



Community Approaches to Flood Management - Nepal

Extension Phase: July – September, 2005

Project Report

(Report Based on Field Visit of Banjaraha VDC, Rautahat, Nepal)

Jalsrot Vikas Sanstha (JVS), Nepal

1. Introduction

Flood and landslides contribute a significant part to the total annual loss of lives and damages to property due to natural disasters in Nepal. Although, the available data are for a very short period, there is an impression that the annual loss of lives and damages to property due to floods and landslides are on the rise. A review of 1993 flood indicates that frequent outburst of monsoon rain causes damages sporadically far superseding the normal trend otherwise. Geographically, the nature of damages due to flood is different for different areas. In the high mountains, the damages are due to large landslides and mudflows. Quite often, the landslides sweep away the whole village. The mudflows cover terraced land with boulders and debris damaging the standing crop and making the land useless for agriculture without massive effort to reclaim them in the future. In the foothills and the floodplain of the rivers in the valleys, the flood causes deposition of coarse sediment over the adjoining flood plain damaging standing crops and converting the land to infertile land mass. The riverbanks in such areas are subject to severe bank erosion and loss of soil, which provides more sediment for the river to deposit on the downstream part. In fact, gradual widening of the river width starting from the foothills to downstream over decades has been observed in many river systems, which indicates gradual changes in the plan form of the river with the expanse of the braided reach from the foothill downstream in response to the added sediment in the river system. Most of the river systems in the vicinity of Nepal- India border have wide flood plains, which suffer frequent inundation damaging the standing crops. The inundation problem in these areas in Nepal often aggravates due to construction of roads, embankments, bridges and barrages in India.

Keeping this in view, the Global Water Partnership's Associated Program on Flood Management (APFM) and sponsored and funded by the World Meteorological Organization (WMO) had started a project entitled 'Community Approach to Flood Management'. 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 in a common and collaborative pilot project homework.

Phase II of the project made in depth studies, conducted awareness generation and capacity building activities in two study areas (Saptari District in Eastern Development Region and Rautahat District in the Central Development Region). The outcome of the project was formulation of Flood Management Coordination Committees in the village communities and put their experiences in the form of manuals on "Community Approaches to Flood management " (Country Manuals) with strong interaction with the community people and stakeholders in the respective districts. These manuals were also translated into local language and distributed to the local administrative level functionaries.

In order to test the manual in actual flood conditions, Phase III of the project was taken up. For this purpose Banjaraha VDC of the Rautahat District was chosen as model site. This area is inundated every year by the flood water of the Lal Bakaiya River. The main cause of which is reported to be a ring bund constructed in the Indian Territory close to the Nepal-India border.



2. Principal Flood Management Activities of CAFM -Phase III

A team of engineer, social mobilizer and staff from Jalshrot Vikash Sanstha (JVS) visited the Banjaraha VDC of Rautahat District in the months of June and August. The objective of the visit was to monitor and evaluate the activities of the Flood Management Committee. The flood from Lal Bakaiya River is causing widespread inundation in the area every year. Loss of life and property was also reported during the last year flood.

A community organization is a prerequisite, for the effective mobilization of the people and resources during the flooding season. Hence, the people of Banjaraha VDC has formed a 13 member users' organization and registered in the District Water Resources Committee of Rautahat District. This committee is formed according to the Water Resources Regulation, 2050. In this way the community organization has become a legal body to deal with the flood and other activities in the area.

The field visit team distributed the flood management manuals written in Nepali language and recently published by JVS, to the following offices:

- i. District Administration office,
- ii. Office of the District Development Committee,
- iii. Divisional Irrigation Office
- iv. Nepal Red Cross Society District Branch, and
- v. Five High schools of Gaur Municipality.

The team also distributed the manuals to members of the committee and other interested persons of the village.

