

THE START SOUTHEAST ASIA LUCC PROJECT OVERVIEW

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The International Geosphere-Biosphere Programme (IGBP) has initiated a programme, the System for Analysis, Research, and Training Programme (START) as an inter-regional collaboration system to enhance scientific understanding of global change. Its primary objective is to initiate regional networks and to develop regional capability. Such cooperative is intended to allow regions to response the regional needs as well as support IGBP global objectives.

Within 13 IGBP-START regions, the Southeast Asia Regional Committee for START (SARCS), has already set out a series of work programmes funded by GEF and administered by UNDP. The series of works are consisted of 4 Immediate Objectives. Since the 1st SARCS Meeting in Manila, May 1993, the National Research Council of Thailand was assigned to be the responsibility agency for the implement of the Immediate Objective 1. Output 2, as follows:

Immediate Objective 1 : To improve estimate of greenhouse gas fluxes, especially in relation to changes in landuse and landcover change which has 4 outputs

- Output 2 : Documentation of current landcover change, the processes responsible for landuse change and the projected changes over the next decades as a basis for assessing its importance climate change
 - Activity 1.2.1 : Workshop to develop methodologies
 - Activity 1.2.2 : Case-studies of landuse changes
 - Activity 1.2.3 : Fellowship Programme
 - Activity 1.2.4 : Equipment for GIS
 - Activity 1.2.5 : Synthesis workshop and publication

The study of LUCC in Southeast Asia Countries is intended to provide better empirical understanding of the stages, processes as well as the driving forces for Land Cover Change, specifically on forest changes, which may affect the global environmental change.

The activity is initiate regional cooperation and regional understanding of the processes in landuse and landcover change, both *their driving forces and their impacts on global environment*. The activities will contribute to regional knowledge and serve as inputs for national policies of the participating countries as well as global level policies. This work will be closely coordinated with IGBP-HDP (the Human Dimension Programme) on landuse-landcover change. Especially, the SARCS-LUCC project should coordinate with IGBP/LUCC Core Project Focus. The first initiative activities on Landuse and Landcover Change is the Workshop on Methodologies for Landuse and Landcover Change, which already held in Chiang Mai Province, Thailand during 21-25 March 1994. The general theme of the workshop was to focus on identifying and developing the relevant methodologies for the study on landuse and landcover changes on the global conditions.

1. The Output of the Workshop

The study are developed at two levels of aggregation. First, Macro level for Southeast Asia Region. Second, Micro level for basic scale for site specific case studies. The study described of various features of forest change using remote sensing data incorporate with GIS data and analyst of the driving forces of landcover changes including scenario projections of changes that may occur up to the year 2020.

1.1 Southeast Asian Region

At the regional level satellite data will be acquired to provide a regional overview of forest cover. There are two potential sources of regional satellite data. The first is provided by the NOAA/AVHRR and the second is available as regional datasets of LANDSAT, MOS-1, SPOT, JERS-1, and ERS-1.

NOAA/AVHRR will provide a broad classification of forest cover at two points in time (1980s and 1990s). These data are available through various international projects such as the CEC TREES project, the IGBP-DIS AVHRR project, GRID etc.

LANDSAT and MOS-1 data are available through a joint IGBP/CEOS Pilot Data Exchange Project. These data would provide coverage for the entire region at high spatial resolution for three points in time (1970s, 1980s, and 1990s). These data could be used to develop time series of forest cover conversion for the region, including those countries outside of the four case study countries (e.g. Cambodia).

These data sets will be useful for producing forest and non-forest maps at the scale of 1:2,000,000.

1.2 Site Specific Case Studies

The case study in each of the four countries will concentrate on critical watershed area. The primary data sets will be obtained from high spatial resolution remote sensing, acquired at high temporal frequency, preferably on an annual basis. Possible data sources are LANDSAT, SPOT, ERS-1, and JERS, which are being compiled by the IGBP/CEOS Pilot Data Exchange Project. The size of the case study areas would be about of 35,000 sq.km. or approximately within the size of one landsat scene.

