

Annual Report

2009-10



MANIPUR SCIENCE AND TECHNOLOGY COUNCIL
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Manipur Science & Technology Council (MASTEC)

Annual Report for 2009-2010

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

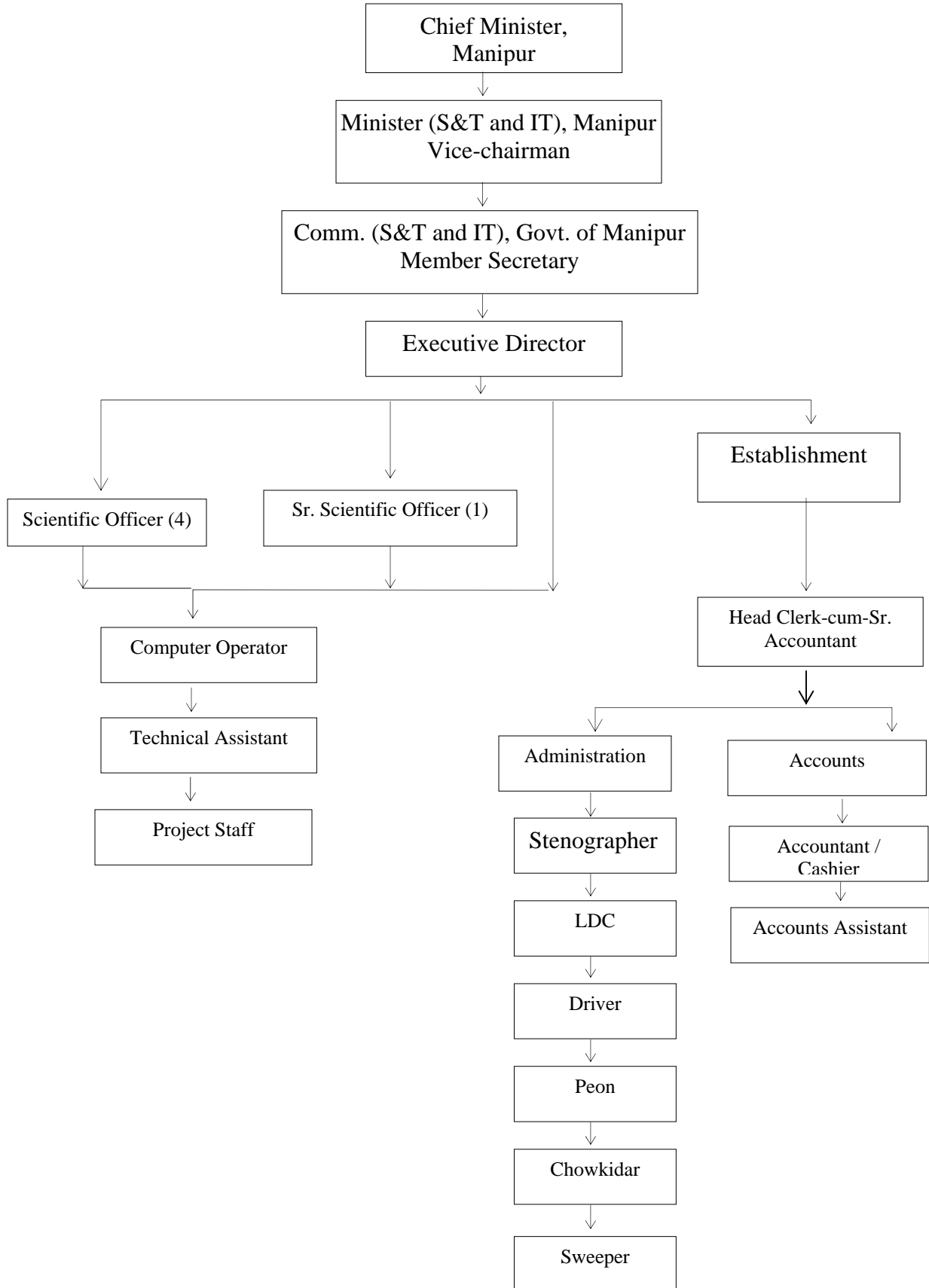
- To identify areas in which Science, Technology and Environment can be utilised for the achievement of the Socio-economic objectives of the State and in particular, tackling the problems of backwardness and underprivileged sections of Society;
- To advise on policies and measures necessary to promote 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 27 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

Scientific 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., Ph.D.	Scientific Officer
4.	Kh. Rakesh	M.Sc.	Scientific Officer
5.	Er. 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, Ph.D.	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.	Sr. Accountant cum Head clerk
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. Surjit Singh	M.Sc.	J.R.F.
22.	Ph. Gopinchandra Singh	M.Sc.	Project Assistant.
23.	Guru Aribam Diana	M.Sc. (Food Tech.)	Project Assistant
24.	Sukham Sheitajeet Singh	B.Sc.	Skilled worker
25.	V. Chinzagin	ClassVIII passed	Unskilled worker

1.4 Activities

The Manipur Science and Technology Council (MASTEC) organised various centrally sponsored **projects** / 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 2009- 2010

1.4.1 Science Popularisation

1.4.1.1 Science Meet 2009

February 28 and May 11 are observed as **National Science Day** and **National Technology Day** respectively throughout the country .

The Council in association with Science Teachers' Forum Manipur (STFM), Manipur Association for the Promotion of Science (MAPS), Manipur Science Communicators' Association (MASCA) and Generation De New Image (GENIM) organised a 5-day long **Science Meet 2009** in commemoration of National Science day and National Technology Day during May 11-15, 2009 at Iboyaima Shumang Leela Shanglen, Imphal. The programme was supported by NCSTC, Department of Science & Technology, Government of India, New Delhi and Department of Science & Technology, Government of Manipur.



Inaugural function of Science Meet 2009

Activities of Science Meet 2009

The main activities of the Science Meet 2009 included Competitions, Exhibitions, Popular Science Show, Folk Form of Communication, Origami/ Mathematics Lab, Scientific Demonstration-cum-Lecture

The competitions included Science Model (Class VIII–XII Science), Science Quiz (Class IX–XII Science), Spot Painting (Class III-V, Class VI-VIII & Class IX-XII Science), Declamation (Class IX–XII Science), Best Appreciation Award (Open) and Best Guide Teacher Award for Science Model). The **Exhibitions** included Science Model, Book, Posters, Photos, Popular Science Gallery, Science on Stamp, Information

Technology. The Popular Science Show covered Animated Scientific Films and Science Explaining Miracles. The **Folk** Form of Communication included Science Drama and Puppet Play

Science Model Competition & Exhibition

The competition was organised for students reading in Class VIII – XII. Altogether eighty-seven models were exhibited by 34 students. The following were the winners

Position	Name of the Winners	Class	Name of the School	Name of the Model
First	Nashit Fattah Gaigangdonliu Panmei	X X	Mannu English School, Imphal	Atrios
Second	S. Paolenmang S. Rabindrajit Singh	X X	Brighter Academy School, Imphal	All season irrigation and power generation plant
Third	Raeesa Lairenlakpam	VIII	Nirmalabas High School, Imphal	H1N1
Third	W. Rocky Singh N. Rahul Singh	X X	Sainik School, Imphal	Recycling Polimers through pyrolysis
Third	Ahanthem Bachandary Lukram Doli	IX IX	R.K. Sanatombi Devi Vidyalaya School, Pangei	Advanced agarbati maker

The **Best Guide Teacher Award** for the Science Model Competition in recognition of the teacher's effort in developing and designing the science model for the competition was awarded to **Th. Ashakiran Devi** of Mannu English School, Imphal

Science Quiz Competition

The competition was organised for students reading in Class IX-XII Science. Mr Thokchom Wanganm and Thoudam Michael of Herbert School, Ghari got the first prize. The second position went to Th. Jeffchand Luwang and K. Ghanashyam Singh of Sainik School, Imphal and the third position went to Keisham Chaoba Meitei and Meinam Rustam Singh of Tiny Tot's Unique School, Imphal



Science Quiz Competition

Spot Painting Competition

The spot painting competition was organized in 3(three) groups viz., i) Sub-Junior Group (Class III—V), ii) Junior Group (Class VI-VIII) and iii) Senior Group (Class IX-X). One hundred fourteen students from 26 schools, Ninety students from 21 schools and 41 students



Spot painting competition for students

from 21 schools participated in the competition of the Sub Junior, Junior and Senior Category respectively. The following were the winners.

