

**The details of work carried out under the different projects are as under:
Science Awareness, Communication and Science Popularization Programme:**

1. DNA Club (DBT's Natural Resources Awareness (DNA) Clubs):

The need for inculcating a scientific ethos at a young age has been felt especially in view of the fact that today we not only need to make children scientifically aware but also need their complete participation in conserving our rich biodiversity. National Bio resource Development Board (NBDB), Department of Biotechnology (DBT), Ministry of Science and Technology, Govt. of India started a DNA Club for school children in 2009. **DNA Club is DBT's Natural Resources Awareness (DNA) Clubs for school going children.**

The clubs has been divided into two groups: VI-VIII standard and IX-XIIth standards. Each school enrolled 40-50 children per school. The contents of the activities for the groups varied. While VI-VIIIth standard, the activities would focus more on Biodiversity and Bio-resources in general, the activities for IX-XIIth standard would focus primarily on Biotechnology. The activities was defined in such a manner that they are extra-curricular, yet oriented towards the curriculum, to ensure acceptability by the school teachers. A teacher orientation programme would be a necessary component of these activities, preferably arranged by the RRAs at least once a year. Vacation Training Programme was also a part of these clubs activities. Each club was given few essential types of equipment to carry out experiments and field studies.

Sikkim State Council of Science & Technology has been identified as the REGIONAL RESOURCE AGENCY (RRA) to implement the programme in Sikkim. TERI-North Eastern Regional Centre is the PROJECT MONITORING UNIT (PMU) of the project. This programme funded by Department of Biotechnology, Government of India is being implemented in Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and **Sikkim**. Thirty five schools were identified within the state for implementation of this project for support through TERI-NE Regional Centre. The duration of the project is three years.

Objectives of DNA Clubs:

- To inculcate among young students a renewed sense of appreciation for bio-resources of the country, their use and management.
- To promote deeper awareness about bio resources and to enthuse students about role of biotechnology and their sustainable utilization especially in the North- East region.
- To introduce young minds to the cutting edge of science as it interfaces with bio-resources.
- To facilitate interface between generation next and individuals and institutions of excellence in science.
- To create opportunities for DNA clubs to showcase their efforts and achievements.
- To invite bright young minds to participate in vacation programs aimed at creating a core constituency of support for conservation and sustainable management of bio-resources through use of science.

Activities related to the DNA Clubs:

The activities under the DNA clubs are proposed to be unique mix in school, out of school activities as well as interaction with eminent person engaged one way or the other with Bio-resources and Bio-technology.

Activities of Regional Resource Agency (Sikkim State Council of Science & Technology) in the schools:

- I. Lectures and discussion
- II. Field visits to study diversity
- III. Hands-on activities and action projects
- IV. Laboratory studies and experiment
- V. Visits to laboratories and institutions for demonstrations on advanced techniques in biotechnology
- VI. Competitions on various biotechnology themes
- VII. Defining tentative activity calendar.

Activities of DNA clubs in the school:

- I. Lectures by scientists, school teachers
- II. Do it yourself activities
- III. Discussion forum
- IV. Competitions on themes of Biodiversity
- V. Field visit for plant exploration and collection
- VI. Project works
- VII. Visit to research Labs and institutes
- VIII. Visit to botanical gardens and zoological parks
- IX. Exposure visit to biodiversity hotspots
- X. Vacation training programme

Role of Project Monitoring Unit TERI-NE:

- I. Charting out the yearly activities and communicating to all the schools

- II. Training of teachers
- III. Establishment of laboratories and defining activity calendar
- IV. Helping RRAs in arranging field visit and making course material
- V. DNA Club festival
- VI. Disbursement of funds to respective agencies in States
- VII. Monitor implementation of school activities
- VIII. Preparation of consolidated periodic reports for all the clubs
- IX. Conduct meetings of the RRAs of North-East
- X. Facilitating visits of committee members to monitor the work being done by each RRAs on a periodic basis.