2.1 Past Activities of the Committee

The people of Banjaraha village, through a general assembly have formed a 13 member Flood Management Committee. 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 as the committee has conducted 14 meetings. Brief description of the committee meetings is as follows:

First Meeting: (June, 15, 2004)

This is a general meeting prior to the formation of the committee. This meeting discussed on the following agenda and took decision on various matters.

- Formation of main committee
- Formation of Sub Committees
- Opening of bank Account
- Consultant Committee involving the chiefs of various line agencies

Second Meeting (June 20, 2004)

- Bank Account
- Pre-flood preparation
- Meetings to be conducted in time
- Office of the Committee
- Finance and Levy

Third Meeting (June 27, 2004)

- It was decided to open the Bank Account in Rastriya Banijya Bank, Gaur Branch

Fourth Meeting (July 17, 2004)

- Acknowledgement of financial support of Rs 30,000.00 obtained from Jalshot Vikash Sanstha (JVS)
- Necessary materials for flood preparation
- Primary treatment of flood affected people

Fifth Meeting (August 16, 2004)

- Office Room for the committee: It was decided to request the Banjaraha Health Post to provide a room for the committee.
- Post flood Activities
- Implementation of Skill Development Programs in the community
- Meeting of the Consultation Committee

Sixth Meeting (September 4, 2004)

The problem of inundation caused by Indian Bund in the south of the village was discussed in this meeting. This Bund is causing inundation in the Banjaraha VDC, Bairiya VDC, Auraiya VDC, Bhadia VDC and Dumariya VDC. It was decided to inform the Indian Government about the difficulties faced by the local people of the area. Request Indian Government and related organizations in Nepal for the solution of the problem.

Seventh Meeting (September 29, 2004)



- It was decided to bear the expenditure done by the committee members for the works of committee.
- Request to other organizations for help in the time of flood.

Eighth Meeting (November 27, 2004)

- Income source of the committee: It was decided to collect Rs 10 per month as levy from all the members of committee.
- Difficulties faced by people during flood
- Necessary measures to be adopted to rescue people from flood
- Purchase of rental equipments to raise the fund for the committee.
- Construction of raised grounds in the community to make shelters during flood
- Construction of raised toilets

Ninth Meeting (November 30, 2004)

It was decided to register the committee in the Internal Revenue Office of Simra and get a Permanent Account Number (PAN).

Tenth Meeting (December 15, 2004)

It was decided to thank District Education Office for proving the opportunity to conduct Informal Adult Education in the community

Requested all the interested persons to donate at the rate of Rs 551 to the committee.

11th Meeting (February 21, 2005)

Appointment of the following persons to conduct the Adult education for the committee

Mr. Arbind Kumar Singh
Mr. Intajar Khan
Mr. Sunil Kumar Singh
Mr. Rahul Kumar Singh
Mr. Sekiya Sadik
Miss Sumita Shrivastava

The problem of maintenance of right bank of Lal Bakaiya River from Indian Boarder to Auraiya Village was discussed. The committee decided to request Department of Water Induced Disaster Prevention (DWIDP) Division No 3 for the maintenance of this bund.

12th Meeting (March 13, 2005)

It was decided to present a proposal to the District Agricultural Office for the implementation of Agricultural Perspective Plan in the Banjaraha VDC.

The poor and flood-affected families will be benefited form the implementation of this program.

This meeting also decided to conduct maintenance work of the damaged right embankment of Lal Bakiya and Bhakuwa Rivers. For the maintenance work of this embankment, the existing amount in the bank will be utilized as mobilization money and will later be reimbursed after the payment of the work by DWIDP.

13th Meeting (April 23, 2005)

It was decided to request various organizations including JVS to provide the following materials for the upcoming flood as pre-flood preparation.



Plastic tents – 100 nos
Dry food Items – 40 quintals
Medicine, cloths, cooking utensils and other necessary materials.

14th Meeting (June 10, 2005)

This meeting was conducted in the presence of JVS representatives.

The JVS representatives informed the committee that it would continue its support this year to the committee as it has done last year.

