, Retd. Reader, D.M. College of Science, Imphal as the Guest of Honour and Shri Th. Surendranath Singh, Executive Director, MASTEC as the president of the function. In his speech, Shri M.A. Sattar mentioned about the importance of science in every aspects of life. He added that science learning does not require sophisticated equipments or a well equipped laboratory, science is everywhere and can be learnt by any one irrespective of caste or creed, important facts about learning science is observation, experimentation and analysis, he added. Dr. Kh. Shamungou Singh, Guest of Honour of the function gave a talk on the theme of the NSD – 2006 “Nurture Nature for our Future”. In the presidential remarks Shri Th. Surendranath Singh expressed about the needs for popularising science in the state particularly among the students. He highlighted some of the science popularisation programmes to be taken up by MASTEC in the near future.

Prizes along with Certificate of merit and Gift hampers to the winners of the painting Competitions on NSD - 2006 were distributed by the dignitaries on the dais. Apart from this, the prizes to the winners of the State and District level Written Science Quiz Competitions for the schools and college students held in connection with the World Year of Physics - 2005 Programme were also distributed.



Prize distribution by the Chief Guest

1.5 Official Visit of Officers on deputation

Sl. No.	Name & Designation	Date	Purpose and Venue
1.	Th. Surendranath Singh Executive Director	February 11-13 , 2006	Meeting on construction of improved kiln held at CGCRI, Kolkata.
2	Dr. L. Dinachandra Sr. Scientific Officer	September 26-27, 2005	3 rd R&D session of INCOH at NGRI, Hyderabad
3	do	9-10 November, 2005	13 th All India Meeting of State S&T Councils and State Departments of Science & Technology at Hyderabad
4	Dr. L. Minaketan Singh Scientific Officer	May 2005	Attended the Project Evaluation Committee Meeting held at Indian National Science Academy (INSA), New Delhi
5	do	August 2005	Visited Hyderabad Poultry Equipments, Hyderabad (A.P.) for procurement of an Incubator cum hatcher
6	do	December 25, 2005 to January 3, 2006	National Geophysical Research Institute (NGRI), Hyderabad for formulation of a programme on Modelling Hydrological System.
7	.Kh. Rakesh Scientific Officer	February 7-8, 2006	Meeting of PEG on State S&T programme at INSA, New Delhi
8	do	March 7-11, 2006	Collection of Office materials from Guwahati
9	Ch. Sarat Singh	May 8-10, 2005	Regional Workshop on Disaster Management held at IIT, Guwahati
10	Dr. R.K. Pritamjit Singh	June 11-12, 2005	Presentation of YSA-2004 Final Report , ASTEC, Guwahati
11	Do	September 12 – October 8, 2005	To attend 4 week course on Introduction to GIS and its applications, National Remote Sensing Agency, Hyderabad,
12	Do	December 27-28, 2005	2 day Orientation on EduSat Interactive Terminal, Vigyan Prasara, NCERT Complex, New Delhi

1.	Do	January 27-28, 2006	National Science Day-2006 function and Final Report presentation of YSA-2004, DST, New Delhi
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1.6 PROJECTS (ongoing)

Research as well as application oriented pilot projects sponsored by various central agencies / departments are being implemented by the Council. **The following are the projects supported by various central government agencies/organisations and** being implemented by the professional manpower of the Council assisted by project staffs

Highlights of the Projects:

1.6.1. Survey and Modernisation of the traditional Fishing Crafts and Gears in the Lakes and Wetlands of Manipur Phase – II sponsored by State Council Division, DST, GoI, New Delhi

Objectives:

1. To survey and inventories the traditional infra- technologies associate with the existing gears and crafts of fisher folk in Manipur Valley (work already completed in 1st phase).
2. To cause modernisation or introduction of appropriate technologies through modification of existing gears /crafts or introduction of new ones under scientific guidance and research.
3. To cause enhancement of fishing efficiency through modernised tools.
4. To cause growth of small scale industries of fishing gears and crafts in the fishermen society.
5. To save ecology and environment in the state through reduction of felling of large trees for canoe making and use of pesticides in capture fishery.
6. To bring about the overall economic development in a sustainable manner for the fishing community of Manipur.

The project is being implemented in consultation with IIT Kharagpur.

Role of IIT, Kharagpur

- 1) Selection of fishing crafts and gears that requires modification and introduction of improved/new crafts and gears.
- 2) Designing of alternative models of Fishing crafts and Gears.
- 3) Testing of hydrodynamic, stability test of the various alternative models of fishing crafts and field test of the various gears developed under the project.