Hon'ble Chief Minister launching the DNA Club programme During Platinum Jubilee Celebration of Namchi Sr. Sec. School On 14th October 2009



Hon'ble Chief Minister giving away science equipments to DNA members



Hon'ble Minister Addressing the Coordinators of DNA Clubs during Valedictory Function



Secretary Science & Technology addressing the DNA Club members during inaugural session of lecture series

2. Innovation in Science Pursuit for Inspired Research (INSPIRE):

INSPIRE Programme is centrally funded flagship programme of the Department of Science & Technology, Govt. of India which is being implemented through State and UT administrations. The objective of this programme is to develop scientific temper amongst the young and to motivate them to take up scientific career for the scientific and technological advancement of the country. This programme has five components covering entire range of education and research from class VI to post doctoral stage of a student. The first component of this programme is INSPIRE Award which recognizes the talents among students at a very early stage. Each INSPIRE Awardee receives a onetime award of Rs.5000/- in his /her school carrier and with this money the awardee will be required to make a project / model which will subsequently be

displayed at the exhibition organized at various level ,including national level.

In the year 2010-11, Students from Sikkim bagged IInd and IIIrd position at the National Level Exhibition in Regional Category held at Pragati Maidan, New Delhi during 15-16th August, 2011. The winners received the awards from the President of India. Accordingly a total of 631 INSPIRE AWARDS have been distributed to various schools all over the state so far. District level and State Level Exhibition was held for these awardees to enable them to compete at National Level during 2012-13. Students received awards for state level category during National Level Exhibition cum Project Competition in August 2012 held at Pragati Maidan, New Delhi. It is now targeted to cover all schools within the state for INSPIRE Award in the year 2013-14.



Students of Sikkim receiving awards from President of India

3. National Science Day Celebration 2012

The focal theme: “Clean Energy Options and Nuclear Safety”

National Science Day is observed on February 28, every year. It is the programme of National Council of Science & Technology Communication (NCSTC), DST, New Delhi. Various activities are being organized throughout the country to generate scientific temperament among the Students/ Collegians/ General Public/etc.

With the above view the Sikkim State Council of Science & Technology had organized the launching celebration of National Science Day 2012 on Feb. 28.2012 at Sikkim Science Center, Marchak and thereafter declared to organize various activities such as District Level Quiz Competition/ Debate/ Lecture series/etc.

Accordingly District level quiz & painting competition and Lecture series was organized starting from April 2-13,2012 covering 60 schools.

The Programme (Quiz & Painting Competition and Lecture) was conducted first at Govt. Sr. Sec. School, Mangan on 02.04.2012 then followed by venue at Passingdong SS, Upper Dzongu on 3.5.2012. Next venue was to Dikiling SSS then to Modern SS and finally at Sikkim Science Center, Marchak where 5 schools participated out of 7 schools invited for the programme. Quiz was participated by the students of class IX & X and Painting was done by the Class V students.

The winners of Quiz & painting competition at the identified venues are

1. Renuka Pandey and Pankaj Kumar Gupta from Mangshila SS at Mangan SSS,
2. Savita Kumari and Ongchu Lepcha Gor SS, U. Dzongu at Passingdong SS,

3. Anish Sharma and Jiwan Giri from Sudunglakha SS at Dikiling SSS,
4. Anup Kr. Gupta and Ravi Kr. Prasad from Modern SS at Modern SS
5. Ayantika Santo and Arun Rajak from Rangpo SSS held at Sikkim Science Center in quiz competition.

The Resource Person, Dr. Rabin Chettri, HOD (Physics), Sikkim Government College and Mr. B.Kunwar, Assoc. Professor(physics dept.) presented their lecture and presentation. The lecture was based on the given theme of NSD 2012 . Both of them explained about various aspects of Clean Energy options, cost of maintenance & feasibility of Renewable sources of Energy, the functioning system of Nuclear Energy, its benefit, the effect of nuclear rays, Success and failure stories of all the sources of energy options etc.



