



World Meteorological Organization



THE ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT



Report on the National Workshop on Community Approach to Flood Management in Nepal

Edited by

TECHNICAL SUPPORT UNIT

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National Workshop on Community Approach to Flood Management in Nepal

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1. Introduction

The National level Workshop on Community Approaches to Flood Management jointly organized by Ministry of Water Resources (MOWR), Water and Energy Commission Secretariat (WECS), Department of Water Induced Disaster (DWIDP) and Jalsrot Vikas Sanstha (JVS), Nepal in Collaboration with World Meteorological Organization (WMO), Geneva was held on 20-21 February in Hotel Himalaya, Lalitpur. The workshop was chaired and inaugurated by Mr. Mahendra Nath Aryal, Secretary of Ministry of Water Resources.



2. Welcome Speech: Mr. Bhubaneswor Pd Daibagya, JVS

Mr. Chairman, Distinguished Participants, Technical Experts, Ladies and Gentlemen,

On behalf of Jalsrot Vikas Sanstha (JVS), it is both my privilege and pleasure to welcome you all to this National Level Workshop on "Community Approaches to Flood Management in Nepal."

At the outset, I should like to express my deep gratitude and appreciation to World Meteorological Organization (WMO) for giving us the opportunity to organize this Workshop. We are also grateful to the Ministry of Water Resources/Water and Energy Commission Secretariat (WECS)/Department of Water Induced Disaster Prevention (DWIDP) for joining hands with us on the organization of this event.

Mr. Chairman,

Unstable steep slopes, weak and fragile geological formation of young mountains along with heavy monsoon rain fall make Nepal one of the most hazardous areas in the world. Because of its topographical variation and geological characteristics together with torrential rain during monsoon season, the country frequently suffers from different kinds of water induced disasters like soil erosion, landslide, debris flow, flood etc. These phenomenon cause loss of lives and property and pose severe hazards to the physical infrastructures, which in turn result disruption on the social and economic development of the country.

Mr. Chairman,

Now I would like to shed some light on the project itself. In the year 2002, as a part of the Global Water Partnership's (GWP) Associated Programme on Flood Management (APFM), JVS was entrusted to carryout the Project on Community Approaches to Flood Management. The Project itself was sponsored and funded by the World Meteorological Organization (WMO). The broad objective of the project was to find out ways and means for strengthening the self help capacity of communities for improved flood management under the IWRM framework. The overall goal was to contribute to the process of sustainable development and improving the quality of life by reducing flood vulnerability with a focus on non-structural measures. As a part of APFM's activities in facilitating the development of regional activities, the project's study area included Bangladesh, India, and Nepal under a common and collaborative research design. The project comprised of two phases. Phase I of the study was completed in early 2003, under which country paper to access flood management activities and practices in the countries with a focus on community's involvement in the activities was prepared. The outcome of the study was presented in the Third World Water Forum held in March 2003 in Kyoto, Japan.

For Nepal, two study areas were selected for carrying out the study. The first was the area in Saptari District in Eastern Development Region affected by Khando River and the second was the area in Rautahat District in central Development Region affected by Bagmati and Lalbakeya Rivers.

Two physical outputs were the products of that study, the first was the preparation of manual on community approach to flood management, which could be readily put into practice and the second was the establishment of some organized communities, making them aware of improved integrated flood management.

Finally, on the Workshop itself, Mr. Chairman, the Workshop will basically address on the findings of the study undertaken by JVS. I trust that our efforts in the Community Approach to Flood Management will open an avenue for the management of Flood in Nepal. I should, however, submit that JVS alone will not be able to accomplish this colossal task, for which all possible cooperation, commitment and involvement from all concerned, including the community people who have a great deal of local experience but lack of sufficient resources, are imperative.

I feel confident that, as eminent experts on the subject, you are better placed to delve into the depth of the problems we are facing on disaster like flood and you would be able to come up with the down to the



earth practical solutions to the problems.

Concluding, I offer my sincere thanks to all distinguished participants for your kind participation. I am confident that your guidance through your interactions during the course of the Workshop will set the course towards further work on this pressing subject.

I thank you again.



3. Key Note Speech: Dr. Wolfgang Eric Grabs, WMO, Geneva

Mr. Chairman, Distinguished Participants, Ladies and Gentlemen,

On behalf of the Secretary-General of the World Meteorological Organization that is a specialized agency of the United Nations I am honored to speak in front of this august audience. It is also my pleasure to report on and promote our project on "Community-based flood management approaches" that has been undertaken in Nepal. Right at the beginning I wish to acknowledge that the success of the project so far has been made possible through the tremendous efforts of JVS and in particular Messrs P. Mathema, S. N Poudel and. D. P Jaishy and their team of professionals. The project is a demonstration that a lot can be achieved with modest funding invested on the basis of a viable concept.

Ladies and gentlemen, it may be needless to mention to you that Nepal is one of the most disaster prone countries in the world. Floods, landslides and avalanches cause about 29% of the total annual loss of lives and 43% of the total loss of property as a result of different disasters in Nepal.

Average material losses amount to roughly 750 million Rupees per year and nearly 4 percent of the total gross domestic product was lost from water-induced disasters in 1997/98. High losses are to be expected in future as a result of unabated population growth and investment for settlements and other infrastructures in areas prone to floods and landslides. Furthermore, disaster preparedness measures coupled with early warning systems are largely lacking.

In all districts flood forecasting and warning systems reaching to the block and panchayat level were considered to be inadequate by villagers in terms of availability and the meaning of forecasts for action by the villagers. In many cases, communication gaps were identified between government agencies planning or implementing structural measures and the village population in terms of consultation and involvement in the planning process.

In most cases, approaches to flood management in Nepal have been fully dependant on government machinery. While government planning and intervention is part of its services to the people, it has its own limitations, as government services are easily over-extended especially in rural areas.

Ladies and Gentlemen, government spending in rural areas of Nepal has resulted in the past in a significant progress in development measured by the number of people lifted above the poverty line but also in terms of overall productivity and sustainable livelihoods of the rural population. Every person lifted above the poverty line alleviates pressure on the national budget for subsidies and helps building up further potential for self-sustained rural development. However, aside from the present security issues in several regions of Nepal, recurring floods and their disastrous impacts that destroy livelihoods, infrastructure and rural production capacities and push people back below the poverty line, threaten a large part of these gains in development.

In support of its member countries, WMO activities are directed towards an increased effectiveness of National Meteorological and Hydrological Services to deliver crucial services including forecasting and advisories to empower and influence government and non-government services as well as the general public to take necessary action. Various formal and more informal traditional and advanced technologies are used to disseminate information to authorities and the general public, particularly the public at risk. However, this information is only effective if there is capacity to respond to the information through prevention, preparedness and response activities at the national and community levels.

In the last two decades, 'resilience' to natural hazards has become the buzzword to describe the capacity to survive, adapt and bounce back from crisis. Development aid has shifted towards people-centred approaches based on local capacities.

In the context of flood prevention and mitigation on a global level, WMO through its Associated Programme on Flood Management has been developing strategies aimed at effective community



preparedness in several countries with the active participation of local communities concerned. Under the programme, WMO has launched in 2002 a pilot project in Bangladesh, India and Nepal on "Community-Based Approach to Flood Management" through field activities in selected communities. As an output of the project, manuals on the community approach to flood management have been developed that cover various aspects such as flood preparedness, rescue and relief, agriculture and livelihood planning and health and sanitation and the role and responsibilities of the communities. The project also addresses issues related to public awareness and capacity development. An evaluation of the applicability of the manuals during the Monsoon seasons in 2004 and 2005 revealed that the approaches adopted proved to be effective and efficient in strengthening the self-help capacity and resilience of the affected communities.

Ladies and gentlemen, the socio-economic relevance of this project in Nepal needs to be seen in the context of a recent estimate by the Overseas Development Institute that in India for every 1 Rupee spent in community-based approaches to flood management, there are 3.8 Rupees of quantifiable benefits.

The identification of capacities of communities has been at the heart of the flood management approach as it takes sometimes the wider 'community' of outsiders to break down barriers to change which keep communities vulnerable. Outside organizations such as JVS can be catalysts for creating resilience by building awareness and consensus for action. In the project, communities were therefore guided towards the evaluation of their own capacities and forging their capacities and perceptions into action programmes geared towards improving livelihoods by safeguarding infrastructure, properties and lives.

Despite best intentions, identifying what is missing in a crisis is more tempting and perhaps better rationalizes the need for outside assistance than identifying the capacities that are already in place. The emphasis on identifying and building strengths represents a paradigm shift in approaching risk. In development, the Sustainable Livelihoods (SL) approach is an important framework that analyses the potential, competence and capacities - rather than weaknesses and needs - of communities. SL recognizes a range of assets or 'capitals' as essential to sustain a livelihood: natural, financial, human, social and physical. In the SL approach, disasters - including the capacity to resist their impact and bounce back - are part of a wider development framework. This is a significant change from the traditional risk reduction approach, which starts with hazards and risks, and then only looks for linkages with development.

The community approach for disaster prevention is not entirely new in Nepal. Activities had been undertaken for example by the Department of Water Induced Disasters and the Nepal Red Cross Society in its Community Based Disaster Preparedness Programme that had been undertaken in close collaboration with government agencies.

In the past, villages and communities ravaged by disasters have mostly been seen as helpless victims that needed full outside support and intervention. This approach ignored the hidden capacity of local people to effectively develop and engage in self-help efforts to alleviate the effects of flooding in terms of preparedness and response to floods and to increase resilience by adopting measures of "Building back better" in anticipation of recurring flood events.

Complementary to government interventions, flood management approaches on the level of local communities and building up from bottom to top would greatly help to secure the gains of development and enable the rural poor to climb up and above the line of poverty on a permanent base. The principal expectation of direct community participation is a largely broadened base for an improved effectiveness in the formulation and implementation of local flood management projects.

Therefore, community flood management efforts are a powerful tool to break the vicious cycle of development and falling back into poverty.

