SYNTHESIS OF MANUALS ON COMMUNITY FLOOD MANAGEMENT IN BANGLADESH, INDIA, AND NEPAL

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1. INTRODUCTION

Preparation of community-based flood management manuals by the participating institutions—Bangladesh Unnayan Parishad (BUP), Dhaka; Institute for Resource Management and Economic Development (IRMED), New Delhi; and Jalsrot Vikas Sanstha (JVS), Kathmandu—for the respective countries, viz. Bangladesh, India, Nepal; and a synthesis of the three country-manuals have been key deliverables of the Pilot Phase-2 of the project "Community Approaches to Flood Management: Joint Activities to Reduce Flood Vulnerability in South Asia (Bangladesh, India, Nepal)." The pilot-project is being carried out by the above mentioned three institutions under memoranda of understanding with the World Meteorological Organization (WMO). The pilot-project is part of the activity: "Associated Programme on Flood Management" that is being jointly carried out by WMO and the Global Water Partnership (GWP).

The country-manuals have been prepared on the basis of information provided by and in consultation with selected flood-prone communities in the three countries (two communities in Bangladesh, three in India, and two in Nepal). Through field research including Participatory Rapid Appraisal (PRA), it was first ascertained which activities the people themselves undertake, individually and collectively, at various stages of floods—before, during, and post—with a view to reducing losses, damages, and suffering caused by floods. Once drafted, the manuals were reviewed by the selected communities during workshops and were subsequently adopted. The outcomes were then taken into account in finalizing the manuals. The manuals, if implemented in various flood-prone areas, will help improve the flood management capacity of the communities concerned and reduce their flood vulnerability. Wide replication will also, through a learning process, contribute towards improving the manuals further, which are expected to serve as a reference in an effort to spread the community-based approach to flood management involving other communities and eventually other countries.

The manuals provide detailed lists and information on communal organization and activities, actions and suggestions at different stages of floods. The manuals also contain guidelines for strengthening the capacity of the communities to undertake flood management activities in a coordinated and more effective manner. This synthesis is based on the three country-manuals. It should, however, be mentioned that the synthesis provides generalizations. Specific conditions in a country may require specific measures, which cannot possibly be generalized. This synthesis, in fact, highlights a set of key common responses, which provide

a broad framework, with reference to which specific measures for particular situations in different countries will need to be worked out taking into account the particular situational contexts.

The measures outlined in the country-manuals cover a wide range of issues, which provide a comprehensive enough basis for the replication of each country-manual on a wide scale in the country concerned. It may be necessary to make adjustments to certain measures outlined in a country- and community specific manual, when applied to different areas of the particular country as there may be peculiar circumstances prevailing in certain areas with regard to the environmental and socio-economic situation as well as different types of floods i.e. riverine floods or flash floods

2 BACKGROUND

Flood is a common phenomenon in the Ganges-Brahmaputra-Meghna (GBM) region. It occurs during the monsoon in all the three regional countries that this study focuses on, i.e. Bangladesh, India, and Nepal. Although floods have been occurring since time immemorial, the type, intensity, and impact (i.e., losses/damages caused and sufferings caused but also benefits generated in terms of alluvium deposits in the soil, fertilization and ground water replenishment) of flood vary widely within and across the countries. Certain key dimensions/characteristics of floods in the countries are outlined in Boxes 1–3. Box-1 lists the flood zones in India, which are flood-affected to various degrees on a regular basis, and severely from time to time.

Box 1: Flood Zones in India

The four major flood zones are:

- The Brahmaputra and Barak basins that comprise the States of Assam, Arunanchal Pradesh, Meghalaya, Mizoram, northern parts of West Bengal, Manipur, Sikkim, Tripura, and Nagaland.
- The Ganga basin, served by numerous tributaries such as Yamuna, Sone, Ghaghra, Gandak, Kosi, and Mahananda, that comprises the States of Uttaranchal, Uttar Pradesh, north Bihar, and south and central parts of Haryana.
- The basins of the northwest rivers such as the Sutlej, the Ravi, the Beas, the Jhelum, and the Ghaggar that cover the States of Jammu and Kashmir, Punjab, and parts of Haryana and Rajasthan.
- The basins of Central Indian and Deccan rivers that include the following rivers: Narmada, Tapi, Mahanadi, Godavari, Krishna and Cauvery, and stretch across the entire central and southern India. Of these, the State of Orissa is the most flood-prone.

On average, between 20–30 percent of the land area of Bangladesh and about 25 percent of the cultivable land in India are inundated annually during the monsoon. Since 88 per cent of the territory of Bangladesh falls within floodplains, 'normal' floods, known as 'barsha', are perceived to be harmless, while 'abnormal' floods with high water levels inundating large proportions of the floodplains for a fairly long time is known as 'bonnya' (moderate to high floods). Sometimes, exceptionally severe floods, known as 'plabon' occur which devastate livelihoods of people and cause havoc to the national economy. These floods are generally river-induced, often triggered by monsoon rainfall throughout the GBM region. Besides, more than 49,000 sq. km. area of Bangladesh is influenced by the Bay of Bengal tides. Certain basic features of floods in Bangladesh are summarized in Box-2.

Unlike India and Bangladesh, Nepal mainly experiences flash floods. The usual duration of such a flood is about 30 hours. However, the sudden occurrence of flash floods causes significant damages in terms of land erosion and landslides as well as to houses and physical infrastructure and crops. The areas of Nepal that are particularly vulnerable to floods are shown in Box-3.

Box 2: A Few Characteristic Features of Floods in Bangladesh

- Annually, some 1,360,000 million m^3 of discharge in Bangladesh originates outside the country. Between 80 and 85 percent of this discharge is generated during June-October.
- Bangladesh in fact has to drain the runoff of an area which is 12 times larger than its size. Only 7.5 per cent of the combined catchment areas of the Ganges, the Brahmaputra, and the Meghna river systems fall within Bangladesh.
- The amount of water that passes over the country can create a pool having a depth of about 9 meters over the country's entire geographical area.
- Besides water, the rivers also carry high loads of silt from the steep and denuded upstreams. Available estimates indicate that 1.2 to 2.4 billion metric tons of sediments are carried annually to the Bay of Bengal. The combined annual sediment load of the Ganges and the Brahmaputra is estimated to be 1.185 billion metric tons.

Box 3: Floods in Nepal

Low lying areas of Nepal, like the Terai, the inner Terai, and the valleys are inundated and fields are filled with sediments every year due to floods during the monsoon. Nepal has experienced in the past numerous floods and landslides in the eastern and central regions.

The major rivers include Sapta-Koshi in the eastern, Gandaki (Narayani) in the central, and Karnali and Mahakali rivers in the western parts of Nepal. All these rivers originate in the Himalayas, grow larger as they are fed with snow-melt water, pass through valleys, emerge out of the mountains on to the plains, and finally merge with the Ganges and its tributaries. The rivers are more influenced by snow-melt and, therefore, exhibit significant flows even in winter months. But the rivers easily get flooded when they receive rainfall runoff in the monsoon. The steep slopes of the glacial mountains generate high kinetic energy that devastates the plains in the valleys.