Sub-Junior Group

Position	Name of the Winners	Class	Name of the School
First	Kanchan Ningombam	V	MegaManipur School, Yarlpat
Second	Sony Soram	IV	Shantilata Memorial School, Imphal
Third	Anchal Yanglen	V	Mega Manipur School, Yarlpat

Junior Group

Position	Name of the Winners	Class	Name of the School
First	N. Anand Singh	VIII	Eagle High School, Imphal
Second	Sonia Thiyam	VII	Maria Montessori School, Imphal
Third	Shakti Dev Laishram	VIII	Tiny Tot's Unique School, Imphal

Senior Group

Position	Name of the Winners	Class	Name of the School
First	Kshetrimayum Johnson Singh	XII	Model Higher Secondary School
Second	Kshetrimayum Rojesh Singh	X	Shantilata Memorial School, Imphal
Third	Kshetrimayum Baby Devi	XII	Model Higher Secondary School

Declamation Contest

The competition was opened to students reading in Class IX-XII Science. Forty six students from various institutions participated in the competition five contestants were selected for the final round through a written test. In the Final Round, students gave an oral presentation for 7 minutes either in English or Manipuri with Slide/Power Point Presentation on any of the given three topics and then interacted with the judges of the competition. The topics included Chandrayan – I, Scientific Temper, Biodiversity Hot Spot with special reference to Manipur

Ningthoujam Asharani Devi of Tiny Tot's Unique School got the first prize and the second prize went to Anandkumar Naorem of Herbert School, Ghari and the third position went to Keisham Tampha Ibemma of Tiny Tot's Unique School

Book Exhibition

Students, teachers and parents paid visit at the book stalls and also bought many books of their interests. Three local book stores/libraries such as Sangam Book Store, Sharma Book Agency and Job Centre, Imphal took part in the book exhibition.

Photo and Poster Exhibition

About 50 (fifty) scientific posters and many photographs of endangered flora and fauna of the state were displayed during this Meet. Posters and the photographs contributed by different individuals and coordinating organizations were also displayed.

Popular Science Gallery & Science on Stamp

Popular Science Gallery & Science on Stamp were organised successfully. Altogether 10(ten) interactive science models were exhibited during the Meet. The organisers also displayed Science on Stamp and many other wall posters relating to the science of Physics.

IT Show

Four local computer institutions/firms participated and displayed advanced technologies and interacted with the visitors, especially, students. Hundreds of students enjoyed with the display and internet facility. The computer institutes/firms that took part in the IT shows included Swift Infotech, Leima Shopping Plaza, AMT Computers, Babupara, Endeavor, Pologround, SRM Enterprises, Pologround

Scientific Film Shows

The scientific films were screened on all 5 days of Science Meet-2009 for a duration of one hour daily. These scientific films screened during the Meet included Medicinal Plants of Manipur, Pluto: No more a Planet, Waterworks of India, Oyster Mushroom Cultivation Orchids of Manipur

Explaining Science Behind Miracles

Scientifically Explaining Miracle was one of the most popular scientific shows of the Meet. The expert members of GENIM demonstrated many items behind miracles and the scientific backgrounds of the shows were explained. Every day, hundreds of students & general public witnessed the show and could learn how science is related with miracles.



A section of students visiting SM 2009

Puppet Play & Science Drama

The art of puppetry forms effective tool for communicating science to the people. Members of MASCA presented 2(two) puppet shows entitled 1) **Thajagi Macha Morambi**, 2) **Eidi Ngak-khre** based on importance of water to the mankind and human evolution. These puppet plays were much impressive and visitors could

realize how puppetry could act as a medium of S&T communication in the society.

Based on the focal theme "**Expanding Horizons of Science**". The artists of Manipur Science Communicators Association also presented a science Drama entitled "**Nava Graha Puja**". This science drama tried to clear the superstitious beliefs about Eclipses in the society.

Origami/Mathematics Lab

Science Teachers Forum Manipur (STFM), displayed many scientific tools based on mathematics. The members of STFM very clearly explained the theories behind those tools and also narrated the stories of the discoveries/scientists to the visitors.

Scientific Demonstration-cum-Lecture

Four experts made demonstration cum lecture on various topics. Prof. N. Rajmuhon Singh, Dept. of Chemistry, M.U. demonstrated on Basic Chemical Reactions. Prof. P. Kumar Singh, Dept. of Life Sciences, M.U. delivered and demonstrated on Biodiversity Hot Spots of Manipur. Shri Ch. Rajendro Singh, Dept. of Physics, Imphal College delivered lecture on Magnetism of Earth and Nanjesh Thongbam of Dept. of Earth Sciences, Manipur College delivered lecture on Fossils and Fossil Sites of Manipur

Local TV Programme

Ten episodes developed on the activities of Science Meet 2009 were telecast in the Local Cable ISTV Network. The programme was telecast at 8.00 p.m. every Saturday and repeat telecast at 8.00 a.m. next day.

Best Appreciation Award

The most prestigious award of Science Meet, **Best Appreciation Award** introduced by MASTEC since the year 1997 to be given to an individual student who proves to have gained the maximum knowledge of science from the Meet as judged by questionnaire response and personal interview was given to **Th. Wangam**, Class XII of Herbert School, Ghari, Imphal

1.4.1.2 Science for Sanitation Month

Under the initiative of National Council for Science and Technology Communication, Department of Science and Technology, Government of India, every year, the month October is celebrated as **Science for Sanitation Month** all over the country with variety of activities addressing to issues of health and sanitation. Manipur Science and Technology Council celebrated Science for Sanitation Month by organizing lecture programmes during July – September, 2009 in different schools, colleges, local communities etc. on Health, Hygiene and Sanitation in the state. The lecture programme

aimed at making people aware about the benefits of good sanitation practices. The lecture programme was organized in co-ordination with Directorate of Health Services, Govt. of Manipur and Regional Family Welfare Training Centre, Directorate of Family Welfare Services, Govt. of Manipur and resource persons were engaged from Directorate of Health Services and Family Welfare Services, Govt. of Manipur for delivering lectures.