MASTEC's component

- 1) Survey of the existing Fishing Crafts and Gears of the state and selection of fishing gears that has to be modified and introduction of new ones in consultation with IIT, Kharagpur and other line Departments of the State Government.

- 2) Construction and fabrication of various models of Fishing Crafts designed by IIT, Kharagpur.
- 3) Multiplication of successful prototypes at pilot scale for demonstration/ Popularisation.

Achievement /Progress of the Project :

A demonstration/ awareness generation programme of Fishing Crafts & Gears developed under the project for the fisherman of the state was organised by MASTEC in association with Loktak Lake Environment Conservation Centre, Thanga on 20th September 2005 at Thanga Khunjem Leikai, Thanga (Loktak lake). Officials of State Fisheries Department, Adhakshya, Bishnupur Districts and Pradhans of the surroundings of the Loktak Lake were involved in the programme. The fishing crafts and gears developed under the project were demonstrated and the fishermen were allowed to operate them of their own. The significance and efficiency of the various models were explained to the local fishermen by making trial on the spots. The local fishermen know the



Purse Seine operation at Ningthem Pukhri



Popularisation of the models at Loktak Lake



Trial of the models by the fishermen at Loktak

significance and advantages of the improved models developed. They readily accepted the models. The fishermen have started asking about the availability of the models. This is a clear example of success story. People from the electronic and print media were also involved in the popularisation programme and the programme was covered in the print and electronic media.

The models were replicated and kept at Loktak Lake under the supervision and care of the Loktak Lake Environment Conservation Centre, Thanga for taking up mass popularisation programmes in the surroundings of the Loktak Lake.

State S&T Councils Division, Department of Science and Technology, Government of India under its programme of video filming of the achievements of all State S & T Councils in India had sent a team to Manipur for film shooting of success stories of Manipur S & T Council. Film shooting of the crafts and gears developed under the project was made by a team from Lucrative Eye Communications, New Delhi. Direct interaction with the local fishermen on the efficiencies and advantages of the models was also

visualised in the film. The positive comments from the fishermen can be seen in the film when the film is released by DST, GOI.

1.6.2 Technology Intervention for Mushroom Cultivation to generate Self employment of tribal women in Ukhrul District in Manipur sponsored by DBT, GoI, New Delhi.

Objectives:

- To involve rural masses in Scientific and organised cultivation of edible mushroom.
- To make rural population aware of protein malnutrition and motivate them for taking up protein rich mushroom to meet the protein demand.
- To train 100 women and men in production of sufficient mushrooms as fast income generating crop.
- To establish a mushroom spawn production unit at the project Site and provide quality spawn to the beneficiaries for ensured quality products.
- To establish marketing facilities of mushroom by supplying sufficient quantities for value added products.

Progress:

The project is implemented at two sites i.e. 1) Technology Demonstration Unit at the premises of Science and Technology Complex at Takyelpat, Imphal and 2) Murei Village in Ukhrul District (a tribal district) about 25 km from Imphal.

Spawn production and packaging are carried out at the Technology Demonstration Unit at Takyelpat and cultivation activity and a part of semi processing of mushroom are taken up at Murei Village by the beneficiaries. Cultivation of oyster mushroom is presently going on at Technology Demonstration Unit at Takyelpat for demonstration. Manipur Development Agency (MDA) which is an NGO located at Murei Village is the Co-implementing Agency of the project. The management of the project at the beneficiary's Village is taking care by MDA. With the engagement of 2 project staff i.e. one Project Assistant and one Skilled Helper, the project is going on smoothly to achieve the project goals. The existing Solar Passive Technology Building of Manipur Science and Technology Council at Takyelpat, Imphal with a total area of 6000 sq. ft. has been utilised for the time being as the Technology Demonstration Unit of the Project. The Unit has a well-equipped Spawn Production Laboratory and a Cultivation Unit for experimental cultivation of varieties of Mushroom. The laboratory has all necessary equipments like Autoclave, Laminar Flow, Refrigerator, Water Storage Tank, Chemical balance, Kitchen Balance, Gas connection and adequate glasswares for preparation of spawn.

Oyster mushroom such as *Pleurotus flabellatus*, *P. eous*, *P. Sapidus*, *P. Ostreatus* (*Phillipine*), *P. Ostreatus* (PCA) had been collected and cultured in PDA media for propagation. Besides the above, some local varieties such as *Lentinula edodes*, *Termitomyces sp.*, *Auricularia sp.*, *Schizophyllum commune*, *Volvareila sp.* are also under tissue culture for developing suitable cultivating technique. Wet preservation of the above varieties are kept as museum specimen for demonstration.