Shri A.K.Srivastava addressing the gathering during valedictory function of NSD 2012



Lectures series during NSD 2012 on the focal theme 'Clean Energy Options and Nuclear Safety'



Hands on experiments demonstration during NSD 2012

4. State Level National Children Science Congress 2012

National Children Science Congress is the programme funded by National Council of Science & Technology Communication (NCSTC), DST, Govt. of India. The primary objective is to make a forum available to children of the age group of 10-17 years both from formal school system as well as from out of school to exhibit their creativity and innovative skills and more particularly their ability to solve a societal problem experience locally by using the method of science.

Resource Teachers Orientation Workshop was organized in November 9-10, 2012 at Sikkim Science Centre and attended by 38 Science Teachers from various schools of the state. The given theme for this year and 2012 was 'ENERGY: EXPLORE, HARNESS & CONSERVE' with six sub themes based on focal theme.

- I. Energy Resources
- II. Energy Systems
- III. Energy & Society
- IV. Energy & Environment
- V. Energy Management & Conservation
- VI. Energy Planning & Modelling

Additional Director, Sikkim State Council of Science & Technology and Dr. B. C. Kusre, Associate Professor, College of Agriculture Engineering & Post Harvest Technology,

Marchak, Ranipool, Dr. Bhakta Kunwar, Senior Lecturer, Sikkim Government College and Associate Professore from Sikkim University were the Master Resource Person during the Workshop.

The State Level 19th National Children Science Congress was organized by Sikkim State Council of Science & Technology in the month of December 10, 2012. Total of Fifteen Projects were selected from the entire four districts to present at State Level Children Science Congress. Best project were selected from Chujachen Senior Secondary School, Namchi Girls Senior Secondary School, Temi Senior Secondary School National Level Children Science Congress was held at Banaras Hindu University, Benares December 27-31.



State Level National Children Science Congress 2012 programme at Sikkim Science Centre, Marchak.

5. Environmental Information System (ENVIS) centre on Eco-tourism:

The Ministry of Environment & Forests, Government of India has provided Environmental Information System (ENVIS) Centre on **Eco tourism theme for the whole country at Sikkim State Council of Science & Technology**. This Centre has taken up various activities for promotion of Eco-Tourism and also publishes ENVIS newsletter on Eco-Tourism regularly. A website www.scstsenvis.nic.in provides various information's on Eco-Tourism. The project is funded by the Ministry of Environment and Forests, Government of India. The Center is functioning since December 2000.

ENVIS is a decentralized system using the distributed network of data bases to ensure integration of national efforts in environmental information collection, storage, retrieval and dissemination to all concerned including policy planners, decision makers, research workers and the public.

The Objectives of the ENVIS Centre are as given below:

1. Long-term objectives:

- to build up a repository and dissemination centre in Environmental Science and Engineering.
- to gear up the modern technologies of acquisition, processing, storage, retrieval and dissemination of information of environmental nature; and
- to support and promote research, development and innovation in environmental information technology.

2. Short-term objectives:

- to provide national environmental information service relevant to present needs and capable of development to meet the future needs of the users, originators, processors and disseminators of information;

- to build up storage, retrieval and dissemination capabilities with the ultimate objectives of disseminating information speedily to the users;
- to promote, national and international cooperation and liaison for exchange of environment related information;
- to promote, support and assist education and personnel training programmes designed to enhance environmental information processing and utilisation capabilities;
- to promote exchange of information amongst developing countries.

3. The responsibilities of the ENVIS Centre on Ecotourism are:

- Establishment of linkages with all information sources, and creation of data bank on selected parameters in the subject area assigned.
- Identification of information gaps.
- Publish newsletters and Bulletins.
- Develop library facility and provide support to the focal point on the subject area.

Most importantly serve as interface for the users on the assigned subject.