In the monsoon periods 2004 and 2005, the approach taken for community flood management has been proven successful in India, Bangladesh and Nepal. Now, that we have an outstanding field-tested blueprint to community-based flood management in Nepal, we need to propagate the concept and its



methods to a much larger number of rural communities threatened by recurring floods. This requires an outreach strategy that I will briefly outline:

The overall purpose of the outreach process would be to: Disseminate and implement the self-help approach in community based flood management as an effective means for disaster reduction and vulnerability to floods. The immediate objective over an estimated first period of three years would be to expand the number of communities reached by the community based flood management approach that has been elaborated and tested in the pilot phases of the project.

In this way, community-based flood management approaches would be in the mainstream of development at national level with a potentially large number of communities benefiting from this- approach. Likewise, monitoring of progress and further achievements in the communities that have benefited through the pilot project needs to be continued.

This workshop is an important part in the effort to publicise and put for discussion the approach and results to be implemented throughout Nepal. The proposed multiplication of the success of the project requires a coordinated effort by relevant government authorities in close collaboration with experienced Non-Government Organizations including those operating at grass-root level in flood-prone areas.

While elected governments have certainly a duty to safeguard the electorate from natural disasters, it is also necessary that citizens recognize their own capabilities and responsibilities for disaster reduction, and are empowered in terms of self-help capacity and with seed funding to become pro-active themselves. A pre-requisite for this is that government authorities delegate certain responsibilities down to community-level and in cooperation with district and community-based organizations.

This process cannot be maintained through the government machinery alone: It is necessary that civil society organizations including charity organizations but also industrialists, alumni associations and other influential national, bi-lateral and institutional donors are convinced of the great benefits of their contributions to affected communities and thus their contribution to Nepal as a whole.

Ladies and gentlemen, in closing let me say that the continued development of Nepal and progress in poverty eradication depends last not least also on the ability to counter the negative impacts of hydrometeorological extremes such as floods and drought. This requires further improvements of the timeliness and accuracy of forecasting services by the relevant organizations on federal and state levels but even so, it requires the active participation of people in affected areas to be pro-active partners in disaster reduction. The latter may require a broadening approach to public service administration, which is already in progress.

A successful approach is being brought forward to you during this workshop for your consideration and necessary action. Further seed funding is needed from national and also international donors on the basis of the political will to further promote a proven concept on community approaches to flood management. Thank you.



4. Key Note Speech: Mr. Som Nath Poudel, Team Leader, CAFM Project

Respected Chairman, Learned Guests and Participants, Ladies and Gentlemen

The Community Approach to Flood Management (CAFM) Pilot Project is a part of the Global Water Partnership's (GWP) Associated Program on flood management and is sponsored by the World Meteorological Organization (WMO). To reduce the flood vulnerability in South Asia the activities under a common and collaborative research design were jointly carried out by three countries: Nepal, India and Bangladesh. Respective participating institutions are Jalsrot Vikas Sanstha (JVS), Kathmandu; Institute for Resource Management and Development (IRMED), New Delhi; and Bangladesh Unnayan Parishad (BUP), Dhaka.

The broad objective of the Pilot-Project was to find out ways and means for strengthening the self-help capacity of communities for improved flood management under the IWRM framework. The overall goal was to contribute to the process sustainable development and improve the quality of life by reducing flood vulnerability with a focus on non-structural measures. The project comprises of three phases and the work was initiated on second half of 2002.

The Phase-1 of the study was completed in early 2003 with the preparation of a country report to access flood management activities and practices with the focus on community involvement in such activities. The outcome of the Phase-1 study was presented in the Third World Water Forum (WWF) held in March 2003 in Kyoto, Japan. Two study areas one in Khando River of Saptari District and the other Lalbakeya and Bagmati Rivers of Rautahat District were selected for carrying out the study.

The Phase-2 of the study project gathered additional information about the flood affected communities of the two previously selected areas and undertook appropriate activities to strengthen self-help capacities of the communities for improved integrated flood management. Following major activities have been completed under this phase:

- Field visits and interaction
- Preparation of the Manual on CAFM
- Presentation of the Manual to professional groups and stakeholders
- Formation of Community Flood Management Committee (CFMC), and
- Identification of further works to disseminate the Manual.

The Phase-3 pilot study was to test the Manual under actual flood conditions. For this purpose, Banjaraha VDC of Rautahat District has been selected. It is worth mentioning here that the eastern Terai of Nepal was severely affected by the flood caused by heavy rainfall in July 2004. The team from JVS along with a representative from the district made several of visits to the site starting from June 2004. Experiences gained and works carried out during the implementation phase were:

- Assisted in finalization of the committee constitution and the registration with the authority
- Operated the Bank Account with some financial support as an initialization fund from JVS
- Committee functioned fairly well with the little resources during the devastating flood period of July 2004
- Played an effective role on pre-flood preparedness, during the flood responses and post-flood rehabilitation works
- Successfully tested the Manual and found CFMC concept was quite an effective tool for flood management non-structurally with people participation, and
- Needed follow-up program at least for three-years for sustainability.

Pilot area specific need-based conclusion for sustainability provided by the study based on the discussion with the CFMC members and others has been drawn for supporting the organizations:



- Training for boating, swimming, running, first aid, drinking water after purification etc. are must for members
- Training for account keeping and appropriate office management for institutional development of CFMC
- Training for mobilizing resources to CFMC officials as well as community members for building their self-help capacity
- Minimum three-years support for CFMC for the sustainability
- Make available mobile phones to the community at least during the rainy seasons
- Provide at least two boats to each CFMC for flood fighting and rescue operation
- Construct temporary latrines on nearby highlands especially for women, children. The aged and sick.
- Install some tube-wells in nearby highlands
- Construct a multi-storied and multi-purpose community building having basic infrastructure at an appropriate location
- Popularize CAFM concept among GO/NGO stakeholders through campaign an advocacy as appropriate, present workshop is one of them.

The limited experiences gathered from the earlier mentioned experiments suggest that, if local people are thus mobilized and provided with necessary training and assisted to build financial and organizational capacity, an effective flood management program can be mounted from below and on time, thereby further reducing the flood vulnerability during normal floods. If the government and voluntary agencies provide timely support and assistance when devastating floods occur, the combined efforts of the communities coordinated by CFMC and the assistance-providing agencies can reduce significantly the losses and damages caused by devastating floods.

The guidelines and measures outlined in the Manual and experiences arising from the limited application provide a comprehensive enough basis and indicate encouraging prospects for the replication on a wide scale in the country. Indeed, on the basis of the experiences gathered as the manual will be replicated, it may be warranted to make adjustments to further improve the contents of the Manual and strengthen the implementation procedures. Our JVS humbly requests GOs/NGOs, especially MoWR, WECS and DWIDP to internalize the findings of this pilot project. Also I want to inform the august gathering that similar document developed by the Institute of Resource Management and Development, India has been accepted by the Indian Government for the field use through related government agencies in several states with local adjustments as needed. I am hopeful that our MoWR, WECS, DWIDP and other related agencies will take needful action in this respect.

Also, JVS thankfully acknowledges that the study has been carried out with the financial support from the WMO/GWP Technical Support Unit. Special thanks are due to Dr. Wolfgang Grabs, Chief, Water Resources Division, Hydrology and Water Resources Department of WMO. Also we want to thank member-organizations and members of Nepal Water Partnership for the support and advice rendered to carry out the study. In conclusion let me thank all the GOs and NGOs who have encouraged and provided support in this endeavour.

Thank You



5. Speech: Mr. Mahendra Nath Aryal, Secretary - MOWR

Speaking from the chair of the inaugural session Mr. Mahendra Nath Aryal, Secretary of the Ministry of Water Resources shared his views to forward the concept of community approach to flood management in the ministry in future programs. As the manual was prepared and tested on very vulnerable flooding areas of the terai districts Saptari and Rautaht, he stressed that the applicability of the manual has increased. This approach, he agreed is in line with the government's decentralization policy which stresses to help the communities. He further suggested that to make the work a success the following things need to be done:

- i. Dissemination of the manual to a wider groups of users
- ii. Expansion of community flood management committees and their empowerment
- iii. Internalization of the manual by the government line agencies and the community.

He informed the session that Ministry of Water Resources has recently developed a policy on water induced disaster management and is in the process of approval from the cabinet of ministers and community approach to flood management could go with this policy, which will enable the concept to move into action.

He requested the organizers to present the concept of the manual and outcome of the national seminar with recommendations in the meeting of the natural disaster relief committee, which will be held sometimes in the coming April, at the ministry.

Concluding his speech Mr. Aryal thanked WMO and JVS for conducting the seminar on such a relevant topic.



6. Discussions

6.1 Technical Session I

This session was chaired by Mr. Shital Babu Regmee, Secretary of Water and Energy Commission Secretariat.

Dr. Upendra Gautam requested the concerned line agencies involved in the field of flood management, to facilitate in the works of JVS as this concept is field tested and has appreciated by the community. He further said that in the regular and emergency types of works being done by the DWIDP, their effectiveness would increase if the community people can be involved in both types of work. Other I/NGOs should also go with this concept for the better effectiveness. He informed the audience that in the plan and policy papers of HMG/N like the Water Resources Strategy and National Water Plan, water induced disaster is given high priority. Hence, this concept should be included in the programs of coming fiscal year.

Mr Lekh Nath Pokharel from the Ministry of Home Affairs, who is involved more than 8 years in the field of disaster management in the ministry, appreciated the concept of non-structural means in the flood management. He further said that it is in line with the concept of sustainable development. He requested the organizers to present the concept along with the recommendations of the seminar in the coming meeting of the natural disaster relief committee as it is a policy of the ministry to discuss the issues with all the concerned stakeholders. He further said that there is a gap in the coordination between the stakeholders.

Mr. Shiv Kumar Sharma, Deputy Director General of Department of Water Induced Disaster Prevention informed that DWIDP organizes roving seminars in its divisional and sub-divisional offices. This manual was distributed to the participants of various training programs conducted by DWIDP and some feedbacks are also received. From the feedback of the participants and in order to make the manual comprehensive, certain additional works (such as methods of water purification, installation of tubewells, making temporary shelters, making temporary latrines, construction of flood proof housings, bio-engineering methods of erosion control etc) should be described in detail in the annexes of the manual.

