

**Proceedings of the
Regional Workshop
on
Making Sustainable Development a Reality:
(WSSD) Reality Checks for NE India**

30th -31st January 2006
Assam Administrative Staff College, Khanapara, Guwahati



Organized by

Resources Centre for Sustainable Development (RCSD)
G. B. Pant Institute of Himalayan Environment & Development (GBPIHED)
R. K. Memorial Foundation
REACH-M

Sponsored by



The organisers wish to acknowledge the sponsors, the participants, theme presenters, moderators, and members of the Workshop groups, whose judicious guidance helped, in making the workshop a reality.

Editors

Dr Dhrupad Choudhury, *D Phil (Oxon)*
Mr. Randhir Singha
Shree Bhaskar Barua, IAS Retired



Making Sustainable Development a reality: (WSSD) Reality Checks for North East India

Rationale for the Workshop

In the post WSSD (World Summit on Sustainable Development) scenario, and in the context of the progress in the plan of implementing of Agenda 21 evolved in Johannesburg, the organizers, for the benefit of the region desire to bring forward an assessment and a reflection of the progress made at the regional and sub-regional context in achieving the Millennium Development Goal built around the WEHAB (water, energy, health, agriculture, and biodiversity) themes. Regions have a major role to play in the global efforts to achieve sustainable development by concrete actions. And that different level of economic development in the region may require the application of different approaches and mechanisms to implement Agenda 21, in order to address the three pillars of sustainable development (economic development, social development and environmental protection) in a mutually reinforcing way for poverty eradication, changing unsustainable patterns of production and consumption, and protecting and managing the natural resource base for economic and social development as overarching objectives of, and essential requirements for, sustainable development.

Sustainable development, addressing the WEHAB agenda essentially calls for innovative partnerships. Partnerships evolved at Johannesburg, have Governments agreed on a common plan of action linked to the Implementation of Agenda 21. But the most creative agents of change may well be partnerships -- among Governments, private businesses, non-profit organizations, scholars and concerned citizens at the local, regional and sub-regional level.

Such an approach is bound to enhance information sharing and collaboration due to shared socio-cultural backgrounds, sustainable development challenges, and problems of trans boundary pollution. Together, we will be able to find our way towards a greater sense of mutual responsibility and build a new ethic of global stewardship"

While a universal realization and awareness exists in regard to the need for achieving the MDGs in order to ensure Poverty Alleviation and Environmental Conservation with the ultimate goal of attaining a Sustainable Development framework, there is also an unequivocal recognition that the Goals cannot be achieved without establishing equitable partnerships between different stakeholders. Governments, members of the Civic Society, or the private sector, in isolation, cannot bring about the desired changes that would pave the way for attaining the MDGs and move towards a sustainable development model – the ultimate objectives can be achieved only when strong partnerships between Governments, NGOs, research organizations, the private sector and the communities are forged based on mutual respect, complementarily and a common, shared goal.

Recognizing the need for providing a Forum so that action can be initiated towards forging Partnerships, and realizing that an exercise of this nature has not been carried out in the North East Region (or the country, for that matter), the Resources Centre for Sustainable Development, a technical Non-Governmental Organization based at Guwahati and the North East Unit of the G B Pant Institute of Himalayan Environment and Development, an autonomous research institute of the Ministry of Environment and Forests, Government of India, headquartered at Almora, Uttaranchal through the NE Unit based at Itanagar, decided to come together and organize a Workshop to make a reality check of the present status in regard to awareness about, as well as actions initiated in achieving the MDGs with specific reference to North East India. The initiative was further supported by two other non-governmental organizations, REACH-M of Thoubal district Manipur and R K Memorial

Foundation, Guwahati. A two-day Workshop on “Making Sustainable Development a Reality: (WSSD) Reality Check for the North East Region” was thus organized on 30th and 31st January, 2006 at Guwahati with invitations for participation sent out to NGOs from all the north eastern States, government officials, multi-lateral development projects in North East India, Corporate and donor agencies .

The Workshop Module and Expected Outcome

The two day Workshop Module composed of Theme lectures in the introductory Plenary Sessions (by an eminent scientist, a senior bureaucrat and an experienced field worker) to introduce the themes and issues involved as well as to provide a framework for discussions. Thereafter, all the Sessions were in the format of Panel Discussions and Working Group Sessions. The Concluding Session consisted of an appraisal of the main issues raised and the discussions in regard to the Action Plan Formulation. (Workshop Programme appended as Annexure 1).