Altogether, 45 lecture programmes were organized in different schools, colleges, local communities of the state such as Yairipok Universal College, Yairipok, Cressent English High School, Kanan Devi Memmorial School, Pangei, Pari Imom Shindam Shang, Pangei, Assemblies of God High School, AG Compound, Churachandpur, Modern English High School, Ghari, Standard English School, Khongjom, Ideal Public School, Irong Cheshaba, Samurou High School, Samurou, Awang Potshangbam School, Potshangbam, United School, Awang, Potshangbam, Free Progress Academy, Konthoujam, Pari Imom Sindam Shang, Langjing, Little Bird School, Moirang, Scholar English School, Irengband, Scholar English Academy, Keikhu, Regular English High School, Imphal, Network of Economy & Welfare Service, Kumbi, Kumbi High School, Kumbi, Eagle High School, Nagaram, Baby Seikam English High School, New Checkon, Maha Union Govt. High School, Chandel, Anallon Christian Institute, Chandel, Ching Tam High School, Yaingangpokpi, Emanuel English Academy, Yaingangpokpi, Diviner English School, Imphal, Brighter Academy, New Checkon, Popular Academy, Mayanglanjing, Manipur Loumi Lup, Irawat Bhawan Complex, Keishanthong High School, Imphal, The Ereima English Academy, Naranseina, South Asian Centre for Research Education and Development, Moirang, City Montessori Hr. Sec. School, Shamushang, S.F.S School, Kangpokpi, KT Hr. Sec. School, Kangpokpi, Apex Christian English Academy, Motbung, Ideal English High School, Charhazare,



Dr. Meghachandra delivering lecture at Kanan Devi Memmorial School, Pangei



A teacher interacting with resource persons at Awang Potshangbam High School,

Sharon English School, Noney, Bethany Hr. Sec School, Senapati, Mount Everest College, Senapati, United Christian Academy, Riha – Ukhrul, Rayburn High School, New Lamka, Churachandpur, Young Pioneer English High School, Kumbi Shetapur, Don Bosco High School, Churachandpur, Probel English School, Kanglatombi

The lecture covered various aspects of health, hygiene and sanitation. Such as Basic concept about Primary Health Care, Health, Hygiene, Sanitation, Types of wastes related to sanitation, Proper waste

and excreta disposal, Access to Safe water supply (Global, National, State), Excreta the main cause of childhood diarrhoeal diseases, Soil and water pollution, Lack of Sanitation and personal hygiene, Barriers to sanitation services, Contamination of food, propagation of flies, Disease propagation routes,



Interaction session at Mount Everest College,

WASH links to Health, Sanitation of eating places, Housing and health, Indoor Air pollutants, Standards of water purity, Management of bio – medical wastes, Food Hygiene, Milk Hygiene, Meat Hygiene, Noise pollution with regards to health, Proper ventilation with regards to health, Poor Sanitation, unsafe water and hygienic environments, Effect of poor sanitation on education, WASH and HIV/AIDS, Highlights of Deaths from unsafe water, poor sanitation and hygiene, Diseases related with unsafe water and poor sanitation, Hardware and softwares of good sanitary practices, Personal hygiene promotion, Food and domestic sanitation, Global facts of poor sanitation and its impact on health, Socio economic impact from unsafe water supply and poor sanitation, Concept about the role of health education, Recent Public Health emergencies such as swine flu, German measles etc. Leaflets on some common diseases of poor hygiene and Sanitation such as Diarrhoea, Viral Hepatitis etc. were developed and distributed to the participants after each lecture programme.

About 13,000 students / people of the state had been benefited out of the lecture programme. During each interaction session, participants put many interesting questions related to health issues and satisfactory answers for the questions were explained by the resource persons.

As a part of the lecture programmes, information about sanitation facilities/practices were also gathered from the local people at different spots. It was observed that most of the people in the rural areas had inadequate toilet facilities and also

they were not in a position to afford the cost for construction of septic tank latrine or other low cost latrines. Besides, there were still many people who didn't have a latrine and hence defecated in the nearby open fields. Many local people suggested for initiating programme for construction of low cost toilet for the poor people of the rural areas in the next sanitation programme.

1.4.1.3 Training Workshop on Science Writing for Ukhrul District

The four day Training Workshop on Science Writing / Journalism for Ukhrul District, Manipur was organised during September 14 – 17, 2009 at the Conference Hall of the Tangkhul Theological Association at Ukhrul in Ukhrul District, Manipur jointly with Manipur Development Agency, Muirei, Ukhrul – an NGO working in the hill districts. Altogether 32 participants (Science teachers in High Schools/ Hr. Sec. Schools/ Colleges, Science Popularisation activists, Reporters/ Journalists, interested individuals etc participated in the training. The training was catalysed and supported by NCSTC, Department of Science and Technology (DST), Govt. of India.



Satyajit Usham, Sr. Sub Editor, Sangai Express delivering lecture on Print Media

The training was inaugurated by Shri A. Ibocha Singh, Commissioner, Science & Technology, Govt. of Manipur as the Chief Guest and Shri Th. Surendranath Singh, Executive Director, Manipur Science & Technology Council, Imphal 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 and Technology, Govt. of India attended the function as the honoured guest. During the course of the training, six resource persons imparted in-depth training on various aspects on science



Presentation of scripts by a lady participant

communication to the participants. The course structure included lecture series using slides, hands on experiments on script development and presentation by participants etc. followed by interaction and plenary session.

Invited resource persons from various organisations were 1. Shri L.I. Sharma, Senior Journalist, Jaipur, 2. Shri T.K.Jain, Chief Editor, Science Magazine, Jaipur, 3. Rupachandra Yumnam, Editor, ISTV, 4. H. Devendro Singh, Duty Officer, AIR, Imphal, 5. Mr. Satyajit Usham, Sr. Sub Editor, 6. The Sangai Express, Imphal, 7. Shri L. Somorjit Singh, Selection Grade Lecturer, Imphal College.

During the technical sessions, Dr. M. Patairiya delivered lectures on the topics 1.) DST's role in popularisation of science in the country and 2) Topic Identification. Shri L.I.Sharma delivered on the topic "Techniques of science communication". Shri T.K.Jain spoke on the topics Sources for science writing. H. Debendro Singh on the topic Opportunities that All India Radio, Imphal Centre is offering to the science writers. Mr Satyajit Singh Usham spoke on Writing for News Papers and role of print media in popularisation of science. Rupachandra Yumnam delivered on developing a script for TV programme. In addition to delivering lectures, separate interaction sessions with the resource persons were also organised.

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.. In the valedictory function, Shri L. Somorjit Singh, Secretary, Manipur Science Communicators Association (MASCA) as the Chief Guest expressed happiness over the enthusiasm of the participants.

1.4.1.4 One day Workshop on Patent Awareness and IPR Issues

Patent Information Centre (PIC), Manipur in association with the Patent Facilitating Centre (PFC), Technology Information, Forecasting and Assessment Council (TIFAC), Department of Science & Technology, Government of India, New Delhi organised a **Workshop on Patent Awareness and IPR Issues** on **8th February, 2010** at **Hotel Imphal**. The main objective of the workshop was to create awareness about IPRs, especially Patents, for individuals, researchers of colleges, universities and R&D institutions etc. in the state. During the programme, participants were interacted with resource persons from TIFAC, New Delhi, Patent Office, Kolkata and Patent Attorney.



Dr. Saha, Director, TIFAC delivering lecture

Dr R Saha, Director, PFC-TIFAC, New Delhi delivered lecture on the topic Introduction to IPR and some case studies.

Yashawant Dev Panwar, Scientist-D, PFC-TIFAC, New Delhi delivered lecture on Patent Information and Its access. S Majumdar & Co., Kolkata Dr Sanchita Ganguli, Patent Attorney delivered on the topic Novelty and Inventiveness in Patents. Shri Madhurjya Thakur, Assistant Controller of Patent & Design Patent Office, Kolkata spoke on Patenting System in India. Altogether 60 participants attended the workshop.

1.4.1.5 Entrepreneurship Development Programme in Biotechnology

A 4 day Entrepreneurship Development Programme in Biotechnology was organized by Manipur Science and Technology Council, Imphal in association with Biotech Consortium India Limited, New Delhi during February 18 -21, 2010 at Hotel



Dr. Mandira Roy, Deputy Director, Biotech Consortium India Ltd delivering



A section of participants of the EDP programme

Imphal. The programme was sponsored by Department of Science and Technology, Government of India. The main objective of the programme was to impart/improve entrepreneurial skills of educated youth enabling them to start ventures or improve their employability in Biotechnology Enterprises.