Scale of analysis would be 1:50,000 to 1:250,000. Best method of analysis would be combination of remote sensing and GIS. Other parameters incorporated through GIS should be at a minimum include :

- soil erosion rate
- growth rate of urbanization, industrialization
- population density and its growth rate

The workshop has also identified that in analyzing the driving force will consider about the capital inputs as well as market demands from outside the region and the basin.

2. The Follow-up Activities

2.1 Case studies

Base on the recommendation from the workshop, projects of case studies will be conducted in four countries in the region, Malaysia, the Philippines, Indonesia, and Thailand.

The main objective of the case studies is to allow identification of common factors as driving forces of landcover change, and identify possible impacts on global change. It is primarily focus on the impact of landcover change to the global condition rather than to the effect of global change to landcover condition.

The research team, consisting of GIS specialists, physical science remote sensing, and social scientists, will work together to identify the availability of secondary data in the respective countries. Should primary data be needed each team will have to design the appropriate instruments for collection of data.

Thailand by the NRCT will be responsible for coordinating and overseeing the implementation of the project and will appoint some experts inside the region, either members from the SAP or other experts, to periodically assess the work process of the research conducted by each team at the four designated countries. The duration of the case study will be two years (1994-1996) in each of the participating institution. At least one scientist in each of participating countries should be assigned as a responsibility people and will work full time for 2 years.

2.2 Fellowship programme

One of its primary objective of the IGBP-START Programme is to enhance the capacity of the region to conduct global change researches. To achieve this objective fellowship programme for young scientists is recommended.

The fellowship programme is designed to involve young scientists not only in studying on landuse and landcover change, but also, at the same time involve them directly with research works in this area. Therefore, it is envisaged that the selected young scientists will also be participating as assistants to the case studies in the respective countries.

It is suggested that simply providing trainings are often less effective if not followed by actual research experience. Therefore, the fellowship programme on landuse and landcover change will be fully integrated into the other and larger components of the overall programme.

3. The main objectives of the fellowship programme are :

- [1] to train young scientists from this region in the research on landcover and landuse change from a global perspective.
- [2] to ensure continuation of interests in conducting research works, and networks in the region.

It is recommended that, close cooperation between the research team and the SARCS Committee members in selecting your scientists for the fellowship is crucial for the success of this program. The fellowship program will consist of two main components : first is Remote Sensing and GIS Data Analysis Training in Thailand directly under the auspices of the National Research Council of Thailand for a period of 7 weeks. The second is an Advance Training in the application of GIS and remote sensing including visiting to several sites. The programme will be coordinated by an appointed USA institution selected by the SARCS Committee. (A proposal from University of New Hampshire is available at present).

At present, the details and the course contents of Training Course are almost completed and will be proposed to the 5th SARCS Meeting in Singapore during 11-12 August 1994. For the case study, the proposals from 4 participating countries will also propose to SARCS Meeting.

4. Equipment for GIS

Hardware and software for GIS for 4 participating countries will be provided by the IGBP-START.

5. Synthesis Workshop and Publication

A four day workshop to present and synthesis the results will be conducted in late 1996. This activity is to ensure optimal results from the case studies for better scientific understanding of regional landuse and landcover change. In addition, highlighting problems encountered in each site in the application of the methodology as well as case study guidelines for future research works. This is in line with the overall objectives of IGBP-START Program, and SARCS objective to create regional network on global change.

Tentative schedule

Activity Output 2:	Budget US\$	1994				1995				1996			
		3	6	9	12	3	6	9	12	3	6	9	12
1. Workshop	50,000	—											
2. Case studies	276,000			—	—	—	—	—	—	—			
3. Fellowship Programme	108,000			—	—								
4. Equipment for GIS	220,000		—										
5. Synthesis Workshop publication	95,000									—	—	—	—