Without any technical difficulties, the laboratory has been constantly producing quality spawn for a few variety of Oyster mushroom. Regular production of spawn for *Pleurotus flabellatus*, *P. eous*, *P. Sapidus*, *P. Ostreatus* (*Phillipine*) is going on at the Technology Demonstration Unit for free supply to the beneficiaries of the Murei Village as

well as for cultivation at the Technology Demonstration Unit. . demonstration purposes with the quality spawn produced from the laboratory. Phase wise cultivation of oyster mushroom in Polybags of size 18” x 12” having 1 kg of dry paddy straw is going on at the cultivation unit of the project for demonstration. Since paddy straw is abundantly available in the state, paddy straw had been selected as a material for the substrate. From the yield, it has been



Spawning of Oyster Mushroom by the beneficiaries during the training programme



Shri Th.Surendranath Singh, Executive Director, MASTEC inaugurating the 2 days training on Spawn Production and Cultivation of Mushroom.

found that paddy straw is a good material for preparation of substrate. Laboratory is constantly producing spawn for free supply to the beneficiaries. About 600 bags of spawn with each bag weighing 550 g are producing every month for supply to the beneficiaries.

The project is implemented in close association with Manipur Development Agency which is located at the project site ie. Murei Village. The village is not far and is located about 25 km from Imphal. Although, there are 62 households, 55 beneficiaries had been selected for the project. In order to enable the beneficiaries to start cultivation of Oyster mushroom, a training programme for the 55 beneficiaries was conducted during September 14 – 15, 2004 at the project site. Smt S. Mema Devi, Mycologist and Co-PI of the project



Cultivation at Village by the beneficiary



Distribution of Spawn to the beneficiaries

imparted indepth training to the beneficiaries. The topics included history of mushroom cultivation, edible and non edible mushrooms, nutritional value of edible mushrooms, types of edible mushrooms, diseases and pests of mushrooms, selection/maintenance of strain and spawning procedures, demonstration of laboratory equipments for mushroom production, specification of the cultivation sheds, demonstration of mushroom cultivation, processing, harvesting, consumption pattern and marketing of mushroom etc.

After proper selection of sites at the plots of the beneficiaries, 55 numbers of cultivation sheds of the size 10 ft x 15 ft had been constructed in each of the beneficiary's plot. The sheds were constructed of locally available materials i.e. bamboo and paddy straw are of the dimension 10 ft. x 15 ft. Racks made of Bamboo are housed inside the shed for cultivation of Oyster mushroom. The first phase cultivation was started during January 2005. Regular cultivation at Murei Village is going on. At the initial stage of cultivation the yield was less. Inspection report showed that there was less moisture content inside the cultivation shed that was caused due to easy escape of moisture to the thin straw side walls of the shed. This hampered the spawn running stage that resulted into low yield.

The sidewalls were renovated upto the desired level to retain enough moisture inside the sheds. As there was enough moisture, the spawn were run properly and the yield of which was good.

Occurrences of Pests were seen in certain stages of the cultivation. Pest infestation took place mainly during the spawn-running period, pinhead stage and cropping stage. Major pests found were rats and flies. Traps were used by the villagers to avoid rat infestation. Insecticides and pesticides were not allowed to apply since these chemicals may affect the mushrooms consumers. Upto certain level, the infestation of pest has now been controlled. Infestation of flies is mainly due to unhygienic mode of cultivation by the beneficiaries. Regular cleaning of the shed and spraying of the floor with accurate doses of bleaching powder is presently being adopted by the beneficiaries to lower infestation of flies.

A monthly average income of Rs.568/- can be generated out of the cultivation by each of the beneficiary.

1.6.3 Low Cost Housing using Stabilised Mud Blocks – Sponsored by State Councils Division, Dept. of Science & Technology, Govt. of India.

Objectives of the project:

- i) to upgrade the rural traditional kutchha houses and introduce cost – effective and durability houses – an alternative of burnt bricks
- ii) to demonstrate and popularise the technology of stabilised mud blocks using locally available soils/muds
- iii) to uplift the poor people with standard houses of the technology
- iv) to impart the technology to rural artisans for socio – economy upliftment

Progress:

The project has been implemented at Leimaram village (an SC village) in Bishnupur



Mud Block House – Demo Unit- 1



Mud Block House – Demo Unit- 2

district, Manipur with the introduction of the soil block making technology using TARA-Balram, Earth Compressed machine. The artisan and youth of the village have been aware about technology. Three mud houses have been constructed in the village.

1.6.4 Water Harvesting and Water Conservation in Imphal East I Blocks, Imphal East District, Manipur sponsored by Department of Water resources, Govt. of India.

