

# Country Report 2013

## India

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- Ministry of Environment and Forests, Govt. of India
- Ministry of Earth Sciences, Govt. of India
- Department of science and technology, Govt. of India
- Council for Scientific and Industrial Research
- Department of Environment, Govt. of NCT of Delhi
- Punjab Agriculture University, Ludhiana, Punjab
- Jiwaji University, Gwalior, Madhya Pradesh
- Khammam Science Club, Khammam, Andhra Pradesh
- M.L.S University, Udaipur, Rajasthan
- UNESCO- India

2013

**Participating schools:**

- GLOBE Program: 2500 schools from 21 states
- GLOBE Science Olympiad 2013: 150 schools from 22 states

**Funding by:**

- Ministry of Environment and Forests, Govt. of India
- Ministry of Earth Sciences, Govt. of India
- Department of science and technology, Govt. of India
- Council for Scientific and Industrial Research
- Department of Environment, Govt. of NCT of Delhi
- Public affairs section of the American embassy in New Delhi
- U. S. Consulate office in Hyderabad
- U. S. Consulate office in Mumbai
- Japan fund for Global Environment
- KNCf

**GLOBE protocols:**

- GPS Protocol
- Atmospheric protocol
- Soil Protocol
- Hydrology Protocol
- Land cover Biology Protocol
- Phenology Protocol

**Description of the program and recent activities:**

**1. *GLOBE Teachers Training Program in Delhi***

With the support from the Department of Environment, Govt. of NCT of Delhi, GLOBE India Organized 4 teachers training programs in Delhi for the eco-club teachers from the schools of Delhi. The teachers were provided training by GLOBE trainers/ Master Trainers/ International Master Trainers. At the end of the training, each of the participating teachers were certified as GLOBE Teachers and provided with a GLOBE Instrument Kit for their school. The training programs were very successful as we become able to add 150 new schools in GLOBE family.

2013

**2. Students Scientists Association in Delhi for Climate change research**

With the support of the Department of Science and Technology, Govt. of India, we have developed a network of students, teachers and scientists. The aim of the association is to provide students an opportunity to feel as scientists. With the guidance of scientists and teachers the students are working on the issues of climate change, biodiversity, waste management and present their projects in the seminars/conferences organized by IES. This helps them to strengthen their research skill as their research activities are being evaluated by scientists and direct interaction with them.

**3. GLOBE Science Olympiad**

GLOBE India initiated a new project which is called as “GLOBE Science Olympiad”. This is an income generation project which will help the GLOBE India to become sustainable. The project was started in 2013 and there were encouraging participants from various corners of the country. There were more than 12, 000 students participated from 150 schools scattering in 22 states in India. There were 49 rank holders (1<sup>st</sup> to 7<sup>th</sup> Rank). The Olympiad helps us to make GLOBE Popular and increase the outreach of the GLOBE Program. We are aiming to reach at more 1, 00, 000 schools and 10 million students during the times to come.

**4. Conference on “Weather and wetlands” in Bhubaneswar**

We have 10 active GLOBE Schools in Bhubaneswar, Odisha-India. We provided an opportunity for the GLOBE students from these active schools to present their ideas on wetlands and biodiversity conservation. We also provided them opportunity to interact with the scientists to strengthen their research skills. Odisha is a biodiversity rich state and have the famous lake Chilika. Lakhs of migratory birds are coming to this lagoon during the winter. Surprisingly the students asked so many interesting questions to the experts that the experts were bound to spend more time with the students and clarified their doubts. They discussed regarding the various ecosystems in the locality, the weather and climate of the locality etc. A field visit of the students, teachers and scientists was organized to the lake Ansupa which is identified as a lake having national importance.

**5. Celebration of World Wetlands Day 2014 in Udaipur**

We have set up 15 wetland clubs in Udaipur, Rajasthan which is known as the city of Lakes. The students and the youth are the member of this club. They have been working for the conservation of wetlands and biodiversity. On February 2, 2014 the members of the wetland club together celebrated World Wetlands Day 2014. The

event was participated by one of the Minister from the state and was covered by local print media.