6.2 Technical Session II

This session was chaired by Prof Dr. Deepak Bhattarai of Nepal Engineering College.

Mr. Rajesh Kumar Jha presented his experiences that after the formation of flood management committee the works were done in a systematic manner and the loss in the last years flood could be reduced considerably. He demanded for the continuation of outside help for sometime until the community become self sustained in managing the flood.

Mr. Lekh Nath Pokharel. Under secretary of the Ministry of Home Affairs informed that the ministry has distributed 25 number of temporary shelters to different regional offices. These shelters can be handled by 5 men and can be shifted from one place to another place. He shared his experience on the Ambhanjyang Landslide of Makwanpur district where 111 people have lost their life last year. It was very difficult to distribute the relief materail in the site because of the remoteness of the place. Hence, he requested for a coordinated effort from all concerned stakeholders.

6.3 Technical Session III

This session was chaired by Dr. Madal Lal Shrestha, Director General of the Department of Hydrology and Meteorology.

Ms Mandira Shrestha of ICIMOD appreciated the effort of JVS for bringing all the key players of flood management like Ministry of Water Resources, Department of Water Induced Disaster Prevention, Department of Hydrology and Meteorology, Ministry of Home Affairs, I/NGOS and Nepal Engineers' Association. It is a very good collective approach to address the flood management issues. She stressed



on the need of a comprehensive guideline for the flood management and it become possible with the help of WMO and good efforts of JVS and the study team.

Dr. Madan Lal Shrestha said that we spend most of the time in the post flood period and very little attention is given in the pre and during flood period. He stressed to give equal importance to other phases of flood management as indicated in the manual. This should be done by putting the community in the centre. For this we have to identify the right partners working in this field and it should be a collective work. All partners should at least be consulted if involvement of all is not possible.

He informed the floor that there are 30 to 40 wireless stations stationed at different parts of the country, which can be used in the forecasting of flood. As DHM is one of the members of the Natural Disaster Relief Committee, DHM is ready to share the data in this effort. DHM has maintained its website (www.dhm.gov.np) where rainfall data which is the main event of flood, can be available for the analysis and flood forecast. Any specialized service in this field can be available from DHM, Mr Shrestha informed the floor.

He made a point that not only the community, the partners should also be given the flood forecasting training to minimize loss of life and property in the community. For this, JVS or any organization can take initiative with the help of MOWR for a consolidated and collaborative effort. The partners could be MoHA, MOWR, NPC, DHM, Red Cross and other I/NGOs.

6.4 Technical Session IV

This session was chaired by Mr. Narayan Prasad Bhattarai, Director General of the Department of Water Induced Disaster Prevention. The detail of discussion of the three groups in the given topic is as given below:

6.4.1 Group 1

This group discussed and presented the preparedness activities in the pre-flood situation. On behalf of this group Mr. Rajendra Prasad Pandit presented his group's views in pre-flood scenario. He stressed that preparedness is the best tool to save life and property of the community people. A number of activities like collection of relief materials should be done in this phase. He stressed on the need of an effective coordination between the line agencies and the community organization as a necessary pre-condition. He stressed on the need of different trainings to the community people on different topics as described in the manual.

6.4.2 Group 2

This group discussed and presented the response activities in the during- flood situation. On behalf of this group Mr. Ganesh Raj Khaniya Presented his group's views in the during- flood scenario. He presented that the activities of this phase of flood management are the reflections of pre-flood activities. More preparedness in the pre- flood means less damage by the flood.

6.4.3 Group 3

This group discussed and presented about the maintenance and rehabilitation activities in the post-flood situation. On behalf of this group Mr. Suresh Pokharel presented his group's views in the post-flood scenario. He stressed on the need of better coordination between different line agencies in this phase. As the condition of the community is totally disturbed in this time a systematic and coordinated activities can only help reduce their problems. He presented the findings of the group in the following four categories and suggested to address the problem accordingly:

- a) Death of human life and livestock
- b) Injuries to human and livestock
- c) Damage of infrastructures/public utilities like roads, telephones, electricity etc,
- d) loss of agricultural product and agricultural land



He pointed out the following issues in the post flood scenario:

- i. addressing and fulfilling the immediate need of the communities such as shelter, food, water, medicines and certain other lifeline facilities and searching the missing persons as the short term issues.
- ii. addressing the long term social and structural rehabilitation activities such as trauma caused to the living family members by the death of their near and dears and other structural damage to the private and public facilities
- iii. problem to address the problems
- iv. vast gap and mismatch in the availability of data and availability of capital resources. In one situation data may be available but there may be insufficient resources and in other situation there may be sufficient resources but data is not available.
- v. lack of effective coordination between various stakeholders.

Presenting his views on this stage of flood management he said that there is a problem to address problems in this stage. There is a vast gap in the availability of data and availability of capital resources in this stage. The data may be available but there may be insufficient resources and in other situation there may be sufficient resources but data is not available. Hence, he recommended for effective coordination between various stakeholders.



7. Closing Session

Remarks from the participants

7.1 Ms Madhavi Pradhan, FSC

Ms. Madhavi Pradhan, representing Friends Service Council (FSC), a local NGO working in the field of Disaster Management in Nepal said that she got the good opportunity to participate in such an important workshop, which she thought was very useful to the community. She also gave a brief introduction of her organization where they are conducting awareness program through essay and art competition, which she thinks is the very effective medium of awareness creating among people in disaster mitigation. Some of the point she stressed are:

- Think locally act globally.
- Need of Local FM station an Bhitte patrika
- Preparation of flood affected map/area
- Development of youth volunteers
- Readily availability of medical team

7.2 Mr. Suresh Pokharel, NEA

Representative from Nepal Engineers' Association (NEA) Mr. Suresh Pokharel in his speech said that this workshop has given him a chance to know each other and knew who is doing what and where. He believed that this workshop will help to internalize the program and said that we are heading towards a right direction. It would have been better had we taken the expert recommendation before testing/publishing the manual in the community, he suggested. Coordination among various related organization/institutions should be there to generate the system and raised the question that who is going to bell the cat. He further said that the sharing of knowledge /Manual to other communities is required. He also said that NEA has about 7,200 members, who may be helpful to the disaster management.

7.3 Mr. Jayram Shah, CAFC

Representing the community Mr. Jay Ram Shah, who has come all the way from Rautahat informed how the committee was formed by 11 member ad hoc committee collecting Nrs. 200 from each members and help of JVS to form as a full fledged committee to be in operation. He also said that the committee made a stock of food materials and distributed to the people during flood. He further said that the assistance from the government is required.

7.4 Dr. Wolfgang Eric Grabs, WMO, Geneva

Representing the WMO, Geneva Dr. Grabs was of the opinion that the workshop received tremendous interest and efforts from the participants. He said that further improvement of the manual could be done as the workshop received various constructive suggestions and recommendations. He further suggested that now we should focus on self help program and support from the government agencies is required to internalizing the program and communities should be empowered/ resilient and move the project ahead.

7.5 Vote of Thanks: Mr. Iswer Raj Onta, JVS

In his speech Mr. Onta, Vice Chairman of JVS thanked all the participants, study team members, paper presenters, session chairs who made the workshop a success. He said that the manual should reach to the local community. JVS and DWIDP should work together. He also shed light on National Water Plan where Community Level Disaster Management has been incorporated. He further said Ministry of Local Development (MOLD) is missing in the workshop. He also said that we should bring all the concerned stakeholders together and create a forum to interact. At the end he said that addendum should be incorporated in the manual and send/distribute in the community



8. Conclusion and Recommendation

Conclusion:

- Flood management is a multi stakeholder discipline.
- There are different groups working in the field of flood management but lack effective coordination.
- There is vast gap and mismatch in the availability of data and availability of capital resources in the community.
- Information dissemination to the community and within the stakeholders is a great impediment in flood management.
- Flood management activities being implemented by different stakeholders are concentrated more in the post flood period. Very little effort has been done in the rest two phases viz. pre-flood and during flood.
- Vulnerability of flood can be reduced to a great extent by implementing non-structural measures along with the structural measures.
- Involving the communities in all the phases, we can do flood management very effectively.
- Community people lack resources to do necessary works of flood management. Hence, they need some outside help for a certain period of time.

Recommendation:

- The community and other stakeholders can use the manual as guidelines for the management of flood.
- For the internalization of the manual, it should be distributed to a wider group of users.
- JVS with the initiation of MOWR should present the contents of the manual as well as the outcome of the seminar to the Natural Disaster Mitigation Committee before the onset of coming monsoon.
- Community work should be included in the regular as well as emergency works of flood control to be implemented by various agencies.
- Certain additional works (such as methods of water purification, installation of tube wells, making temporary shelters, making temporary latrines, construction of flood proof housings, bio-engineering methods of erosion control etc) should be described in detail in the annexes of the manual.
- There should be a central coordinating agency in the Ministry of Home Affairs.
- Ministry of Water Resources should play a key role in flood management by involving the flood affected community.
- Department of Hydrology and Meteorology should provide real time data of rainfall in order to forecast the flood.
- Different communication media such as FMs, should effectively be used to disseminate flood warnings to the community people in local languages
- JVS or any other organization should act as catalyst to mobilize the people in different stages of flood management



9. Press Release

To uplink the findings from the pilot project to the nation-wide disaster management and prevention process, a national workshop has been jointly organized by Ministry of Water Resources, Water and Energy Commission Secretariat, Department of Water Induced Disaster Prevention and Jalsrot Vikas Sanstha (JVS), Nepal in collaboration with World Meteorological Organization (WMO), Geneva, Switzerland.

Since 2003, a Pilot Project on Community-Based Flood Management in South Asia has been carried out. The objective of the project is to reduce vulnerability of communities to floods through suitable community-based flood management approaches and measures undertaken. The field results confirmed that this project approach and proposed activities on community level could be replicated in a large number of other communities and countries.

The two-day workshop discussed and disseminated the findings of this pilot project to major stakeholders at National Level including community representatives. Through this workshop the findings of this pilot project has reached out to different governmental and non-governmental agencies working in the management and prevention of disasters, in particular floods.