The programme was inaugurated with Shri Th. Surendranath Singh, Executive Director, Manipur Science and Technology Council, Imphal as Chief Guest and Dr. Mandira Roy, Deputy Director, Biotech Consortium India Limited, New Delhi presided over the function. Selected 50 participants took part in the programme. Resource persons from various Institutes/Organisations delivered lectures on various aspects of establishing an enterprise in biotechnology. The topic included Entrepreneurial opportunities in Biotechnology and Govt. of India initiatives to promote Biotech entrepreneurship, Biofertilizers and Biopesticides, IPR in Biotechnology, Herbal Extracts, Marketing management and human resource management, Financial management and managerial accounting, Enzymes, Biofuels and Micropropagation and orchid Culture.

1.4.1.6 Training Workshop on Understanding Weather and Climate

A 3-day Resource Persons Training Workshop on Understanding Weather and Climate was organized under the sponsorship of National Council of Science and Technology Communication (NCSTC), Department of Science & Technology, Govt. of India, New Delhi during February 22-24, 2010 at the Conference Hall of State Youth Centre, Khuman Lampak, Imphal.

The main objective of the programme was to impart training about Weather, Climate and Hazards and its effect on our day-to-day life and to inculcate a spirit of enquiry, questioning, observation, analysis and interpretation of data by understanding weather patterns through low cost weather observation kits and models; learning and taking scientifically valid measurements so that they in turn may stimulate student's interest in pursuing careers in Science & Technology especially in areas of climate, meteorology, hazard management etc. The programme also covered awareness and understanding about global warming, soil, air and water pollution and their effect on Hydrological, Carbon, Nitrogen Cycles.



A section of the participants

The target group of participants were Science Teachers of High/Higher Secondary Schools and Science Activists from Science NGOs in the State. Altogether 50 participants attended the 3-day Training Workshop. Weather & Climate Study Kit developed by Science Centre (Gwl), M.P. for Rastriya Bigyan Evam Prodyogiki Sanchar Parishad was used during the Training Workshop.

The Training Workshop was inaugurated by Shri A. Ibocha Singh, Commissioner (Science & Technology), Govt. of Manipur as the Chief Guest. Mrs. Sandhya Verma, Secretary, Science Centre (Gwl), M.P. and Shri Th. Surendranath Singh, Executive Director, Manipur Science & Technology Council, Imphal were the Honoured Guest and President of the Inaugural Function respectively.

In his Inaugural Speech Shri A. Ibocha Singh, Commissioner (S&T), Govt. of Manipur mentioned about the importance of organizing such workshops in the present scenario of weather and climate change.

Mrs. Sandhya Verma, Secretary, Science Centre, (Gwl), M.P. in her speech highlighted how the Weather & Climate Study Kit was developed by M.P. Science Centre for Rashtriya Vigyan Evam Prodyogiki Sanchar Parishad, Department of Science & Technology, Govt. of India for the school students/children. She also suggested for

opening of Mini Weather Stations in different places of the State so that students of the nearby schools may get some idea about the use of the various instruments in the kit and at the same time weather data may be collected and a comparative study with published data of Newspaper may be carried out.

Dr. Nabakumar Singh, Head of Department of Geography, Imphal College, Imphal delivered a lecture on the topic “Global Atmospheric Change”.

There was a lecture-cum-demonstration on the measurement of Atmospheric Pressure using Aneroid Barometer, measurement of Rainfall using Rain Gauge by Mrs. Sandhya Verma. A group presentation based on the data recorded by different groups of 5 participants each using the Weather and Climate Study Kit developed by Science Centre (Gwl), M.P. under the supervision of Mrs. Sandhya Verma.



Presentation of result based on experiment by a group of participants

Shri L. Somorjit Singh, Selection Grade Lecturer, Imphal College, Imphal delivered a lecture on the topic “Global Climate Related Issues”.

A field visit to the Metrological Centre of ICAR, Imphal Centre was also organized. All the participants and some officials of Manipur Science & Technology Council along with the Key Resource Person Mrs. Sandhya Verma visited the Metrological Centre. Miss Anita, Research Associate, ICAR, Imphal Centre demonstrated and explained about the equipments installed in the Centre. Apart from the manual weather & climate study equipments, there were Automatic Weather & Climate Study equipments such as Rain Gauge for measurement of rainfall, Sunshine Recorder, Anemometer for measurement of wind velocity, Minimum and Maximum Temperature Recorder etc. in the Metrological Centre of ICAR, Imphal Centre.

Opening of Mini Weather Stations:

As proposed by the Key Resource Persons, Mrs. Sandhya Verma, the participants were instructed for opening of Mini Weather Stations at their Schools and at Local Clubs/NGOs for individual and NGO Participants. Altogether 25 (twenty five) Mini Weather Stations have been opened as a follow up activity of the day Training Workshop on Understanding Weather & Climate.

1.4.1.7 National Science Day - 2010

The **National Science Day 2010** was celebrated on February 28, 2010 at Hapta Kangjeibung, Palace Compound, Imphal in association with Organisation for a Better Society (OBS), Palace Compound, Imphal. The programme was catalysed and supported by National Council for Science & Technology Communication (NCSTC), Department of Science & Technology, Government of India, New Delhi and Department of Science & Technology and Information Technology, Government of Manipur. This year's national theme as announced by DST, GoI was "***Gender Equity for Prosperity with Peace***".

The main activities of the day included **Spot Painting Competitions** for Sub Junior and Junior categories and **Invited Lecture** on the theme "***Gender Equity for Prosperity with Peace***" by Dr. S. Romeobala Devi, Chief Counsellor, Imphal West Police Head Quarter, Imphal. About 80 students from different schools of the state participated in the competitions.



Audience hearing the lecture on the topic "***Gender Equity for Prosperity with Peace***" delivered by Dr. S. Romeobala

In the Sub-Junior category, Jackson Akoijam of M. M. Hr. Sec. School, Wangkhei was given the First prize and Thiyam Meghabarna of Maria Montessori Sr. Sec. School, Koirengei got the second prize. K. Chorjitkanta Sharma of Maria Montessori Sr. Sec. School, Koirengei got the third prize. Kangabam Linthoingambi and Anchal Yanglem of Mega Manipur School, Yaralpat were given the consolation prizes. In the Junior category, the first prize went to Kshetrimayum Preety Devi of Little Flower School, Imphal. Sonia Thiyam of Maria Montessori Sr. Sec. School, Koirengei got the second prize and Takhellambam Chittaranjan Singh of Kendriya Vidyalaya Lamphelpat was given the third prize. Soram Sanathoiba of St. Joseph's School and Lanchenba Ngangom of Malika Standard English School were given the consolation prizes respectively



Spot Painting Competition

The programme concluded with a valedictory function chaired by Shri A. Ibocha Singh, Commissioner, Science and Technology, Government of Manipur.

1.4.2 Projects:

1.4.2.1 Dry Fish Fermentation Technology in Manipur sponsored by DST, Govt. of India

The project was taken up with the following approved Objectives.

- To conduct survey on the availability/ abundance of raw materials i.e. the dry fish and market analysis of fermented fish (ngari).
- To introduce a compress machine for dry fish fermentation to the general public of Manipur.
- To carry out dry fish fermentation in a scientific and hygienic manner.
- To cause an overall improvement of the traditional dry fish fermentation method as the traditional practice is unhygienic, time consuming and labour intensive.
- Comparative study of the biochemical constituent, microbiology and sensory evaluation of ngari produced out of the new technology with that of the traditional technology.
- To conduct demonstration programme for awareness generation.

Achievements:

A new technology has been developed for fermentation of dry fish.