**6. Wetlands clubs activity in Udaipur for wetlands and Biodiversity conservation**

15 wetland clubs in Udaipur are working for the conservation of wetlands and biodiversity in the city of Udaipur. They have been regularly spreading awareness on the issue by organizing rallies, street plays, awareness camps etc. They have been also studying the lake water quality by using GLOBE Hydrology protocol. They have been maintaining a register on local flora and fauna.

**7. Post CBD\_COP 11 seminar in New Delhi**

This event was organized with the support of the Japan Fund for Global Environment and the Ministry of Earth Sciences, Govt. of India. UNESCO has also extended technical support to organize this event. There were participants from India, Nepal, Thailand and Japan. Various activities such as cultural activities, street plays, student's Research Project Presentation, exhibition etc were organized. The program also involved students, teachers and scientists/ experts. A field visit was also organized to Keoladeo National Park in Bharatpur, Rajasthan to study the impact of climate change on Biodiversity.

**8. Celebration of World Environment Day 2013**

The participants of the post CBD\_COP 11 seminar together celebrated world Environment Day 2013. The gathering was at the residence of the Chief Minister of Delhi. One of the participating students from Japan presented a plant to the Chief Minister on the occasion of the World environment day. After the interaction with the Chief Minister each participants went on a nature trail inside the residence of the Chief Minister

**9. Students Research Project in Hyderabad Region (in 5 active GLOBE Schools)**

With the support of the U.S. Consulate office in Hyderabad we trained 40 schools on GLOBE Program. Out of this 40 we identified 5 most active schools and funded them to implement a different research project in their school by involving their students. The projects include, herbal garden, beach cleaning, waste management, water quality monitoring etc. The schools are working on this project and collecting data on the same.

**10. GLOBE Teacher's Refresher Training in Hyderabad**

With the support of the U.S. Consulate office in Hyderabad, we had organized a GLOBE Teachers Refresher Training program in Hyderabad Region. During the training on GLOBE the teachers requested for refresher training within a year of their training. The training helped the teachers to clarify their doubts and solve their problems they are facing while practically implementing the program in their schools.

2013

# Country Report 2013

## Thailand

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### Cooperating organizations:

1. Mae Fah Luang University
2. Loei Rajabhat University
3. Chiang Mai Rajabhat University
4. Lampang Rajabhat University
5. Surin Rajabhat University
6. Mahasarakham University
7. Thaksin University
8. Walailuk University
9. Burapha University
10. Srinakharinwirot University
11. King Mongkut's Institute of Technology Thonburi
12. Thai Tap Water Supply Public Company Limited

### Participating schools:

169 schools in 25 provinces of Thailand

### Funding by:

1. The Ministry of Education
2. US Embassy in Bangkok, Thailand

### GLOBE protocols:

1. Atmosphere protocol
2. Hydrology protocol
3. Soil protocol
4. Land cover protocol

### Description of the program and recent activities:

#### **1. Training Activity**

**1.1 On weather and climate:** The offered training activities provided the participants - students and teachers from 96 schools – with an opportunity to learn the GLOBE standard data collecting method in aerosol protocol such as measuring air temperature, relative humidity, and rainfall. The first training took place during 26-28 January 2013 at Mae Fah Luang University, Chiang Rai Province. The second one during 16-18 February 2013 at Loei Rajabhat University, Loei Province and the third workshop during 9-11 March 2013 at IPST, Bangkok.

**1.2 On disaster:** The training workshop conducted from 31 March to 3 April 2013 at Green Lake Resort, Chiang Mai Province was attended by Buddhist priests from 45 schools from four provinces (Phrae, Nan, Chiang Rai, Phayao) in the North of Thailand, and local hill community leaders. The training comprised four basic protocols, namely Soil, Hydrology, Atmosphere, and Land Cover/ Biology. The participants learned about and how to mitigate the effects of floods, forest fires and other natural disasters on the soil.