Most importantly, the Secretary of the Ministry of Water Resources Mr. Mahendra Nath Aryal has requested the workshop participants to recommend specific actions and activities to be undertaken. The findings of the pilot project and workshop will be internalized in the water-induced disaster prevention and management policy of the government. The Department for Water-Induced Disaster Prevention (DWIDP) will take the lead role in the implementation of further nationwide Community Flood Management Activities.

Dr Wolfgang Eric Grabs, Chief, Water Resources Division of the World Meteorological Organization (WMO) highlighted the relevance of the project and the necessity of involving communities to increase their self help capacity. He further stressed that success of the project required a coordinated effort by relevant government authorities in close collaboration with experienced NGOs including those operating at grass root level in flood prone areas.

High level representatives of MoWR, Ministry of Home Affairs (MoHA), DWIDP and Department of Hydrology and Meteorology (DHM) presented their papers and organizational views on Community Based Flood Management and assured to internalize this proven approach to flood management and the workshop recommendations with the view to implement this approach nationwide. A total of six working papers on integrated flood management and disaster prevention were presented by different experts.

Working groups had been established to outline the outreach process and necessary activities to implement the pilot project and the workshop findings in Community Based Flood Management nationwide.

Background of the project

This project is a part of the Global Water Partnership's (GWP) Associated Program on Flood Management (APFM) and is sponsored and funded by the World Meteorological Organization (WMO). The broad objective of the project is to find out ways and means for strengthening the self help capacity of communities for improved flood management under the Integrated Water Resources Management (IWRM) framework. The overall goal is to contribute to the process of sustainable development and improving the quality of life by reducing flood vulnerability with a focus on non-structural measures. As a part of APFM's activities in facilitating the development of regional activities, the project's study area included Bangladesh, India and Nepal under a common and collaborative research design. The study work in Nepal was entrusted to JVS. The project comprise of three phases.

**Phase I Study**

This phase was completed in early 2003 and prepared a country paper to assess flood management activities and practices with the focus on community's involvement in the activities. The outcome of the Phase I study was presented in the Third World Water Forum held in March 2003 in Kyoto, Japan.

From the part of Nepal, two study areas were selected for carrying out the study. The first is the area in Saptari District (Launiya and Tilathhi VDCs) in Eastern Development Region affected by Khando River and the second is the area in Rautahat District (Brahamapuri and Banjaraha VDCs) in Central Development Region affected by Bagmati and Lalbakeya rivers.

Phase II Study

The phase II of the study project was to gather additional knowledge base about the flood affected communities and undertake appropriate activities to strengthen self-help capacity of communities for improved integrated flood management. For this, workshops were conducted at all the four communities as well as at two districts. As an output of the project, manual on the community approach to flood management was developed which covers various aspects such as flood preparedness, rescue and relief, agriculture and livelihood planning and health and sanitation and the role and responsibilities of the communities.

Phase III Study

The main aim of this phase was to provide technical and methodological guidance and organize the community for improved awareness on integrated flood management and use the Manual. Banjaraha VDC of Rautahat district was selected as a pilot area to test the Manual. The Community Flood Management Committee was registered in the District Water Resources Committee, Rautahat. The committee has undertaken a number of activities in the years 2004 and 2005 floods and conducted activities related to flood preparedness, response and rehabilitation which will be continued in the coming years. It has also conducted activities like construction and maintenance of flood embankments in Lal Bakaiya River with the financial support of Department of Water Induced Disaster Prevention. The District Education Office has entrusted it with the adult literacy programme in the last fiscal year.



ANNEX: Technical Sessions – Papers

1. Mr. Danda Pani Jaishy, MOWR - Community Approaches to Flood Management in Nepal

Community Approach to Flood Management Nepal

Abstract

As a part of the Global Water Partnership's (GWP) Associated Program on Flood Management (APFM), Jalshot Vikash Sanstha (JVS), a non-profit making NGO working in the water Resources sector in Nepal has taken initiatives for the community approach to flood management. With a goal to the process of sustainable development and improving the quality of life by reducing the vulnerability of flood with a focus on non-structural measures, a study was conducted focusing four flood affected communities in two selected districts-Saptari and Rautahat of Nepal. The communities faced the flood in an unorganized manner. There is no flood warning system in place and the communities depend on their traditional way of flood warning system. After a wide stakeholders' consultation, a manual for use by the community was prepared and is being tested as a pilot program in one of the community of Rautahat (Banjaraha VDC). The manual has elaborated the role of community-based organizations in the management of flood. The manual starts from classification of floods and flood prone areas of Nepal, categorically describes steps for preparedness, lists out activities of the community organization to be performed during flood and provides direction on how to carry out post flood rehabilitation and maintenance. It then provides sound basis for another cycle of flood management-preparedness, response, rehabilitation and maintenance.

The interactive process conducted in the field and district headquarters of the two districts, helped the communities and the stakeholders to aware of the possibilities of organizing and facing the flood in a collective manner and minimizing the ill effects of the flood, to the life and property of the people.

1.1 Introduction

Unstable steep slopes, weak and fragile geological formation of young mountains along with heavy monsoon rainfall make Nepal one of the most hazardous areas in the world. Because of its topographical variation and geological characteristics together with torrential rain during monsoon season, the country frequently suffers from different kinds of water induced disasters like soil erosion, landslide, debris flow, flood etc. These phenomenon cause loss of lives and property and pose severe hazards to the physical infrastructures resulting to disruption of the social and economic development of the country.

1.2 The Project

This project is a part of the Global Water Partnership's (GWP) Associated Program on Flood Management (APFM) and is sponsored and funded by the World Meteorological Organisation (WMO). The broad objective of the project is to find out ways and means for strengthening the self help capacity of communities for improved flood management under the IWRM framework. The overall goal is to contribute to the process of sustainable development and improving the quality of life by reducing flood vulnerability with a focus on non-structural measures but keeping unavoidable structural means in view. As apart of APFM's activities in facilitating the development of regional activities, the project's study area included Bangladesh, India and Nepal under a common and collaborative research design. Jalsrot Vikas Sanstha (JVS) has been instructed with the task of carrying out the pilot study in Nepal. The project was designed to carry out its study in two phases.

1.2.1 Phase I Study

This phase of the study was carried out in late 2002 and early 2003. The objective of this phase was to prepare a country report with the following specific objectives:

- Identify sources of information on floods among the flood-prone communities and assess their levels of flood preparedness;
- Ascertain the community's level and magnitude of perception of flood as a risk;
- Understand flood management activities and practices at the community level;



- Determine the needs and expectations of the communities vis-à-vis flood mitigation and loss minimization;
- Highlight the community level coping strategies at present, and their capacity to enhance their options for response in flood vulnerability reduction.

From the part of Nepal, two study areas were selected for carrying out the study. The first is the area in Saptari District in Eastern Development Region affected by Khando River and the second is the area in Rautahat District in Central Development Region affected by Bagmati and Lalbakeya rivers.

The outcome of the phase I study was presented in the Third World Water Forum held in March 2003 in Kyoto, Japan.

1.2.2 Phase II Study

The phase II of the study project aims to gather additional knowledge base about the flood affected communities and undertake appropriate activities to strengthen self-help capacity of communities for improved integrated flood management. The following activities were envisaged:

- Strengthen people's ability to understand flood warning messages and use them in combination with their own assessments through traditional methods.
- Undertake programme to enhance awareness, preparedness, and coping strategies of flood affected people.
- Provide assistance to improving the flood responses undertaken by the local people.
- Prepare a manual using guidelines provided by the national flood response strategies that are available in each country and knowledge generated through local surveys and consultations.
- Identify specific non-structural measures, beyond the ability of the local community to address, which have to be provided by the government and NGOs /CBOs in each location to help reduce the flood vulnerability.
- Facilitate confidence building and dialogue amongst professionals. Individuals and institutions dealing with the issues involved in flood management.
- Identify effective modalities of managing floods through effective regional co-operation as well as specific activities to accelerate such co-operation.

Two physical outputs were expected out of this study, the first is the manual on community approach to flood management and the second is establishment of some organized communities aware of improved integrated flood management and ready to make use of the manual. After preparation of the manual, Banjara VDC of Rautahat district was chosen in the pilot study for the establishment of committee and use the manual to cope with the flood in the VDC

1.2.3 Methodology

Following methodology has been adopted for the project:

- Field visit and interaction with the people
- Preparation of a sample constitution for organizing the Community Flood Management Committee (CFMC) and distribution to the key persons in the communities
- Preparation of Manual on Community Approach to Flood Management,
- Interaction on the manual with the affected communities and key stakeholders in the project area and the districts
- Presentation of the manual to various interested groups to seek feedback,
- Finalization of the manual at national level and presentation to regional forum



1.2.4 Lessons Learned from the Field

Two communities in each of the two districts- Launiya and Tilathi in Saptari District and Brahamapuri and Banjaraha in Rautahat were selected for field works. The interaction with the communities revealed the following common facts among the communities:

- People temporarily shift to high lands, public places, schools, embankments, etc during floods.
- The communities have no collective pre-coping mechanism. All the activities are done on individual basis.
- Proper coordination is lacking among the agencies involved. The external support provided to the affected communities is inadequate and inequitable.
- Due to heavy sediment load in the river, the bed level is rising every year causing more threat of flooding in the future.
- There is no permanent flood management committee in the communities. However, they form an ad-hoc committee when river training works with support from the government agencies are to be constructed.
- Strong confidence for self-help is demonstrated by the communities, but scarcity of fund remains a major constraint

Saptari District Study Area

- There is no flood warning system and people use traditional practices of watching cloud and rain.
- Some of the households in Tilathi community have individual pre-coping practices such as storing foods, keeping plastic sheets and tents etc. But there is no such practice in the community of Launiya.
- Proper engineering design of river training works is lacking.