While the Introductory Plenary Session, composed of Theme lectures, introduced the issues and the framework for later discussions, the Panel Discussions (for each Theme) was organized with the objective of generating discussions on actions initiated and in identifying the Gaps in regard to actions initiated, as well as to identify the partnerships required to be established in achieving the goals. The Working Group Sessions were organized to concretize Prioritization of Issues, Identification of Actors, Role definition of Actors as well as strategy development for partnership forging and developing action plans. The Working Groups activities for the two themes were organized as parallel sessions which were later merged in the Action Plan Formulation and Partnership Forging Session in the second day.

The expected output, at the end of the Workshop, were identification and prioritization of Issues in both themes, the identification of Actors, spanning the Government to the grassroots (communities), definition of roles for each partner as well as the Action Plan in regard to Partnership Forging and action to be taken. An amalgamation of these, in the form of recommendations, would form a framework for action by Governments as well as each Actor(s) identified, with the basic objective of initiating action for achieving the MDGs for Poverty Alleviation and Environmental Conservation within the general context of Sustainable Development Framework.

Workshop Proceedings

Day 1: 30th January, 2006

Inaugural session

A simple inaugural session, presided by Dr Dhrupad Choudhury, Scientist Incharge of the G B Pant Institute of Himalayan Environment and Development's North East Unit, initiated the Workshop. The session started with a Welcome Address by Mr Randhir Singha, Executive Director, Resources Centre for Sustainable Development, Guwahati. After welcoming the participants, Mr R Singha gave a brief introduction about his organization which was followed by an elaboration on the objectives of the Workshop. This was supplemented by an audio presentation of the speech delivered



The banner features the following text and logos:

- Sponsored by:**
 - ONGC (Oil And Natural Gas Corporation Limited)
 - CPART (Council for Advancement of Peoples Action & Rural Technology)
 - North Eastern Council Govt. of India
- Co-organized by:**
 - G B Pant Institute of Himalayan Environment & Development
 - RK Memorial Foundation
 - REACH-M
- Resources Centre for Sustainable Development** (with logo)
 - Partners in Sustainable Development
- Making Sustainable Development a reality.**
- WSSD Reality Check**
- Venue:** Assam Administrative Staff College, Khanapara, Guwahati. 30 – 31st January 2006

by Mr Kofi Annan, Secretary General, United Nations at the WSSD, Johannesburg. On conclusion of the Welcome Address and the audio presentation, the participants introduce themselves with a brief outline of their organization and work.

After the self-introduction, Dr D Choudhury, in his Presidential Address, contextualized the need for the Workshop in the context of the North East and the expectations of the Organisers in regard to the Outcome.

The Presidential Address was followed by a Vote of Thanks proposed by Mr M Moses Maring, Secretary, REACH-M.

Plenary Sessions: Theme Lectures

The First Plenary Session started as scheduled, Shri K C Momin, Director, Soil Conservation, Government of Meghalaya chaired and moderated the first session in lieu of Dr K Buzarbarua, who could not attend due to an official engagement at New Delhi. Prof V K Gaur, who was scheduled to deliver the first Theme lecture, could not reach Guwahati in time for the first session. The Organisers, therefore, decided to reschedule the Theme presentation timings. The Theme lectures of Theme II: **Agriculture, Environment & Development**, therefore, were preponed and the first Theme Lecture was delivered by Dr Dhruvad Choudhury, GBPIHED, NE Unit. Dr. Choudhury, before delivering his lecture, apprised the participants on the rationale for choosing his theme. He pointed out that the larger proportion of the North East Region was composed of hills and upland terrain, inhabited by ethnic communities that were predominantly agrarian. The agricultural practice of most of these communities was shifting cultivation and hence, any attempt at improving the economy of the North East Region had to be centred on approaches to addressing development initiatives within the context of the practice of Shifting Cultivation. The common perception of the practice is negative and hence all attempts to address shifting cultivation started with a negative premise. He differed from this approach and felt that the practice offered tremendous opportunities even in the present day context. His theme lecture, therefore, was entitled "**Sustainable Forestry & Environmental Conservation: Opportunities in Shifting cultivation**".

