



**CHARM Project Report 10**



# **CHITTAGONG HILL TRACTS IMPROVED NATURAL RESOURCES MANAGEMENT**

## **Bangladesh**



### **PROCEEDINGS OF THE CAPACITY BUILDING AND CONSULTATION WORKSHOP ON IMPROVED NATURAL RESOURCES MANAGEMENT IN THE CHT HELD IN BANDARBAN**

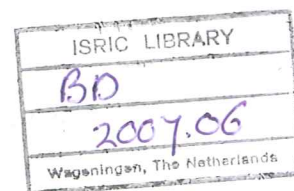
**28-29 November 2006**

ASIA PRO-ECO



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28-29 November 2006

#### Editors

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## **Acknowledgements**

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The Bangladesh Centre for Advanced Studies (BCAS) and the Centre for Environment and Geographic Information System (CEGIS) in association with ISRIC-The World Soil Information, the Netherlands, and Lleida University, Spain have jointly organized the "Capacity Building and Consultation Workshop" of Chittagong Hill Tracts Improved Natural Resource Management (CHARM) Project. The workshop was held in Bandarban on November 28-29, 2006 at the Parjatan Hotel. Key objectives of the Capacity Building and Consultation Workshop were to share the findings of CHARM project activities including pilot study on Bandarban Sadar Upazilla and solicit inputs from the different stakeholders primarily on different options and measures towards improvement of natural resource base. Sharing computer based draft "Information System" developed under CHARM project, providing hands on training and obtaining feedback for further improvement were also part of the consultation workshop. It is to be noted that the CHARM activities are being supported by European Union under Asia Pro Eco Programme.

The Capacity Building and Consultation Workshop was attended by a wide range of stakeholders including representatives from the Department of Agricultural Extension (DAE), Department of Fisheries, Forest Department, Soil Resources Development Institute (SRDI) and other agencies from Bandarban, Rangamati and Khagrachari Hill District. There were also representatives from the Chittagong Hill Tracts Development Facilities (CHTDF) Project under United Nations Development Programme (UNDP), and NGOs. The Deputy and Assistant Deputy Commissioner of Bandarban District and Upazilla Nirbahi Officer (UNO) of Bandarban Sadar Upazilla also attended the workshop.

The two-day workshop was divided into three technical sessions including one breakout session, and opening and concluding sessions. The first day of the workshop dealt with natural resource management issues of whole Chittagong Hill Tracts (CHT). The second day of the workshop concentrated on Pilot

Study on Bandarban Sadar Upazilla which has prepared through a participatory land use mapping and natural resource planning and hands-on training of the CHARM information system.

## Opening Session

Mr. Abdul Mazid Shah Akhand, Deputy Commissioner of Bandarban Hill District chaired the opening session of the Workshop of CHARM Project. Mr. Mozaharul Alam, Research Fellow, BCAS welcomed the Deputy Commissioner and the workshop participants.

### 2.1 Project Overview

**Mr. Stephan Mantel**, Project Coordinator of CHARM, gave an overview of the Project and its activities. He discussed the history of the CHT and natural resource management issues and he summarized the CHARM project results.

The central theme of CHARM is to improve information access and knowledge exchange for decision making and planning in natural resources management in the CHT. Surveys and field studies were done to: 1) assess the state of the environment and improve access to base line information, 2) assess management practices and use of natural resources by various stakeholders, 3) identify stakeholder information needs for improving decision making, 4) test a participatory natural resources planning methodology in Bandarban Sadar.

CHARM aimed at building institutional capacity through organizing stakeholder platforms for discussion of issues and opportunities in Natural Resources Management (NRM), testing the participatory natural resources planning methodology and by development of a user-friendly NRM information system to support effective decision making. Alternative management strategies were discussed with different resource users group and stakeholders in a number of meetings and focus group discussion.

Key activities carried out by the CHARM project included:

- a. Review of policies, laws and regulations related to environment and natural resources including decision making process and institutional capacity;
- b. Environmental diagnostic survey and development of baseline database on CHT;
- c. Assessment of stakeholder information need for improved natural resource management and decision making;
- d. Inventory and documentation of current natural resource management practices in the CHT and identify better alternative options;
- e. Development of a sustainable land management planning tool and test;
- f. Development of a computer based information system for improved easy access to NRM information; and
- g. Recommendation on implementation strategy.

The environmental diagnostic survey contributes to the compilation of the base line information on the CHT natural resources. A land cover map was created on the basis of remote sensing information of 2003 and supported by field checks for ground truthing. A regional soils and terrain information system was compiled using the digitized geological map, the SRTDM Digital Elevation Model, and LANDSAT TM images for delineation of the mapping units. The soil profile information was obtained from the Soil Resources and Development Institute (SRDI). Information was compiled in databases, digital maps, and reports. On the basis of the information need inventory the data from different formats were made available through a user friendly information system for easily data access.

The compilation and harmonization of spatial data was not straightforward. The various digitized maps of different themes and from various sources, such as the geological and the regional soil map, could not be fitted on the common mapping base (LANDSAT TM and SRDT Digital Elevation Model).



Maps were therefore not spatially reliable. The map errors were not systematic or related to map projection parameters. Redrawing of part of the maps was inevitable to create plausible spatial databases.

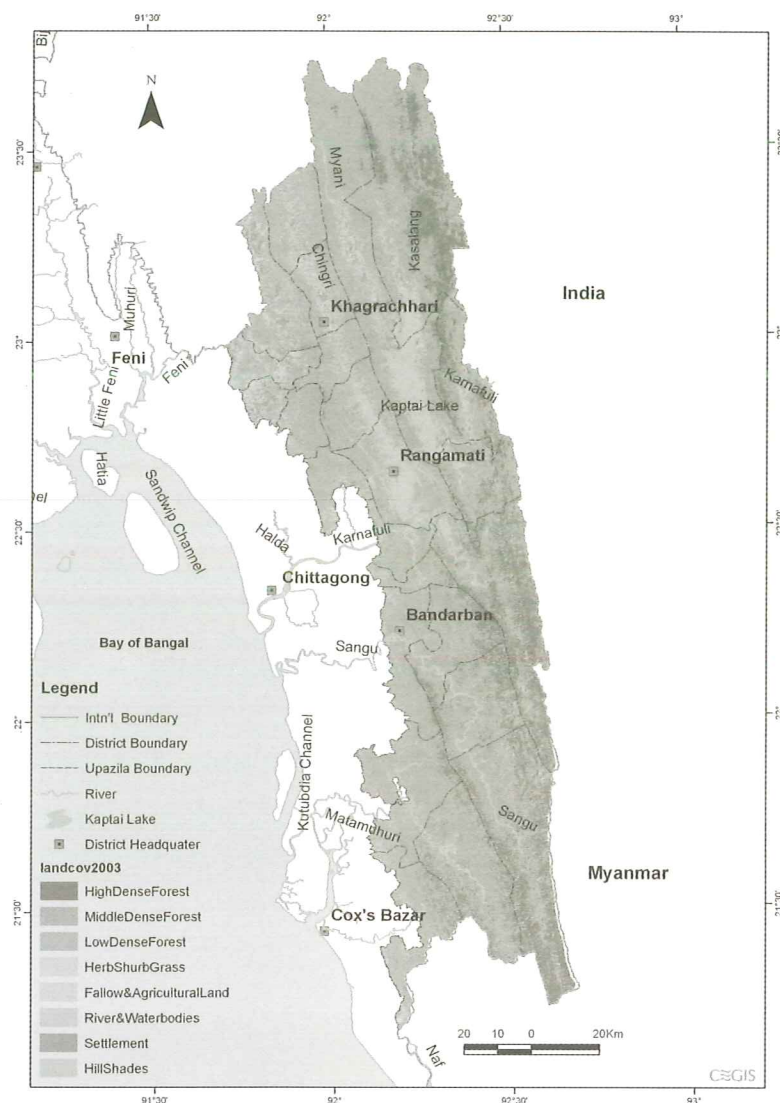
The issues of NRM in the CHT have been quantified through: 1) inventory of land management practices, 2) inventory of stakeholder decision making and information needs, 3) assessment of the state of the environment, 4) through organization of stakeholder platforms and discussions, 5) the review of policies and environmental control of the CHT.