Rautahat District Study Area

- The communities in Brahamapuri and Banjaraha are practicing their own system of flood forecasting and warning such as entrusting elders to listen to the weather report from radio broadcasts and watching flood upstream
- People temporarily shift to neighboring permanent houses, high lands, public places, schools, embankments, etc during floods.
- Although, government is about to complete embankment to stop water spilling the banks of Bagmati and Lalbakeya, the threat of flood damage will remain the same.
- Increasing urbanization and increased network of roads and infrastructure is increasing the drainage congestion and the depth and duration of inundation is also on the increase.
- The Red Cross has made some efforts to mobilize the youths of Banjaraha VDC in organized basis in disaster management and has provided them trainings.

As it is evident from above that there are many things in common in both the study area while there are some differences. It can be concluded in both the cases that, with some external support and catalytic activities, the communities can be organized to manage the flood and reduce the losses to the life and property due to flood related disasters.

1.3 The Manual

Based primarily on the aspiration the studied communities, the manual has been prepared in order to guide them to raise their capacity to live with the flood while minimizing the loss of property and lives. The manual has been divided in the following five parts:



1.3.1 Part I – Introduction

This part of the manual introduces various terms to use by the communities. It defines various types of flood in Nepal in four groups- flash flood, monsoon flood, localized flood and glacier lake outburst floods and their general characteristics. Flood prone areas are classified in three classes – erosion prone area and inundation prone area. Inundation prone area is classified in terms of severity of inundation; which can be tied up with any one of the physical phenomenon such as frequency, depth and duration of floods. The community has option to choose any one of these approaches to its convenience.

1.3.2 Part II - Pre-Flood Preparedness

In areas where occurrence of flood is a regular phenomenon, preparedness is considered as one of the main activities to save life and property of the people. Preparedness includes three Ps - plans, preparations and provisions made in advance for carrying out activities when the area is being hit by the flood. The primary objective is to allow the passage of flood with minimum damage to lives and properties of the community.

This part of the manual advocates first why community organization is needed to cope with flood and summarizes the following reasons for the need of an organizations:

- Better preparation for facing the flood event,
- Immediate response during flood,
- Better coordinated effort to fight flood,
- Ease to bring external support,
- Making community's voice heard,
- Channelise government support,
- Establishment of legal body and registration.

Who will do all these things? Some catalyst organization is needed at this point. Depending upon specific situation, there can be number of institution initialing this process. NGOs, the concerned VDC, Red Cross etc. can play this role. Furthermore, there are some Government organizations working in disaster management such as the local division of DWIDP, local office of the Chief District Officer, Local Police office, Local Military office can initialize this process. The elite person/s should seek the possibility of involving one or more of these organizations.

Again depending upon the specific situation of the affected community, there can be a number of ways forming the CFMC. Interaction with the communities during the field study phase of preparing this manual has indicated two such options as follows:

- Village Development Committee (VDC) should establish CFMC representing the affected communities, women and ethnic groups with the chairmanship of local Ward chairman of the affected area.
- Affected communities should establish CFMC with the chairmanship of local elected community leader and with the representation of VDC and Ward representatives including women, ethnic groups, teacher, local leader etc.

According to the specific need of the community, CFMC can also form various sub-committees to take care of the specific need. Some of the possible sub-committees are as follows:

- Forecasting and Warning Sub-Committee
- Rescue, Evacuation and Search Sub-Committee
- Relief Materials Distribution Sub-Committee
- Rehabilitation and Reconstruction Sub-Committee
- Health and hygiene Sub-Committee



The manual categorically lists out a number of steps CFMC should take in order to prepare itself for facing the flood. These are:

- Information dissemination and training
- Training on Post Flood rehabilitation and reconstruction activities
- Assessment of Flood Hazards
- Making Provisions of Emergency Relief
- Making Temporary Refuge
- Making Temporary Refuge
- Generating Financial Resources
- Adjusting Land Uses
- Forecasting and Warning
- Preparing Evacuation Plan
- Ensuring Communication Link to the World
- River Training works

1.3.3 Part III - During Flood Responses

This part deals with the situation when the flood has actually arrived and the community has started responding to the situation. It is in fact testing the preparedness of the community. At this time CFMC members and all other sub-committees should remain active in their respective areas.

During a flood, one may choose from the following two options (i) enduring flood by staying inside the house or compound, or (ii) leaving the house and taking shelter either in non-flooded areas or in nearby flood shelters, if available.

Enduring Floods

Enduring flood is indeed difficult. Many poor families tend to stay back in their marooned dwellings, often in raised platforms inside the dwelling or on roof-tops to avoid moving out and risk the theft of valuables. In doing so, they sometimes fall victim to snake-bites, even drowning. Escaping flood waters and taking shelter elsewhere also depend on the availability of flood shelter or high places to move to, which are expected to be arranged by the CFMC.

Living within the marooned homestead or opting to relocate to a neighbour's or a kin's house during a flood is a family-level response while opting for relocating temporarily in a flood shelter may be a community response.

However, it is advisable to shift, with help from the CFMC, children (below 10 years of age), old (above 60), adolescent girls, pregnant women, and lactating mothers to safer places (flood shelters, flood-free kin's house) on a priority basis.

The CFMC should arrange making known safe escape routes by hanging coloured signs on trees to facilitate quick and safe relocation.

The main activities in this situation can be:

- Improve Housing Condition
- Food and Drinking Water Storage and Handling
- Nutrition Supply
- Maintaining Healthcare and Hygiene
- Safeguarding Agricultural Production
- Maintaining Mobility
- Maintaining Liaison



Escaping Floods

- The main activities under this can be:
- Preparing Temporary Flood Shelters
- Taking Shelter in Tents
- Physical Relocation to Flood Shelters/Camps
- Managing Day-to-Day Activities in Running the Flood Shelter/Camp
- Maintain Health Care Facilities
- Miscellaneous Activities such as maintaining surveillance against theft/burglary, Check inflation of prices as a result of unfair trade practices by middlemen owing to short supply of essential commodities during flood and address these issues through the CFMC etc.

1.3.4 Part IV- Post Flood Rehabilitation and Maintenance

When flood starts receding, the immediate need is to bring normalcy in the community as early as possible through rehabilitation and maintenance of the damaged infrastructures. Life of the people at this stage is still disrupted and they seek help from their own community and from outside. At present rehabilitation operation in Nepal is spread over a large number of sectoral line agencies and institutions and that too is available lately after the occurrence of flood. The government line agencies such as DWIDP, Department of Roads, Nepal Electricity Authority, and Nepal Telecommunication Authority do the rehabilitation of the damaged infrastructure under their respective jurisdiction. Hence a coordinated approach of delivering necessary help is essential.

The CFMC with the help of proper supporting agencies should focus its activities in order of the following priority.

- Restoration of health care and maintenance of hygiene and sanitation
- Helping people in need of food
- Restoration of communication and coordinating external support
- Prepare restoration plan
- Start immediate repair and maintenance that the community can do by itself
- Seek and coordinate external help for restoration of houses and infrastructures

Rehabilitation and maintenance activities should be carried out three stages- Stage I Immediate, Stage II Intermediate, and Stage III after Normalcy. CFMC should identify the activities to be executed in each of these phases.

The following activities are identified as stage I activities:

- Supply of potable water and monitoring of its availability
- Monitoring hygiene and sanitation situations and maintain them.
- Mobilizing health personnel to the needy people, child, pregnant women and elderly
- Ensuring availability of basic food items in the market at reasonable prices
- Informing relief agencies of their need and establishing communication with them
- Fair distribution of the relief materials
- Helping establish law and order situation
- Mobilizing people to clear the drainages for fast drain out of flood water.

When flood recedes and normalcy starts returning, then the CFMC should focus on the following activities in stage II:

- Assess damage caused by the flood through sub-committee using different forms.
- Prepare immediate restoration plan and identify who is doing what (persons, committee and external agencies).
- Start executing immediate restoration plan
- Seek external help by communicating with related agencies
- Coordinate external restoration activities



- Facilitate people in getting reconstruction materials such as wood, roofing material etc
- Educate people in reviving the damaged crops and facilitate them in getting seeds, fertilizers and external support
- Facilitate needy people getting work for their day to day maintenance. Activities such as food for work can be brought to the area where poorer section of the community can work to earn.
- Facilitate reconstruction by ensuring that the rebuilt constructions, houses, bridges are now safe against the next flood.

When normalcy returns in the community, the following activities of stage III should be done

- Review the effectiveness of the preparedness measures and decide what the deficiencies are and what improvements are necessary in the preparedness for the next flood.
- Prepare a restoration plan as per the revisions made.
- Facilitate starting income generating activities for the poor
- Facilitate growing new crops according to the situation and needs
- Start those activities which can be done by the communities and seek help from external agencies which can not be done by the community.
- Coordinate the works being done by different helping agencies
- Conduct next cycle of activities of preparedness.

1.3.5 Part-V Managing Information for Future References

Flood relief activities of the past, in most cases are criticized for mismanagement. Relief institutions come to help people only after occurrence of flood and damage to the community. This situation can be better managed if information collected from different sources, are communicated to different helping institutions in time. Structural measures are still in vogue to control flood in many communities. Many people of a community mostly demand for structural measures, which they think, are the best method of flood control. The structural measures are often unsustainable due to their inherent technical deficiencies. Non-structural measures of flood management though sustainable requires much effort on educating people and proper management.

CFMC in coordination with different institutions should collect required information on preparedness, forecasting and warning, crop management, before, during and post flood situation. The information on the damages caused by individual flood is very important for reviewing preparedness plan.

CFMC should keep record of all the flood events and the associated damages caused together with the activities conducted by the CFMC in response to the flood. The records should be in writing. It will be good practice to send a copy of these records to local office of DWIDP for safety.

Mapping Resources and Services Available at Local Level

Mapping of resources and services available at local level is necessary to cope with the disasters of flood. Mapping of resources such as cultivable land, forest, grazing land and villages etc should be made by CFMC with the help of different organizations. Similarly services available in a community such as schools, health posts, public/private ponds, nurseries etc should be mapped and a detail inventory of such services should be made. This resource and service map is instrumental to assess the risk and vulnerability involved in a community as well as for the mitigation planning.

The flood risk maps prepared should be updated annually after the end of each monsoon season. The list of organization available locally for support and their address should be updated periodically.

