



## **CASITA II**

Ref: TH/Asia IT&C II/ 04 (96405)

### **Sustainable Capacity Building on Urban Disaster Mitigation in Asia Using IT&C Learning Tools**

#### **Needs Assessment Report**

30 April 2005



**Asian Disaster Preparedness Center**

---

# **Needs Assessment Report**

## **1. Introduction**

The 1<sup>st</sup> phase of the CASITA project funded under the EU Asia IT&C program ended in March 2004. From the initial group of 14 universities, four universities from Indonesia, India, Sri Lanka, and Thailand have requested assistance for the development of undergraduate and postgraduate level courses on natural risk management during the CASITA phase I final workshop and subsequently. They requested the courses to be supported by a research component in order to ensure sustainability and ability to be innovative to address local priorities. These universities, observed to be most promising have taken steps already to institutionalize disaster management subjects in the course curriculum of ongoing courses, are:

1. Indian Institute of Remote Sensing, India
2. Gadjah Mada University, Indonesia
3. University of Ruhuna, Sri Lanka
4. Chiang Mai University, Thailand

Therefore, these universities were approached to obtain more information on the needs and special features to be included in academic programs. The common major hazard type associated with cities in all target countries is hydro-meteorological, but cities in India and Indonesia have considerable threat due to seismic activities also. The urban context, population density, associated social and economic problems differ country to country. A serious difference also can be observed in terms of level of subject knowledge of disaster risk management, land use planning, etc. The level in expertise in application of tools such as GIS/RS is also different from one university to another. The need assessment will focus on subject matter as well as the capacity and infrastructure needs of respective universities.

## **2. Methodology**

The process of needs assessment started soon after the start of the project. In fact, both ITC and ADPC had been continuously in touch with all the four universities during the period between CASITA I and II. This has greatly helped both ITC and ADPC to be up-to-date on the progress made by these universities. The following channels were used for conducting needs assessment:

- Setting up of electronic distribution list
- Individual universities to be contacted personally for preliminary assessment
- Prepare and include a short description on the project for sharing with all partners
- The questionnaire circulated to universities includes – current set up of the course, plan for the disaster management course at the post-graduate level, curriculum and sessions of the course, expertise and number of the teaching staff, available infrastructure, research component in the course, support required from ADPC, ITC and BU, potential job opportunities.

Since one nominee of each university was awarded fellowship to attend 12 weeks short course on GIS and Remote Sensing for natural hazard and risk assessment at ITC, it was agreed that all the four faculty members will continue to work on the needs assessment in consultation with and under overall supervision of ITC.

Based on the consultations, discussions and inputs from all the four universities, a brief on the needs assessment is given below:

### **3. University of Ruhuna, Sri Lanka**

#### **3.1 Introduction**

The Department of Geography at the University of Ruhuna in Sri Lanka focuses on disaster management issues. It has general and special degree courses and about 150 students enroll for these courses every year.

The Department of Geography has an office room, Cartography Lab, Land evaluation Lab, three lecture rooms, Computer Lab, Library, and 12 lecturers rooms. There are 17 staff members in all, 3 are professors, 6 Grade 1 Senior Lecturers, 5 Senior Lecturers. The Department also has a climatic data collection station.

The Department of Geography carries out research works mainly in the following areas: Coastal Geomorphology, Coastal Zone Management, River Basin Hydrology, Environmental Hazard, Population dynamics, Rural development and Regional Planning.

### **3.2 Needs Assessment**

- The Department of Geography lacks in computer and Internet facilities. The existing computers are old and they need to be upgraded. There is also a need to develop the network of computers and increase Internet accessibility.
- At present the M.A., M.Phil. and Ph.D. programmes are not functioning properly due to lack of special and targeted modules. Therefore, the curriculum and special modules need to be developed.
- There is a need to train teachers specifically for disaster management, GIS and remote sensing which would in turn contribute towards development of a joint research programs and proposed M.Sc. program under CASITA project.
- In order to promote research in disaster management field it was found to be important that research guidelines should be developed highlighting the current research in this field. Also necessary equipments and materials such as the software and satellite images should be made available along with small grants for purchase of digital data etc. There is also a need to organize a workshop for development of methodology for disaster related research.
- A disaster management center needs to be established in the University of Ruhuna whose main objective would be to develop database system, conduct short courses and carry out disaster related research. Teaching materials, such as text books, reports and monographs should be provided as well as the skills for preparation of teaching modules should be developed. A University staff exchange programme should be established for exposure and enhancement and upgradation of skills.

### **3.3 Proposed programmes**

- **Joint Research Programme**

Under the joint research programme the following case studies will be carried out by the University staff members in collaboration with partner Universities:

Flood Risk Assessment of Colombo City, Landslide Risk Assessment of Matara district, Tsunami Hazard Assessment of Matara district.

- **Proposed M.Sc. Programme**

A new M.Sc. course on Environmental Management is proposed to be designed with especial emphasis to disaster management and coastal zone management. The course duration will be two years and the target group will be School Teachers, Environmental officers, Project Managers, Planning officers, other Government officers and Professionals.