1.4.2.2 Landslide Hazard Zonation between Noney-Nungba along NH-53 & Geotechnical Investigation of two slides sponsored by DST, Govt. of India

Objectives:

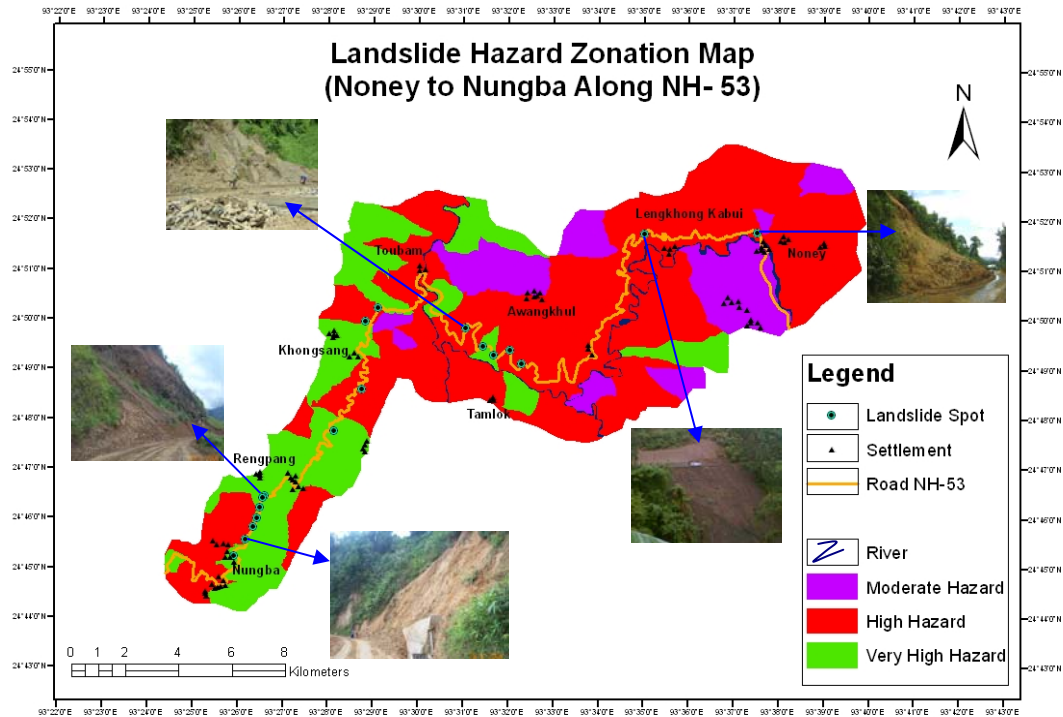
1. To study geomorphology, geology and structural parameters for slope stability. and study hydrological conditions.
2. To study soil and rock mechanical properties.
3. To prepare a detailed map from the sites specific studies, risk assessment and to develop preventive measures.

Based on the distribution of TEHD values of each facet the landslide hazard zonation map has been prepared and facilitates spatial classification of the study area into three zones viz. Moderate Hazard (MH), High Hazard (HH) and Very High Hazard (VHH).

Zone	TEHD Value	Description of Zones	Area (Sq. Km.)	Percentage
I	5.1 – 6.0	Moderate Hazard (MH) Zone	25.2	14.57
II	6.1 – 7.5	High Hazard (HH) Zone	104.8	60.58
III	> 7.5	Very High Hazard (VHH) Zone	40.2	23.24

Table 1: LHZ based on TEHD (after Anbalagan, 1992 & BIS, 1998)

Eighteen (18) incidences of landslides have been identified in the present study. Most of the landslides falls into active and old slides categories. Majority of the study area is High Hazard and Very High Hazard zone. High Hazard Zone is about 60.58% of the total area covering 104.8 sq.km followed by Very High Hazard Zone covering 40.2 sq.km with 23.24% of the total area. 25.2 sq. km. and 14.57% area is included in Moderate Hazard Zone whereas Very Low Hazard Zone (VLH) and Low Hazard Zone (LH) are not identified.



A. Determination of Factor of Safety (F) of Awangkhul Part II slides

Generally landslides occur when the disturbing/driving force (FD), which is chiefly resulted from the self weight of the slope forming materials exceeds the resisting force (FR) given by the shear strength of the materials. So, the factor of safety of a slope is the ratio of resisting forces to driving forces, i.e. $F = \text{resisting forces} / \text{driving forces}$

i) Analysis of Soil properties (Direct Shear Test) to calculate Safety of Factor.

Stress Strain curve of the soil samples of the landslide site are made by plotting the data of displacement against load calibrating from Direct Shear Test. Some of the Stress Strain curves of the collected samples are shown in fig. below.

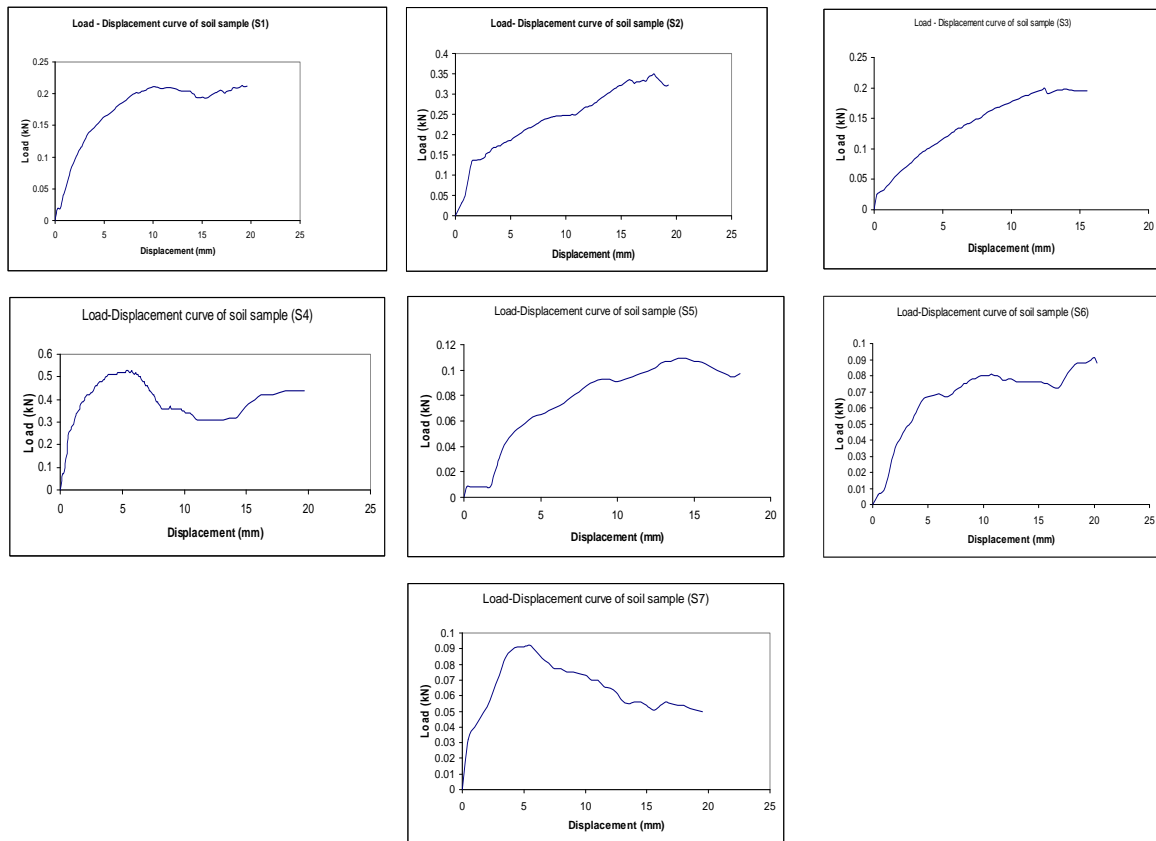
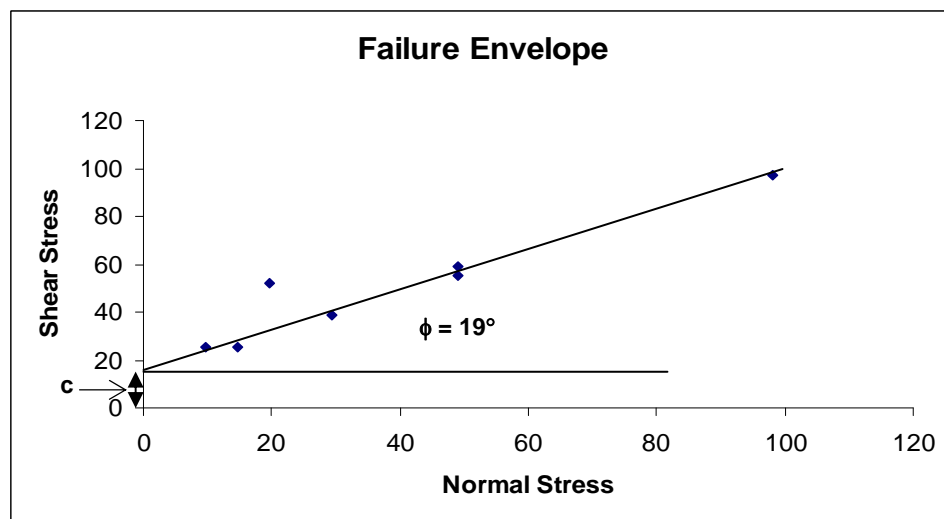