Dr. Choudhury presented a knowledgeable & revolutionary theme address focusing on the ecological and social aspects of the practice of shifting cultivation. According to him, during his association with elders of a jhumia Naga village, he found that the jhum cultivation is a scientifically sound system. He supported this statement that in spite of the general conception as the shifting cultivation is bad; shifting cultivation in fact is a good ecological system. It is the only system where secondary forests are allowed to regenerate naturally. He asserted that all other land use changes results in a permanent change in forests, while shifting cultivation revive forests. He also stated that shifting cultivation allows primary forests, which absorb more of carbon dioxide than the secondary forests, which is required in reduction of global warming. Shifting cultivation gives successive sequential attention between forests and agriculture and the wisdom of the farmers who practice shifting cultivation and allows resource use within the systems' carrying capacity.



Theme Presentation by Dr. D. Choudhury

Dr. Choudhury also brought forward some points of improvement like changes in crops grown and increasing the fallow period with a P3DM (Participatory 3-Dimensional Management), which is easily understood by the people who practice them.

This paper generated quite a lot of open discussions from the participants.

Dr Choudhury's presentation was followed by the next Theme lecture, delivered by Shri Bhaskar Barua, IAS (Retd), a former Secretary to the Government of India in the Ministry of Agriculture. Shri Barua presented a paper entitled "**Agriculture in stimulating Sustainable Economic Growth & Rural Development**" in which he made a systematic presentation of the theme. His presentation started with the Millenium Development Goals to which major nations, including India were committed, followed by issues involved in the Theme. He then proceeded to place the issues in the context of the Region to make the participants aware of the regionally relevant issues in regards to making sustainable development a reality. He stated that the issues that are relevant to the north east region and need immediate attention are:

- a. Natural Resource depletion
- b. Human capital stock taking and enhancements
- c. Updating database in priority basis & enhancements
- d. Livelihood enhancement and
- e. Application of Science & Technology.

Sri Barua also listed the relevant issues in application of Science & Technology in sustainable development. These, as listed by the speaker, and are



Theme Presentation by Shri Bhaskar Barua, IAS (Retd)

- a. Livelihood – analyze carrying capacity of slope areas, for alternate livelihoods infrastructure such as like infrastructure, roads, marketing.
Extensive discussion on livelihood issues, required urgently.
- b. Transformation of laboratory findings to practicable ones, dissemination to enhance livelihoods.
- c. Adoption of Sloping Agricultural Land Technology (SALT)
- d. Conservation agriculture based on
 - Optimum output balanced with minimum degradation
 - Importance of water & soil conservation awareness among the farmers, jhumias
 - Minimizing soil & water run-off
- e. Flood control & management
- f. Enhancing irrigation potential
- g. Importance of horticulture e.g. Nagaland
- h. Food processing, to increase shelf-life
- i. Optimizing livestock population
- j. Upgrading livestock resources (except Assam)
- k. Upgradation of local breeds to be profitable for small farmers.
- l. Market orientation for extension workers, planners & managers.
- m. Review of extension system, high specialization & fragmentation is the cause, necessity is integration.

At the end, Shri Barua put forth few recommendations for due consideration of Government of India

1. Treat flood as a national problem
2. Floods control & mitigation - holding water back, storage reservoirs, monitoring seismic activity
3. Dams –required but with priority to environmental & socioeconomic concerns
4. Reorientation of agriculture in plain areas – Rabi as main season

He also opined that the programme of action should be based on issues agreed upon. Shri Barua's presentation was brief but evolved some discussions & comments. Some of the important points that were discussed are

- Food insecurity in N E India
- Dilemma of retaining shifting cultivation and the need or aspiration for promoting settled cultivation
- Lack of development of entrepreneurship among the masses may be encouraging militancy resulting in slow development.
- Integration of human and natural resource components for holistic development

The most important issue that has emerged from the discussion is zonation of the region on the basis of carrying capacity – and the concept of optimized production with minimized degradation. It was essential, the speaker felt, that Planners, Scientists, NGOs & communities take note and adopt this approach if the goal of sustainable development, poverty alleviation and environmental conservation was to be achieved.

The lecture was followed by Panel discussion on the Theme of Agriculture, Environment and Development, subsequent to which the Session ended with a vote of thanks and appreciation to the Moderator, Shri Momin.