- **Job opportunities**

The demand for disaster education has increased after the tsunami disaster and even the government of Sri Lanka is going to introduce disaster related curriculum in schools, therefore in future there would be more opportunities for disaster management professionals.

#### **4. Chiang Mai University, Thailand**

##### **4.1 Introduction**

The Department of Geography is one of three departments of the Faculty of Social Sciences, within the Chiang Mai University (CMU). Currently, the Department has 17 staff members, which are mostly involved in teaching. It offers program study in both Bachelor and Master degree.

The curriculum of the Bachelor program in the Geography Department emphasizes on spatial analysis particularly in giving knowledge on various concepts, theories, including application of quantitative analysis methods. It also includes application of new technology, and computer techniques in data analysis and cartographic design, and also application of geographic information systems (GIS) in data analysis. Department of Geography also cooperates with The Geo-Informatics and Space Technology Development Agency (GISTDA) in the establishment of The Geo-Informatics and Space Technology Center (Northern Region) in order to serve remote sensing data, to consult, to train, and to provide research services in different branches to various institutes from both public and private sectors in the Northern Region and nearby countries.

##### **4.2 Courses**

Four programmes are offered:

- Bachelor of Science Program in Geography
- Master of Science Program in Geography (Thesis)
- Master of Science Program in Geography (Independent Study)
- Master of Science Program in Geoinformatics

In relation to the CASITA II project, in particular the last programme seems to be the most relevant.

### 4.3 Needs Assessment

- **Joint postgraduate course on “Geoinformatics for Disaster Management”**

A specialized course on “Geoinformatics for Disaster Management” as a specialization within the Geoinformatics course, which would include more hazard and risk related topics in the elective part of the course, needs to be offered. A joint Master’s program between ITC and CMU could be introduced where CMU would open four new elective subjects:

- Introduction to Disaster Management,
- Hazard Assessment,
- Risk Assessment, and
- Application of Geoinformatics in Disaster Management.

Short trainings for 3-4 months could be conducted for post graduate students at ITC so as to enhance their knowledge and experience on natural disaster and hazard assessment.

- It would be beneficial for Thai students if there is joint research between ITC and CMU and ITC staff could be co-supervisor for students for their master’s thesis.
- One of the main bottlenecks for collaboration with the Department of Geography of the CMU is that all courses are offered in Thai, and the introduction of English medium courses is still not foreseen.
- In the framework of the CASITA II project a course was organized in the Chiang Mai

University on Urban Disaster Management, during 9-10 April 2005, which was taken by the staff members of ADPC. The Geography Faculty of Chiang Mai University also proposed the organization of a course on “Geo-Information for natural hazards and disaster management in Chiang Mai, Thailand” sometime during second year of the CASITA II project, in 2006.

- **Joint research with Land Development Department (LDD)**

ITC has had a long working relation with the Thai Land Development Department. Emphasis was laid on possible collaboration of LDD-ITC and CMU, particularly in following areas:

- Landslide Hazard Map and Hazard Assessment in the Upper Northern Thailand
- Flood Risk Map and Flood Assessment in the Upper Northern Thailand
- Drought Risk Map and Drought Assessment in the Upper Northern Thailand.

#### **1.1.1**

1.1.2 Counterparts from CMU and ITC/Bonn University/ADPC have to be identified for this.

- **Capacity building and staff exchange**

- Upgrading CMU faculty by joining the short course training at ITC.
- **Staff exchange**; guest lecture between Chiang Mai University-Thailand, Gadjah Mada University-Indonesia, University of Ruhuma-Sri Lanka, Indian Institute of Remote Sensing- India, ITC-The Netherlands and Bonn University-Germany.

## **5. Gadjah Mada University, Yogyakarta, Indonesia**

### **5.1 Introduction**

Gadjah Mada University has the required experts and facilities for running Disaster management courses. Since 1996/1997 the Natural Disaster Research Center of the University has been continuously cooperation jointly with Bakornas PB (National Coordinating Board for Disaster Management), Social Department and supported by UNDP to run short courses and special training programmes in the application of RS/GIS in hazard assessment and disaster management. Since 2004 the Center together with Faculty of Geography Gadjah Mada University has been conducting a refresher course on the Application of Geo-Information in Disaster Management, supported by ITC, the Netherlands. Master program in **Geo-Information**

**for Disaster Management** was launched in the academic year 2004/2005 with support from ITC (International Institute for Geo-Information Science and Earth Observation), The Netherlands.

In general, the aim of the program is to develop academic and professional skills in managing disasters with emphasis on the application of RS/GIS for Disaster Management. This course is directed towards critical and professional knowledge of Geo-Information sciences for education, research and community services in Disaster Management. This course is designed for academic staffs and professionals involved in disaster assessment, prevention, mitigation, relief, and disaster management using Geo-Information science and technology.

The teaching faculty consists of the lecturers from the Geography Faculty, Research Center for Disaster, Gadjah Mada University and ITC, the Netherlands who have a wide range of expertise required to support and run this program. The program is expected to be completed within 18 months.