**1.3 On the Earth System Science:** The training was conducted from 5 to 7 June 2013 at Subnokkaew Wittaya school in Sakaew Province. Fifty-five Teachers and students from 6 schools in this Thai-Cambodian border province took part in this training. Covering three basic protocols, i.e. Soil, Atmosphere, and Land Cover/Biology, the training aimed at giving the participants the necessary knowledge for local environment observation, the awareness of research problems, and the way they could integrate Earth System Science into the current secondary school curriculum. This training aimed at integrating the knowledge of Mathematics, English, Occupations, and more importantly GLOBE standard student research methodology into Science.

**1.4 GLOBE Basic Protocol training:** The training workshop took place on 17 October 2013 at Dara Academy in Chiang Mai Province. Fifty-three teachers were trained in GLOBE basic protocols in this workshop.

## 2. Water Conservation Innovation Competition, “Thai Tap Junior Water Prize.”

During 17-19 January 2013, GLOBE Thailand (IPST) collaborated with the Thai Tap Water Supply Public Company Limited to organize the third water conservation innovation competition at Bangkok International Trade & Exhibition Center (BITEC), Bang-na, Bangkok, Thailand. More than one hundred projects were entered to the competition this year (2013). The winner, namely “**A Novel Bioadsorption Instrument for Removal Heavy Metals in Waste Water**” project competed in The Junior Water Prize in Stockholm, Sweden.

## 3. GLOBE Student Research Competition in Thailand

GLOBE Thailand (IPST) collaborated with Thai universities to organize the GLOBE Student Research Competition “**GLOBE Learning Expedition 2013**” (14–15 May 2013). The competition was carried out in two stages. In the first stage, eight research projects along with their PowerPoint presentations were selected from among those submitted. The selected research projects were presented in the second stage when the following six were chosen:

1. A Study of Planting Green Beans for Nourishing the First Year Para Rubber Seedling
2. Weather Affecting *Aedes* Mosquitos in Rubber Plantation Areas at High and Low Risk from Dengue Transmission in Trang Province, Thailand
3. The Relationship Between Climatic Factors, Soil Characteristics and Density of Fiddler Crabs (*Uca* spp.) in Selected Mangrove Ecosystems at Bang Pu, Samutprakarn Province, Thailand
4. The Weather Affecting the Amounts of Latex Production and the Percentage of Dry Rubber Content of Rubber Trees (*Hevea brasiliensis* Mull. Arg. var. RRIM 600) in Phatthalung Province, Thailand
5. A Study of Water Quality Affecting the Change of the Amount of Krill in Lamchareon, Parknam, and Saenchan Beach in Rayong Province During 2011-2012
6. The Effectiveness of Nitrate Concentration in Water in Relation to Pitcher Number of Pitcher Plant (*Nepenthes* spp.) in Bung Klong Long Wetland

Two teachers, four students and one from IPST were participated the Sunburst Environment Program (17 – 23 November 2013) in Singapore. They presented their research “**Study of the length of staghorn coral for Coral restoration by using PVC at Prapakarn Beach, Samaesarn Cape, Sattahip Chonburi province, Thailand**”.

## 4. Research Exchange Activity Between GLOBE Thailand and GLOBE India

GLOBE Thailand (IPST) and GLOBE India have jointly implemented a GLOBE research exchange program since 2011. During 28 October – 2 November 2013, GLOBE Thailand by IPST sent a group of 29 GLOBE students, teachers and scientists to participate in the GLOBE Science Fair in New Delhi, India. The Thai students from 10 schools presented their Earth System Science - ESS research results at the fair. To reciprocate, during 16-21 January 2013, 22 GLOBE students from India

**2013**

joined the International Science, Mathematics, and Technology Education Conference in Bangkok, Thailand.