(The power_point presentations of the speakers in Theme II: Agriculture, Environment and Development are appended as Annexure II)

Post lunch, the Theme lecture on **Theme I: Water Sciences, Natural Hazards and Disaster Mitigation**, was delivered by Professor V K Gaur of the Centre for Mathematical Modeling and Computer Simulation, Bangalore, one of the leading authorities of the nation in disaster mitigation. Prof Gaur delivered a lecture entitled "**Mountain Systems: Characteristics, Endowments, Hazards & unprecedented S & T guided knowledge & Technology to Reduce Community Vulnerabilities**".

Prof Gaur elaborated the evolution & formation of the planet earth which is a component of the Solar System that in turn is a part of the galaxy, Milky Way. Thousands of such galaxies form the universe which is nothing but a system.

He explained that interaction of various components of any system results in the integrity of the system. If the system is full small inputs are not reflected in the system. He also explained that formation of mountains is the manifestation of a living vibrant planet and is a continuous process.

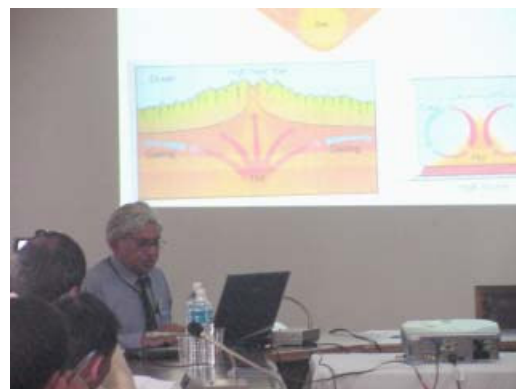
The responses in case of any emergency or disaster should be creative and constructive.

For this the tasks in hand arise from

- Under developed human resources
- Poor socio-economic integration &
- Heightened environmental risks

From these arising tasks we have to proceed forward

- a. Development of human resources – to be done by the government not by the community
- b. Technology mediated equitable integration &
- c. Technology aided environmental protection



Theme Presentation by Prof. V .K. Gaur

The threats at present are

- i) critical nature of mountain systems due to constant input of energy
- ii) anthropogenic factors
- iii) low level of return by the communities to the mountains
- iv) human induced rapid climate change which may be caused by industrial activity in other parts of the world

The mountains are critical due to uncertainty of events. With the help of technological breakthroughs, the probabilities of the occurrence of such events like landslides, avalanches and other natural hazards could be mapped with a certain degree of accuracy, and early warning mechanisms can help in coping and adapting with the hazards under the fragile environment in a stable way.

Except during short periods of time, the system is always in a critical state till such time as the energy input is constant.

Climate changes –unavoidable, faster today, during the last 13,000 years. The best option is trying to reduce the degree of change.

Prof. Gaur also highlighted the action points that need immediate attention

- i) Knowledge powered mountain communities.
- ii) Strong policy commitment- should be spontaneously absorbed by the communities, based on culture and traditions of the communities.
- iii) Economic return to mountain communities.
- iv) State of the R & D should be upgraded to improve environment and reduce vulnerability with the help of advanced S & T compatible machinery.
- v) Reduce pressure on mountains due to population explosion
- vi) Develop proper land use maps.
- vii) Quantify community knowledge as communities are aware of the mountain processes, what is going to happen & when.
- viii) Quantify hazards, its probability that will help in designing resilient systems.
- ix) Modern satellites can help in effective & timely relief & rescue operations.
- x) Need of hazard maps for the region and also the country
- xi) Necessity of mountain risk maps.

Prof. Gaur's theme presentation aroused a lot of enthusiasm among the participants and ensued a lot of fruitful interaction with Prof. Gaur to look for possible solutions of mainly mountain related problems that are plaguing the region for quite some time and for the new ones that might arise due to changing demographic, climatic and environmental volatility.

Some of the queries put forth by the participants for discussion are

- The need for revisiting traditional hazard warning systems.
- The advancements in glacial hydrology in relation to disaster management
- Steps to link-up formal scientific technology and traditional knowledge & institutionalizing thereof,
- Whether satellite maps are easily accessible to NGOs or communities?
- Whether excessive well digging may increase the chances of landslides?
- Any successful case stories institutionalizing satellite maps/ risk maps & their successful utilization in reducing or mitigating hazards, to replicate in other areas.