Objectives:

- (I) To identify the surface and ground water resources
- (II) To investigate ground water potentiality.
- (III) To assess the quality of the surface and ground water for domestic and irrigation purposes.
- (IV) To carry out the management practices for deteriorated water.
- (V) To construct suitable water harvesting and conservation structures.

Progress:

Database on surface and subsurface water resources has been created and resource mapping of the area is also done. During the project tenure 6(six) water harvesting and conservation structures will be constructed. Three sites of construction have been identified and out of which 1(one) structure is constructed.



Spring Water Conservation Structure at Sanasabi Village, Imphal East

1.6.5 Dailong Micro Hydel project – Sponsored by State Councils Division, Dept. of Science & Technology, Govt. of India

Objectives:

- (i) To design and develop the cross-flow turbines suitable for (2x50kw) capacities. The packages consist of turbine and electronic load controllers for a micro-hydel station at Dailong Village, Tamenglong, Manipur.
- (ii) To study the problems of and set guidelines for installation, operation, maintenance and energy utilisation associated with Micro Hydel Units in remote hilly terrains. Micro hydel units are environmentally clean and eco-friendly suited to decentralised power generation.



Laying of penstock

Progress: Civil Works

- i) Construction of Desilting tank and Forebay tank have been completed. Earth work in excavation for penstock trench have been completed.
- ii) Joining/welding of 60 nos. of penstock pipes have been completed
- iii) Laying of 20 penstock pipes including RCC supports/saddle blocks at the joints have been completed and the work is in progress
- iv) Construction of Power House has been completed.



Power House



Fore bay tank and diversion weir

Electromechanical Equipments

Two AC Generators, two Control Panels and two Electronics Load Controllers and two turbines have been received and are yet to be installed.

1.6.6. Japanese Quail Demonstration cum Production Centre sponsored by SSD, DST, Govt. of India

Objectives of the Project

- i) Popularisation of quail farming techniques among farmers in Manipur.
- ii) To help quail farmers in incubation and hatching of eggs consistently to sustain the industry in the state.
- iii) To provide periodic training to farmers.
- iv) To provide quail eggs and quails to the interested farmers

Achievements / Progress

Availability of quail birds in the Demonstration Centre :

The quail birds and hatching eggs were made available to the interested farmers/ individuals/ public etc. on demand.



Rearing shed of Japanese quails at Takyelpat



Adult Japanese Quails in the rearing centre

Training in Japanese Quail rearing at District level

The training in quail farming has been organized for the districts namely Senapati district, Thoubal district, Tamenglong district, Bishnupur district etc. during the year 2005-2006.

Training for Thoubal District

An awareness Workshop on Japanese Quail Farming for Thoubal District was organized on July 12, 2005 at Khangabok, Thoubal District, Manipur. Shri Menjor Singh, Principal, K.M. Blooming School, Khangabok inaugurated the training as the Chief Guest and Dr. L. Dinachandra Singh, Senior Scientific Officer, Manipur Science and Technology Council, Imphal presided the inaugural function. Dr. L. Minaketan Singh, Scientific Officer, MASTEC while welcoming the guests, invitees and participants highlighted in brief the objectives of the training. Dr. Ksh. Pabitra Singh, Poultry Development Officer



Expert explaining male –female birds



Interaction with self help groups

delivered lectures on the topics 1. Quail Industry & need for its popularisation for income generation and 2. Management of quails. Dr. Kh. Somorendro Singh delivered the topics entitled 1. Feeding, Nutrition and diseases of quails. He also covered the aspects on marketing of quails. In total, twenty five participants including a self help group of females consisting of nine ladies attended the programme successfully.

Training in Quail farming for Bishnupur District

The one day awareness programme on Quail farming for the Bishnupur district was organized on July 5, 2005 at Phairenbam Mandop at Moirang in association with Phairenbam Youth Development Organisation, Moirang in Bishnupur District. Shri Ph. Ranbir Singh, Commissioner, Moirang Municipal Council inaugurated the training. In his inaugural address, he said that poultry farming could be one way of earning for survival and this challenging job should be taken up by educated unemployed youths. He appreciated Manipur Science and Technology Council for taking up such initiatives for the first time in the state. Since people of the region are fond of meat items, quail farming could occupy a larger space in the he further said. Dr. L. Dinachandra Singh, Senior Scientific Officer, MASTEC explained why the training was taken up at district level. In the technical sessions, two speakers such as Dr. Ksh. Pabitra Singh and Dr. Kh. Somorendro Singh, Poultry specialists delivered lectures and interacted with the participants. Altogether thirty two participants including five ladies took part in the training. At the end of the training, all the participants were given certificates by the Chief Guest of the function. The Chief Guest also took part in the training from the inaugural session till the end of the programme.