## 2.2 State of Environment of CHT

An environmental diagnostic survey of the CHT was done assess the state of the environment of the CHT, to provide baseline information on natural resources, and to identify the social and economic drivers and constraints. **Mr. M Fida A Khan** of Centre for Geographic Information Services (CEGIS) presented on the "State of the Environment of the Chittagong Hill Tracts". Key activities carried out under the environmental diagnostic survey were: a) compilation of the up-to-date data and information; and b) integration of analyzed information into geospatial database using Geographic Information Systems (GIS) & Remote Sensing (RS).

The primary objective of the environmental diagnostic survey was to prepare up-to-date information on the physical environment and natural resource base of CHT including pressures, states, impacts and measures. It has also assessed risk of degradation processes, such as biomass decline, and degradation risks, such as soil erosion.





**MAP 1 : Land Cover Map.**

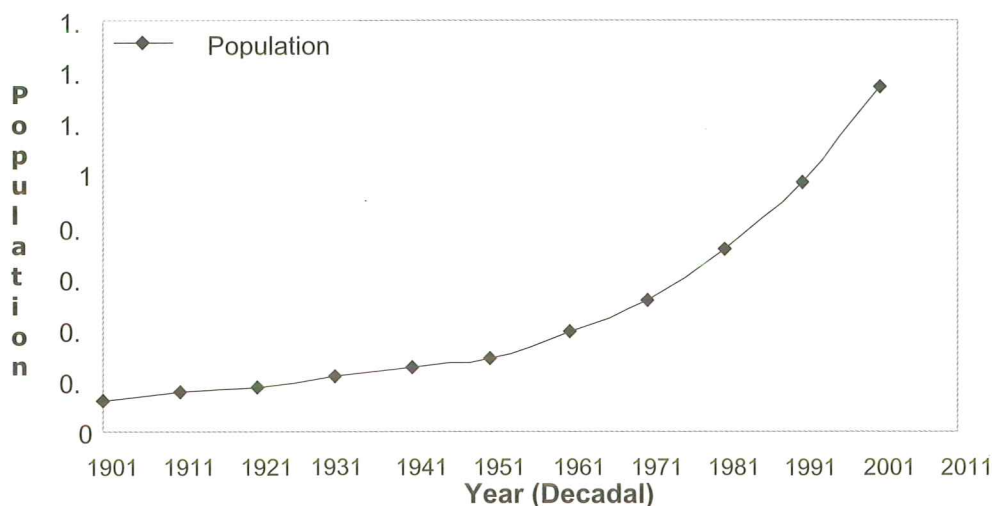
Specific objectives of the Environmental Diagnostic Survey of the CHT were to:

- ◆ Assess and indicate the status of physical environment and natural resource base;
- ◆ Identify underlying pressures and process of degradation of the environment and natural resource base;
- ◆ Assess future risk and degradation of natural resource base and identify options for improvement; and

- ◆ Prepare baseline information including maps and tables showing existing status and possibilities of improved land management and planning.

The Environmental Diagnostic Survey considered major natural resources of the CHT such as soil, water, forest, and wildlife. Population increase in the CHT due to migration and natural growth has increased pressure on the natural resources. The population has increased at a high rate since 1961.

**Figure : 1 Historical trend of population in Increase in the CHT.**



The Chittagong Hill Tracts are homeland of thirteen ethnic tribes that are engaged in different occupations and livelihood activities. These can be categorized into four types.

**Type One:** Jhum cultivation, plain land agriculture, collection of forest resources, homestead gardening, fishing, hunting, cattle rearing. These activities are being carried out mostly by the tribal people of the CHT. As population increased, they are being engaged in other activities also;

**Type Two:** Production of handicrafts, cottage industries and other industries (e.g. paper mill, hydropower plant, tea processing etc);

**Type Three:** A small section of people is engaged in more specialized activities like banking and tourism; and

**Type Four:** Activities like education, culture and entertainment has gained popularity as the population increases and tourism is flourishing in the CHT area.

A soil and terrain map was created on the basis of earlier work done by the Soil Resources Development Institute (Brammer 1986). Existing soil information was enhanced with interpretations of the SRTM 90 m digital elevation model (USGS 2003) and satellite imagery (Landsat and IRS). Landform units were derived from the

Digital Elevation Model. The spatial pattern of the soil pattern was improved, slope and relief parameters were quantified and mapping units with almost similar compositions were merged. A digital database was created that contains the basic terrain and soil information for each mapping unit. This georeferenced soil and terrain database improved the existing regional soil information and makes it available and accessible. It also allows for a range of interpretations for support of natural resources management, such as assessment of soil erosion risk, soil fertility, and land suitability.

A land cover map was created to assess current vegetation cover. LANDSAT 7 ETM+ images of 2003 were used as primary dataset land use maps of Chittagang Hill Tracts Area. Forest cover density (FCD) was expresses in percentages: 10% FCD, 20%, 30% and so on. The FCD layer was finally classified into following classes:

1. Herb-Shrub and Grass (1 - 5% FCD)
2. Low Forest (5-25% FCD)
3. Middle Dense Forest (25-40% FCD)
4. High Dense Forest (40-100% FCD)

The range of percentages of FDC values for the above classes was selected based on field information and other secondary data



**Table 1: Area in hectare of different classes**

Class Name	Area (Ha.)
Fallow or Agricultural land	51,521
Herb-Shrubs-Grass	64,331
Low Dense Forest	284,334
Middle Dense Forest	554,240
Dense Forest	202,643
River and Water Bodies	78,212
Settlements	58,819
Hill Shades	31,433
<b>Total Area</b>	<b>1,325,533</b>

Deforestation is a major cause of environmental degradation in the Chittagong Hill Tracts (CHT), Bangladesh. Net primary productivity or biomass production is an integrated measure of productivity; its deviance from the norm can indicate biomass degradation or improvement. Biomass changes in the CHT were studied for the period 1981-2003. Potential hot spots of biomass degradation were identified as those areas with both declining net primary productivity and declining rain-use efficiency. These areas occupy 20 per cent of the CHT. The combined index shows three places as potential hot spots: the area around Lake kaptai; border area between Khagrachari and Rangamati districts; Naikhongchhari and Alikadam of Bandarban District. The ground truths of the identified areas have been validated in field investigations.