## **5. Hawaii-Thai-Lao PDR STEM Education Project**

The Institute for the Promotion of Teaching Science and Technology (IPST) carries out the “Hawaii-Thailand-Lao PDR STEM Education Project” starting in the third quarter of 2013. This pilot activity aims at testing STEM curriculum on energy use dealing with energy conservation in selected schools in Hawaii (US), Thailand and Lao PDR. This project will pave the way for the promotion of STEM education in Southeast Asia.

In addition to the curriculum on energy use developed in the workshop held on 2-5 September 2013, the pilot project will use add-in modules from the “Solar Thermal Solutions”, “Solar Electricity with Photovoltaics” and “Island Breezes Blowing Energy” units of the Maui Economic Development Board (MEDB)’s curriculum. The modified curricula will both fit Hawaii, Thailand and Lao PDR and suit the local requirements in the respective countries.

The modified curricula are being used in eight classrooms in Hawaii (3), Thailand (4) and Lao PDR (1). The students of the selected classrooms participating in this pilot project are 8th graders in Hawaii and 9th graders in Thailand and Lao PDR. They are either 12 or 13 years old. Where this pilot activity is concerned each classroom needs one teacher.

## **6. Supplementary Books**

### **6.1 ESS e-Book**

GLOBE Thailand is developing Earth System Science student books and teacher guides for G.4-6 and G.7-9 into e-books for tablet (iOS, Android), Windows on mobile and Web Browser.

### **6.2. GIS & Wetland Book**

GLOBE Thailand collaborated with the Mahasarakam University and Mae Fah Luang University, to promote the importance of local wetland as well as the use of GIS in research on environmental problems and land use. The collaboration resulted in a training workshop for teachers and students in Chiang Rai and Mahasarakam Province. In addition, supplements containing learning activities have been produced for those who did not take part in the workshop so as to aid their learning and research.

## **7. ESS Network**

GLOBE Thailand collaborates with 11 universities to undertake two projects, namely Earth System Science Curriculum Monitoring Project and Strengthening GLOBE Scientist-Teacher-Student Research to enhance ESS learning and research. The eleven universities are Thaksin University, Walailuk University, Lampang Rajabhat University, Loei Rajabhat University, Surin Rajabhat University, Chiang Mai Rajabhat University, Burapha University, Srinakharinwirot University, King Mongkut’s Institute of Technology Thonburi, Mahasarakham University, and Mae Fah Luang University.

## **8. International Conference on Southeast Asian Weather and Climate 2013 “ASEAN Adapting to Climate Change” (ICSA-WC 2013)**

The International Conference on Southeast Asian Weather and Climate 2013, held in Chiang Mai, Thailand from 27 to 29 November 2013 brought together scientists and practitioners working on adaptation to the impacts of climate change.

The conference was organized by the International Committee for Southeast Asia, membership of which includes representatives from the Chiang Mai Rajabhat University, Green Tree Foundation, Northern Meteorological Center, National Science Museum, Institute for the Promotion of Teaching Science and Technology (IPST), Department of Royal Rainmaking and Agricultural Aviation, Kunming Meteorological Bureau (China), and Queensland University of Technology (Australia).

Serving as an ASEAN forum with the aim of fostering a creative dialogue among policy makers and practitioners, the conference had the main theme of adapting to climate change. In total, 19 main topics were covered in five sessions. The presentations and discussions focused on the assessment of the current research on climate change within the ASEAN community. Besides building a database and information system on climate change, the conference helped to identify the



## **2013**

possible appropriate cost-effective solutions to problems arising out of climate change, adaptation and mitigation options and strategies for policy makers based on research findings and experience.

IPST hosted Session 5 on Climate Change Education featuring four main topics: curriculum and content, implementation in school, research in climate change education, and climate change awareness and society. GLOBE Thailand was entrusted with its organization and decided to include a workshop and presentation on the GLOBE activities of Asia-Pacific countries. In addition, two workshops, as follows, were conducted for GLOBE teachers.

1. GLOBE STEM by Dr. Tony Murphy, Director of GLOBE Program
2. Climate Change Education by Dr.Dev Niyogi and Mr.Theodore Leuenberger from Purdue University