Fig 2: Failure Envelope curve



ii) Detailed of input Parameters Considered in Analysis:-

Average Slope angle	–	40°
Height of the slope (H)	–	86m
Unit weight of soil (γ)	–	17957 N/m ³
Cohesion (c)	–	16,000 N/ m ²
Angle of internal friction (ϕ)	–	19°
Moisture content	–	20.81 %

For Y- intercept

For X- intercept

$$\tan \phi / F = 0.625$$

$$\begin{aligned} \text{Or, } F &= \tan 19^\circ / 0.625 \\ &= 0.3443 / 0.625 \\ &= 0.55 \end{aligned}$$

$$C / \gamma \cdot H \cdot F = 0.02$$

$$\begin{aligned} F &= C / 0.025 \times \gamma \times H \\ &= 16,000 / 0.02 \times 17957 \times 86 \\ &= 0.518 \end{aligned}$$

$$\begin{aligned} \text{Factor of Safety} &= \frac{F \text{ value along Y – intercept} + F \text{ value along X – intercept}}{2} \\ &= \frac{0.55 + 0.518}{2} \\ &= 0.534 \end{aligned}$$

C. SLOPE INSTABILITY OF RAUNGDAI LANDSLIDE – (SMR PPROACH)

i) Unconfined Rock strength (Point Load Test) to evaluate Rock Mass Rating.

The point load test (PLT) is an accepted rock mechanics testing procedure used for the calculation of a rock strength index. This index can be used to estimate other rock strength parameters. 25 rock samples were used to determine the unconfined rock strength. The values obtained from point load strength of the area is **8.23301253 Mpa**.



Determination of rock

ii) Rock quality designation index (RQD)

$$\begin{aligned} \text{Rock Quality Designation, RQD} &= 115 - 3.3 \times J_v \\ &= 115 - 3.3 \times 6 \\ &= 95.2 \end{aligned}$$

where, J_v is the number of joint s per cubic meter

iii) `Discontinuities Parameters:

I) Joint Spacing

II) Conditions of Discontinuities:

- **Persistence or Continuity**
- **Surface Roughness**
- **Alteration.**
- **Joint Condition Factor**

According to Palmstrom (1995), the joint condition factor can be calculated by using the following relations.

$$\begin{aligned}\text{Joint Condition Factor, } jC &= \frac{jL \times jR}{jA} \\ &= \frac{4+1}{1} \\ &= 5\end{aligned}$$

iv) Groundwater conditions:

Groundwater conditions is generally channalised along structural discontinuity of rocks and observing the area as wet during the rainy season and damp during winter groundwater condition.

Table: 2 Discontinuities parameter of the sliding area.

Location	Frequency per meter	Spacing in meter	Persistence in meter	Surface roughness	Alteration	Groundwater
Raungdai / Blongdai 4 km to Nungba	6	0.16	0.1- 10 Discontinuou s and short & medium	Planar and smooth	Clean joints and Fresh rock wall	Wet during summer & damp in winter

Table: 2 Discontinuities parameter of the sliding area.

Location	Frequency per meter	Spacing in meter	Persistence in meter	Surface roughness	Alteration	Groundwater
Raungdai / Blongdai 4 km to Nungba	6	0.16	0.1- 10 Discontinuous and short & medium	Planar and smooth	Clean joints and Fresh rock wall	Wet during summer & damp in winter

v) Determination of RMR:

The numeric value of RMR is the algebraic sum of tabulated value calculated from field parameters. From the field data, strength of rock masses (RQD), spacing of joints, conditions of discontinuities and groundwater conditions for landslide location is calculated and their respective weightages have been assigned. The higher value of RMR indicates good quality of rock mass whereas lower value of RMR indicates the

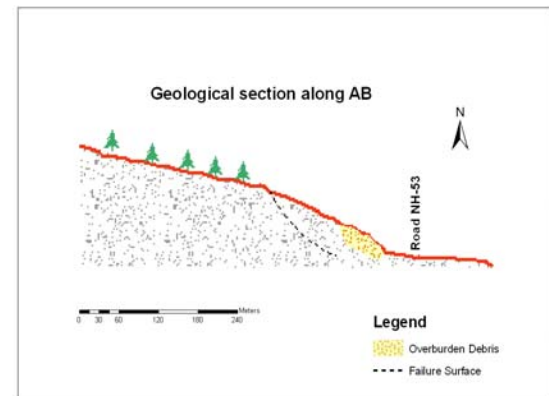
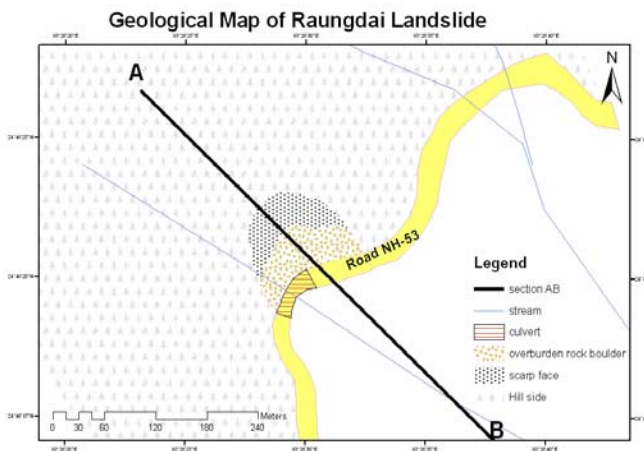
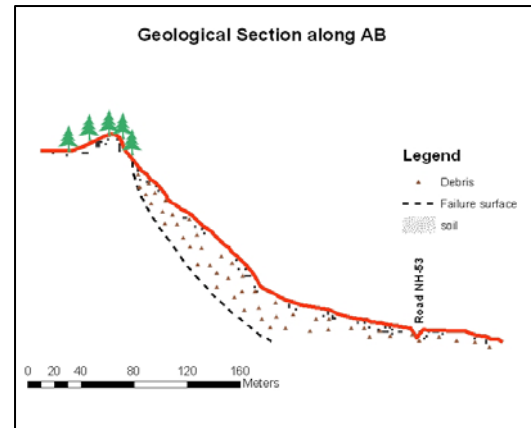
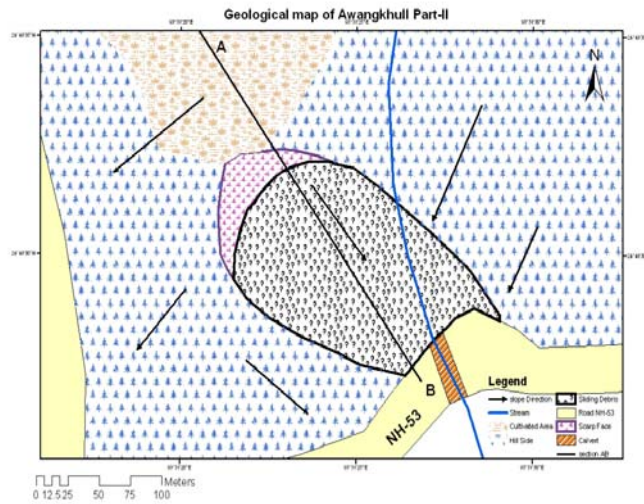
very poor rock quality to enhance the possibility of sliding. The RMR value of the sliding area is tabulated in the table below.