Demonstration of Japanese quails



Identification of male and female birds

He also shared views during interaction session. Dr. L. Minaketan Singh, Scientific Officer cum Programme in-charge read out the summary of the one day training. The training ended with a vote of thanks from Kh. Gyaneswar Singh, Secretary, Phairenbam Youth Development Organisation (PHYDO).

Training in Japanese Quail Farming for Senapati District (Tribal dominated district)

The one day training on quail farming for Senapati District was organized with local support of the Motbung Youth Club, Sadar Hills at Motbung in Senapati District. Lamthang, Chairman, Motbung Village Authority graced the occasion as the Chief Guest. Dr. L. Minaketan Singh, Scientific Officer, MASTEC (Project PI) presided over the programme. Shri Shonsat Lhouvum, President, Motbung Youth Club was the Guest of honour of the function. Shri Ch. Sarat Singh, Scientific Officer conducted the programme. He highlighted about the objectives of the training. Shri Lettinsei Lhouvum, Secretary, Motbung Youth Club proposed vote of thanks. Two invited experts delivered lectures and



A section of participants attending the training in quail farming

also interacted with the participants on various issues of quail farming covering various aspects such as space requirements of rearing quails, feeding, management, diseases, marketing, preparation of local feeds etc. . Altogether thirty participants attended the one day programme.

Training in Quail farming held at Lukhambi (Khumji) , Tamenglong District (Tribal dominated district), Manipur.

The training held on October 6, 2005 at Lukhambi (Khumji) part – II town of Tamenglong District, Manipur was inaugurated by Shri Lunglin Kamei, Chairman, Lukhambi Part –II, Tamenglong District, Manipur. Dr. L. Minaketan Singh, Scientific Officer and Project PI presided over the training. The town authority led by the Chairman, Lukhambi – II provided the local support. Invited experts Dr. Ksh. Pabitra Singh, Poultry Development Officer and Deputy Director and Dr. Kh. Somorendro Singh, Poultry Specialist of State Veterinary and Animal Husbandry Services, Government of Manipur attended the inaugural function as the guests of honour. The inauguration was followed by technical sessions. Dr. Ksh. Pabitra Singh delivered lecture on the topic “ Quail farming for income generation and its management”. The lecture was followed by interaction with the participants. The expert answered the questions put by the participants. Dr. Kh. Somorendro Singh spoke on the topic “ Feeding, Nutrition and marketing of quails” and also interacted with the participants. Most of the participants were found quite enthusiastic in quail farming. Altogether 35 farmer participants including 12 lady participants attended the programme.

The session on sex identification of quail birds was held separately in two groups. The male participants formed one group and lady participants constituted one group. During the demonstration session, each participants was given opportunity to identify male or female birds from a group of mixed birds. The experts explained in brief about how to identify male birds or female birds. He asked the participants to always remember the following points while identifying male or female bird.

1. The female birds are slightly bigger in body size than male birds
2. The Male birds have slightly reddish colour in their chess whereas female have brownish colour
3. The male birds produce a solution while pressing at the anus whereas the female birds failed to produce fluid

Before concluding session, a group discussion in the form of feed backs was held. The following points were noted down out of the comments suggested by the participants.

1. The farmers living in the hill districts would find difficulties in farming of quails due to lack of Incubation facilities in the hills. Imphal is far from district Head quarters. and carrying of quail eggs from hill districts to Imphal city for incubation would face problem since quail eggs are fragile in nature. Hence, it was suggested to have hatchery unit each in all the hill district Head quarters.

2. It was suggested to organise such training programmes separately in the entire Sub – Divisions of the hill districts to give awareness to the maximum number of tribal population in the district

3. Since the experts in poultry areas are not available in the tribal dominated hill areas, MASTEC should make necessary arrangement to provide technical guidance as and when required.

The training ended with a vote of thanks by Mr. Sk. Adipou, Secreatary, Socio Economic and Relief Society, a Non Government Organisation, Lukhambi, Tamenglong District.

Hatchery unit.



Hatchery unit installed at MASTEC Complex, Takyelpat

A Hatchery unit has been established by installing an incubator cum hatcher procured from the firm M/S Hyderabad Poultry Equipment, Miyapur, Hyderabad (Andhra Pradesh) at Takyelpat in the later part of the second year of the project implementation period.