Request JVS and other agencies for the help of providing two boats in the committee for the rescue work during the upcoming flood

2.2 Present Activities of the Committee

During the period of this year's flood the committee was conducting the following activities in there areas:

- i. The committee is conducting eight numbers of Adult Education classes in the village. Interested people above the age of 15 years are attending these classes. This program was sponsored by District Education Office, Rautahat. One teacher is provided for every 20 students. The classes are conducted during the night time.
- ii. Department of Water Induced Disaster Prevention (DWIDP) Division No 3 has 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. Seventy five percent of this work completed till the date of field visit.
- iii. As part of the social service activity, 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.
- iv. This year the committee was handed over Rs 35,000 as a seed money for the flood management activities. The committee intended to invest this amount to feed the needy people during the flood. Some of the community people were requesting to distribute the cash amount to the needy people, which was denied by the committee. This was done to avoid possible disputes among the people.
- v. The committee members were mobilized for the rescue operation in the Lal Bkaiya boat capsized.



3. Immediate need of the community

The committee is in need of the following facilities for the upcoming flood in the area:

- i. At present there is only one boat in the community, which is taken from India on rent by a local contractor. The contractor pays IRs 3,000.00 per month to the owner of the boat. Previously there was one private boat owned by a committee member who was providing free of cost service during the flood to the flood affected families. This boat was damaged during the last year's flood.
- ii. The only boat taken on rent was overturned during this year's flood in the Lal Bakaiya River. At least 40-50 people were travelling on it, of which 20 people disappeared and the rest were rescued. Hence, the committee is trying to get at least two boats in their possession for the rescue operation.
- iii. ii) At present, the area is out of telephone service. Effective communication is necessary during the flood. Hence, a mobile telephone is necessary in the area. This phone can be a source of income for the committee during other months of the year.
- iv. People live in the top of Indian embankments during the flood. There is lack of raised ground in the area. Hence, the committee is preparing to construct Chautari (raised grounds) for temporary refuge in the area.
- v. People, particularly the women are facing difficulty during the flood due to lack of private toilets in the area. Raised toilets are necessary in the area during the period of inundation.
- vi. There was very low rainfall during the months of July and August. Also, the ring bund that was washed away by the last year's flood, was not maintained by the Indian Government. It is because of these reasons, the intensity of inundation was not so high in the Banjaraha village. The local people fear that the problems will aggravate after the bund is maintained by the Indian Government in the next year's flood.



4. Analysis of Institutional Capability of Existing Institutions

There are four basic activities, which are related with flood management, namely, prevention, preparedness, rescue and relief, and rehabilitation. Under each of these activities, there are a number of institutions involved as has been illustrated from the mandate of various institutions in the section above.

4.1 Preventive Measures

Department of Water Induces Disaster Prevention (DWIDP), Department of Soil Conservation and Watershed Management (DSCWM) and Department of Irrigation (DOI) are the three major institutions involved in the preventive measures. The preventive measures executed by the DWIDP and DOI are focused on river training activities. These activities are also largely focused on structural intervention in the river system. Although, the importance of non-structural measures like bio-engineering in river training and involvement of communities in the management of flood, has been identified as viable and cost effective options, these departments have not been able to incorporate these measures in their programs effectively.

DSCWM has been involved in preventive measures in the watershed and in the upstream area of the river systems. Its activities are largely concentrated on the use of non-structural measures like agro forestry, trail improvement, soil erosion reduction from the watershed. DSCWM also carries out structural intervention in river system such as check dams for preventing gully erosion, river bank protection etc. This department has good human resources capacity on carrying out non-structural measures but lacks such capacity in structural measures.

The experience of DSCWM in non-structural preventive measures has not been shared by the DWIDP and DOI, nor the experience of DWIDP and DOI in structural measures shared by DSCWM. Each of these institutions is acting in isolation with no coordination and sharing of experience among them.