Table: 3 Determination of RMR

Location	Strength	RQD	Spacing	jL	jR	jA	jC	Ground Water	RMR
Raungdai / Blongdai 4 km to Nungba	12	20	8	3	1	1	5	7	57 Fair rock

jL= joint continuity or length, jR= joint roughness , jA= joint alteration , jC= joint condition factor.

D) Detailed map of the specific sites of the sliding area.



1.4.2.3 Manipur Science Aquarium at D.M. College of Complex, Imphal sponsored by Department of University & Higher Education, Govt. of Manipur

Manipur State has a vast potential of fishery resources comprising of ponds, tanks, natural lakes, marshy areas, swampy areas, rivers, reservoirs, submerged cropped land, low lying paddy fields etc. The largest source of fish is the Loktak Lake. A good number of ornamental fishes are available in the state, specially, in the hilly terrain areas.

Keeping the above facts in mind, Manipur Science and Technology Council, Imphal in association with the Department of University and Higher Education, Government of Manipur, Imphal has been jointly implementing a project on **Manipur Science Aquarium** at D.M. College Complex, Imphal. The main objectives included



Aquarium tanks being constructed

- study the behaviour of different types of local and marine fishes
- conserve the fish fauna of the state
- make aware of the available local fishes to the public
- create a place for recreation of the public

Constructions of aquarium tanks, toilet complex and watchman-cum-store room at the project site have been completed.

1.4.2.4 Patent Information Centre (PIC), Manipur sponsored by DST, Govt. of India

Considering the importance of Intellectual Property Rights (IPR), the Patent Information Centre (PIC), Manipur was set up on 25th March, 1998 at the Directorate of Science & Technology and Information Technology, Govt. of Manipur, Imphal under the supervision of PFC-TIFAC, DST, New Delhi with the following objectives:

- i Introduce patent information as a vital input in the process of promotion of R&D programmes.
- ii Provide patenting facilities to scientists and technologists in the country for Indian and foreign patents on a sustained basis.
- iii Keep a watch on developments in the area of IPR and make important issues known to policy makers, scientists, industry etc.

- iv Create awareness and understanding relating to patents and the challenges and opportunities in this area including arranging of workshops, seminars, conferences etc..

The PIC Manipur was transferred to Manipur Science & Technology Council (MASTEC), Imphal from the Department of Science & Technology and Information Technology, Govt. of Manipur on 26th November, 2007. Thereafter, a Memorandum of Understanding (MoU) was drawn between PFC, TIFAC, Department of Science and Technology, Government of India, New Delhi and Manipur Science & Technology Council (MASTEC), Imphal on 30th October, 2008.



PIC Manipur unit

The PIC, Manipur is now fully equipped and operational providing services on IPR related issues in the State. An awareness programme on IPR issues was organized on Feb 8, 2010 at Imphal. The PIC has opened an IPR Cell at Manipur University on Feb 9, 2010.

1.4.2.5 Scientific Evaluation of Water Purification System in the State of Manipur (Phase – I) sponsored by DST, Govt. of India

The project was taken up with the objectives of collecting water samples from identified schools and conduct testing of the water samples for selection and installation of suitable water purification system in the schools.

Under the project, 20 schools from the state such as Kendriya Vidyalaya Lamphelpat, Imphal West District, Kendriya Vidyalaya, Langjing, Imphal West District, Kendriya Vidyalaya, Leimakhong, Imphal West District, Kendriya Vidyalaya, Loktak Project, Bishnupur District, Jawahar Navodaya Vidyalaya, Khumbong, Imphal West District, Jawahar Navodaya Vidyalaya, Yarpalpat, Imphal East District, Jawahar Navodaya Vidyalaya, Bishnupur, Bishnupur District, Jawahar Navodaya Vidyalaya, Umathel, Thoubal District, Jawahar Navodaya Vidyalaya, Lambui, Ukhrul District, Jawahar Navodaya Vidyalaya, Churachandpur, Churachandpur District, Jawahar Navodaya Vidyalaya, Mao Maram, Senapati District, Jawahar Navodaya Vidyalaya, Tamenglong, Tamenglong District, Vungzagen Govt. High School, Churachandpur, Churachandpur District, Jiribam Higher Secondary School, Jiribam Sub-division, Imphal East District, Tamphasana Girls' Higher Secondary School, Imphal, Imphal West District, Moirang Multipurpose Higher Secondary School, Moirang, Bishnupur District, Kakching Higher Secondary School, Kakching, Thoubal District, Maha Union High School, Chandel, Chandel District, Lanva Model High School, Churachandpur, Churachandpur District,

Tadubi Higher Secondary School, Tadubi, Senapati District have been identified. Surveys have also been conducted for collection of water samples from school campus and the samples were tested at NABL accredited Labs. M/s R.V. Briggs & Co. Private Ltd., Kolkata as shown below.

<i>Sl. No.</i>	<i>Name of Schools</i>	<i>Test Parameters</i>	<i>Test result</i>
1	J.N.V Bishnupur	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	186 NTU
		Iron	12.42 ppm
2	Lanva Model High School	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	3.53 NTU
		Iron	0.35 ppm
3	Moirang Multi Purpose Hr. Sec. School	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	23 NTU
		Iron	0.70 ppm
4	T.G.Hr. Sec. School	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Present
		Turbidity	3.14 NTU
		Iron	BDL
5	Jiribam Hr. Sec. School	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	< 1
		Iron	BDL
6	Kendriya Vidyalaya, Lamphel	Coliform organization / 100 ml	< 1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	< 1
		Iron	BDL
7	Kendriya Vidyalaya, Langjing	Coliform organization / 100 ml	< 1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	2.25 NTU
		Iron	0.28 ppm
8	Kendriya Vidyalaya, Langjing	Coliform organization / 100 ml	< 1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	< 1
		Iron	BDL
	Kendriya	Coliform organization / 100 ml	> 200

<i>Sl. No.</i>	<i>Name of Schools</i>	<i>Test Parameters</i>	<i>Test result</i>
9	Vidyalaya, Loktak Project	Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	< 1
		Iron	BDL
10	J.N.V Khumbong	Coliform organization / 100 ml	< 1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	1.0 NTU
		Iron	BDL
11	J.N.V Yaralpat	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	4.31 NTU
		Iron	0.17 ppm
12	J.N.V Ukhrul	Coliform organization / 100 ml	< 1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	< 1
		Iron	0.13 ppm
13	J.N.V Thoubal	Coliform organization / 100 ml	>200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	1.86 NTU
		Iron	0.14 ppm
14	J.N.V Tamenglong	Coliform organization / 100 ml	>200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	<1
		Iron	BDL
15	J.N.V Senapati	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	8.92 NTU
		Iron	0.45 ppm
16	JNV CCpur	Coliform organization / 100 ml	<1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	1.37 NTU
		Iron	0.63
17	Vungzagen Govt. High School, CCpur	Coliform organization / 100 ml	<1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	1.37 NTU
		Iron	BDL

<i>Sl. No.</i>	<i>Name of Schools</i>	<i>Test Parameters</i>	<i>Test result</i>
18	Maha Union High School, Chandel	Coliform organization / 100 ml	<1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	< 1
		Iron	BDL
19	Tadubi Hr. Sec. School, Senapati	Coliform organization / 100 ml	<1
		Faecal coliform	Absent
		E. Coli / 100 ml	Absent
		Turbidity	1.37 NTU
		Iron	BDL
20	Kakching Hr. Sec. School	Coliform organization / 100 ml	> 200
		Faecal coliform	Present
		E. Coli / 100 ml	Absent
		Turbidity	19.8 NTU
		Iron	0.52 ppm

From the test report, it has been observed that most of the water samples are associated with turbidity and iron problems. In some samples, presence of Coliform organization, Faecal Coliform, E-Coli etc. were observed. However, other parameters were found under permissible limit.