In the higher mountain areas, floods occur due to rapid spring melt and in catastrophic events such as Glacier Lake Outbursts. Such glacier-induced floods are highly unpredictable and damaging. Flooding in hill valleys often occurs because of sudden cloudbursts, localized in nature, with incessant rains that may last for days. Heavy rains also cause landslides, which sometimes block the course of the rivers. These “temporary dams” breach later, causing extensive damages to physical infrastructure and agriculture in populated areas. Since no prior warning can be issued and people do not usually get any time for preparing themselves, such floods cause havoc to the people and the economy.

Floods affect livelihoods of people, farming practices, infrastructure, communication systems, and public health. In all the three countries, agriculture is the dominant occupation. Different types of crops and cropping patterns are adapted to the flooding regimes defined by the time of occurrence, type of flood, and flood intensity. The floodplain agriculture and its major farming practices are largely affected in all the three countries. The fisheries, aquaculture and livestock sub-sectors are also severely affected, which often require major rehabilitation activities.

3 FLOOD MANAGEMENT: THE FRAMEWORK AND RESPONSE ACTIVITIES

Flood management activities may be of three broad types: (i) advance preparation (ii) real-time responses and (iii) post-flood rehabilitation. Preparation relates to such activities as are conceived for execution during a flood and where preparations are made in advance. The purpose is to reduce flood-related vulnerability of households and communities. Real-time responses aim to reduce damages

and losses as a flood is understood to be imminent and, then, as it sets in. As flood recedes, the rehabilitation phase begins.

3.1 Flood Preparedness

In order to begin the preparedness process, people need to understand that a flood is coming and how intense it might be in terms of areas that will be affected as well as the depth of inundation and the estimated duration of the flood event. People have been traditionally doing their own flood forecast by looking at the behavior of the rainfall, water levels in rivers, behavior of snakes, frogs, ducks and other animals. These methods are empirically weak but quite often no technically sound flood forecasting and warning activities are in place. But, even though such activities are in place in many places now, quite often flood forecasting messages do not reach the affected population on time and in terms and language they understand. Therefore, they still have to combine their traditional knowledge with the information they receive from the bulletins aired by media, radio in particular, from time to time during flood seasons. Such bulletins are often in technical-speak and cannot be fully grasped by the ordinary rural people. People often seek information from the chairmen or the members of the local elected bodies, local knowledgeable persons and officials but do not often receive satisfactory information. In the light these circumstances a considerable degree of uncertainty remains. People are, therefore, constrained to rely more on empirical methods as indicated above. The conclusions have sometimes been right; but not so at other times regarding both timing and intensity of floods. Lack of timely and effective flood forecasting and warning, disseminated in local languages, remains a major problem.

In the community approach, flood preparedness, therefore, includes the following activities:

- Formation of a community level organization named Community Flood Management Committee (CFMC), or Flood Management Committee (FMC) as in India, to manage floods. (Henceforth CFMC will be used as the common term)
- Assessment of various requirements to reduce flood vulnerability and to enhance the capability of the community to reduce damages, losses, and sufferings of the people
- Training for capacity building at community and individual levels, as appropriate
- Planning for rescue and evacuation, flood proofing and flood moderation
- Organizing drills to facilitate effective evacuation
- Making provisions for addressing unforeseen eventualities
- Monitoring of the proceedings with respect to various activities undertaken and reporting
- Managing information for future reference

3.1.1 Formation of the Community Organization

Prior to the activities undertaken in the context of the pilot-project, most of the activities carried out by the people themselves during a flood were based on individual initiatives. If these activities are carried out in a community-based organized manner at community level, risks and vulnerability due to flood can be substantially reduced. For that to happen, community institutions are needed for collective action-planning, implementation, and monitoring of preparatory tasks and response activities both during and post-flood phases. Community action will start with the community mobilization to strengthen the organizational bases for local flood mitigation initiatives. In the past, people were hastily organized, if at all, and that too primarily for the construction of physical facilities or often unplanned evacuation and rescue activities. Under the proposed community approach, the focus is on community involvement in all phases including awareness-raising, individual and community capacity building, planning, and implementation.

Prior to the formation of the CFMC, information needs to be assembled and analyses prepared concerning the importance of community institutions, the role and responsibilities of the CFMC, the CFMC formation process and how community members as well as resources may be mobilized. The added benefits of the community-based approach should be identified, and the compiled information base should be disseminated to the concerned local-level authorities, local political leaders, teachers, community leaders, and others concerned. It is necessary to organize meetings and dialogues with the relevant communities regarding the formation of the CFMC.

In order to implement these activities effectively, facilitation by a catalyst organization may be needed. Depending upon specific situations, there can be a number of institutions facilitating this process; but this has to be done in a coordinated fashion. The concerned local government institutions, various line agencies of the central government (including police, agriculture, disaster management), local chapter(s) of the International Red Cross/Crescent Society, and relevant NGOs can play appropriate roles.

Depending upon the specific situation of the affected community, there can be a number of ways of forming the CFMC or FMC as named in India.

a. Flood-prone communities may establish the CFMC, with the chairman (President in India) of the local elected body, which should not be above the union/panchayat level, as the chairperson and representation from the local elected body, affected groups, including women, ethnic groups, teachers, local business leaders, and other local groups and knowledgeable persons.

b. Alternatively, the immediately concerned local government may establish the CFMC, with representation as above.

Initially, an Ad-hoc Committee (AC) (comprising of, say, 7 to 9 members[1]) may be formed to carry forward the process of the formation of the fully-fledged CFMC.

[1] The actual number to be worked out by the Community itself.

The AC will work with the organization(s) assisting the community in flood management to get things clarified properly before the formation of the CFMC. It will draft or review the constitution of the committee if a draft may be provided by the main facilitating organization. The AC, with assistance from the facilitating organization(s), may conduct discussions and interactions with the affected communities, local leaders, teachers, women, and different ethnic groups as part of the preparatory steps.

The CFMC that will eventually be formed will include local leaders, women, representatives of ethnic groups, representations of local elite groups, agriculture/ health care officials, teachers, representatives of local NGOs and CBOS. Among others, it should be inclusive of all stakeholders in a representative manner . There may be an Advisory Committee with people from line ministries and local government, senior citizens, and so on, who may provide guidance and facilitate linkages with sources of assistance as may be required. If the situation demands, the CFMC can appoint Task Committees. General activities of the CFMC are outlined in Annex-1.

3.1.2 Assessing Needs and Capability of the Community

In order to prioritize various activities to manage floods, a community should know who are the most vulnerable; what their needs will be during a flood, which will of course depend on the intensity and duration of the flood; what do they usually do in managing the impact of flood, what the needs are in relation to improving their capacity as well as that of the community as a whole, of which they are a part, and the biophysical, infrastructural, and socio-economic conditions of the area under consideration, and other relevant aspects.

Mapping of resources and services available at the local level is necessary to possibly avoid flood disasters. Mapping of resources such as cultivable land, forest, grazing land, elevated areas and settlements should be made by the CFMC with the help of the facilitating and other local-level organizations. Similarly, a detailed inventory of social infrastructure such as schools, health posts, public/ private ponds, tubewells, public sanitary latrines etc. should be prepared. These maps and inventories will be helpful in assessing the risks and vulnerabilities facing the community as well as in mitigation planning.