## **5.2 Facilities**

At present the following facilities are available within the University:

Postgraduate teaching rooms (AC, LCD, OHP, White board), Libraries (CD ROM), Several geo-physical laboratories, Educational facilities in Research Center for Natural Disasters, PUSPICS, and Natural Resources and Environmental Management Studio (NREM) at the Physical Geography Department, Remote Sensing and GIS laboratory, Access to ITC library facilities and other related disasters field laboratory.

## **5.3 Needs Assessment**

- **Promotion of the M.Sc. Program** (UGM-ITC in DM) to be done through distribution and leaflet and road show of UGM staff in Indonesia, through postings in ITC and or ADPC/CASITA II web site, through short note on ITC News, advertisement at Holland Education Fair 2005-and year after and also through ASIA Link, etc.
- Scholarships to be provided by ITC, Bonn University, ADPC and others to as many as possible.

- Support from ITC would be needed for providing educational textbooks and software such as ILWIS, ERDAS, etc as well as hardware such as computers, laptops, etc.
- Capacity Building and Upgrading knowledge of the staff needs to be done through short courses on disaster management, short course on EREG at ITC Joint short course in Disaster Management at ADPC (2005) and Refresher course (ITC alumni and interested person) in UGM for “Tsunami Modeling and Reduction Strategy)- (2005/2006). Also students of this course can be send to ITC for short term trainings.
- UGM would need staff from ITC, Bonn University and ADPC for various components in the program along with the existing staff there.
- The research done under the program would be published under “The Indonesian Journal of Geography” and through UGM/Research Center for Natural Disasters (joint research/training/short course, publication/public awareness campaign in Disaster Reduction Program), established since 1986
- UGM has a new program in QA (2003/2004: preparation phase, 2005 : implementing year) and Accreditation for the programs would be conducted by National Board for Higher Education Accreditation (BAN-DIKTI).

## **6. Indian Institute of Remote Sensing, Dehradun, India**

### **6.1 Introduction**

The Indian Institute of Remote Sensing (IIRS) at Dehradun is a premier training and research institute in South Asia functioning under the National Remote Sensing Agency (NRSA), Department of Space, Government of India. Formerly known as Indian Photo-interpretation Institute, IIRS was set-up in 1966 under the aegis of the Survey of India, with the collaboration of the Government of The Netherlands, on the pattern of the International Institute for Aerospace Survey and Earth Sciences (ITC), Enschede, the Netherlands. The prime objectives of the Institute are training, education, research and consultancy in remote sensing applications in forestry, geology, agriculture and soil sciences, urban and regional planning, water resources, marine sciences, and image processing, geographic information systems, photogrammetry and photo-processing.

At IIRS, around 50 experienced scientific staff imparts training on the application of remote sensing and GIS to professionals and students from diversified fields. More than 3700 professionals from all over India and abroad have graduated from the institute since 1966. The training programme, known as “Transfer of Technology” at IIRS, offers more than 20 specialisation courses in various geoscientific fields.

## **6.2 Academic Programs**

The joint MSc course on Geo-informatics has been running for three consecutive years, the first group of MSc students in Geo-informatics in 2002-2003. The joint MSc course in Geo-informatics leads to an ITC MSc degree in Geo-information Science and Earth Observation with specialisation in Geo-informatics, and the joint MSc course in Hazard and Risk Analysis leads to an ITC MSc degree in Geo-information Science and Earth Observation with specialisation in Geo-hazards.

## **6.3 Needs Assessment**

### **- Supervision of M.Sc. students**

A total of 8 M.Sc. students have visited ITC in the period February-May 2005 as part of the joint MSc course on Hazard and Risk Analysis of IIRS and ITC. The support to the research of the MSc needs to be done through Internet using the blackboard site of ITC, with similar components as the CASITA II site.

### **- Research collaboration**

Research collaboration between IIRS and ITC will take place in several ways.

**Joint PhD research.** Plans are underway for joint research in the field of Geoinformatics and in the field of Landslide hazard and risk assessment (in collaboration with National Remote Sensing Agency and Geological Survey of India). In the past several IIRS staff has obtained Ph.D. in a sandwich construction with ITC.

### **- Joint MSc research resulting in joint publications**

The topics of joint M.Sc. research are selected in such a way that they fit within the research interests of both organisations in the field of Geoinformation and hazard and risk analysis. The results of the M.Sc. research is presented on the blackboard site, on the ITC website, and will eventually result in a number of scientific papers presented in conferences or published in scientific journals.

**Planned activities for the coming periods:**

- Visits of ITC Rector, Director external Affairs and Head of Research to India in May 2005, and signing of agreements: for joint courses with IIRS and joint PhD research on landslide hazard and risk with IIRS, NRSA and GSI.
- Mid Term review of M.Sc. courses
- Training on research skills development
- Joint fieldwork supervision of a M.Sc. student by IIRS staff and ITC staff in June 2005.
- M.Sc. research supervision by ITC and IIRS supervisors in the period
- M.Sc. defence in IIRS attended by 2 ITC staff members
- Joint writing of papers related to M.Sc. research topics.