Activity Report of the ENVIS Centre Sikkim on Ecotourism for 2012-2013:

1. Database on the parameters specified by the Ministry as Status of Eco-tourism, Flora and Fauna and Research and Literature has been worked upon and new information on these parameters updated regularly in our website www.scstsenvis.nic.in for proper dissemination.
2. Information also in the form of monthly news clippings collected from local and national dailies/internet/books and magazines, ecotourism events worldwide has

been updated in the website with a linkage to their websites, case studies and articles on ecotourism and other issues pertaining to the ecotourism of the country.

3. Information pertaining to the tourism of the state is updated as and when available thus assisting the tourism of the state towards information dissemination on a national level.
4. The ENVIS homepage has been redesigned and made more dynamic with adding more photos on the photo gallery and bringing changes to make it more users friendly.
5. The Centre has brought out a newsletter addressing issues related to climate change and tourism and health tourism and also a compilation of abstracts from research papers on Ecotourism of India.
6. Important linkages to the tourism websites of the country and the state as well have been given in the ENVIS homepage.
7. The queries coming to the Centre in the form of emails, telephone, letters or personal visits has been effectively responded and books from the ENVIS library has been effectively made use of thus assisting the research

workers, students and the general public in the area.

8. The infrastructure of the Centre has been upgraded rendering benefits on the usage of facilities to the visitors and various research papers on Eco-tourism have been collected for reference.
9. The Centre mainly focused on the village tourism and the tourism infrastructure in the national as well as state level during the year.

Specific achievements made by the Centre towards ENVIS objectives

- The Centre has built a repository for information dissemination through its website and its publications in the form of Newsletters, Abstract volumes, books etc.
- The Centre has maintained a good collection of books in the ENVIS library in the concerned thematic area.
- The Centre has effectively responded to the queries that comes in the form of e-mails, telephone calls or personal visits.
- Thus the Centre has played a significant role in helping out the research workers, students, policy planners and those in the field through information dissemination.

6. Bio-Informatics infrastructure Facility (BIF) for the Biology Teaching through Bio Informatics(BTBI) under BTISnet DBT at Sikkim Science Centre, Marchak Activities of BIF at Sikkim Science Centre:

- i. Developing the website to creating awareness of biotechnology through bioinformatics.
- ii. Development of interactive information and interpretation kiosk with visuals on different facets of biodiversity of Sikkim
- iii. Collection, collation, compilation & dissemination of biotechnology related Information to students.
- iv. Nature interpretation facility about wild sanctuary and Nature Park.
- v. Development of interactive computer based quizzes on bio resources of Sikkim.
- vi. Web links to Biotechnology research centre and state of the art institute around the country for research prospects.
- vii. Display and Visual tour of biological processes in interactive ways with multimedia.
- viii. Environmental awareness through short documentaries.
- ix. Generating awareness about recent advancement in the field of biotechnology and nanotechnology.

x. Awareness and visual tour in Human Genome Project, robotics, genetics telemedicine, instrumentation etc.

xi. Web links to DBT website, ENVIS, Sub DISCs, DST websites etc.

7. Extension of Sikkim Science Centre and Construction of 8meter dia Planetarium

• The Sikkim Science Centre is one of the important facilities created for communication, popularization and outreach of science and technology in the State. This Centre has been set up at Marchak, East Sikkim with the support of National Council of Science Museums, Government of India. It was inaugurated and dedicated to the people of Sikkim on 22nd February, 2008 by the Hon'ble Chief Minister of Sikkim.

• Further extension of Sikkim Science Centre has also been taken up with the support of National Council of Science Museums, Government of India. This will include 8 meter diameter Planetarium as well as thematic galleries on recent advances in science and learning science through fun, 3D theatre, space & biotechnology gallery.

• The works for extension of centre and planetarium is expected to be completed by October 2013.



Sikkim Science Centre, Marchak

8. Construction of Technology Bhawan at Deorali, Gangtok:

For the development of Science & Technology in the State, construction of Science & Technology Bhawan at Deorali, Gangtok with modern and

state of the art facilities is expect to be completed by mid 2013.