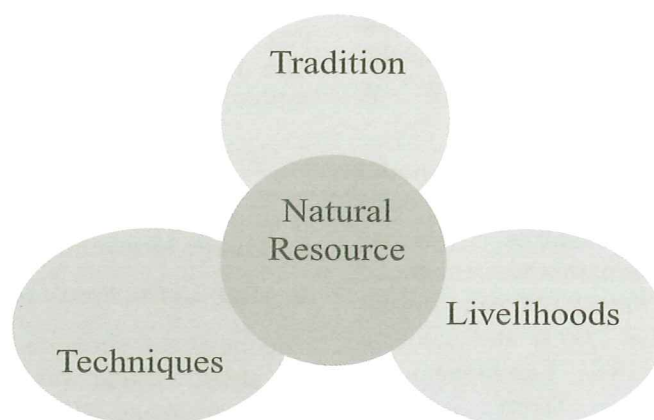
Among the environmental issues identified in the CHT State of the environment study were vegetation cover decline, soil erosion and nutrient decline, and decreased water availability and rainfall pattern change. Green biomass and net primary productivity decreased over 62 per cent of the land area by annual rate of 0.17%. Among the factors identified in the field survey of land use change history in relation to vegetation cover decline and associated soil erosion were: 1) increased forest conversion due to population increase, 2) forest conversion to plantations of timber species such as teak, 3) illegal logging, and 4) decreased roation cycles in Jhum due to population increase.

Climate change was identified by users in the land use change history survey in terms of variability of rainfall patterns and temperature increase. Analysis of rainfal patterns in the CHT over 1981-2003 revealed that rainfall decreased over 90% of the CHT; rainfall decreased spatially from the south to the north of the region.

## 2.3 Review of Polices and Environmental Control of CHT

"Land use Planning and Environmental Control of CHT: Review of Policies" was prepared by **Dr Shahidul Islam** and **Mr Mozaharul Alam** of Bangladesh Centre for Advanced Studies (BCAS). It focused on the important and interdependent link between natural resource use, tradition, and techniques and policies. Policies and acts were assessed through literature review and consultation of local people.

**Figure 2 : Man-Nature Relationship**



Different policies, acts, and regulations apply to the CHT compared to the rest of Bangladesh due to its unique history and natural and geo-physical characteristics. Before the 1900, there was neither act nor regulation for the tribal people of this area. The CHT Regulation Act-1900 is the only document that has given the indigenous people a distinctive legal authority. After the Peace Treaty in 1997 the Circle Chief has the voice for carrying out policy implementation on CHT issues. Some of the key acts and laws that govern the GHT include:

- a. CHT Regulation Act, 1900
- b. Bazar Fund Regulation, 1937
- c. CHT Land Acquisition Regulation, 1958
- d. Peace Treaty, 1997
- e. Hill District Council Act, 1998
- f. CHT Regional Council Act, 1998
- g. Land Commission Law, 2001

It is found that most of the national policies in Bangladesh do not explicitly take into consideration the specific physical characteristics and ethnic diversity of the CHT. The lack of special attention in implementation and enforcement of laws and regulation to protect natural resource base has lead to high exploitation rates exploitation of natural resources. The salient features of the key national policies such as National Environmental Policy 1992, Forest Policy 1994, National Industrial Policy 2005, National Agriculture Policy was formulated in 1999, The National Water Policy (1999) and National Tourism Policy of Bangladesh were presented and discussed in the workshop.

Both the National Environment Policy 1992 and National Forest Policy 1994 emphase reduction and depletion of forest cover and forest resources, and protection of forest area and afforestation programs. Rapid population growth leads to overexploitation of forest resources. In addition, vegetation cover and bio-diversity were reduced though the promotion of rubber plantations by private entrepreneurs. The National Forest Policy

rules that tribal people living around forest areas should be settled in identified areas and should protect the remaining area as forested lands. The policy does not address Jhum cultivation and the livelihoods of the tribal people of CHT.

The National Environment Policy 1992 addresses the water quality of water bodies such as haors (low-lying lands that are flooded in rainy season and used for fish cultivation), baors (ox-bow lakes), lakes and rivers. Still, the Kaptai Lake and the Karnaphuli River are under serious threat to water pollution and are silting up. The National Water Policy emphases the necessity to protect water quality, both surface and sub-surface, the need to ensure an effective use of water resources, manage watersheds and basins appropriately, and long-term planning for and preservation of natural depressions and water bodies. The Government of Bangladesh has declared 13 areas as "Ecologically Critical" but it is a failure of the environmentalists, pressure groups and policy makers to include Kaptai Lake as an "Ecologically Critical Area". The Water Policy also states that all water related projects must be multipurpose, multidisciplinary and integrated. Kaptai Lake unfortunately failed to satisfy that criterion.

The National Environment Policy 1992 also stated that measures must be taken to stop hill cutting, land levelling, stone-mining and other activities that cause environmental degradation. This is all relevant to the CHT area but implementation of the Environment Policy is low. The Environment Policy also contradicts with the Building Construction Act of 1952 that allows hill-cutting for construction purposes.

The National Agriculture Policy was formulated in 1999 and it took into account the fact that Bangladesh is moving from subsistence to commercial farming. Some of the major objectives of the policy are: preservation and development of land productivity; preservation of existing bio-diversity of crops; environmental friendly sustainable agriculture; effective irrigation systems development. It also promotes research on soil and agro-forestry, bio-diversity of crops, irrigation, and improved crop varieties.



The National Industrial Policy 2005 and Tourism Policy can be regarded as drivers for economic development of the CHT. The National Industrial Policy of 2005 has identified 33 sectors of which at least 9 are related CHT region, such as: agro-based industry, flower plantations, oil & gas exploration, tourism, furniture, herbal medicine, horticulture, commercial plantation and handicrafts. However, there is lack of initiative on promoting agro-based industries in the CHT. There was a plan to establish agro-based EPZ at Mongla, Iswardi and Nilphamari, but despite immense potential the CHT was not considered. Out of 5 nominated persons by the Government for the National Council for Industrial Development (NCID) there is no representation from the CHT region.

The Tourism Policy of Bangladesh is weak and oversimplified. Even though Bangladesh is a country with vast natural beauty, the Government has failed to take advantage of this resource and Bangladesh is far behind the other South Asian countries in this respect. Some of the main aims of the tourism policy is to: develop, preserve and maintain tourist resources (attractions), and to create a favourable image to outside of Bangladesh to the world. The CHT area has been identified by the Policy for development of tourism. The adjoining areas of Chittagong Metropolitan Area and Sunadia, Cox's Bazar and St. Martins Island have also been identified for tourism development. Tourists favour packages of mixed environmental and cultural elements, and the CHT region can provide the highest package offer.

The review of policies and environmental control concluded that most of the National Policies support management of natural resources and environment at CHT. It is also to be noted that most of the Act, Rules and Regulations related to CHT primarily address administrative and revenue collection and very little on natural resource management. Despite unique characteristics of CHT, there is lack of explicit acknowledgement and consideration of the unique features and characteristics of the CHT in policy formulation, strategy development and implementation of projects. Formulation of policy is dominated by top-

down approach, whereas policy formulation needs a bottom-up approach in general and in CHT in particular.

There is a lack of institutional capacity in general and at the local level in particular. Cooperation to implement policy and measures is also insignificant and department agencies are underrepresented or sometimes even completely lacking in the CHT. Furthermore there are overlaps of responsibilities and mandates and cross-institutional cooperation is required.

The review has also revealed that there is very little reflection and acknowledgement of Indigenous knowledge to national policy formulation particularly of CHT issues (problems, concern and challenges).