4.2 Regulatory Measures

Land Use Management

Land use management is the key to flood management and reducing flood related disasters. Nepal has typically little percentage of about 18 percent of its total landmass useful for agriculture. Being agriculture-based society, the settlements are also concentrated inside the same area. These areas lie mostly alongside the bank of the rivers in hilly zone and in the Terai plain, which is prone to flooding. In the same area, the urbanization is growing. The flood plain and the marginal areas along the riverbanks are being encroached due to growing population pressures. There has been increasing trends of losses in terms of properties and lives due to these factors. It has been realized that some regulatory measures should be in place to regulate the human settlement and economic activities in the flood risk areas to minimize the magnitude of losses due to flood disasters.

DWIDP can formulate the required policy and other acts and regulation measures under the water resources acts. However, it does not have any control on land ownership and land use. The public land is under the control of the Ministry of Forest and Soil Conservation while private lands are under the control of the Ministry of Land Reforms and Management (MLRM). The MLRM has also the mandate to adopt regulation on the land use. In fact, the land use and land capability maps of Nepal were prepared long back but the regulation on the use of land has not materialized so far. A draft River Management Policy is under preparation under the leadership of the Ministry of Water Resources, which has put forward the concept of regulating land use in the flood prone area based on the risk involved. It will take a long time to have this policy and other acts and regulations in place. Even if the policy is in place, the institutional



mechanism to implement the regulation coordinating the line agencies in the three ministries is not present at least in the present institutional setup.

Housing Codes

Housing Codes are applied in a few metropolitan areas of the country. However, none of these codes address the aspects of flood management.

Flood Insurance.

The concept of flood insurance has not yet entered into the country and so the institutions are not geared for such activities.

Research Activities

Worldwide, it has now been accepted that researches based on physical and mathematical modelling of river systems are essential to plan and formulate flood management projects. The present institutional structures of DWIDP, DSCWM and DOI do not support such research activities. There is no unit in any of these institutions that is responsible for carrying out mathematical modelling. DWIDP has a physical modelling center but its activities are very limited which falls short of the requirement. There is no regulatory mechanism that makes modelling mandatory for project planning and implementation. There are, however, some graduate engineers in these institutions who have received master's level education and training in river management but their ability has remained unutilized.

4.3 Preparedness

Hazard Mapping

Disaster hazard maps increase the preparedness of the society and the related institutions in case of disasters. DNCMD has mandate to prepare disaster hazard maps, which includes flood hazards among several other natural hazards. Similarly, DWIDP has also a plan to prepare flood hazard maps which also includes landslide hazards. DSCWM also speak of preparing such maps. However, there has been no significant progress towards preparing any such maps. Hazard mapping activities have not been built in the institutional setup of these institutions. Therefore, it is difficult to get this process initiated. DNCMD does not have any technical human resources capacity for such mapping. DWIDP and DSCWM have some capacity but are not sufficient to catalytically initiate the process.

Awareness Training

Raising public awareness in fighting the flood disasters is also very important to minimize the loss due to flood disasters. DWIDP provides some training to the public related to disaster management. DSCWM also provides training in respect of conservation. DNCMD does not have sufficient institutional setup for such training. But these training are not oriented to the focused area where the disasters are most likely and their effectiveness are reduced.

Emergency Supplies

Although it has been realized that there should be ready stocks of critical emergency supplies located at various major centers in the country, such centers are non-existent. Institutionally, DNCMD is required to manage such supplies especially medicines, rescue and relief materials. Similarly, DWIDP has mandate for emergency works of fighting the flood. The department use to keep some materials such as gabion boxes, sand bags, stock of boulders at various locations. These materials are used in case of emergency flood. However, the stock of such materials is dependent largely on the availability of funds and the department does not have any predetermined program and allocated budget for such activities.