A local-level flood risk map should be prepared, clearly identifying flood vulnerable zones within the area as well as elevated areas to safeguard livestock, grains and for evacuation purposes together with the indication of safe escape routes to such areas. The flood risk maps should be updated periodically as may be deemed necessary based on the nature and severity of recurring as well as extreme floods. The list of organizations which conduct community-based flood management activities in particular areas and their contact addresses should be updated periodically. The CFMC would coordinate these activities in cooperation with the

local-level organization that may be in a position to extend assistance in this regard.

3.1.3 Organizing Information Dissemination and Training for Capacity Building

Once the CFMC is in place, it should focus on increasing the community's capacity for managing floods by raising their awareness and by organizing appropriate training activities. Information dissemination is the most powerful tool for public awareness. Information makes people aware about the potential danger from floods and the training provides knowledge to communities to organize flood preparedness measures to cope with flood hazards. The CFMC should inform the community of its activities, make them aware of the likely flood situation and possible flood mitigation measures. Information can be disseminated to the community in several ways, some of which are:

- Regular informal discussion (i.e., courtyard talk programme) in the community
- Distribution of pamphlets, posters, and other material
- Raising awareness through mass media (radio bulletins, television, newspapers etc.) in local languages
- Exhibition of drawings, picures and documentary films and slides for the public
- Inclusion of the Flood Management Manual in secondary school syllabus and regular adult awareness training events
- Poetry, debate, and essay competition in the schools on flood related issues
- Workshops at appropriate local levels involving community organizations, with the assistance of local government

Training would provide the people with knowledge and raise their capability to act. The CFMC would discuss the need and the manner of organizing training activities with the primary stakeholders/beneficiaries. There can be several types of training that the community may require, which may include the following:

Training for Preparedness

- Developing local flood warning methods and understanding flood information
- Construction methods for flood proofing of houses and the re-enforcement of local embankments
- Flood resistant crops and their cultivation
- Preparing to face floods
- Getting organized for putting the planned activities into practice when a flood hits

- Office management and record keeping training for CFMC members and Task Committees (if appointed)

Training for Flood Response Activities

a) Evacuation, rescue, and search methods such as boating, swimming
b) Management and distribution of relief materials
c) Maintaining health (safe drinking water, medicines for common flood diseases) and hygiene during flood situation in situ and in flood shelters/high places where people may move to
d) Food storage and handling during a flood
e) Food stocks for people and livestock as well as methods to safeguard seeds and grains
f) Evacuation of endangered areas

Training on Post-Flood Rehabilitation and Reconstruction Activities

- How the community may organize itself to help one another in getting back to their normal lives together—e.g. returning to their homes if evacuated; rehabilitating/rebuilding the houses, as necessary; putting back their economic pursuits such as agriculture, small business, and job seeking into functioning again; and seeking assistance from appropriate sources (e.g. agricultural loan from the Krishi Bank, primary agricultural credit society etc.).
- Training on income generation activities such as establishment of nursery, apiculture, gabion wire netting, local handicraft, sewing/cutting and weaving training for women, candle manufacture at local level, and other appropriate activities depending on opportunities in the particular areas.

The CFMC should make a list of all local or locally working regional/national institutions that can provide assistance in training and information dissemination and may seek their assistance as appropriate. Training may be provided at different times during the year, as may be agreed by the community members.

3.1.4 Planning Interface with Government

In order to reduce the risks associated with floods, certain key structural interventions are necessary. These would include removal/reduction of drainage congestion and river training to facilitate drainage and flood protection or flood-proofing of infrastructure. While the emphasis of the community approach to flood management is on non-structural measures, the community cannot remain totally oblivious of the need for such interventions. In respect of these activities, communities can assist by participating in planning and by monitoring the

implementation to ensure that things are done as planned. In planning the activities of the community, the CFMC should, therefore, keep this perspective in view. Once the planning exercise has been completed, the CFMC should engage itself in dialogues with the community members for both awareness building and responsibility budgeting along with the finalization of the plan.

There would be several aspects of the plan, the implementation of which might be beyond the scope of the community. These would require cooperation and financial support from government. Hence CFMC may liaise with local and higher level government authorities in order to both keep them informed and enlist their assistance as may be necessary. It should also liaise with the central/state (in India) government agencies, which are responsible for structural measures, for that part of the plan which relates to community assistance in planning and in monitoring of the implementation of the structural measures within a particular area.

3.1.5 Monitoring and Reporting

The CFMC, should monitor, perhaps through a task committee set up for the purpose, the implementation of various tasks it has initiated at all levels (pre-, during, and post-flood situations) in order to assess if the tasks are being performed properly and efficiently and whether intended beneficiaries are getting what they should. Monitoring also helps in identifying what further or different actions are needed, if any, to secure desirable results. The monitoring results should be properly documented to provide a basis for any modification to be introduced and to learn from the successes and failures.

3.1.6 Making Provisions for Emergency Situations

Flood occurs every year in certain parts of each of these countries, which, on average, may be moderate but, may affect the local the community members, partly or fully. Deluges occur from time to time, which require major pre-, during and post-flood flood management operations. Hence, some of the necessary relief materials should be collected and stockpiled in advance for meeting emergency needs of severely affected people. The CFMC may through consultation with the local people determine the size and contents of the emergency basket. A variety of relief materials may be required, as listed below.

- Boats and equipment to facilitate emergency evacuation, particularly of pregnant/lactating women, elderly people, and children, as needed;
- Supplies of tents, plastic sheets, etc. to physically relocate the evacuees in flood shelters and high grounds;
- Storing of common medicines and other accessories for emergency health care;

- Emergency food supplies for the most vulnerable;
- Cooking utensils, stoves etc;
- Energy supplies for lighting and cooking—lantern, torches, dry wood, kerosene, LPG gas cylinders; and
- Preparedness for emergency communication, information dissemination and networking—e.g. supplies of hand-held mikes and cell phones.

For those who can make their own arrangement, the CFMC should arrange proper training, especially to the women, on how best to store supplies of necessary items.

It should also be borne in mind that not all the members of the community would need assistance nor could be provided assistance from the resources of the CFMC. Some of the people would be more in need than others. The most affected should be assisted first. Therefore, interactions with the people are needed to identify those who can make their own arrangement and those who cannot do so and provisions should be made considering the needs of those who cannot make their own arrangement. Assessment of needs, as outlined above, would help identify the likely most needy, not so needy, and so on.

3.1.7 Drills

One of the major tasks in capacity building of flood vulnerable communities is to organize periodic (say, once a year, preferably during early monsoon) evacuation drills to safe grounds on marked escape routes, participation in which will enable local people to understand why they need to do something and how the community can work in a coordinated fashion for the best possible results from the flood management activities planned to be undertaken during a flood.

3.1.8 Managing Information for Future Reference

Flood relief activities of the past are, in most cases, criticized for ineffective management. Relief-distributing agencies come to help people only after flood losses and after people have sustained damage and loss of property. The situation can be better managed if information related to what had been done with what success and failures collected from previous floods are available to currently concerned people and agencies involved in relief and rehabilitation work. In this way it can be ensured that a community-specific knowledge base is gradually being built and maintained by the local people.