### 2.4 Open Discussions

Among the environmental problems and causes of land degradation identified are the reduced rotation cycle in the Jhum farming system, with resulting forest decline, soil erosion and nutrient decline, and inadequate plantation management of timber species that are planted on steep hills that have been clear-cut from the original vegetation. Most of the discussion of the session focussed on Jhum cultivation and alternative sources of livelihoods for the tribal people. Jhum is often unjustfully blamed as the single cause for the environmental and degradation problems of the CHT. Yet, the Jhum system is relatively sustainable if a fallow period is maintained of sufficient length. Participants also pointed out that Hill Cutting, which has disastrous environmental consequences, needs to be considered in the environmental diagnostic report.

The use of data on population census from the Bangladesh Bureau of Statistics in the presentation on the State of the Environment was debated. Suggestions were made to use data from the Asian Development Bank (ADB) reports rather than the BBS data. The information from the ADB report had been considered for use, yet it was decided to adhere to Government data for population figures.

Residents of the Hill districts observed a lack of implementation or enforcement of policy or regulation in the CHT. It was noted that some development projects are implemented that may not be very effective in terms of impact on the people of the area. Implementation of development activities and tourism are hampered by the remoteness of parts of the CHT; the lack of infrastructure and lack of access to utility services.

## 2.5 Concluding Remarks by Chair

Mr. Abdul Mazid Shah Akhand, Deputy Commissioner, Bandarban thanked workshop organizers of the CHARM project. Mr. Akhand recognized that the workshop is a valuable platform for sharing ideas and concerns on management of the natural resources of the CHT. It is not the responsibility of CHARM to formulate policies, make decisions or carry out development activities, but the outputs of CHARM and of this workshop will provide an insight in the status of the natural resources and their management. It will provide guidance for policy development and decision making and promoting development.

Even though Jhum Cultivation was given a lot of priority in the open discussion, Mr. Akhand stated that Jhum should not to be considered as the major problem. Ownership of the natural resources or lack of it is the main culprit. Ownership is one of the first and crucial steps towards natural resource management and gives knowledge and guidance to the people. The other priority issues in the CHT are nutrition, education and proper understanding of NRM. Improving education and enhancing knowledge exchange should be a priority.

Tourism is an important industry and is no longer considered pure entertainment. The media can have a positive influence on Tourism development and the development of CHT in general. Among the range of initiatives are being prepared and a direct bus service from Dhaka to Bandarban will start from December 15, 2006.

Mr Mozaharul Alam thanked the Deputy Commissioner for his valuable contribution and suggestions on development of the CHT

and engagement of participants in the discussions. He also thanked the participants for their valuable comments on the presentations and additional inputs which will help in finalizing recommendations of the CHARM Project activities.



### Project Overview and Current Situation

Mr. Mozaharul Alam, Research Fellow of Bangladesh Centre for Advanced Studies (BCAS) chaired the Technical Session.

### 3.1 Documentation on Land Practices by BANCAT

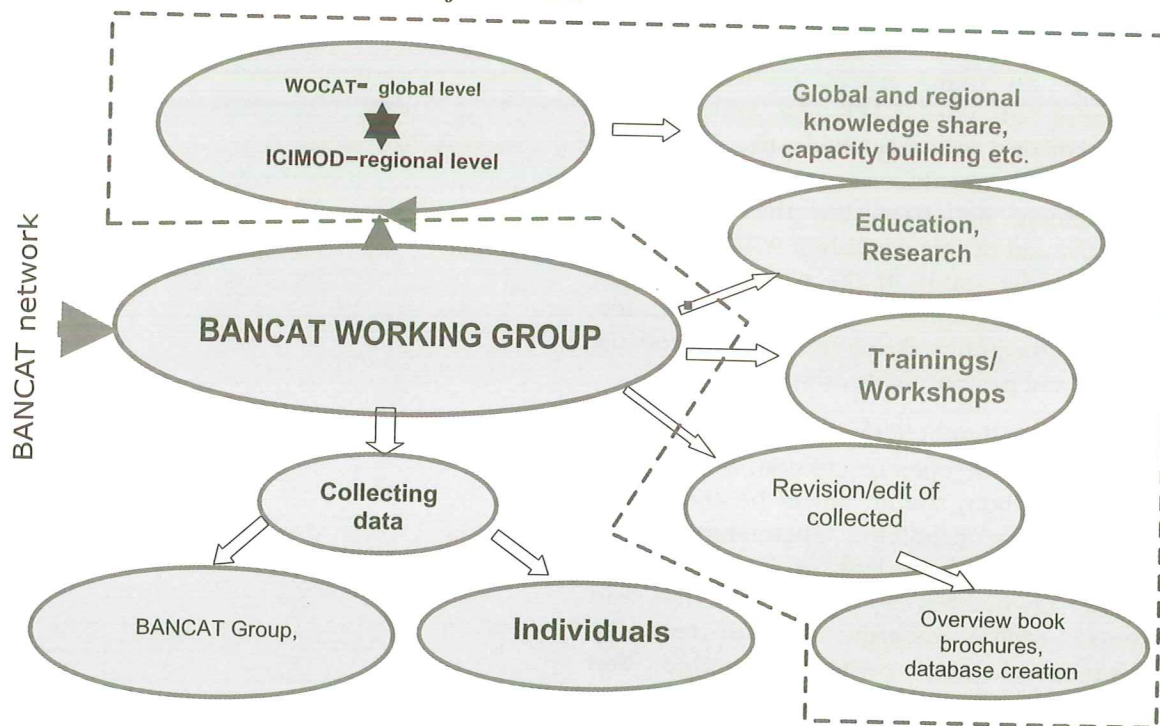
Mr S. K. Khisa, Coordinator of Bangladesh Conservation Approaches and Technologies (BANCAT) gave a presentation on "Documentation on Land Practices". The presentation includes an overview of BANCAT activities and how it carries out documentation on land practices in the CHT.

### 3.2 Land Management Practices and Sustainable Alternatives

Mr Stephan Mantel, Project Coordinator of CHARM made a presentation on Land Management Practices and Sustainable Alternatives in the CHT on behalf of the team. The presentation was prepared by Mr José Ramon Olarieta of the University of Lleida, Spain and he carried out this study jointly with Mr. Abdul Alim of Bangladesh Centre for Advanced Studies (BCAS). The objectives of the study were to:

- Review the existing information on land use and environmental issues;

Figure 2 : Documentation Process of BANCAT



At present BANCATs' activities are restricted to the CHT only but activities are expanded to the rest of Bangladesh. BANCAT disseminated information through publications and posters. The BANCAT staff, known as BANCATeers, has already documented 30 technologies and 9 approaches to Land Management Practices in the CHT. BANCAT is a network organization and is a part of WOCAT which works at the global level. The figure below shows the network organization of BANCAT and how it links up with WOCAT.

- Document sustainable land use alternatives in conditions similar to those in the CHT;
- Field survey land management practices in the CHT; and
- Analyse actual land use and alternative options for better management of natural resources.