While some of the points were discussed immediately some were agreed to for discussion during the panel discussion. The responses & comments to a few of the above points are

- Traditional warning systems are there but eroded without replacements



- Through glacial hydrology advancements one can measure discharge, movement of glaciers
- Things that are happening in the earth can not be stopped. The option is to reduce the extent & degree, through system designing
- Government should encourage advanced technology of mapping & transfer to the communities
- Information should be available in vernaculars for faster absorption
- Risk maps should be available to town planners, Municipal Corporation.
- P3DM can be linked to disaster Management Cell
- Focus should be on disaster prevention

The Theme Lecture for the Second Theme was chaired and moderated by Shri Bhaskar Barua.

Post-Lunch

The post-lunch session started with a panel discussion on the themes. There was a healthy discussion among the participants and the experts in an effort to arrive at consensus for the different issues. Emphasis was given on

- How to do the hazard mapping
- Partnership linkages

On the map designing issue, Prof. Gaur suggested that content designing for powerful inputs should be done in an immediate manner. For content designing, graphic designers may be useful, interact with the communities & the designing should be highly professional for to ensure affectivity. Assistance from National Institute of Design may be asked for.

A participant representing the Assam government raised the point that in Assam the main problems are difficulties in estimating run-off and flood zoning. He also said preparation of flood risk maps may be useful – but know-how is not available.

In response to the above query, Prof. Gaur said maps can be provided by space agencies like National Remote Sensing Agency. But for that articulation or categorization of problems is quite essential. The system needs should be specified. Organizations like ISRO, NEC may help with finance in this regards.

Siltation can be reduced to a great extent by putting water retaining walls, design the systems with channels/pipelines for proper draining. For checking siltation on river beds, series of low dams may be useful. Reduced human interventions in the hilly areas, at the sources of the rivers may also be quite useful.

Shri Barua suggested subsistence pressure in jhum has to be reduced. Alternatives may be low volume high value crop production system. Objects that can be produced in the region, e.g. orchids may be considered.

For marketing perishables, local markets are more useful. Global suppliers close to the production area should be explored. However, it is better to emphasize less perishable like black pepper.

Prof. Gaur wanted to know the state of Microhydel scenario in NE India, and opined that such systems may be suitable for the region.

In Nagaland, Microhydels of 100, 200 KW is successful– should be increased in number. Randhir Singha pointed that technology for producing power from 5 kW onwards could be incorporated for developing affordable village based power in line with the development of Microhydel system in Nepal.

Prof. Gaur suggested reduction of the stress of growing population on land, based on alternative resources & try to explore every possible avenue. For instance

- Medicinal and Aromatic Plants (MAP) – Low volume and high value.
 - Identification of proper species.
 - Commercial cultivation.
 - Should be concentrated on second generation products.
 - Active principles.
 - Local pharmaceuticals

He also said hierarchy of human resources should be initiated starting from the grass root level. We should work our minds.

Dr. Choudhury highlighted the works being done by NEDFi regarding MAPs, concentrating on few species – Patchouli, Geranium. Again the issue is marketing and linkages.

Prof. Gaur suggested we should be one step ahead to overcome the phenomenon of saturation. For instance, we should be doing extraction & distillation if others are doing cultivation, to be competitive in the market.

The Panel Discussion session was chaired and moderated by Shri Bhaskar Barua.

DAY II: 31st January 2006

Pre-Lunch

Day two of the workshop commenced with the formation of the working groups to discuss the region specific issues that are critical to strive towards achieving the Millennium Development Goals. Two groups were formed one each for the two workshop themes. Dr. Choudhury outlined the working group tasks and the aspects to be considered are

1. Issues - identify
2. Prioritized issue – high priority and yet doable goals.
3. Roadmap – doable in 1st yr., 3rd yr, 5 yrs.
4. Players/stakeholders – identify/specify
5. Convergence or forge.
6. Partnerships– identify/specify
7. Outcome (tangible)



Working Group II

The Working Group on the first Theme was Chaired by Shri R K Mazumdar, Deputy Secretary, Revenue and State Project Officer, Disaster Management Cell, Government of Assam, while Shri K C Momin, Director, Soil Conservation, Government of Meghalaya, chaired the Working Group on Theme II.



Working Group I

The next Session was the Working Group presentations. The Session was chaired by Prof S D Phukan, Former Adviser (Water Resources), North Eastern Council. The first presentation was on the theme **Water Sciences, Natural Hazards and Disaster Mitigation**, presented by Mr Aja Zinjui of the Environmental Society of Nagaland.