1.6.7 Pilot Project on Rain Water Harvesting in Manipur sponsored by SSD, DST, GoI, New Delhi

Objectives :

- Introduction of ferro-cement tank as safe water reservoir
- Fabrication and installation of 15 numbers of demonstration based roof top rain water harvesting structures (five structures in the 1st year and 10 structures in the 2nd year) in the select places in the state.
- Popularisation of rain water harvesting techniques in the state.

Technical Back-Up Support & Linkages with nearby institutions:

Regional Research Laboratory (RRL), CSIR, Jorhat, Assam provided technical guidance and related literature from time to time as and when required. The engineers of the Manipur Building Centre, Porompat also shared their expertise in the fabrication works.

Achievement:

- i) Man power/ Project staff including Project Engineer trained

The three Project Staffs (one engineer and two masons)engaged in the ongoing project have been trained at the Applied Engineering Division of Regional Research Laboratory (RRL), CSIR, Jorhat (Assam) about fabrication and construction of various types of ferro-cement tanks for storage of water. After being trained, they had started fabrication and construction of ferro-cement tanks for collection and storage of rain water.



Fabrication of skeletal cage

Materials used :-

Steel rods, chicken wire mesh, cement, sand, water proof materials etc.

Steps adopted

- Preparation of base foundation
- Preparation of bottom floor
- Fabrication of body skeletal cage and roof portion with steel rods
- Fixing of chicken wire mesh in equal distribution
- Plastering using cement mortar
- Performance test

The demonstration based ferro-cement structures for a capacity of 5000 litres have been fabricated and constructed at the following places in the second year of the project implementation

- 1) Moirang in Bishnupur District
- 2) District Hospital Campus, Tamenglong
- 3) Palace Compound, Imphal East
- 4) Leimakhulen Leikai, Langol
- 5) Little Angels' School , Tangrei, Ukhrul District
- 6) Langjing, Imphal West District
- 7) Goura Sampradai Mandop, Moreh in Chandel District.



Ferro cement water storage tank at District Hospital Campus, Tamenglong



Ferro cement water storage tank Constructed at Ukhrul



*Ferro cement water storage tank
at Moreh, in Chandel District*



*Ferro cement water storage tank
at Langjing Achouba, N.C. Road*



*Ferro-cement Water Storage tank
at Gobindaji Temple, Imphal East Dist*



Ferro-cement Water Storage tank at Langol

Performances of the above tanks were satisfactory and the tanks have been successfully used for storage of water. The constructions of the remaining rainwater harvesting structures are in progress.

1.6.8 Drip Irrigation System for Rabi Crops of Manipur sponsored by State S&T Councils Division, DST, GoI, New Delhi

Objectives :

- i) To substitute the flooding method/manual method of giving water to each plant by drip irrigation system
- ii) To eliminate land levelling in undulating/hilly region.
- iii) To maximise utilization of available water
- iv) To increase the cultivable area and yield of the crops.

Progress Achieved:

- i) Drip irrigation system has been installed at the first site in a plot measuring about 0.5 acres and two different rabi crops viz., Tomato and Brinjal have been grown.
- ii) Two new project sites have been identified and lease agreement have been entered into with the farmers.
- iii) Detail topography survey of the two new sites have been conducted.
- iv) A subsurface water storage tank for rain water/spring water harvesting has been constructed at Lukhambi Part-II.
- v) Drip Irrigation systems have also been installed at two project sites Lukhambi Part-II, Tamenglong District (Hill station) and Maklang village, Imphal West District in plots measuring 0.5 acres each.
- vi) Tomato, Brinjal and Cauliflower have been grown at Lukhambi Part-II and crops are likely to be harvested during April-May, 2006.
- vii) Brinjal, Tomato and Cucumber have been grown at Maklang village and fruits have started to come up.
- viii) Awareness programme-cum-training workshops on drip irrigation system for the farmers are yet to be organised in the 3rd year.



Tomato irrigated with drip system at
Langthabal Kunja



Drip Irrigated Brinjal at Langthabal Kunja



Drip Irrigation system applied to
Cucumber at Maklang



Drip Irrigation system applied to
Brinjal at Maklang



Drip Irrigation system applied to Brinjal at Lukhambi

1.6.9 Database Management System of the Medicinal Plants of Manipur sponsored by State S&T Councils Division, DST, GoI

OBJECTIVES :

- i) Survey and investigation of the Medicinal Plants of Manipur.
- ii) To make awareness amongst the villages about preservation/conservation of medicinal plants of Manipur.
- iii) To formulate a database information system of Medicinal Plants of Manipur.