A survey of 40 households was carried out with some emphasis on those involved in land-uses alternative to traditional jhum, and this resulted in a certain bias towards bigger households. Information was collected on

household size, land tenure, households members, inputs and outputs in the land-use systems performed in the household (basically ploughland, jhum, wood plantation, homestead, fruit plantation, fringeland, domestic animals, gathering of wild products, and rubber plantations), and concerns of household members in relation natural resource management. A review of the literature showed that 44% of the households have less than 1 hectare of land and the mean ownership is 0.56-1.28 ha. A very high proportion, 76%, of the households own less than 2 ha of land, and households that are able to obtain enough food throughout the year use a minimum of 1.04 ha of cultivated land.

The results of this study show various interesting conclusions regarding land use practices in the CHT:

- a) Jhum will always remain a fundamental land-use system in the foreseeable future:
  - i. Food security for farmers means producing their own staple crop, and
  - ii. Regional production will not be sufficient to cover demand.
- b) Cash crops are not an alternative for the majority of the farmers:
  - i. Only large farmers or farmers with other sources of income change to cash crops, and
  - ii. Marketing and accessibility will remain the limiting factors in the near future.
- c) Associations of producers have to be developed, road network need to be improved, and simplified and cheaper permits and taxes for wood production is needed.
- d) General suggestions for improved management include:
  - i. increase inputs of organic matter: use weeds for mulch/compost and improve management of manure,
  - ii. use of liming materials,
  - iii. avoid use of hazardous chemicals, and
- iv. research on indigo in plough (as a relay crop) and Jhum land (to improve fallow)
- e) Suggestions for improved management of plough land include:
  - i. increase inputs of organic matter: use plant residues and introduce relay crops in dry season for green manure;
  - ii. improved fertilization: the use of urea as the only fertilizer should be discouraged; and
- iii. research on system of rice intensification (SRI).
- f) Suggestions for improved management of Jhum:
  - i. improved management of slash and burn technique: avoid gullies and steeper slopes within the Jhum Plot and keep wide margins to neighbouring plots;
  - ii. improved fallows: introduce species producing litter and with commercial use (e.g. bamboos, cowpea, etc). Avoid teak/gamari plantations as fallow agriculture; and
  - iii. improved fertilization: the use of urea as the only fertilizer should be discouraged.
- g) Suggestions for improved management of fruit gardens:
  - i. keep good ground cover;
  - ii. improved fertilization: the use of urea as the only fertilizer should be discouraged;
  - iii. use weeds for mulch/ compost; and
  - iv. research on best tree density.
- h) Suggestions for improved management of wood plantations:
  - i. realizing that trees do not guarantee soil conservation;
  - ii. improve ground cover by introducing bamboos and leguminous shrubs;



- iii. avoid use of fire;
- iv. research on best tree density for good tree growth and good ground cover; and
- v. mix species to improve natural forest regeneration.

### 3.3 Natural Resource Management, Livelihood System and Decision Making Process

**Mr Khandaker Mainuddin**, Fellow of Bangladesh Centre for Advanced Studies (BCAS) presented on "Natural Resource Management, Livelihood System and Decision Making Process in the CHT". The objectives of this study were to:

- a) Assess socio-demographic profile of the CHT population;
- b) Assess the extent of households' dependence and use of natural resources including land, water, forest etc for their livelihood;
- c) Highlight the pressures including degradation and depletion of natural resources and their causes;
- d) Review the use of information in natural resource management; and
- e) Focus on the perceived needs and requirements of information for improved planning and management of natural resources to promote sustainable livelihoods and development in CHT.

The methodology of the study included a review of relevant literatures, secondary data and information; consultations with stakeholder groups; focus group discussions; and household survey. The collected data included household size, education level, ownership of average land, access to utilities, drinking water source, access to natural resources and other socio-economic factors. The study also assessed livelihood patterns and types of cultivation and household management practices. These factors together contribute to the decision-making process for land use and management, relocation, shifting, etc.

The household head primarily takes the

administration decides over the use of government land. The Raja, headman and social organizations assist individuals in decision making processes and selection of practices. There are four categories of decision making; a) household head by himself or herself; b) household head in consultation with family members, headman, karbari; c) government and NGOs; and d) decisions for particular use of land by Deputy Commissioner through advertisement. Existing guidelines and practices for land and water resources management in the CHT is under the control of the Headman's willingness, individuals' willingness, traditional and customary laws.

### 3.4 Stakeholder Information Needs for Improved Decision Making, Planning and Management of Natural Resources

"Stakeholder Information Needs for Improved Decision Making, Planning and Management of Natural Resources" was presented by **Mr Mozaharul Alam**, Research Fellow of BCAS. The stakeholder groups targeted by this study include Policy and Decision Makers (local administrations and public representatives, natural resource management Institutes, Representative of Raja), and Resource Users (Farmer, Fisherman, Women Group, etc). The information was gathered using Questionnaire Survey, Focus Group Discussion (FGD) and Consultation with Stakeholders. The information needs were categorized into three different groups i.e. information on natural resource base, information on technologies, and information on market and price.

Local level public representatives, decision makers, and resources users expressed interest in information on soil fertility, nutrient and water availability. Information on different technologies related to agricultural inputs and training as well as market information.

Different stakeholder groups have different needs for information. For instance, the UP Chairman and members asked for information on soil fertility and water availability, while the forest resource users desire information on improved agricultural management and technologies. The information needs and the information gaps were identified for all the stakeholder groups.

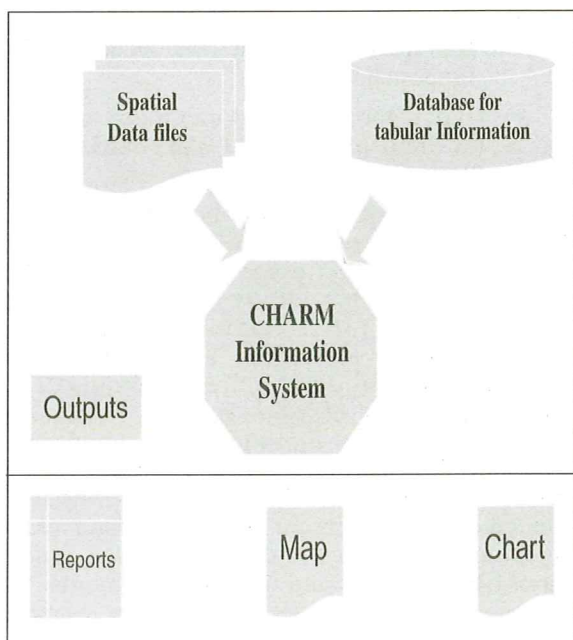
### 3.5 Computer Based Information System.

A Computer Based Information System was developed to assist local level planning and informed decision making by different stakeholders. This was presented by **Mr Md. Abdul Lahel Shafey**, GIS Software Development Expert, CEGIS. Objectives of the information system are to:

- ◆ Provide improved information basis for decision making;
- ◆ Disseminate CHT environmental information;
- ◆ Create user friendly representation of different spatial and non spatial data layers related to CHT; and
- ◆ To teach how the user can view, print, query and export data with the user interface.

The Architecture of this system is relatively simple and is represented in the figure below.

**Figure 3 : Architecture of System**



The beauty of the system is that it is user friendly and that anyone with basic knowledge of computer systems can work on it. The programme can handle GIS data without the GIS software, and therefore it is also cheaper to use. The capabilities of this system are:

- ◆ Spatial and tabular data can be added,
- ◆ Data can be viewed as vector, raster, grid or table,
- ◆ Graphs can be plotted and new data field added,
- ◆ Calculations on a field can be made,
- ◆ Get output from information system,
- ◆ The GIS capabilities include: zoom in and out, pan and identify,
- ◆ View print layout.