Maintaining Transparency

CFMC should maintain transparency at all levels of its activities. CFMC should maintain records of all the expenditure incurred in any operation on daily basis. It should maintain the record of the use of material in stock. It should also maintain the records of money, relief material received from external agencies and their uses and expenditure. At the end of the monsoon season each year, CFMC should call a general meeting and make public all these records for comments. CFMC should also make public its



activities periodically. Maintaining transparency would increase public acceptance of CFMC.



2. Mr. Rajesh Kumar Jha, CFMC – Voice of the Community

Respected Chairperson of the Session,
Representatives of World Meteorological Organization (WMO), Jalsrot Vikash Sanstha (JVS) and other cosponsors, ladies and gentlemen.

On behalf of the "Lal Bakaiya River Control Community Flood Management Committee", which was formed by the initiation of JVS, and on behalf of the people of flood affected people, I, Rajesh Kumar Jha want to present some of our experiences to this august gathering.

Honorable Chairman,

First of all, to study the flood management aspects of our flood affected area, JVS, by sending their representatives gathered the local people, social workers, local community organizations and disseminated some information about the flood and its effects to us. We have realized that effectiveness of flood management will increase by working together, hence, we the people of Banjaraha VDC have formed "Lal Bakaiya River Control Community Flood Management Committee".

Based on the manual published by JVS and as per the direction of technical persons we have conducted pre-flood preparedness activities; during flood preparedness and constructed temporary shelters, temporary latrines and raised platforms in the community. I would like to inform you all that, with the arrangement of first aid materials and adopting methods like purification of drinking water etc. the damage by the floods of 2004 and 2005 were comparatively less than the earlier floods in our area.

We, the people of the community and Lal Bakaiya River Control Community Flood Management Committee have been guided by the regular inspection of JVS.

If the financial support provided by JVS does not seem to be necessary to be spent immediately, we give it to the small businessmen for vegetable and fruit business and take an extra ten rupees as interest the next day. This helps the local small businessmen financially as well as increases the committee fund. But as the problems created by the floods are great and the financial supports to us are less, there are various problems, which I feel it important to mention.

Honorable chairman,

I think you are informed, by the media about the death of 9 people due to the last year's floods in the Lal Bakaiya River. As only one boat that has been rented from India is not sufficient for the rescue works, if there are 2 boats, necessary number of mobile phones and a provision for storage of food grains, then the problems caused by floods can be minimized to a great extent. The community has also felt the shortage of office and furniture for the continuation of this committee. Thus I would like to request JVS on behalf of the people of the community to appeal for the above-mentioned provisions.

Hoping for the appropriate actions from the related authorities on the voices of the people of the community, I would like to thank all the respected and venerable ladies and gentlemen present here. Thank you,



3. Mr. Som Nath Poudel, JVS – Lesson Learnt from CAFM Project

Lessons learnt from the CAFM Project Activities

3.1 Introduction

This pilot project is organized as a component of WMO/GWP Associated Programme on Flood Management (APFM). The broad objective of the project was to find out ways and means for strengthening the self help capacity of communities for improved flood management under the IWRM framework. The overall goal was to contribute to the process of sustainable development and improving the quality of life by reducing flood vulnerability with a focus on non-structural measures. The project's study area included Bangladesh, India and Nepal under a common and collaborative research design. Jalsrot Vikas Sanstha (JVS) has been entrusted with the task of carrying out the pilot study in Nepal. The project was designed to carry out its study in three phases.

3.2 Phase I Study

This phase of the study was carried out in late 2002 and early 2003. The objective of this phase was to prepare a country report with the following specific objectives:

- Identify sources of information on floods among the flood-prone communities and assess their levels of flood preparedness;
- Ascertain the community's level and magnitude of perception of flood as a risk;
- Understand flood management activities and practices at the community level;
- Determine the needs and expectations of the communities vis-à-vis flood mitigation and loss minimization;
- Highlight the community level coping strategies at present, and their capacity to enhance their options for response in flood vulnerability reduction.

Two following study areas were selected for carrying out the study.

- i. Launiya and Tilathi VDCs of Saptari District in Eastern Development Region affected by Khando River and
- ii. Brahmapuri and Banjaraha VDCs of Rautahat District in Central Development Region affected by Bagmati and Lalbakeya rivers respectively.

The outcome of the phase I study was presented in the Third World Water Forum held in March 2003 in Kyoto, Japan.

3.3 Phase II Study

The phase II of the study project was aimed to gather additional knowledge base about the flood affected communities and undertake appropriate activities to strengthen self-help capacity of communities for improved integrated flood management. The following activities were done in this phase of the study:

- People's ability to understand flood warning messages and using them in combination with their own assessments through traditional methods was strengthened.
- Programmes to enhance awareness, preparedness, and coping strategies of flood were implemented.
- Provided assistance to improve the flood responses undertaken by the local people.
- Prepared a manual using guidelines provided by the national flood response strategies and knowledge generated through local surveys and consultations. This manual was later translated into Nepali language and distributed to different stakeholders.
- Identified specific non-structural measures, beyond the ability of the local community to help reduce the flood vulnerability.



- Facilitated confidence building and dialogue amongst professionals, individuals and institutions dealing with the issues involved in flood management.

Following physical outputs were obtained out of this study:

- i. Preparation of the manual on community approach to flood management
- ii. After preparation of the manual, Banjarah VDC of Rautahat district was chosen out of the four studied sites in the pilot study for the establishment of committee and use the manual to cope with the flood in the VDC

3.4 Phase III Study

To make use of the manual, Banjaraha VDC of Rautahat district was chosen for the study.

A team consisting of an engineer, a social mobilizer and a staff from Jalshrot Vikash Sanstha (JVS) visited the Banjaraha VDC of Rautahat District from June 9 – 12, 2005. The objective of the visit was to monitor and evaluate the activities of the Flood Management Committee formed by the people of Banjaraha Village to help the flood affected people of the community.

Activities of the Committee

Realizing the fact that, a community organization is a pre-requisite for effective flood management, people of Banjaraha VDC has formed a 13 member users' organization and registered in the District Water Resources Committee, Rautahat. This committee was formed according to the Water Resources Regulation, 2050. Thus, the organization has now become a legal body to deal with the flood and other activities in the area.

Salient features of the committee are as follows:

Name: Lal Bakaiya River Community Flood management Committee

Date of Registration: July 19, 2004

Licence No: 1/061/62

Chairman	Mr. Girishnandan Kumar Singh
Vice-Chairman	Mr. Jiyalal Baitha
Secretary	Mr. Intajar Khan Paithan
Vice-Secretary	Mr. Abadh Kishsor Singh
Treasurer	Mr. Jayaram Shah Baniya
Member	Mr. Pradeep Kumar Singh
Member	Mr. Surendra Mahara Chamar
Member	Mr. Tahir Khan Paithan
Member	Mr. Harendra Shah
Member	Mr Ramdhar Sahani
Member	Mr. Ram Pukar Shah
Member	Miss Siya Devi.
Member	Miss Siyani Devi

Representation of women and disadvantaged ethnic groups of the community is found in the committee. However, the presence of women members in different activities is to be encouraged.

Bank Account	: Rastriya Banijya Bank, Branch Office Gaur
Saving Account No	: 14457
Date of Opening	: July 20, 2004
Initial Amount	: Rs. 31,000.00

This Committee is also registered in the Internal Revenue Office, Simra, of Bara District on December 6, 2004. Its Permanent Account Number (PAN) is 301756168



So far, the committee has conducted 14 meetings.

The committee has conducted eight numbers of Adult Education classes in the village. Interested people above the age of 15 years attended these classes. This program was sponsored by District Education Office, Rautahat. One teacher is provided for every 20 students. The classes were conducted during the night time.

Department of Water Induced Disaster Prevention (DWIDP) Division No 3 had awarded a contract amounting Rs 250,699.35 to the Committee for the maintenance work of the right bank of Lal Bakaiya and Bhakuwa River.

The committee is providing Rs 500 to a poor of Banjaraha village per day who invests this amount in the daily local market and returns Rs 510 on the same day to the committee. In this way the committee is earning Rs 10 per day and the poor earns about Rs 200 per day from this investment.

3.5 Lessons Learned from the Field

From the interaction with the selected communities of Rautahat and Saptari districts, the following facts are revealed:

- The communities in Brahmapuri and Banjaraha were practicing their own system of flood forecasting and warning such as entrusting elders to listen to the weather report from radio broadcasts and watching flood upstream
- People used to temporarily shift to neighboring permanent houses, high lands, public places, schools, embankments, etc during floods.
- Although, government is about to complete embankment to stop water spilling the banks of Bagmati and Lalbakeya, the threat of flood will remain in the community depicting that structural measures alone can not address the problems of flood.
- The Red Cross has made some efforts to mobilize the youths of Banjaraha VDC in organized basis in disaster management and has provided some trainings to them.
- Construction of embankment near the Nepal-India border has increased the incidence of inundation in the Banjaraha VDC of Rautahat.
- Although Department of Hydrology and Meteorology has some meteorological data regarding flood, it has no mechanism to disseminate these information to the affected people.
- During the flash flood, there is very limited time for the people to prepare for evacuation. Dissemination of meteorological data by DHM through local FM radio or Radio Nepal in local languages could help reduce the damage from flood. The information can be disseminated in the form of daily or hourly weather bulletins during the monsoon period.
- Department of Water Induced Disaster Prevention (DWIDP) through its divisional and sub-divisional offices throughout the country could prepare hazard maps of the affected communities. These hazard maps can be used for different management purposes in all the three phases of flood management.
- Most of the poor people reside in the flood plain, thus increasing the risk and vulnerability of the flood.
- Most of the schools and other public buildings in the communities are constructed as single storied. If they could be constructed as two or three storied, the upper floors of such buildings can be used as temporary shelters during the flood.
- Co-ordination between different government and non-governmental agencies during different phases of flood is the urgent need. This could be done through the Ministry of Home affairs as it is responsible for different types of disasters such as earthquakes, fires etc.
- Internalization of the manual in its present form or in a revised form, by different government and non-government agencies is necessary.
- Establishment of community organizations such as in Banjaraha Village of Rautahat, are helpful to the community people in the management of flood in all its three phases.