The CFMC in coordination with various participating organizations should collect the relevant information on forecasting and warning as available to the people; flood preparedness; crop management; and before, during, and post-flood situations the way they were sought to be addressed. The information on the damages and

losses caused by individual floods including information on the local occurrence, depth and duration of inundation or the occurrence and extent of flash floods is very important for reviewing preparedness and action plans. The CFMC should keep record of all the flood events and the associated damages and losses caused together with the activities conducted by the CFMC in response to the flood. The records should be in writing. It will be a good practice to send a copy of these records to local administration for safe keeping for future reference.

3.1.9 Resource Mobilisation

Activities to be performed by CFMC would entail some amount of expenditure for which funds should be available at the disposal of CFMC. For this purpose, a community pooled resources may be created. In view of their poverty, the flood affected people may be expected to contribute a small percentage only, say 20 percent of the pool, either in cash or in kind depending upon the financial ability of the households while a major portion (say about 80 percent) of this amount should come from state/central government, as the case may be. The economically weaker section of households may, however, offer their labor in the re-construction work free of cost in lieu of cash contribution. Funds can also be raised through donation under 80G of the Income Tax Act in India. The funds thus procured and spent should be audited in the same manner as other funds of the local government are audited.

3.2 Response to Floods

Timely responses, as planned, should be implemented prior to, during, and after a flood event. People of flood-prone areas of the regional countries have been responding to floods during all the three stages on their own, which may be considered household-level coping mechanisms against floods. However, prior to the pilot-project intervention, lack of organizational guidance and of coordination does not allow pooling of limited capabilities of the people, leaving the outcome at random. It is envisaged that these individual actions, if coordinated at the community level and if the community capacity is strengthened through such activities as awareness building, training, and networking, can generate an effective grassroots-based flood management approach. Key elements of this approach are outlined below.

3.2.1 Pre-Flood Responses

a. CFMC-level responses

When the flood season is imminent, the CFMC may organize constant Flood Vigilance Task Activities (FVTA) to check on how the flood is developing (i.e. to assemble and review available information on flood forecasting and issue warning

to the people. The CFMC should keep record of indicators (for example, water level relating to a landmark, say, on an electricity pole or a tree) observed, the corresponding warnings issued and the actual effect that take shape in terms of mobilization of people and resources in response to the evolving situation. The data bank created thereby over time can be a very useful background material in dealing with future floods.

According to the forecast degree of severity of the flood, warning should be issued, giving the likely severity level to different parts of the area. Warning concerning different levels of severity should be given out along with actions that residents in relevant parts of the area may need to undertake. The likely actions may include staying alert, keeping one's belongings and valuables at higher elevations, preparing for evacuation, evacuation as deemed necessary, and relocation to a safe refuge.

The CFMC may allocate specific responsibilities such as assemblage of information and issuance of warning to particular members responsible for FVTA. There are several modalities of issuing warning to choose from:

By showing flags (hoisting different colour-coded flags) on bamboo poles or by hanging flags from tall trees at open spaces so that these can be seen from all sides of the area. During the phase of preparation and drill programmes, people should be apprised of which colour of the flag means what.

From people to people (i.e. warning may be issued to people in public places including markets) or by using up-stream flood messengers

- By playing drums, making the announcement as people gather
- By using loud speakers/mega-phones
- By using local FC/FM radio, cell-phones messages, walkie-talkie sets, HF/VHF wireless sets, if available

Endeavour should be made to use all or several of these methods in order for the warning to reach the maximum number of the likely affected people. People may also pass the message by word of mouth.

As the warning is issued, the CFMC should also contact the concerned agencies outside the community to inform them about the evolving situation for possible help towards rescue and other tasks as may be needed.

To improve the situation, the flood affected community may undertake the following key activities when a flood is imminent to minimize negative flood impacts.

- Activate the 'Community Flood Management Committee' (Annex-I). In case, the CFMC does not exist, form such a Committee and assign responsibilities/duties to the members, individually and/or in small task forces.
- Quickly assess the needs of the poor, the disadvantaged, females, children, and the elderly in the community. Based on this assessment, quickly prepare

plans for evacuation, relocation, provision for relief for the most vulnerable, arrangement for safe drinking water, sanitation, and other requisites.

- Identify community flood shelters and high open spaces (where tents can be erected) based on their accessibility, location, facilities, and capacity etc. Make prior arrangement with the authority of the facility (e.g. school building, community centre) so that the premises may be handed over to the CFMC for the duration of the flood for taking necessary steps.
- Identify and arrange the safest means and prepare route-plans for evacuation/ relocation to those designated flood shelters. Discuss these matters with the community members and make them aware of the shelters and the evacuation facilities.
- Ensure that an adequate number of boats are maintained in working condition, and are kept at the disposal of the CFMC to facilitate relocation of the elderly, children, and lactating/pregnant women on a priority basis.
- Prepare the designated flood shelter(s) and high open spaces by (a) cleaning up the premises, (b) preparing large-sized cooking facilities, (c) sinking afresh or elevating the existing tube-wells above flood danger level (Annex-II), (d) making smaller rooms available for health care check-ups for lactating mothers, children, and adolescent girls; storing medicines and food items; and storing fire-wood/biomass and/or kerosene, and lanterns for lighting.
- It is necessary to keep a vigil on flood embankments (if any) and take precautionary measures so that breaching may be avoided. Sesbania and other fuel wood can be planted along the bank of an embankment so that it does not get eroded easily by the floodwaters. It is also necessary to regularly check on the activities of rodents that affect the stability of embankments.
- If it is considered necessary, seedbeds may be prepared at the initiative of the CFMC or by individual households on floating platforms made of banana stems or bamboo.

Preparation for Fish and Vegetables Culture

- Make cages, using low-cost material, collect fish fingerlings and begin ‘cage fish culture’ (details are provided in the manual of Bangladesh).
- Adopt technology of pen culture through nets or raising boundary of the pond to prevent fish being carried away by flood water.
- Where water hyacinth (hydroponics) is available, blocks may be prepared by piling up several layers of water hyacinth to produce floating beds on which vegetables may be grown.
- Raise aquaculture crops like makhana (euryale ferox) and singhara to generate income during flood.

- Floodwaters would rejuvenate aquatic environment in dry ponds in the neighbourhood, and if such ponds are available in the locality, identify those well ahead of the flood season, take layers of soil from the silted up bed and use thesa to increase the height of the plinth, and encircle the pond with nets and practice fish culture.
- Compartmentalize poldered areas along the coastal zone, which would enable various activities that can only be done in an aquatic environment;

Preparation in terms of Crop Selection, Alternative Practices, Livestock and Poultry by the Households and the Community (upon receipt of flood warning)

There may be little scope for agricultural preparedness at the community level in absence of community based organizations like agricultural cooperatives or CFMC. To serve the common interest of the community members. CFMC may persuade farmers to undertake certain activities together that would enable them to better safeguard their livestock, agricultural machinery and equipment, unutilized fertilizer and seeds, which may include the following:

- Make arrangements for safe storage of agricultural equipment, fertilizers and seeds, preferably in a common place where vigilance is possible, even during high floods;
- Put name tags or signs and symbols, preferably in permanent (water resistant) ink, on each of the items to be stored in a common storage; and
- Make arrangements such as organized vigilance activities to avoid theft and mishandling.