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

The project was taken up with the objectives of designing and developing the cross-flow turbines suitable for (2x50kw) capacities and studying the problems and set



Flow of water in the tail race channel discharged by the turbine



Penstock Pipes carrying water embedded inside the cross section of the rock cut to supply water to the turbine

guidelines for installation, operation, maintenance and energy utilisation associated with Micro Hydel Units in remote hilly terrains.

The construction of Desilting tank and Forebay tank have been completed. Earth work in excavation for penstock trench have been completed and joining and welding of penstock pipes have been completed. AC Generators, Control Panels, Electronics Load Controllers and two turbines etc. have been installed. Power House has been constructed.

Since installation of machineries is completed, the trial run has been successfully conducted on 19th March 2010. It is targeted for electrification of 100 households of Dailong village in Tamenglong district. It is yet to be commissioned.



Trial run of Micro hydel being conducted

1.4.2.7 Pilot Scale Demonstration of Ceramic Membrane Based Iron Removal Plants in Manipur



Water Storage device of 5000 liter capacity



Machineries of iron removal plant installed

Two sites namely 1) Shri Shri Govindaji Temple complex, Imphal and 2) Science & Technology Complex, Takyelpat, Imphal were identified. Hand pumps (one each) at the two sites were installed and Civil works in site preparation and shed construction have been completed at the two sites. Tanks of 5000 ltr. capacity for storage of raw water have been installed at the project sites. The ceramic membrane based iron removal plants have been installed. Water has been tested at CGCRI Lab, Kolkata. The plants are yet to be commissioned.

1.5 Meetings/Trainings attended

Name of official and designation	Meetings/Trainings	Sponsored Organisation	Venue	Period
Th. Surendranath Singh	Preliminary Arrangement for Science Excursion	DST, Govt. of Manipur	Kolkata	April 18-21, 2009
	Review Meeting of Micro Hydel Project	DST, New Delhi	INSA, New Delhi	July 7, 2009
	Meeting with M/s Jalsakti Pvt. Ltd in connection with Dailong Micro Hydel Project.	DST, New Delhi	Kolkata	October 12, 2009
Dr. L. Dinachandra Singh, Sr. Scientific Officer	Brainstorming Session on Landslides of NE-India	DST, New Delhi	Nagaland University.	May 5-6, 2009
	National Conference on Scientific Strategies for Preservation and Protection of Wetlands in India	DST, New Delhi	JNU, New Delhi.	January 11-12, 2010
	Brainstorming meeting on S&T Councils	DST, New Delhi	INSA, New Delhi	March 27, 2010
	Scientific Intervention of Water Challenges	DST, New Delhi	INSA, New Delhi	October 5-6, 2009
Kh. Rakesh	Science Excursion	DST, GOM	Various Labs. In Kolkata	April 2009
	Meeting of the DST Project Evaluation group on State S&T Councils	DST, GOI	DST, GOI, New Delhi	May 12 – 13, 2009
	National Meeting on water, Sanitation and Hygiene	DST, GOI	INSA, New Delhi	September 16 – 17, 2009
	Regional Meeting on Satellite Interactive Terminal	Vigyan Prasar	Science Centre, Shillong	December 17 – 18, 2009

Er. Ch. Sarat Singh	Project Review Meeting	DST, GoI	INSA, New Delhi	July 8, 2009
Dr. R.K.Pritamjit Singh	Science Excursion	DST, Manipur	Various Lab in Kolkata	April 2009
	Master Resource Persons Training Programme on Total Solar Eclipse - 2009	DST, GoI	Science Centre, Sikkim	June 8 – 10, 2009
	12 th All India PIC Interactive Meet - 2009	PFC-TIFAC, DST, GoI	MGM Resorts, Chennai	December 21 – 22, 2009

1.6 Visiting Scientists 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, New Delhi	September 14-17, 2009	Attending Training Workshop on Science Writing / Journalism for Ukhrul District, Manipur
2	Shri Tarun K.Jain Chief Editor, Science Magazine, Jaipur	September 14-17, 2009	Attending Training Workshop on Science Writing / Journalism for Ukhrul District, Manipur
3	Shri L. I.Sharma Sr. Journalist, Jaipur	September 14-17, 2009	Attending Training Workshop on Science Writing / Journalism for Ukhrul District, Manipur
4	Shri A. Roy Choudhury M/s Jalsakti Engineering Pvt. Ltd., Kolkata	Nov 16-18, 2009	Installation of machineries and Trial Run of Dailong Micro Hydel Project
5	Shri A.Basu Managing Director M/s Entech Metals Pvt. Ltd, Kolkata	Feb 2-7, 2010	Water treatment of Iron Removal Plant at Govindaji Temple, Imphal
6	Shri Sen Sharma, CGCRI Kolkata	Feb 2-7, 2010	Water treatment of Iron Removal Plant at Govindaji Temple, Imphal
7	Dr. Bandyopadhyay Scientist F, CGCRI, Kolkata	Feb 2-7, 2010	Water treatment of Iron Removal Plant at Govindaji Temple, Imphal

8	Dr. R. Saha Director, PFC, TIFAC, DST, New Delhi	February 8, 2010	To attend the Workshop on Patent Awareness and IPR Issues
9	Jashwant Dev P. Scientist, PFC, TIFAC, DST, New Delhi	February 8, 2010	To attend the Workshop on Patent Awareness and IPR Issues
10	Dr. Sanchita Ganguli Patent Attorney S. Majumdar & Co, Kolkata	February 8, 2010	To attend the Workshop on Patent Awareness and IPR Issues
11	Madhurya Thakur Patent Office, Kolkata	February 8, 2010	To attend the Workshop on Patent Awareness and IPR Issues
12	Dr Mandira Roy Deputy Manager, Biotech Consortium India Ltd. (BCIL), New Delhi	Feb 18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
13	Amitab Dutta Biotech Consortium India Ltd.(BCIL), New Delhi	Feb18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
14	Dr. Tripathi Biotech Consortium India Ltd.(BCIL), New Delhi	Feb 18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
15	Dr. J. Kunnalyan Sun Agro Biotech, Chennai	Feb 18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
16	Er. Jai Uppal Sr. Consultant, Alternate & Renewable Energy, Haryana	Feb 18-21,2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
17	Dr Ambika C. Banerjee Corporate Advisor, R&D, East India Pharmaceutical Works Ltd, Kolkata	Feb18-21,2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
18	Dr. S. Dev Chief Research Manager East India Pharmaceutical Works Ltd., Kolkata	Feb 18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
19	Dr.D.K.Agarwal Dean, Academics, Indian Institute of Management, Shillong	Feb 18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal

20	Dr. S.S.Sarkar Associate Professor, Indian Institute of Management, Shillong	Feb 18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
21	Syed Md. Mashfuqulla Project Executive, Biotech Consortium India Ltd.(BCIL), New Delhi	Feb 18-21, 2010	To attend the Entrepreneurship Development Programme (EDP) in Biotechnology at Imphal
22	Mrs. Sandhya Verma Science Centre, Bhopal	Feb 22-24, 2010	To conduct the Programme on Understanding Weather & Climate

1.7 Library :

MASTEC has made a modest attempt to build up its own library. The collection is about 500 (five 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.