4. Mr. Lekh Nath Pokharel, MOHA – Flood Management: Legal Provision, Challenges and its Measures

Flood Management: Legal Provision, Challenges and its Measures

Abstract

Nepal, a small landlocked country in south Asia, is prone to both natural as well a man made disasters. It has been experiencing several natural disasters such as floods, earthquakes, avalanches, landslides, hailstorms and droughts causing loss of lives and properties. Ministry of Home Affairs is the national focal point of disaster management. Mainly, it is responsible for policymaking, coordination and cooperation with stakeholders. Recently Nepal has initiated various efforts to cope the impact of water induced disasters. Natural Disaster Relief Act 1982 is a milestone as legal instrument to cope the challenges of disasters in the country.

Despite different man-made problems and paucity of resources, lack of public awareness, Nepal has been gradually picking up the momentum towards improving the disaster management. Policy makers/planners have shown keen interest in looking into the challenges of disaster management from the economic, social and developmental point of view, an approach that is gaining broader support. His Majesty's Government of Nepal has been given priority towards capacity enhancement, emergency response planning, preparedness, rescue and relief as well rehabilitation and reconstruction programmes. Nepal considers the outcomes of the World Conference on Disaster Reduction and Asian Conference on Disaster Reduction to be inspiring and fruitful to prepare the national strategies for Nepal.

Country background

Nepal lies between 80° 4' - 88° 12' east longitude and 26° 22' and 30° 27' north latitude. It is a tiny land locked country situated between the two large and densely populated countries of Asia – the People's Republic of China in the North and India in the South, East and West. Nepal houses approximately 25 million people with 72 languages and varied culture and customs mainly based on the Hindu and Buddhist culture and traditions. It has an area of 147, 181 sq. kilometres with all varieties of climate and topography ranging from the sub-tropical to the alpine. Administratively, Nepal has been divided into five development regions, seventy-five districts, and fifty-eight municipalities and 3,913 village development committees. Most part of the country is seismically active. Hence, the geomorphology is very fragile. The country is divided into Himalayan region, the Hilly region and the Terai region (Plain land). Himalayan region occupies 15 percent of the total area of the country with eight highest mountains above 8,000m, including the Mount Everest, the highest peak in the world.

Major Disaster & Its Scenario

The major types of disaster include earthquakes, landslides, floods, glaciers lake outburst, epidemic, lightning, windstorm avalanche etc. A summary of the loss of human lives by disasters from 1983 to 2004 is in Table 1.

**Table 1.**

Year/Types	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Flood & Landslide	293	363	420	315	391	328	680	307	93	71	1336	49	203	258	78	276	209	173	196	441	232	131	6843
Fire	69	57	52	96	62	23	109	46	90	97	43	43	73	61	45	54	46	53	26	14	16	10	1185
Epidemics	217	521	915	1101	426	427	879	503	725	1128	100	626	520	494	947	840	1207	141	154	0	0	41	11912
Windstorms, Hailstorm & Thunder bolts	0	0	0	0	2	0	28	57	63	20	45	47	34	75	44	23	22	26	41	6	62	10	605
Earthquake	0	0	0	0	0	721	0	0	0	2	0	0	0	3	0	0	0	0	1	0	0	0	727
Avalanche	0	0	0	0	0	14	20	0	0	0	0	0	43	4	9	0	5	0	0	0	0	0	95
Stampede	0	0	0	0	0	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71
Total	579	941	1387	1512	881	1584	1716	913	971	1318	1524	765	873	895	1123	1193	1489	393	418	461	310	192	21438

Source: MoHA, Disaster Management Section

Flood Management Mechanism

i) Natural Disaster Relief Act, 1982

Government activities till the 1980s were mainly directed towards post-disaster management, such as rescue, relief, and rehabilitation. "The Natural Disaster Relief Act, 1982" was introduced in the country, which was amended three times distinguishing the significance of the pre-disaster (awareness programs) and post-disaster (rescue, relief and rehabilitation) activities. The Act has provisioned for the Disaster Relief Committees at the Central, Regional and District and Local levels.

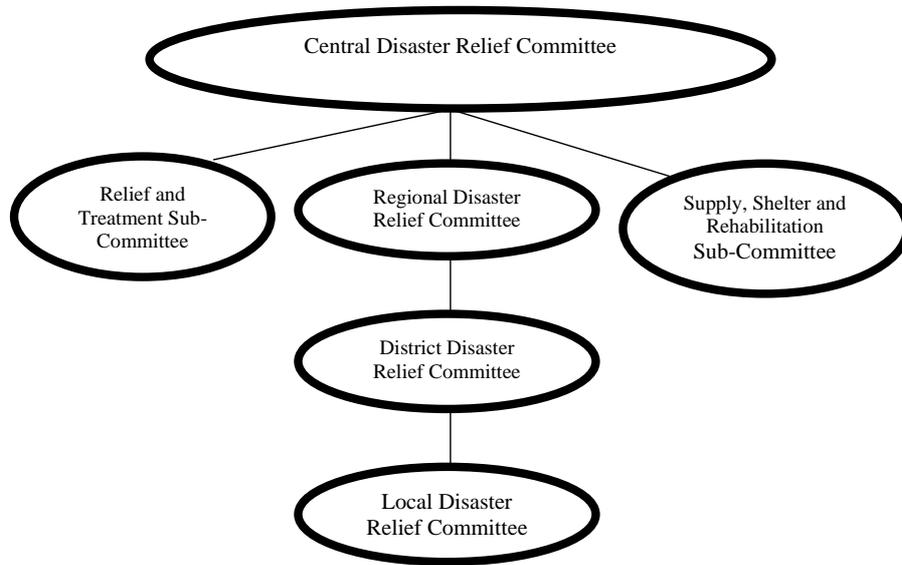
The Central Disaster Relief Committee has formulated some norms or standards for immediate relief assistance to the victims of the natural disaster in cash or goods.

The Central Natural Disaster Relief Committee (CNDRC), Regional Natural Disaster Relief Committees and District Natural Disaster Relief Committees are functional in all times. The CNDRC chaired by the Hon'ble Minister for Home Affairs is the apex committee, which is responsible for formulating policies and plans in relations to overall aspects of disaster management in coordination with various key agencies of disaster mitigation. The Ministry of Home Affairs is national focal point in disaster management. It looks after the disaster management activities, as a secretariat of the CNDRC and the DNDRC which are mainly responsible for carrying out the post-disaster activities at district level. To expedite the rescue, relief and rehabilitation activities effectively and efficiently; the Act has made provisions of the Central, Regional and District Disaster Relief Funds.



Organizational structure

According to the NDR Act, 1982 the organizational structure is as below;



The Central Committee can constitute Relief and Treatment Sub-Committee (RTSC) and Supply, Shelter and Rehabilitation Sub-Committee (SSRSC) in case of massive natural disaster. Hon'ble Minister of Health coordinates RTSC. These sub-committees provide necessary advice and suggestions to the Central Committee, help to execute policies and directives of the Central Committee and operate effectively the rescue, relief and rehabilitation works.

ii) National Action Plan 1996

His Majesty's Government of Nepal, Ministry of Home Affairs has formulated a National Action Plan in 1996 in order to specify the priority activities of various disaster management related Government agencies. The plan had been prepared under the direction of the International Decade for Natural Disaster Reduction (IDNDR) National Committee. The Plan had identified the priority item group and activities together with the responsible executing agencies. It has laid emphasis to the national hazard assessment, awareness raising, training, information system, land use plan, disaster reduction policy, regional and sub-regional cooperation between and among countries and establishment of documentation centre on disasters. Main objectives of the National Action Plan are as follows;

- Disaster Preparedness.
- Disaster Response.
- Disaster Reconstruction and Rehabilitation and,
- Disaster Mitigation

This plan also focuses on hazard mapping, risk assessment, vulnerability analysis and so on. As it was an ideal and ambitious plan that could not be implemented as envisaged. The plan was reviewed thoroughly and submitted in World Conference on Disaster Reduction-II (WCDR-II), 2005, at Hyogo in Japan. The outcomes of WCDR-II are proved to be milestone in the field of disaster reduction. As a follow up of the Hyogo framework of Action, Nepal has pursued several initiatives in the field of disaster risk management. In line with this, Nepal has been preparing national strategy on disaster risk reduction.

Provisions of Disaster Management in the Tenth Periodic Plan (2002-2007)

The objective of the plan is to make development and construction works sustainable, reliable and effective as well as to keep life of the common people secured.



In order to achieve the objective the plan has set certain strategies such as adopting suitable technology to minimize environment effects and losses due to disaster, making rescue and relief reliable and effective, carrying out effective public awareness activities, strengthening earthquake measurement stations and preparing hazard maps of vulnerable areas.

With a view to achieving the above-referred strategies, programmes are made as develop integrated information system in coordination with national and international agencies, develop reliable database, prepare institutional inventory, operate five regional warehouses with sufficient stockpile of relief materials, develop national fire code, prepare landslide inventory based on hazard maps and create epicenter map, provide immediate information to common people of any mode of disasters, adopt disaster preventive system and offer instant counselling and rehabilitation to the victims. Similarly, assessments of environmental and disaster impacts, enhance people's participation in watershed management and river control, timely reform legal and institutional frameworks, effective implementation of regional programmes, harness participation of stakeholders in all areas of disaster reduction and increase public awareness are the working policies of the plan.

The plan expects to achieve the following:

- To establish cordial relations among the national and international partners.
- Effective sharing of disaster information and experiences.
- Reduction of damages
- To prepare hazard maps and identify vulnerability thereby contributing to lessen the loss of lives and property.
- Strengthen rehabilitation works and immediate availability of relief materials to the victims.

Emergency Health Preparedness Plan

If huge disaster occurs in Nepal, there is not sufficient open space for emergency response. In case of emergencies the victims can be shifted at schools, hospitals, and open space. In case of emergency treatment the existing hospitals are not equipped with sufficient manpower and facilities. The ratio of available facilities in comparison with the population is: Doctors 1:4000, Nurses 1:2600 hospital beds 1:3500. In fact, these facilities are, to a great extent, insufficient. So, the capacity for emergency rescue should be increased in the cities. Resource is necessary to strengthen such situation both from national and international levels.