Preparation for Security and Public Order

- Form and activate a task force of volunteers to maintain security of the flood shelter(s) and to keep the peace and public order
- Prepare to combat diarrheal outbreaks
- Establish stocks of packets/sachets of oral saline for re-hydration to meet emergencies during outbreaks of diarrhea (Annex-III)
- In case of paucity of funds, oral saline can also be prepared at low cost, through a participatory process (e.g. by engaging local school children). Prepare a stock of 300~400 packets of oral saline (Annex-IV) and store those in a dry cool place to meet an emergency

b. Household-level responses

Households may, in consultation with the CFMC and with in line the community level preparations as far as possible, undertake various steps. What a household can do, though, depends on its capacity. But the households must participate in

the CFMC activities and top those up by doing whatever they can by themselves. These would include the following:

- Keep an eye on available sources of information regarding flood warning;
- Elevate, where possible, the plinth (*bhiti* and/or *bhita*) of the homestead;
- Change, if possible, the weakened pillars/stilts;
- Raise, where possible, the level of the plinth of the cattle-sheds;
- Collect pipes for tube-wells and raise their level before issuance of flood warning;
- Prepare elevated stages to store food (preferably dry food such as *chira,* puffed rice and molasses), fuel (kerosene, biomass), fodder, and family assets and valuables;
- Refurbish, if required, the family boat(s), if any;
- Collect carbolic acid from a dispensary and place it in small bottles around the house, preferably at doors and windows (in order to avoid snake bite);
- Raise the level of sanitary latrines and, if possible, connect latrines with the raised house by a makeshift bridge (locally known as *shanko* in Bangladesh);
- Keep a few sachets/packets of oral saline, sugar, salt, water purifying tablets, emergency first aid material etc. in a basket hanging from the ceiling/roof;
- Collect several stems of banana plant and make raft(s);
- Prepare portable earthen stoves to face emergency;
- Practice 'cage fish culture' and/or 'floating vegetable gardens';
- Work with the CFMC in making strategic decisions, based on available information, as to when to evacuate (if necessary), where to go, how to go (modality and transportation means), what to take along and what to leave behind, who should be left behind for surveillance etc.;
- Prepare to safeguard agricultural production; a host of methods are available for country-specific situations, a few of which are: harvesting of premature standing crops of certain kinds (viz. vegetables, spinach, maize etc.), which may be destroyed by flood, to reduce the loss burden; and taking such steps as seed preservation for expediting agricultural activities following recession of floodwaters;
- Preserve seeds as much as possible to meet the household seed requirements after the flood. Seeds of the following crops may be preserved: paddy, wheat, corn, millets, pulses, oil, and potato;
- Establish seedbeds in flood free areas, if possible. Several households may join hands for mutual benefit by sharing the costs of seed procurement and the preparation of flood-free seedbeds;
- Raise the height of the banks of the household ponds which are at risk of inundation by flood water to protect fish from escaping. At least, put a fence

with tree-branches and nylon nets firmly attached to the surface of the banks for the purpose;

- If raising the banks or putting in fences becomes impossible, catch the fish prematurely and sell the catch to recover partial cost of production;
- Hang seed pots on the ceiling of the house and/or on a tree or keep seeds in the houses of relatives who are located on high (flood free) land;
- Cultivate vegetables and greens in raised lands ('dhibees') within the homestead to avoid being their destroyed by flood waters up to a point; and
- Cut old and weak trees which have greater chances of being uprooted due to flood and may cause casualties.

3.2.2 During-Flood Responses

a. Enduring Floods

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 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), the 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 tress to facilitate quick and safe relocation.

Improving Housing Condition

- Build makeshift platform (within the house) and put perishable items on it to avoid submergence.
- Protect the house from being eroded by wave activity by creating a protection belt arount it through bio-engineering (use '*dhol-kolmi'r jharot*' or bamboo sticks/jute sticks, and such other devices).

Food and Drinking Water Storage and Handling

- Safeguard perishable food items, cooking fuel, and valuables from submergence by placing them on elevated platforms or by hanging them from the roof.
- Use tube-well water if it is not contaminated, including by arsenic; otherwise, purify water before drinking (Annex-V).

Nutrition Supply

- Eat locally available varieties of spinach and vegetables.
- Use pre-processed dry food with sufficient amounts of water in order to avoid dehydration.
- Use spirulina supplement drinks to provide extra energy.

Maintaining Healthcare and Hygiene

- Keep a watch on the health condition of each family member. Transfer the sick to the nearest healthcare centre.
- Endeavour to provide drinking water, fodder, and animal feed to livestock and poultry, as needed.
- Avoid defecation in open-water to avoid polluting water, which creates health hazard. Try to use sanitary latrine.
- Household sanitary latrines should be located on raised land to prevent flood water submerging it as much as possible as flood water rises.
- Keep the homestead sanitary latrine connected with the house by making a makeshift bamboo bridge.
- Use oral saline when there is an outbreak of diarrhea. If deemed necessary, quickly transfer the patient to the nearest hospital/healthcare facility.
- Give aspirin if a scorpion bites or put ice on the sting, if possible, or use calcium tablets or powdered eggshells to minimize allergic reactions.
- Keep carbolic acid in small bottles (mouth remaining open) hanging on the outer sidewalls (out of reach of children) to avoid snake invasion and snakebites.
- Control house flies by using deltameturin and permathrin around the places of cooking and eating.

Safeguarding Agricultural Production

- When water is receding from the flood affected areas, fruit trees tend to fall due to the soil becoming soft as a result of flood water impact. Efforts must be made to prevent falling of the trees by providing support using bamboo

poles. If necessary, fruits may be picked or trees pruned following proper procedure; guidance may be available from the nearest Agriculture/Forest office. After the soil dries up, trees may be fertilized and nursed back into health.

- Enhance family's nutritional status by planting fast-growing vegetables in the homestead gardens.
- In case of delayed recession of floodwaters, efforts must be made to make the best possible use of land in the remainder of the season in accordance with available local options.
- Throw tree branches into fish-culture ponds so that the fish may feel safe and do not leave the ponds .
- Safeguard livestock and poultry from submergence by placing them on elevated platforms and rafts.
- Provide water, feed, and fodder to livestock and poultry on a regular basis
- Regularly assess the health condition of the domestic animals and birds and arrange for vaccines from local veterinary doctors.

Maintaining Mobility

- Create temporary bamboo bridges (as described earlier) to connect the households with roads that are not submerged in order to maintain mobility.
- Keep a boat or a raft handy for maintaining communication, if possible, especially for transferring sick and/or the elderly to the safer places.
- In inundated areas, mark safe passages with sticks to avoid stepping into deep ponds with the risk of drowning.
- If finances can be mobilized, procure one engine-powered (fibre-glass) boat or more to facilitate relocation of patients, if needed, to relatively distant health centres or hospitals and to keep contact with local government officials for transfer of emergency requirements etc. Make a periodic maintenance plan of the engines and the boat(s), especially during pre-flood period.