### 3.6 Open Discussion

The topic of the discussion was based on the presentations in the technical session. The participants agreed that a healthy hillside ecosystem is essential for sustainability of livelihoods of the CHT people. Monoculture is responsible for soil degradation and loss of bio-diversity and it was argued that monoculture forest plantation is a cause of soil degradation.

With regards to the information systems and the tools for analysis and access to databases, participants expressed concern that not all stakeholders have access to computers. Some of the stakeholders have no knowledge about computers at all. Even though only basic computer skills are required to run the information system, part of the targeted lower-level users are not educated and even a user-friendly information system is not directly accessible to them. This means there is a need for basic computer training for some stakeholder groups. This will be taken into account in the formulation of an implementation strategy. Main people targeted now are people who are in close contact with direct beneficiaries, such as staff of NGOs and local administration.

### 3.7 Hands on Training

A hands-on training was organized to familiarize participants with the CHARM Information System. The participants groups were formed and simple tasks were carried out on the computer, such as accessing databases, creating maps, and retrieving relevant data. All participants were asked for their feedback on the Information System for further improvement.



### Pilot Study of CHARM Project

Technical session II in Day 2 of the workshop was chaired by **Mr Md Anwar Hossain**, Assistant Deputy Commissioner (ADC), Bandarban Hill District. The participants for Day 2 included people only from Bandarban Hill District since it was focusing on Pilot Area Study on Bandarban Sadar Upazilla. Mr. Hossain stated that the main problem of Bandarban is its remoteness and the general lack of development. There is a paucity of teachers and it proves difficult to ensure education in remote areas such as Bandarban. Consequently, the education rate is low. Increase of education is a priority issue in Bandarban. Mr. Hossein argued that NGO's can support education at the Upazilla level and residential education can be ensured by their workers so that travel time is shorter for children.

Mr Hossain expressed concern about the lack of economic activity in the area that are needed for support of livelihoods. The challenge is to use the hilly terrain to generate sufficient economic activities for provision of jobs and income to local people. In this respect rubber plantations have achieved some success, but it is a long-term effort. Poor people do not have the financial capacity to invest in rubber and wait for 6-7 years before rubber can be harvested and economic benefits are gained. They need alternative source of earning for a living. Tea plantations can be considered because they have economic return in 2-3 years. The government provides loans with interest rates as low as 5% for investments in cash crops. If such loans were made accessible to all, the resources-poor would be able to set up some sort of economic activity to support their livelihoods.

Availability of water is another major problem in the hilly districts. There is no access or water systems in the remote areas of Bandarban. The everyday domestic need and irrigation need for water has to be met. The depressed area "Khads" could be identified and barricaded to store water for cultivation and other purposes. The large Khads can even be used for fish cultivation. Already some embankments have been built near the towns for use as water resources.

Furthermore poultry, horticulture etc should be encouraged as sources of income generation. Group discussion should take place between the

stakeholders, district officers, NGO's etc to generate ideas for development and to identify the priority issues. The different sectors should look into integrated plans of action to generate income for the people, to ensure land management practices and natural resource management (NRM).

### 4.1 Methodology and Development of NRM Plan

**Mr Stephan Mantel** and **Mr M Fida Khan** presented the methodology and tools for Development of Natural Resources Management Plan of Pilot Area. This plan was prepared after extensive field survey and consultation with local people at union level engaging relevant stakeholders from the pilot area. Bandarban district has 5 Upazillas and the Bandarban Sadar Upazilla was chosen for the pilot study. The plan is to optimise the natural resources of the Bandarban Sadar Upazilla. The objectives of the pilot study were to find out:

- ✦ To identify the existing land management practices using participatory methods;
- ✦ To identify a methodology for formulation of a plan for improved Natural Resources Management;
- ✦ To identify the stakeholders and the main issues involved;
- ✦ To solicit alternative opinions for natural resourcemanagement and recommendations; and to
- ✦ To develop a detailed methodology with the help of the local stakeholders and through a consultation process.

Some of the other objectives include the development of separate information for the Bandarban Sadar area which will be disseminated. This study should provide information for recommending on implementation strategies and options for local and regional development planning. The pilot area was chosen on the basis of indicators which include socio-economic conditions, infrastructure, institutional strengths, etc. Base-line information was collected from different sources. Maps were generated on themes such as forested areas, water bodies, roads and human settlements.

The approach applied in the pilot study is mainly in consultation with the local people. 5 consultation workshops were held at the union level of the pilot area.

The steps followed in developing natural resource management plan are:

1. Situation Analysis: on information from local people and secondary information.



2. Development Stakeholder forum
3. Problem analysis to find out the priority issues in NRM
4. Planning Workshop: from grassroots level onwards to discuss the proposed plan
5. Development of Implementation Plan

All the data collected were used to develop a land use map indicating land management types such as: plough land, jhum cultivation, settlement areas, fruit gardens, streams and waterfalls. After information compilation, the data were analysed and NRM issues were identified. Local stakeholders were consulted and asked for their opinion on land use and management and for additional alternative options. Policies were also reviewed for the different sectors and these were implemented into the plan. Development of alternative management practices was also stressed and a Natural Resource map was generated after compiling all the information. Alternatives in natural resources identified must be technologically viable, economically feasible and locally acceptable to the Bandarban Sadar area in order to be successful.

#### 4.2 Documentation Methodologies used by BANCAT

**Mr Shoaib Ahmed**, Database Manager for BANCAT presented on documentation methodologies by the professional association 'Bangladesh Conservation Approaches and Technologies' (BANCAT). The issues discussed were;

- ✦ Local adaptations/innovations: there are no quick fixes, or 'silver bullet' solutions
- ✦ Technologies and approaches need to be flexible and responsive to changing and complex local environmental and social situations.

BANCAT used Soil and Water Conservation (SWC) technologies and case studies from Bandarban were highlighted to show how the documentation process is carried out.

- a) First three questionnaire surveys on SWC technologies, approaches and maps were carried out
- b) Documenting information from and with land users
- c) Computer data entry form was used to enter data

- d) Good photos and drawings are essential for data
- e) WOCAT Technologies Database has provisions for fast retrieval of data. It also offers options for data management and analysis.

Mapping is important for SWC processes. Unfortunately there is no systematic and standardised mapping and monitoring of degradation and/or conservation at global, regional or national level. There are some BANCAT (WOCAT) maps and these provide very useful information to the stakeholders and to the SWC project. The maps provide a scale-independent spatial overview of the project site and record the current state of land degradation and SWC. It also helps to monitor the SWC activities and their impacts; provides a planning and support foundation to SWC activities; sets priorities to combat degradation; creates awareness; and adds value to research and education.

The method used was the PEA (Participatory Expert Assessment). This method capitalises on the experiences of SWC specialists and on existing documents and data. It also facilitates the compilation of scattered knowledge and helps to identify knowledge gaps to be addressed by surveys or applied research.

#### 4.3 Open Discussion

Some of the participants pointed out that the issues of mountain springs (chara) were left out of the discussion. There has been intensive discussion on agriculture and alternatives to Jhum Cultivation but the problem of dying out of charas was not brought up. There were literally hundreds of charas in Bandarban and the rest of the CHT, but they are disappearing at a fast rate. This may be due to changing rainfall patterns or drying up of other water sources. Due to the deterioration of the mountain springs a certain species of fish is also disappearing rapidly.