PHYSICAL PROGRESS

- i) Intensive surveys have been conducted in the valleys of Manipur and collected data of medicinal plants in consultation with some local publicly known traditional medical practitioners (Maibas). Surveys in the hilly areas are yet to be conducted.
- ii) The Project Progress Review Meeting was held on the 30th August, 2005 in the office of Manipur Science and Technology Council, Imphal. Two Scientists from DST, Govt. of India attended the said meeting.
- iii) Data of 350 medicinal plants including 100 indigenous plants have been entered into the computerized database. Out of which photograph of some plants are shown below

1) Manipuri name : Bhubati

Habit : Herb **Parts Used :** Leaf

Mode of Preparation: Leaves boiled for decoction

Mode of Use: Decoction and fresh

Ingredients: Leaves contain caffeic, chlorogenic and myristic acids; carvacrol, eugenol, hentriacantane, tritriacantane ect.

Ailment Treated : Leaf decoction is used in asthma, chronic fever, worm diseases, diabetes, piles, jaundice, dysentery.



2) Manipuri Name :Kengoi

Habit :Herb **Parts Used :**Leaf **Mode of Preparation:** Plant is cooked for consumption,
Mode of Use : Decoction

Ailment Treated : Cooked plant is given against diabetes. Piles and intestinal disorder.



Kengoi

3) Manipuri Name : Waka yendem

Habit : Herb **Parts Used :** Leaf

Mode of Preparation:Tender leafy shoot cooked for consumption and boiled for decoction.

Mode of Use: Decoction

Ingredients: Plant is a good source of Rutin(a bioflavonoid) which reduces increased apillary fragility. Rutin strengthens the inner lining of blood vessels. **Ailment Treated :** Cooked tender shoot is eaten against diabetes. Cooked plant is commonly taken in combination with other herbs for high blood pressure.



Waka yendem

4) Manipuri Name: Thangjing

Habit : Herb, **Parts Used :**Fruit & Leaf, **Mode of Preparation:** Leaf petiole crushed with water for paste preparation. The fruit has a special taste and aromatic flavour. The tender leaves locally known as "Khyom" and petioles after removing spiny skin may be served as vegetable in curries and salads. The immature fruit (lolang) is used after boiling while mature fruit(Aroba) is used fresh in traditional



Thangjing

Mode of Use: Fresh, **Ingredients:** Fruit contains food values per 100 gm of edible portion : Protien-12.8g, Fat-0.1gm, Minerals-0.5gm, Carbohydrate-76.9gm, Calcium-20mg, Phophorus-90mg and Iron-1.4mg.

Ailment Treated : Raw fruit is used for diabetes, leaf petiole paste is applied against burns and boils. Seeds are spernatorrhoea, tonic, astringent and deobstruent. Seed flour is used as substitute for arrowroot and easily digestible.

5) Manipuri Name: Chengkruk tingkhang panbi

Habit : Herb **Parts Used :** Root & Leaf

Mode of Preparation: Leafy shoot crushed with lime for paste Leaves crushed for paste and extract.Leaves crushed & soaked for infusion. Leaves boiled for decoction or cooked with salt for consumption.



Chengkruk tingkhang panbi

Mode of Use Decoction, Fresh, Local Application and Infusion

Ingredients: Higher alkanes and their methyle derivatives, higher aliphatic alcohols, acids and esters, amino acids, beta- sitosterol, cholesterol etc. are reported present in the plant.

Ailment Treated : Leaf extract is taken for regulation of blood pressures. Cooked leafy shoot is eaten in diabetes. Leafy shoot paste with lime is good for local application on skin sores for early healing. Leaf paste is applicable on boils and burns. Leafy shoot infusion is good in eczema cases.

1.6.10: CGCRI, Kolkata & MASTEC joint ventured project on Pilot Scale Demonstration of Ceramic Membrane Based Iron Removal Plants in Manipur:

Progress:

- 1) Two sites have been identified one at Shri Shri Govindaji Temple complex, Imphal and the other at Science & Technology Complex, Takyelpat, Imphal.
- 2) Drilling of two hand pumps (one each) at the two sites have been completed.
- 3) Civil works in site preparation and shed construction have been completed at the two sites.
- 4) Plastic water storage tanks have been procured and construction of one Ferro cement tank (5000 ltr. Capacity) for storage of raw water at one of the project sites is completed.
- 5) CGCRI, Kolkata is yet to install the ceramic membrane technology to the project sites.



*Drilling of tube well at
The Govindajee Temple, Imphal.*



*Shed for Iron removal plants with Water
Storage Tank at the Govindajee Temple*

1.6.11 Project on Community Information Centre (CIC) sponsored by Ministry of Information Technology, Govt. of India.

Objective:

1. To proliferate the use of Information Technology (IT) for Socio-Development up to the Block Level
2. To develop databases, locally relevant contents, finally leading to e-governance, e-commerce, e-learning etc.