Maintaining Liaison

- Keep liaison with local government authority and local administration for updated flood bulletins and/or warnings. Keeping good contacts with neighbouring villages and local level government officials would also be useful, especially in receiving information regarding flood warning. This is a role for the CFMC to perform.

b. Escaping Floods

Preparing Temporary Flood Shelters

Operationalize the plans and programmes already developed by the CFMC. In the context of the emerging circumstances, the CFMC would need to work out

procedural details regarding undertaking various tasks relating to pre-, during, and post-flood situations as well as regarding the management of the proposed flood shelter(s). If a CFMC/FMC is not in place, one may be quickly established; and if that is not feasible soon enough, individuals will have to use their best judgment about what to do and how. But, it would be advisable to coordinate activities with neighbours and others as much as possible. The CFMC would undertake the following tasks at the preparatory stage.

- Persuade the local government authorities to build a multi-purpose flood shelter at a higher ground in frequently flooded areas. This building can be utilized for other purposes during flood free period. Also utilize school buildings or other public buildings on highlands as flood shelters during flood period.
- In the absence of a suitable building that might be temporarily used as a flood shelter, arrange makeshift tents, to allow people to stay during the period of the flood on otherwise open high location, if it is not raining continuously . A stock of makeshift tents (made of plastic sheets over a flexible bamboo structure) may be pre-arranged, with the help of the local-level administration. These tents may be distributed, with proper identification, according to the need of shelter-seeking families/households.
- Arrange training for the local youth/scouts so they can put together and erect makeshift tents.
- Assess the overall requirement of space in the flood shelter/shelters already arranged and, if needed, identify additional capacity elsewhere.
- Clean up the premises, provide room for the privacy of females.
- Check where to place cooking utensils and stoves.
- Arrange a good number of sanitary latrines, based on capacity assessment. Make cleaning up schedules for the latrines.
- Contact the local Health Officer and make arrangement for health check-ups of the evacuees, as necessary.
- Create separate storage spaces for (a) medicine, (b) food items, (c) register books/logbooks, (d) dry fuel, and other necessary items.
- Earmark rooms for treating patients, ensuring privacy of lactating mothers and adolescent girls.
- Contact local government institutions and NGOs/CBOs for various supplies (food items, drinking water, fuel, medicine), as may be needed when people are located in the shelters.
- Assess weekly need for various supplies and try to obtain them. Provide charts and logbooks to record supply and utilization of various items.
- Arrange community kitchen/langar in the flood shelter, if possible.

Taking Shelter in Tents

- Help people who move to flood-free open fields, which may be easily accessible by road/boat, to erect makeshift tents, which may be called a flood camp.
- Arrange a number of 'temporary tent-based hospitals', as may be required, which should be managed by the community in cooperation with the local Health Officer.
- Arrange adequate sanitation and waste management facilities around the tents.
- Arrange adequate number of sanitary latrines with the provision to clean these at regular intervals.
- Arrange separate tents to treat sick individuals, provide privacy to lactating mothers and other females.
- Arrange separate tents for storage of food items, fuel, medicine, and other valuables.
- Establish community bathing facilities around the flood camp.

Physical Relocation to Flood Shelters/Camps

- Help shift marooned people to flood shelter(s) and/or to flood camps. In the relocation process, the children and elderly people should get higher priority compared to adult males and females
- Clearly mark escape routes, preferably showing signs along the escape routes.

Managing Day-to-Day Activities in Running the Flood Shelter/Camp

- Maintain logbooks on the activities carried out by the CFMC members; and by task parties, if established. Responsibility of maintaining the logbook should be pre-assigned to one or more individuals to whom all concerned would be advised to report.
- Maintain a list of all the people (community members) taking refuge in each flood shelter/camp.
- Maintain designated baskets for collection of 'households' wastes.
- Arrange for cleaning up of the sanitary latrines several times a day (full time sweepers, if available may be employed on a temporary basis).
- Maintain books to record receipts of relief materials.
- Proper accounts must be maintained of cash donations and expenditure out of such funds.
- Organize, if possible, musical events by motivating and utilizing children and grown-ups located in shelters/camps to enhance morale of the people living in the shelters/camps.

- Liaise with government authorities for continued support towards ensuring proper functioning of the flood shelters/camps.

Maintain Health Care Facilities

- Organize routine health check-ups for pregnant women, the sick, children, and the old.
- Maintain a separate room/tent for treating ailing patients.
- Maintain first aid materials.
- Store typical medicines that may be required by marooned people, including antidotes for snake bite.
- Maintain logbooks to register receipts and usages of medicines and other supplies; check stocks on a regular basis, and try to replenish stocks as quickly as possible.

Miscellaneous Activities

- Maintain 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.
- Maintain boat/raft transportation facilities.
- Liaise with all possible sources for updated flood information and listen to radio bulletins; disseminate available information regularly to the community members.
- Monitor the well-being of those who have not relocated themselves in flood shelters/camps. If necessary, assist them to cope with the situation by supplying essential food and non-food items.
- Maintain records of successes and failures regarding the operation of flood shelters for future reference.
- If highways are used as temporary flood camps, regulate traffic passing by.
- Arrange, if necessary, a community cattle shelter on such high lands as those used for weekly village market as well as inner-banks of embankments/ polders/ highways.
- Distribute cattle feed and dry fodder collected in advance following the criterion of 'bare minimum' principle.
- Arrange medication at the cattle camps.
- Extend the facility to stable bound animals not shifted to camps.
- Redress grievances among community members arising out of malfunctioning of the system, if any.

- Install sanitary latrines (pit latrines on stilt) along highways that are being used as flood shelters.

3.3 Post-Flood Rehabilitation

Flood affected people are keen to get back to normal life. After suffering losses in terms of crops, livestock, and property, they often find themselves in extremely difficult situations and cannot rehabilitate themselves without assistance from the government, rich benefactors, or NGOs/CBOs. Sometimes, neighbours help one another towards getting back to 'normal life' following floods. Interpersonal relationship and kinship also play vital roles in helping some flood affected people to find their feet again. Community effort can be useful in mending partially damaged houses, often by means of offering free labour to one another. Well-to-do people sometimes employ poor neighbours in restoration activities, thereby offering temporary employment. In the case of large scale flood devastation, government's role in relief and rehabilitation becomes crucial.

A CFMC/FMC can help reconstruction of houses, sanitation facilities in each household, water supply facilities at community levels, rehabilitation of roads/ bridges/culverts/electric connections, educational activities, and healthcare facilities in the area under its command.

Returning Home

- The CFMC can help the evacuees to return home along with whatever belongings they may have after the flood waters have receded adequately.
- On return, the immediate task facing them is to mend the houses, restore sanitary latrines, repair earthen cooking stoves, reconstruct facilities for storing food items, fodder, and attend to other urgent needs.
- The community members can help one another out in these tasks, spontaneously or through the intermediation of the CFMC.

Inventory and Assessment of Damages/Losses

- The CFMC should prepare an inventory of losses/damages suffered by each of the households in the community, based on a questionnaire survey. A model questionnaire format is suggested in Annex-VI.

Assessing Needs of the Community and Identifying

the Most Needy Households for Rehabilitation

- Along with the assessment of losses/damages, the CFMC, with information gathered from the wider community, can identify the most affected households. This exercise would help prioritize the eligibility of the households in relation

to the level of urgency of their rehabilitation needs. This knowledge base would certainly help the government in channeling its rehabilitation assistance properly down to the household level.