Some of the land regulations that are unique to CHT have not been given enough importance. Furthermore the policies specific to the CHT has not been implemented or regulated. In fact the people are not aware if these policies are beneficial or harmful to the CHT and Bandarban region. The policies were created by people who have little or no knowledge of the sensitivity and socio-economic situation of the people of this area.



### Break-out Groups

Mr Shoaib Ahmed of BANCAT chaired the technical session III which included the breakout groups. In this session, the participants were divided into three breakout groups and concentrated on various issues. In order to facilitate the group discussions, the participants were given some guiding points.

Participants asked about the types of activities to be identified for CHARM. Mr Mozaharul Alam stressed that CHARM is not a donor agency, nor is it an implementation organization. CHARM is a project that will study the existing natural resource base of the CHT and formulate methodologies for planning efficient use of the resources for development and livelihoods. The information and recommendations that come out of this workshop will be used to further strengthen the formulation of an implementation strategy for follow-up of the recommendations. The information gathered will be used by other implementation organisations and development agencies in future.

The guidelines and questions to be given to the participants are the outcomes and challenges identified at the union level consultation workshops. The participants were asked to validate the findings from the union level and use their own expert judgement to add on to the existing list. Also the participants were asked to prioritize the problems and recommend alternatives or improvements to the problems identified.

Mr Alam requested the participants to identify the implementing institutions and their strengths regarding proper implementation and management. Policy support is a crucial area for consideration. Finally provision of a rough estimate was requested for the resources or funds required to implement the recommendations that the groups would present.

### 5.1 Recommendations and Conclusions

The three groups came up with recommendations and these were presented at the workshop. The list of recommendations is given below.

- ◆ Jhum Cultivation: Since jhum cultivation, or mainly the reduction of the rotation periods, is responsible for soil degradation, loss of soil fertility, erosion and productivity, alternative agriculture methods like agro-forestry and intensification of Jhum, were suggested. Crop cultivation according to land suitability was stressed.
- ◆ Land ownership issues have to be resolved for better management and preservation practices.
- ◆ Alternative practices for long-term farming, low cost fertilizer supply, improved land management and access to management techniques.
- ◆ District Administration should be strengthened for improved decision making and preparation of land use planning and management.
- ◆ Training in crop production according to soil type and land elevation, irrigation practices, modern technologies for cultivation, distribution of quality seeds and accessibility to funds through bank loans.
- ◆ Forest cover should be increased through better forest management and land ownership. Monoculture should be discouraged and knowledge dissemination should be more efficient.
- ◆ Community participation and training for sustainable forest management.
- ◆ Watershed management and increasing capacity through training. Water resources have to be protected and rainwater harvesting during the rainy season should be encouraged.
- ◆ Encourage fruit gardens and nurseries.
- ◆ Markets should be developed to give support to the livelihood of the local people. There should be linkages between production factors and markets.

- ❖ Water supply and sanitation is important and water quality should be maintained. Awareness creation on water management issues is crucial and water supply infrastructure should be accessible to all. The government should increase the number of sanitary latrines.
- ❖ Eco-tourism industry should be developed in this area. Development of tourism automatically takes care of development of other sectors.
- ❖ Restore fish, wildlife and agriculture stock through conservation methods
- ❖ Institutional arrangement is very important. There should be a designated organisation where the stakeholders can take their queries and access relevant information. It was suggested that the land authority and the office of the ADC should be responsible for information management.
- ❖ NGOs can give motivational training to the local people. They can also look after the technical training component part of the natural resource management.
- ❖ Access to knowledge and improved technology. Recognition of organisation to be contacted. Also training on improved technology is important to change some of the land use practices that are degrading the land and resource base.
- ❖ Community participation was stressed by all three breakout groups. Identification of fisheries sector most suited for commercial purposes in the CHT. The fisheries department should take initiative to carry out this project.

A vote of thanks was given to the groups for their recommendations for improving natural resource base and livelihoods of the CHT people. They were also been thanked for taking the time to participate in the workshop and their valuable contribution was appreciated.



## Programme of Capacity Building and Consultation Workshop on Improved Natural Resources Management in Chittagong Hill Tracts

**Date: 28-29 November, 2006**

**Venue: Parjatan Motel, Bandarban, Bangladesh**

Opening Session	:	09:00 - 11:00
Chair by	:	<b>Mr. Abdul Mazid Shah Akhand</b> , Deputy Commissioner, Bandarban Hill District.
09:00 - 09:30	:	Guest take their seats
09:30 - 09:35	:	Welcome Address by <b>Mr. Mozaharul Alam</b> , BCAS
09:35 - 09:50	:	Overview of the Project by <b>Mr. Stephan Mantel</b> , Project Coordinator, CHARM Project
09:50 - 10:10	:	Presentation on State of the Environment of CHT by <b>Mr. Malik Fida A Khan</b> of CEGIS, Project partner, CHARM Project
10:10 - 10:25	:	Presentation on Review of land use planning and environmental regulations by <b>Dr. Shahidul Islam</b> , BCAS
10:25 - 10:50	:	Open Discussion (Q&A)
10:50 - 11:00	:	Remarks by the Chair
11:00 - 11:30	:	Tea Break

### TECHNICAL SESSION

DAY-1	:	TUESDAY, 28 NOVEMBER 2006
TECHNICAL SESSION: I	:	PROJECT OVERVIEW AND CURRENT SITUATION (11:30 - 13:00)
Chair by	:	<b>Md. Showkat Rashid Chowdhury</b> , UNO, Bandarban Sadar Upazilla, Bandarban.
11:30 - 11:45	:	Presentation on BANCAT Documentation on Land Management Practices by <b>Mr. Sudibya Kanti Khisa</b> , CHTDB, Khagrachari
11:45 - 12:00	:	Presentation on Present Land Management Practices and Sustainable Alternatives in CHT by <b>Mr. Stephan Mantel</b> , ISRIC/ <b>Jose Ramon Olarieta</b> , UDL
12:00 - 12:15	:	Presentation on Existing Natural Resource Management, Livelihood System and Decision Making Process by <b>Khandaker Mainuddin</b> , BCAS
12:15 - 13:00	:	Open Discussion (Q&A)
13:00 - 14:00	:	Lunch Break
14:00 - 14:15	:	Information needs for stakeholder groups for planning by <b>Mozaharul Alam/Abdul Alim</b> , BCAS
14:15 - 14:30	:	CHARM Information Management System by <b>Md. Abdul Lahel Shafey</b> of CEGIS
14:30 - 15:00	:	Open Discussion (Q&A)
15:00 - 15:15	:	Tea Break
15:15 - 16:30	:	Familiarization with Information Management System (hands on training)
16:30 - 16:50	:	Feedback on Information Management System (Q&A)
16:50 - 17:00	:	Concluding Remarks by the Chair



**TECHNICAL SESSION**

DAY-2		WEDNESDAY, 29 NOVEMBER, 2006
TECHNICAL SESSION: II		Pilot Study of CHARM project
Chair by	:	<b>Md. Anwer Hossain</b> , ADC General, Bandarban Hill District.
09:00 - 09:30	:	Guest take their seats
09:30 - 09:35	:	Welcome by Chair
09:35 - 10:00	:	Presentation on Methodology and Development of Natural Resources Management Plan of Pilot Area by <b>Mr. Stephan Mantel</b> , Project Coordinator, CHARM Project
10:00 - 10:20	:	Conservation Approaches and Technologies in Bandarban documented under BANCAT by <b>Mr. J.U. Shoaib</b> , Principal Scientific Officer, Soil Resources Development Institute (SRDI), Dhaka
10:20 - 10:50	:	Open Discussion (Q&A)
10:50 - 11:00	:	Remarks by the Chair
11:00 - 11:30	:	Tea Break