MASTEC, NIC, Govt. of India, Imphal center and DST, Govt. of Manipur play a key role in jointly implementing the above mentioned project. NIC supports the technical know how, DST, Govt of Manipur shares in the overall administration and MASTEC handles the financial matter including the payment of monthly honorarium to the project manpower/ staffs engaged on contract basis in the project.

So far 33 (thirty three) CICs have been set up in 33 developmental blocks in the state. Each CIC has got 6 numbers of computers connected to the Internet through a VSAT

Users :

Panchayat representatives, Student members, Women Development Organisations, Youth Club Members, NGOs, Entrepreneurs, Educational Institutions, Common men etc.

Benefits to the rural people :

- i. Internet access and e-mail connectivity
- ii. Access to data base /developmental information of national importance.
- iii. Training through distance learning techniques and connectivity to leading educational and research institutions in the country
- iv. Awareness of IT at block level

1.6.12. Identification of Strategy for Mapping of S & T needs in a State

Objectives:

- Inventorization and Mapping of problems in relevant sectoral areas of the entire state requiring S&T intervention based on secondary sources.
- Documentation of problem including areas drafting of specific and well defined problem statements mapped together with S&T interventions in one priority district.

Progress / Achievements:

- Procurement of one P4-Computer.
- Procurement of one A3 Inkjet colour Printer.
- Collection of secondary data from different Government Departments and Institutions.
- Procurement of 2001 Census Data.
- Digitization of Base Map at Sub-Divisional level.
- Entry of secondary data.
- Problem Identification of different sector.

1.7. List of Scientists/Visitors to MASTEC

The following scientists made official visits to MASTEC in connection with the programmes shown below.

Sl. No	Name & Address	Date of Visit	Purpose of visit
1	Dr. Manoj Patariya Scientist F / Director (NCSTC), DST, GoI., New Delhi	May 19-22, 2005	To attend the Training Workshop on Science Writing / Journalism

2	Prof. Mukulchand Pandey Lucknow University, Lucknow (U.P.)	May 19-22, 2005	To attend the Training Workshop on Science Writing / Journalism
3	Dr. D.C. Goswami Scientist G Regional Research Laboratory Jorhat, Assam	May 21-22, 2005	To attend the Training Workshop on Science Writing / Journalism
4	Shri Nripen Saikia Scientist, DIET, North Lakhimpur	October 26- 29, 2005	Training Workshop for Resource persons on Hands on Experiments
5.	Dr. Rakesh Chettal Director, NSTMIS Division Department of Science and Technology (DST), Govt. of India (GOI), New Delhi	October, 2005	To attend the ¹ LPAC Meeting of the Project “Database Management System of the Medicinal Plants of Manipur”
6.	Dr. A.N.Rai Scientist D., NSTMIS Division DST, GOI, New Delhi	October, 2005	To attend the ¹ LPAC Meeting of the Project “Database Management System of the Medicinal Plants of Manipur
7	Dr. A.K.Hanjura Scientist F National Physical Laboratory, New Delhi	December 21 – 23, 2005	Installation of satellite based time receiver and teleclocks at Imphal
8	Shri Ved Prakash Technical Staff, National Physical Laboratory, New Delhi	December 21 – 23, 2005	Installation of satellite based time receiver and tele clocks at Imphal
9	Ram Sajjan Technical Staff, National Physical Laboratory, New Delhi	December 21 – 23, 2005	Installation of satellite based time receiver and teleclocks at Imphal
10	Er. Mayur Degra Infinium India Ltd, Ahmedabad	March 2006	Site Selection for Disk Antenna for EduSat at Takyelpat
11	Er. Jayesh Goswami Infinium India Ltd, Ahmedabad	March 2006	Installation of Disk Antenna for EduSat at Takyelpat
12	Dr.(Mrs) Padma S.Vanker IIT, Kanpur, U.P.	March 2006	Project formulation for joint implementation by MASTEC and IIT, Kanpur
13	Dr. A.K.Goswami Ex. Director, ASTEC, Guwahati	March 2006	Project formulation on Traditional dyes for implementation by MASTEC

1.7 Library :

MASTEC has made a modest attempt to built up its own library. The collection is about 400 (three hundred) volumes of various disciplines. In addition, a number of periodical journals, newsletters, bulletins, local papers, science publications etc. are received regularly. MASTEC aims at strengthening the library of the Council.