The **issues** highlighted by the working group are

1. Forest destruction
2. Scarcity of irrigation water/drinking water

3. Upstream (arsenic) poisoning
4. Destruction of vegetation covers in catchment areas
5. Disaster mitigation
6. Man-made forest fire
7. Need for capacity building

Key players

- Local people – participation in rule making
- NGOs – as links between government & community, educators
- Government – technical back up, need based.

To cope with water scarcity, rain water harvesting should be promoted wherever possible, individual & community level & catchments areas should be enriched with afforestation.

Capacity building – preparation of 3-D/2-D maps involving community. Demonstration should be complemented with on-hand practical. Planning should be demand based and the programmes should be designed as per the local situation. Need for taking up Capacity building in alternative means of livelihood – area specific.

Roadmap

Improve learning capacity of communities

Explore possibilities to improve health & environment, create awareness.

Response from partners

- Community needs assessment – PRA, P3DM
- Technology development – research organizations like GBPIHED, RCSD, others
- Planning & financial assistance from government.
- Linkage between R & D organizations, Government & NGOs by S & T based NGOs like RCSD
- Incorporate political party representatives in decision making.
- Roof-top rainwater harvesting, linked with sanitation programmes
- Community level database should be prepared to identify specific resources prone to specific hazards
- Traditional warning systems should be documented and feasibility study should be carried out
- Blending of modern and traditional systems of management for better efficacy.

The second working group's presentation on the theme **Agriculture, Environment & Development**, presented by Ms Samhita Baruah, Programme Coordinator (NRM-SEP), North East Network, highlighted the following issues

1. Jhum
2. Agri database updation &
3. Environment versus development – critical analysis required

Jhum

- Incorporate new aspects
- Increase the fallow cycle to more than 2 years
- Land use, land tenure & soil type documentation
- Introduce SALT and conservation agriculture
- Concentrate funds for jhummiyas at grassroot level
- Gender issue

- Incorporate soil & water conservation measures

Role of Stakeholders

NGOs

- Action Research
- PRA
- Participatory training
- ITK
- Social mobilization

Government

- Legislations – cultivation period
- Apex body at NEC for to look after jhum cultivation
- Linkage between CBOs like farmers unions, traditional institutions
- Capacity building
- Monitoring & evaluation – may be by NEC

Convergence

- At least one representative for each state from the community of cultivators

Database updation

- Information of market rates
- Community radio
- Jhuming activities by census personnel
- P3DM for information gathering

The presentations of the Working Groups are appended as Annexure III.

FINALISATION OF ACTION PLAN STRATEGY

At the post-lunch session, deliberations were made for finalizing the action plan strategy for achieving the MDGs. The Session was presided over by Shri Bhaskar Barua.

It was agreed upon by one and all that the recommendations of the working groups may considered as the basis for formulating the Action Plan strategy for meeting the MDGs. For that a five member drafting committee was constituted with the following five persons

1. Shri K C Momin
2. Shri Bhaskar Barua
3. Shri R K Mazumdar
4. Dr. D Choudhury
5. Shri Randhir Singha

The workshop was concluded with a vote of thanks by Dr. D. Choudhury.

The Drafting Committee put forward the following recommendations in regard to the Themes discussed:

The issues identified by both the Working Groups centre around natural resource degradation brought about by human interventions and exploitation. The underlying

essence of analysis of both Working Groups is that the problems stem from mismanagement of resources and highlight the deleterious effects of such management approaches with a consequential increase in marginalization and vulnerability. The Workshop, therefore, recommends the following Action Points:

Concrete steps require to be taken to increase awareness about threats that increase vulnerability which could be potential disasters. The dissemination of this knowledge requires to be carried out and for effective awareness raising, particularly at the grass-root levels, extension material that succinctly communicate issues and the process by which the threats arise, need to be developed. Professional skills need to be inducted in this endeavor and therefore, the expertise of organizations with Designing or Communication skills require to be brought in. Research organizations having the requisite knowledge or database should be involved in generating/supplying the information while Communication experts should be used for developing the extension material. The material should then be used for increasing awareness and empowering the communities. Community awareness raising and dissemination should be carried out by NGOs subsequent to a substantial capacity building in this regard as well as in respect to the issues and threats. The whole effort needs to be coordinated by the concerned line departments within Governments – eg Threats and Vulnerability in regard to Natural Hazards, Disaster Management Cells; threats, vulnerability in regard to soil erosion, landslides, etc, by Soil Conservation Department, Forest Department.