4.4 Rescue and Relief

The Chief District Officer's Office (CDO Office) seems to be instrumental in mobilizing resources such as police and military force at the site of disaster first to identify the seriousness of the disaster and then to carry out emergency rescue and relief operation using the security personnel, local resources and coordinating external governmental and non-governmental agencies. The CDO Office also acts as a focal point for CNDRC, and channels central and external resources whenever required. The CDO Office is preoccupied with many other activities within the district while at the same time it has to take care of all types of natural disasters and does not have any specialized personnel or unit for Rescue and Relief operation in professional manner. There is no institution at regional or at central level which can support the CDO office when need arises.

A separate institution having its own fleet of transportation on land and in air for use in emergency rescue and relief was a felt need since long. The CNDRC is supposed to act for this. This institution could house a fleet of specialized rescue and relief personnel, which could be mobilized on call from the site of disasters. But due largely to financial restraints, this endeavour has not materialized.

4.5 Rehabilitation

The rehabilitation operation is spread over a large number of sectoral line agencies and institutions. The government line agencies such as DOI, Department of Roads, Nepal Electricity Authority, and Nepal Telecommunication Authority do the rehabilitation of the damaged infrastructure under their respective jurisdiction. The rehabilitation of the affected people due to flood and landslides, which often makes them homeless and landless, is critical. The CDO Office in coordination with the District Revenue Office, District Land Reform and Management Office and other nongovernmental organization carry out rehabilitation works. The rehabilitation works is mainly focused on providing them some land for housing only, which is not enough to grow food to sustain. There are no abundant jobs for these people. Therefore, the affected people are to leave miserable life. There are however some NGOs that provide job trainings to these people. There is neither an institution nor a clear government policy to address the need of the affected people.



5. Summary

There are two types of institutions having stakes in the flood management in Nepal, namely policy and coordinating institutions and implementation institutions. The first types of institutions are the national level commissions and ministries and the second types of institutions are departments under the ministries and local bodies and non-governmental organizations.

The Ministry of Water Resources, Ministry of Forest and Soil Conservation, Ministry of Home Affairs are the leading institutions, which have the highest stakes in the flood management in Nepal.

The responsibilities, which are required in various aspects of flood management, are spread over a large number of institutions under different ministries. These institutions mostly are working in isolation with little or no coordination among them and often having overlapping mandates.

The institutions involved in preventing measures seem to have enough of human resources although they are constrained with the financial resources. The software part of the flood management such as preparedness, raising awareness, rescue and relief, and rehabilitation are weak both in respect of institutional capability as well as available financial resources.

The Chief District Officer's Office (CDO Office) seems to be instrumental in mobilizing resources such as police and military force at the site of disaster first to identify the seriousness of the disaster and then to carry out emergency rescue and relief operation using the security personnel, local resources and coordinating external governmental and non-governmental agencies. The CDO Office also acts as a focal point for Central Natural Disaster Relief Committee (CNDRC), and channels central and external resources whenever required. The CDO Office is preoccupied with many other activities within the district while at the same time it has to take care of all types of natural disasters and does not have any specialized personnel or unit for Rescue and Relief operation in professional manner.

Lal Bakaiya River Flood management Committee, formed under the Water Resources Regulation, 2050 is working effectively in the Banjaraha VDC of Rautahat district despite of the limited resources available with them. The committee is trying to follow the pre-flood, during flood and post flood activities described in the manual but due to lack of proper trainings, the committee is not functioning to their full capacity.

Other services in the area such as informal adult education, minor contracts for maintenance of the damaged embankments, canals can be done effectively by the committee. The Financial Administration Rule, 2056 has provision to award contracts amounting up to Rs 2.5 million, to the users' committee. Hence, all stakeholders of HMG/N should prefer to award such contracts to the committee. The committee is aware of such provisions in the rules and regulations of HMG/N. This will encourage the community to participate in the construction works as well as will help to raise some fund for the community.

Community organizations should have some rescue equipments such as boats, tents, phones, medicines, water purifying materials etc. of their own to use at the time of need. At present the committee does not have any such materials in their possession. This is only possible through outside assistance. Representation of women and disadvantaged groups of the community in the committee is important. However, in the terai regions, their involvement in the flood management activities is very less which has to be further encouraged.