In this context, health-workers should be grouped and assigned in a “National Disaster Preparedness and Emergency Response Plan” and embarked upon seismic vulnerability assessment of the major hospitals of Nepal. The task was preformed jointly by the Ministry of the Health and the World Health Organization (WHO), Nepal. This effort has resulted in the development of structural and non-structural seismic vulnerability assessment of hospital system including the building.

Priority Concerns on Disaster Management

HMG/Nepal has given serious attention on the following priority sector:

- His Majesty's Government of Nepal has already started the process to develop a National Strategy for Disaster Management in Nepal. This initiative is expected to provide a coherent framework for disaster risk reduction in the country. For the finalization of the strategies plan and modification of the national action plan HMG/Nepal, has recently formulated the Steering Committee and a Working Group to obtain the objectives.
- Activities like appraisal of disaster while selecting development projects, operationalizing disaster preparedness, rehabilitation and support programs and adherence to building code have been emphasized into the processes of development planning and implementation.
- An integrated information system has been developed in the different levels to facilitate the disaster preparedness as well post disaster management.
- Collaboration and partnership among government, UN agencies including WHO, non-governmental organizations, private sector organizations and external development partners have



been emphasized for accomplishing disaster risk reduction and mainstreaming it into the national development process.

- The development of national strategies will be followed by an integrated periodic action plan for disaster reductions.
- Massive scale awareness campaigns on early warning systems and disaster risks reductions have been emphasized at the community level.
- Identification and mobilization of resources internally and externally have been initiated to ensure the activities concerning disaster risks reduction.
- Priority has been given towards capacity enhancement, emergency response planning, preparedness, rescue and relief as well rehabilitation.

Challenges in Disaster Management

Nepal is exposed to several types of disasters every year. According to a survey there are 1.06 reported events of disasters per day in average in Nepal causing the loss of lives and properties as well as damaging development infrastructures. HMG/Nepal is compelled to spend large amounts to recover such losses but very little have been done to reduce the risk of it so far.

The plans and policies also pay less attention regarding pre-disaster activities. Large parts of the population in the country are still not aware of natural disasters. Studies regarding identification of most vulnerable places and disaster types are still inadequate. Prioritized disaster events/hazards and their preparedness and mitigation parts are completely lacking except for few urban centres. Similarly, the pre, during and post disaster activities for different hazards are yet to be established. In Nepal, the disaster related works are done on an ad-hoc basis. The priority, so far, is mostly focused on the post disaster activities.

Disaster management is a challenging task as it happens all of a sudden. Thus during a huge natural disaster it becomes very difficult to cope with a normal administrative set up and limited resources. However, the challenges in disaster management system of Nepal are diverse and complex, which can be pin-pointed as follows:

- Paucity of resources.
- Adverse & rigid geo-physical condition of the country
- Inadequate infrastructure facilities.
- Lack of public awareness.
- Absence of modern technology including early warning systems
- Lack of co-ordination and cooperation.
- Very few NGOs willing to work in tough terrain.
- Perception of the people (some people especially illiterate rural people think that the natural disasters are the act of God. They seldom know that preventive measures can reduce the impact of natural disasters).
- Unplanned settlements.
- Lack of trained manpower.

Measures to cope with the challenges

The past decade has witnessed several achievements in Nepal in the field of disaster risk reduction. These include development of methodology for risk assessment and action planning at municipal and district levels for the implementation of complex community-based programs successfully. In order to efficiently manage the disaster in the pre, during and post disaster period, Nepal has operated its activities in professional manner. As a result enough efforts were made in formulating perspective and periodic plans of disaster management.

In this context, despite the different challenges, it is believed that if the following measures could be taken then the above-mentioned challenges could be solved to a greater extent:

- Mass education/awareness campaign such as; training, seminars, workshops etc.



- Change the perception of the people through public awareness raising programs
- Infrastructure development
- Adequate resources
- Hospital emergency plan as part of sectoral strategy
- Effective coordination among the agencies related disaster.
- Advancement in technology including the establishment of early warning systems
- Disaster management course should be included in school and university curriculum
- Disaster management component should be incorporated in development plans of the government.
- NGOs need to be motivated to work in the remote areas.
- Planned settlements are needed.
- Building Code application should be made mandatory.
- Capacity enhancement of the institutions involved in disaster management.
- Experience sharing programmes among the nations.
- Role of mass media to create awareness.
- Establishment of separate natural disaster management centre.

Conclusion

Disaster management, being a multi-disciplinary and huge task, is not easy to execute. However, Nepal is gradually improving its disaster management capacity. The effects of natural disasters in various parts of the world have shown the necessity to intensify international, regional cooperation for emergency preparedness and response plan in disaster management. For disaster reduction, the effective practical policy and people's participation for awareness are very important. Timely awareness programmes should be carried out on sites as well as through media. Disaster prevention programmes in all sectors (Health, Education, Agriculture and so on) should be implemented to the disaster prone areas with sufficient resources.

Last but not the least though natural disasters cannot be stopped. The losses by disasters can be reduced if effective preventive measures are taken in due time. Hazard mapping, vulnerability assessment, risk analysis and early warning system are essential elements for preventive measures for possible disasters. So, we should adopt above measures not only in Kathmandu valley but also all over the country. To attain all this, there is a need of the strong political commitment, realistic policy formulation, implementation and quick decision-making process. Of course, there are a number of challenges even then efforts should be geared towards achieving concrete results in the field of disaster management and risk reduction in Nepal.



Technical Session IV (Group Work with focus on futuristic approach to CAFM)

In this session group discussions were conducted by dividing the participants into the following three groups:

- Group I: Futuristic Approach to the flood management in the pre flood phase
- Group II: Futuristic Approach to the flood management in the during flood phase
- Group III: Futuristic Approach to the flood management in the post flood phase.



ANNEX II: News Cuttings/Electronic Media Coverage

Translation of the News Published in the "Nepal Samacharpatra" Daily on 21 February, 2006.

Nepal Samachar Patra
Kathmandu

The fact has been made public that 4% of the Gross Domestic Product (GDP) is lost due to floods and landslides in Nepal every year.

According to experts, inability of the community to provide proper contribution to flood management due to lack of awareness, the geographical and natural situation and the lack of coordination between policy makers and the community to contribute in the disaster control is some of the reasons responsible for high damage due to the disasters.

Similarly in the statistics, it has been mentioned that 29% of total loss of life and 43% of total loss of property is due to natural disasters.

Other reasons responsible for such a huge loss due to natural disasters like floods and landslides has been credited to the increase in population, migration, and giving less importance to settlement and development of physical infrastructures in such a way so as to minimize the disasters.

Presenting these statistics, chief of Water Resource section, UN World Meteorological Organization, Dr. Wolfgang Eric Grabs said, "Distance between the government planners and the community leads to the problem in the implementation of the programs. It is related to the poverty and lack of awareness in the rural areas."

While inaugurating a two day workshop organized jointly by Jalsrot Vikash Sanstha (JVS) and Water Energy Commission on Monday, secretary of Ministry of Water Resources, Mahendra Nath Aryal said that some new policies are being introduced keeping in mind these facts.

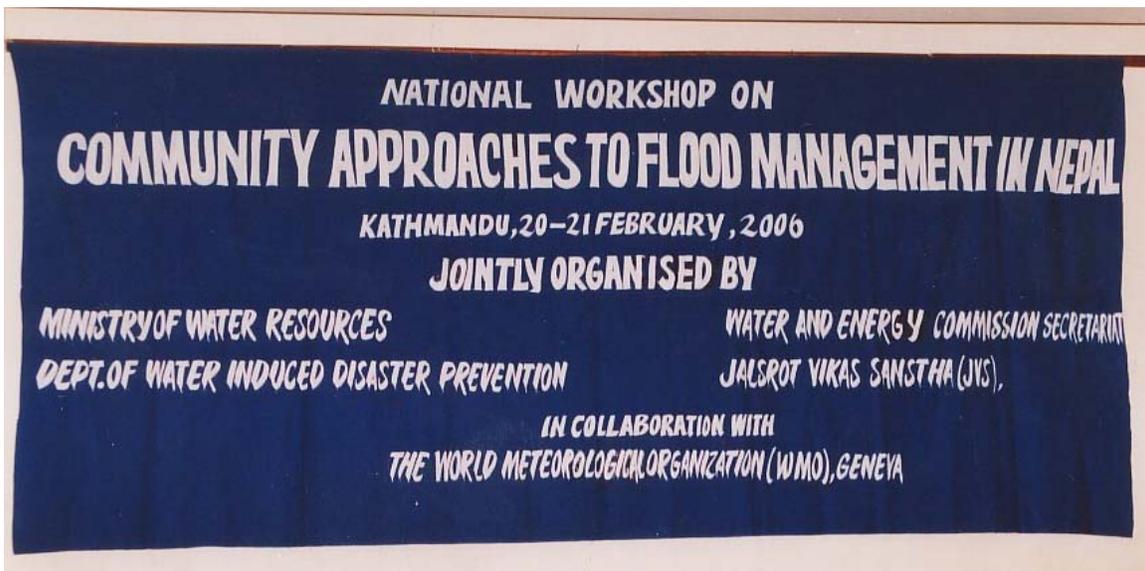
In that occasion, general secretary of JVS, Bhuwaneshwor Daibagya, informed about the study being carried out in coordination with India and Bangladesh. The first phase study was conducted in at Saptari and in second phase study in the areas affected by the Bagmati and Lal Bakaiya River in the Rautahat district.

Besides, print media, radio and state owned/private television channels also gave a wide coverage of the workshop.

GLIMPSES OF THE WORKSHOP



Inauguration of the Workshop by Mr. Mahendra Nath Aryal, Secretary - MOWR



Workshop Banner



Workshop Registration



Workshop in progress



Workshop Participants



Group Work



Group Presentation





Concluding Remarks from Dr. Wolfgang Grabs, WMO



Lighter moment during Workshop break