Prioritizing Rehabilitation Activities Concerning Infrastructure including School and College Buildings

- The CFMC should in consultation with community members on one hand and concerned government agencies on the other assess the losses and damages caused to road, embankments, school and college buildings, and so on. This exercise will ensure planning for prioritized rehabilitation of infrastructures and other public establishments in the area.

Compensatory Classes for Loss of Teaching Time

- In the case of loss of teaching time due to prolonged flooding the CFMC should try to arrange extra classes in schools/colleges on Sundays or holidays and/or increase the daily teaching hours till the backlog is cleared.

Restoration of Health Care, Hygiene and Sanitation

- At the household level, health conditions of the members should be monitored and if necessary doctors should be consulted after flood water has receded.
- Restore tubewell, as needed.
- Restore sanitary latrine, as needed.
- The CFMC can help households in these tasks and also in improving environmental conditions facing the households in the wake of the flood.

Rehabilitation of the Flood Shelter/Camps

- Once the evacuees have left, the CFMC should arrange the cleaning up of the vacated flood shelters/camps to make them usable for their usual purposes.

Management of Relief and Rehabilitation Programme

- At the community level, liaise with relevant government agencies and NGOs towards mobilizing relief materials. Distribute relief on the basis of needs and priorities.

Rehabilitation of Agricultural Production

- The CFMC should organize collection and distribution of seeds and seedlings, as needed. In this task, the CFMC should maintain liaison with the relevant government agencies and any other organizations that may address the seed issue.
- The CFMC may help most needy families to access credit so that they can restart whatever small-scale economic activities (e.g. crop production,

horticulture, agro-forestry, nursery, pond-culture, small-scale industries/ workshops, trading etc.) they were engaged in before the flood.

- The households can and should also contact the local-level Agriculture Officer for guidance in relation to selection and collection of seeds, assessment of suitability of crops for the remainder of the post-flood cropping period (viz. Kharif in Bangladesh and Rabi in India), and selection of feed for the livestock and poultry.
- A useful thing to do is to grow vegetables within the homestead. Local-level Agriculture Officers can help promote homestead horticulture by providing seeds of quick-growing varieties.
- Nurseries may be established by those who have land, seeds and other inputs for self-use and sale to others.
- The CFMC may encourage community members to re-excavate productive ponds and start fish culture by facilitating access to credit and other inputs.

Agricultural Technologies

- A number of agricultural technology packages are available in each of the participating flood vulnerable countries, which may be of great help towards restoring agricultural activities following a flood. These resources need to be made available to the farmers through the local-level Agriculture officials. A number of examples are cited in the Bangladesh and India manuals.

Revitalization of Economic Activities

- The CFMC should initiate action pertaining to the re-vitalization/starting of gainful economic activities with a view to supplementing the family earning of the flood victims. It may seek the help and assistance of the local level government officials for setting up of ventures at small/cottage industries level based on the locally available raw materials duly supported by the provision of micro credit wherever necessary.

Annex-I

A Proposed Framework for COMMUNITY FLOOD MANAGEMENT COMMITTEE (CFMC) in Bangladesh

Mission: The CFMC will work to reduce the losses, damages, and sufferings of flood affected people by mounting and coodonating appropriate activities in pre-, during, and post-flood stages.

Target area where the CFMC will work: A CFMC will design and implement people-centric flood management activities usually in an area belonging to the local government tier of Union Parishad in Bangladesh (the corresponding area is Panchayat in India and Nepal).

Composition: The proposed CFMC is envisaged to be coordinated by the leadership of the particular local government body. Its composition would vary from country to country depending upon respective institutional frameworks.

It is proposed that, in Bangladesh the CFMC will consist of 9 to 12 members, ideally as below:

Convenor : √ Chairman of the particular local government body (by virtue of her/his position)

Co-convenor: √ A member of the local government body, designated by that body

Members :
- √ An elected member of the local government body, designated by that body
- √ An elected female member of the local government
- √ Headmaster(s) of High/Primary School(s) (maximum two)
- √ Religious leaders (maximum one from each religious community)—e.g.
- √ Imam of a local masque, purohit of a local temple located in that area
- √ Local-level government officials (selected, maximum three including
- √ Agriculture Officer/Block Supervisor responsible for that area)
- √ One village doctor/health practitioner

The CFMC will select one of its members to work as its Member-Secretary.

It may here that, in India, the proposed CFMC will have 15-18 members including head (mukhiya) of panchayat as president to preside over all the meetings, a Secretary to convene the meetings of FMC and a Treasurer to maintain inflows and outflows of funds of the committee, as selected by the general body of the panchayat from among its members. The other members of the Committee (FMC) will consist of a few representatives from affected groups such as women, social/ health workers, the socially and economically disadvantaged, business men and persons with the background of agriculture and animals husbandry practices etc.

The CFMC will have an emergency control room to maintain round the clock vigil on various activities to be performed by the community during the flood.

The ***general functions*** of the proposed CFMC will be to foster flood preparedness, formulate and implement flood responses, mobilize local people and local resources, liaise with the higher tiers of government and possible sources of assistance, and to coordinate various flood management activities in the community.

The ***overall functions*** of the proposed CFMC will include, but will not be limited to the following:

- To ensure that locally available flood information is timely disseminated to the community members (making use of hand-held megaphones, mikes etc. that are used for disseminating calls for prayer/gathering and other means);
- To liaise with thana/block/district level officials, if needed even at higher levels, for obtaining updated information on flood forecasting and warning, and disseminate that to the community members for them to prepare to make appropriate responses;
- To help the community members relocate in flood shelters/camps, if that becomes necessary;
- To negotiate and reach agreements with authorities of such institutions as schools and community centres located within its area of operation, which may not be inundated, to convert their buildings and playgrounds into temporary flood shelter(s)/camps;
- To make necessary arrangements (cleaning of the premise(s), construction of sanitary facilities, establishment of hand tubewells etc.) for making the facility/space useful as a temporary flood shelter/camp;
- In case of unavailability of flood shelters, arrange and distribute tents to shelter seeking people as per their need; and establish and maintain one or more camps in a flood-free ground (or along an embankment);
- To keep record of community members who are provided with various kinds of services while in camps/shelters;
- To arrange food, healthcare, medicine, water supply and safe sanitation for the people taking refuge in the shelters/camps(s);

- To arrange for and conduct flood evacuation drills and exercises;
- To arrange for flood vigilant groups and dam/embankment wardens;
- To maintain (a) safety, (b) health condition, and (c) peace within the camps/ shelters;
- To resolve conflicts, if any, within the shelters/camps;
- To assess needs of the community population (by household) in relation to various relief services on a regular basis;
- To raise funds (cash, in kind) in order to meet needs of the flood refugees;
- To distribute relief goods and disburse relief funds in accordance with 'needs assessment report';
- To maintain ledger books on various items received and distributed;
- To arrange meetings frequently on the operations of the shelters/camps to review the on-going activities and identify what more may be done to improve coordination and ensure smooth execution of the operations;
- To provide assistance to people who chose to remain in their homes (if that is possible) in terms of food, safe water, sanitation, medicines etc. Assistance should also be provided to them to move to safe locations should that become necessary at any stage;
- In the context of rehabilitation planning, the CFMC would cooperate with the government in assessing losses and damages suffered by each affected household in the community, or start its own assessment even before a government assessment team is deployed;
- To make arrangement, in cooperation/consultation with the upazila/block level authorities, for providing institutional assistance to the households to ensure quick recovery and rehabilitation following a flood;
- To cooperate with the government process as well as make its own assessment, as appropriate, of damages caused to common utilities/facilities/ infrastructure (viz. extent of disruption of electric poles, erosion of roads, damages to school and college buildings, breach of embankments etc.), and assist the concerned authorities in the rehabilitation of these infrastructures and establishments;
- Based on the assessments made, the CFMS may prepare a 'Plan of Action' (time-bound) on a preparatory basis for quick recovery/rehabilitation of the flood affected people and the area along with an estimated fund requirement;
- To liaise not only with higher level government tiers (upazila/block), elected representatives and the concerned line ministry officials, but also with the members of the Legislative Assembly and National Parliament representing the area to mobilize support for the alleviation of the conditions of the flood

effected people and the area. The 'Action Plan' may be the basis of programmes and actions to be undertaken;