TECHNICAL III and CONCLUSION		Breakout Group Discussion (11:30 - 15:45)
Chair by	:	<b>Mr. J.U. Shoaib</b> , Principal Scientific Officer, Soil Resources Development Institute (SRDI)
11:30 - 13:00	:	3 break out group will discuss on three selected issues
13:10 - 14:00	:	Lunch Break
14:00 - 14:15	:	Presentation by Group I
14:15 - 14:30	:	Presentation by Group II
14:30 - 14:45	:	Presentation by Group III
14:45 - 15:30	:	Open Discussion & Wrap Up
15:30 - 15:45	:	Tea Break

## Appendix 2

### List of Participant:

Organization	Name	Designation
Bandarban Hill District	Md. Abdul Mozid Shah Akand	Deputy Commissioner
Bandarban Hill District	Md. Anower Hossain	Addi. Deputy Commissioner
SRDI	Jalal Uddin Md. Shoaib	Principle Scientific Officer
CHTDB	Sudibya Kanti Khisa	Project Manager
Headman Association Rangamati	Tushar Kanti Dewan	Secretary
	Sharat Kumar Tripura	
CHTDB, Rangamati	Shambu Nath Samddar	Research Officer (Agriculture)
DAE, Rangamati	Mobin Uddin Ahmed	Deputy Director
DAE, Rangamati	Abdul Maleque	Crop Production Specialist
TAUNGYA	Suvashis Chakma	VCF
TAUNGYA	Milon Kumar Vate	
LARA, Khagrachori	Advocate. Hemanta Tripura	General Sectetary
	Md. Sarwoar Alam	
Thazingdong	Aung Shwe Sing	Executive Director
PEACE	Akayching	Accountant
PEACE	Shaing Shaing U	Executive Director
CHTDB, Bandarban	Mong Mong Chak	Project Director
CARITAS, Bangladesh	Tapan Kumar Das	Program Manager
Movement for the Protection of Forest and Land Rights in CHTs.	Zuam Lian Amlai	Chairperson
PAUSE	Md. Mujammal Haque	Executive Director
Bandarban Press Club	Mr. Milon Chakrabarti	Member
Representative of the Bohmong Chief	Mr. Saw Hla Prue Jimmy	Representative
	Sonnu Mong Marma	
Bandarban Paurashava	Dilip Barua	Commissioner
Raicha High School	Mehree Marma	Head Mistress
Upazila Livestock Office	Khorshed Alam	Representative
Bandarban Sadar Upazila	Aptaf Hossain	Upazila Agricultural Officer
Kolakhyang Mouza	Thawai Hla Prue	Headman
Bandarban Hill District	Dr. Moslehuddin Ahmed	District Fisheries Officer
Bandarban Hill District	Mr. Abdul Mabud	Divisional Forest Officer



Organization	Name	Designation
DAE	Md. Shahidulla Sarker	Deputy Director
Bandarban Sadar Upazila	Md. Neazuddin	Senior Fisheries Officer
DPHE	Md. Monzur Murshed	
GRAUS	Chinmay Murung	Project Director
Bandarban Press Club	Md. Badsha Mia	President
DPHE	Feiroz Alam Chy	Sub-divisional Engineer
	Md. Mahbubul Islam	
AKS, Bandarban	Mrs. Donai Prue Neli	Executive Director
Sualok Muaza	Mr. Moungh Thowai Ching	Headman
Sualok Union Parishad	Ranglai Mro	Chairman
Bandarban Press Club	Md. Aminul Islam Bachu	Secretary
Reporters Club, Bandarban	Md. Minarul Haque	Member
Prokash	George Tripura	Executive Director
UNDP	Md. Salim Uddin	NUNV
UNDP	May May Nue	NUNV
BFRI	Shukla Rani Basak	
BFRI	Syedda Rayhana Meny	
BFRI	Mohammed Mohiuddin	Sr. Research Officer
BFRI	Dr. M. Khairul Alam	Divisional Officer
SRDI	Dr. Abdul Gafur	Senior Scientific Officer
USHA	A K M Jahangir	Executive Director
Toymu	Azaharul Islam	UPC
Toymu	Gabriel Tripura	Executive Director
ISRIC - World Soil Information, The Netherlands	Stephan Mantel	Project Coordinator, CHARM
BCAS	Khandaker Minuddin	Research Fellow
BCAS	Mozaharul Alam	Research Fellow
BCAS	S M Alauddin	Sr. Research Officer
BCAS	Md. Abdul Alim	Research Officer
BCAS	Olena Reza	Sr. Research Officer
BCAS	Shah Newaz	IT Manager
BCAS	Mariam Rashid	Research Officer
CEGIS	Malik Fida A. Khan	Head, Database/IT Division
CEGIS	Md. Mostafizur Rahman	GIS Analyst
CEGIS	Jakia Akter	Water Resource Engineer
CEGIS	Md. Abdul Lahel Shafey	Programmer





## Photo Gallery

### Opening Session



#### Opening Session Panel:

From left to right: Mr. Malik Fida A Khan, CEGIS; Mr. Stephan Mantal, Project Coordinator, CHARM Project; Mr. Abdul Mazid Shah Akhand, DC, Bandarban; Mr. Khandaker Mainuddin, BCAS; Mr. Mozaharul Alam, BCAS

### Concluding Session



#### Concluding Session Panel:

From left to right: Mr. Malik Fida A Khan, CEGIS; Mr. Stephan Mantal, Project Coordinator, CHARM Project; Md. Anwer Hossain, ADC, Bandarban; Mr. Mozaharul Alam, BCAS; Mr. Khandaker Mainuddin, BCAS.

### Participants of the Workshop



## Group Discussion





## Training on Information System



## Appendix 3



**Mr. Abdul Mazid Shah Akhand**  
DC, Bandarban



**Md. Anwer Hossain**  
ADC, Bandarban



**Mr. Stephan Mantal**  
Project Coordinator, CHARM Project



**Dr. Shahidul Islam**

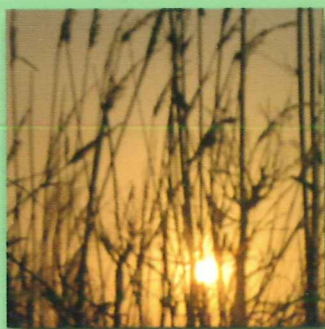


**Md. Abdul Lahel Shafey, CEGIS.**



**Workshop Organizer.**





The environment in the Chittagong Hill Tracts (CHT) is under pressure. New methods must be developed, applied, and tested for sustainable management of the natural resources. Practical information is required at both the field and policy level. The Chittagong Hill Tracts improved natural Resources Management (CHARM) project aims at building capacity of different stakeholder groups for promoting sustainable natural resources management in the Chittagong Hill Tracts (CHT). CHARM targets a better understanding of sustainable management of the natural resources and the provision of an improved information basis for decision making with involvement and participation of target groups.



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**ISRIC - World Soil Information  
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