The primary recommendation, however, is for a more focused and scientific landuse management. This has to be based on the principle of '**optimised production and minimized degradation (and hence, reduced vulnerability)**' (*sensu* Shri Bhaskar Barua).

To attain this, Land Capability and Vulnerability Mapping at Village/Village Cluster levels require to be carried out. Such maps may be 2-dimensional, conventional sketch maps, but ideally, should be Three Dimensional, done on a participatory basis. Social mobilization for the purpose requires to be carried out, but has to follow awareness raising as recommended in section 1 above. The mobilization has to be carried out with the facilitation of NGOs who are well focused and informed regarding the goals, purpose as well as the mobilization process mechanisms. Once the communities are sensitized and mobilized, maps (either 2-D, but preferably 3-D) can be generated. Such maps should be made by the community with the facilitation of NGOs so that information regarding land capability, soil types, water and other resources as well as the vulnerability from natural hazards (landslide prone areas, flood prone sites, etc) are mapped. The advantage of 3-D Models is the compatibility of such maps to the GIS-platform. 3-D modeling can capture many dimensions of the area (based on local knowledge) and hence offers tremendous scope for Perspective Landuse Planning for Livelihood activities as well as Disaster Prevention. The tool also accommodates the principle outlined by Shri Barua.

Seeing that agriculture would continue to be the vocation of the majority of the people living in the hills for want of any alternative, it is urgently necessary to take two steps. One is the propagation and practice of conservation agriculture, and the other is development of alternative livelihoods for the hill people so that for some part of the population at least, there are other sources of income to live by.

The information thus generated (Land capability mapping, Vulnerability Maps, etc) can be put in public domain – locally at the village level, as well as at the cluster/block level by putting such maps on the electronic platform available in the CICs (Communication Information Centres). Once put on this platform, the information would be available to the community as well as to the Governments. The updating of the maps is required to be done every year and the annually generated information updated on the electronic platform as well. The link between the community and the CICs/Governments has to be the NGOs. Therefore NGOs will require skill development and specialization, for which research

organizations and/or technical NGOs will have to be supported for such Capacity Building Programmes.

Resource mapping and Livelihood Options Assessments – conducted through PRA, using tools such as the Seasonality Dependency Matrices for Food Availability and Income Generation (*sensu* Choudhury) should be carried out to assess resource availability and hence, assessments for enterprise development. Such assessments are critical for developing livelihoods that are complimentary to natural resource management and hence those that will result in optimized production with minimised vulnerability.

Partnership development, critical for attaining the MDGs, need to be encouraged. Effective partnerships can develop if relationships are based on mutual respect. Communities need to be empowered in decision making – devolution of powers in decision making, therefore, requires to be carried out at the earliest. Policy initiatives, particularly those that allow community driven planning and implementation, requires encouragement and adoption. Pilot initiatives in this regard require to be taken up, particularly in the uplands and supported by the local government agencies.

Research organizations, Universities and other specialized agencies have generated information and research findings which are of relevance and potential application – either in regard to basic information or applied technologies. These require to be made accessible to users and stakeholders. A mechanism requires to be developed for the wider dissemination and accessibility. A beginning can be made through annual 'Open Days' facilitated through the relevant departments and for the benefit of the communities. This can be undertaken through State Science Councils/Societies.



List of Participants:

Sl No	Name & Designation Organization & Address	Sl No	Name & Designation Organization & Address
01	G.C.Baruah Administrator Bosco Reach Out Guwahati 2515501/2633733	02	I.K.Baruah Joint Secretary Revenue Department Assam, Dispur , Guwahati 2260511 (O)
03	N.H. POUHEU Secretary Backward Area Dev. Society (BADS) N-C- Hills, Haflong 03673-238431. 094350-78166(M)	04	Dibya Kanti Singh Joint Secy. Dishari Ek no Tilla, Belonia, South Tripura 799155 09862217529 dibyakanti@yahoo.com
05	H.S Malviya Joint Director MOEF RO-NE MOEF, Shillong, 2227673 hsmalviya@gmail.com	06	Chansa Luithui Co-ordinator VVD, Ukhrul, Manipur-795142 03870-222008 (o) 9436410135 (C) Vvd_ukl@yahoo.co.in
07	Ms. Teetu Yuka President AASA Polo Colony, Naharlagun Arunachalpradesh 943605400, 2350816 enority701@yahoo.com	08	Ms. Langhia Rima Spokesperson Ringtey-Denney Society Palin Dist:Kurung Kumey 03788-244216 Longbia_future@rediffmail.com
09	Hibu Tatu Co-ordinator Future Generation Vivek-Vihar, H-sector, itanagar Arunachal Pradesh 0360-2215355, 9436047075 tatu@future.org	10	Shri K.C. Momin Director Soil & Water Conservation Deptt. Meghalaya, Shillong-793001 0364-2224551 (o) 2224686 @ megsoil@rediffmail.com
11	Ps Ngamnung Anal Chief Functionery Chandil khubul Social Welfare, Arts & Culture, Manipur 039872-032251	12	Romeo Yahlung United tribal Development Project (UTDP) 09436085824 romeochothe@rediffmail.com
13	Tongpao haokip Reach-M Chandal Dist., Manipur 03848 265335 mosesmaring@yahoo.co.in	14	Mr. R.M.Das Institution of Engineers Assam State Centre (Former Chairman) 98640 46288
15	Aja Zinjui Environmental Society of Nagaland Nagaland 9436071800 esnindia@rediffmail.com	16	Dr. H.K.Badola Scientist Incharge GBPIHED, Sikkim Unit, Pangthang, Gangtok, Sikkim
17	M.Moses Maring Reach-M 94360 29310	18	Mr. Dibakar Deka G.V.M 9435027944
19	Mrs. T. Phanbu Ka Lympung Ki Seng Kymthui C/o 30 lachumier, Shillong 793001 9436119083 (C) , 2220593 (O)	20	Dr. NatalieWest Ka Lympung Ki Seng Kymthui C/o 30 lachumier, Shillong 793001 9862063472 (C)



21	James Sprunt Sustainable Development & Organic Agriculture Consultant C/o Nabagraha RD Kharguli, Hillside Ghy-4 9864081055 Mcsprint71@yahoo.com	22	Ghaneshyam Pathak Dr. R.K.Memorial Foundation Silpukhuri, Guwahati-781003 9954324381 (C)
23	Surendra Singh CAPART NEZ Member, Convenor 2268368	24	Ranjit Rangphi Kalang Watershed Smaity 2160091
25	Prasen Dewri Kalnag Watershed Samity 2160091	26	K. Shunba NEPED, Kohima 9436001465
27	A.K. Mitra Water Resource Assam 9864014714	28	D.K.Chetia Water Resources Deptt. 2661562
29	Nilaksha Das Secretary Centre for Technology Environment & Rural Development Kaknachal Road, ghy-3 9435195158 nilakshadas@pestmek.	30	S.Thakuria Joint Secy to the Govt of Assam Planning & Development Deptt. 9435149743
31	Rupak Kumar Mazumder State Project Officer Dy. Secy. Disaster Management Revenue Deptt. Dispur 0361-2237010, 9864055550 Mazumder @rediffmail.com	32	Samhita Boruah Programme Co-ordinator (NRM-SEP) North East Network 0361 2603833, 2631582 Email: assammen@yahoo.co.uk www.northeastnetwork.org
33	F.Rahman Joint Secy. Forest & Environment Govt of Assam, Gispur Guwahati 0361-23047131	34	Prof V.K.Gaur Former Secretary to Govt. of India (India Institute of Astrophysics)
35	Prf. M.M.Saikia Centre for Disaster Management Assam Administrative Staff College. 2331237 @, 2360068 (o) mmsaikia@rediffmail.com	36	Mrigen Sarma City Correspondent Amor Assam G.L.Publication 94351 44024
37	Prf. S.D.Phukan Former Advisor , NEC Harumotoria, Guwahati Assam	38	Ms. Sangita Roy Free lance Community Developer & P3DM expert 94351-17638, 0361-233967 biosangi@yahoo.com
39	Mr.Sem Haokin Freelance Consultant Delhi 011-55246487, 01205514097@ 9899529142 Sem_haokin@yahoo.co.in	40	Akhon Sophi Environment Society fo Nagaland (ESN) Kohima, Nagaland 9436071800 Email: esnindia@rediffmail.com

RCSD

20, Bye Lane 12 W, Rajgarh Road, Guwahati 781007, INDIA

Tel (M) 9864059980, Fax: 0361 2525057, E-mail: mailbox@rcsdin.org , web: www.rcsdin.org