- Based on the lessons learnt from community approach to flood management just implemented, preparatory activities may be undertaken for an improved framework for action and more effective implementation when a flood hits the area next time. The CFMC should continue to be in place and ready to be pressed into operation as and when necessary again;
- In the interim, the CFMC will also work to keep up the morale of the people, maintaining a high level of awareness, through continued education and advocacy.

If found necessary to facilitate the activities of the proposed CFMC, a number of task parties/forces may also be formed to deliver specific services (such as relocation, sanitation, safe water supply, healthcare, livestock management, food preparation and distribution and storage and issuance of supplies). The task parties will act on behalf of the CFMC and report to the CFMC in its regular meetings.

Annex-II

Emergency Installation of Hand Pumps

In emergency, hand pumps are often installed in shelters/camps for community use. Efforts must be made to avoid contamination of the groundwater aquifer by the pathogen loaded floodwaters, while drilling for the tubewell.

- ❖ Select a higher non-flooded ground for the installation of the hand pump.
- ❖ Install hand pump at the upstream side of the latrine.
- ❖ Maintain at least 15 meter distance from latrines.
- ❖ Do not allow pool of contaminated water around the hand pump.
- ❖ Tie the hand pump tightly with a suitable support such as a bamboo or wodden pole to avoid shaking/movement while in use.

If the aquifer is contaminated during pump installation, the well must be disinfected. The following procedures need to be followed.

- Mix 4 teaspoonfuls of bleaching powder in one tin of water (usually 18 litres).
- Open the parts of the hand pump (i.e., barrel, plunger, plunger rod, weight valve, bucket etc.)
- Keep the parts submerged in chlorine solution (in the tin) for at least an hour.
- Do not allow children to use the chlorine water.
- Take ten litres of water in a bucket and mix 4 teaspoonfuls of bleaching powder. Pour the chlorine water, after thorough mixing, into the tube (pipe) and keep for three hours.
- Assemble the pump head, valve, plunger etc. and reinstall the tubewell.
- Pump vigorously for 30 minutes to drain out chlorine treated water from the well. When the water would smell only mildly chlorine, it may be used for drinking purpose.
- Keep children away from the site during the course of the operation.

Long-term flood resistant hand pumps

- ❖ In flood prone areas, hand pumps should be installed over raised platforms/ pedestals, above flood level. The platform should be provided with steps and railing.
- ❖ Before the beginning of a flood season, ensure that there is no crack in the base structure. If there is any, mend it well ahead of time.

Annex-III

Technique for the Preparation of Water Purifying Packets

In areas highly affected by flood, there is often no alternative to the use of the floodwater itself or water contaminated by floodwaters. Floodwaters often contain suspended foreign discrete/colloid matter which cannot be removed by using bleaching powder or liquid chlorine alone. Efforts must be made to collect clean water that is free from suspended foreign matter (sieves may be used) and then disinfect it by using a suitable disinfectant. In this regard the water purifying powder, usually a mix of bleaching powder and a coagulating agent, appears quite handy. This powder helps, when properly mixed with floodwater in a bucket, coagulation of the suspended material to form heavy floc, which settles on standing in quiescent condition for some time. The chlorine of the powder meanwhile reacts with the pathogens in water and disinfects the water.

The settled sludge on the bottom of the bucket can be discarded after taking off the supernatant water from the bucket which can safely be used for drinking purpose. This is easy to make, carry, and apply, and is cheap. Therefore, it is a very popular tool for the public health engineers and voluntary organizations to use in emergency situations.

The Procedure: The procedure involved in the preparation of the Purifier Powder is rather simple. The powder is made from ingredients like alum, bleaching powder, and lime. All these ingredients are available in local markets. The following steps should be followed:

1st Step (For one hundred packets): Weigh 3 kg of alum, 1.5 kg of lime, and 200 gms of bleaching powder (ensure that the latter has 33% strength). Keep three packets/pots separately. The alum should be as dry as possible. Try to use the best quality lime. The container for bleaching powder should be resistant to sunlight.

2nd Step Grind alum into powder, spread it on a dry sheet of plastic and dry well. Keep ground dry alum in a plastic container. The lumps of lime should be ground well into fine powder and stored in a separate dry container. Keep the container air-tight to avoid the risk of melting.

3rd Step Mix required quantities of lime and bleaching powder intimately; keep the mixture in a plastic bucket. Do not mix with alum at this stage.

4th Step Prepare 200 plastic sachets of size 5´´ X 4´´. In the absence of properly sized sachets, take 100 polythene packets that are generally used for germination of pot plants. Write mixing instructions on a page (must be legible), make 100 photocopies.

The following *instructions* should be written:

- Take one bucket/pitcherful of water (10-12 lit).
- Take ½ teaspoonful of powder from bigger packet of alum and pour into the bucket/pitcher.
- Take ½ teaspoonful of white powder from smaller packet (mixture of lime and bleaching powder), pour into the pitcher, and mix intimately with the water of the bucket/pitcher. Stir the water vigorously for ½ minute and allow it to settle. Visible flocs will form and settle at the bottom in about 45 minutes to one hour.
- Put a four-folded piece of cotton cloth on the mouth of a second (cleaned) pitcher. Decant the supernatant slowly through the cloth-filter into the second pitcher. Water in the second pitcher should be free from contaminants. Keep the pitcher covered all the time. This water is to be used for drinking purpose only. Please note that water will smell of chlorine.

One sachet/packet should weigh about 47 gms, which can treat about 180 to 200 liters of turbid floodwaters depending on turbidity, alkalinity etc. of untreated water. After preparation, the water purifier packets should be used as quickly as possible. However, it can safely be used within 2/3 months without much reduction of potency.

The packets may be stocked in strategic places such as in flood-shelters/camps. Once prepared, packets may be distributed among the community members. One family of 6 persons (which is the average size of a household in India and Bangladesh) will require one packet per week. For easier distribution schedule, there should be one designated day per week in the locality. The CFMC should maintain roster for smooth distribution of water purifying packets, and maintain a register for all inputs and outputs as well as storage and distribution of the packets.

In every household, special care must be taken to keep water purifying chemicals out of reach of the children. If, by accident, it is swallowed by a child, he/she should be taken immediately to the nearest hospital.

Cost information: The cost of about 100 of these water purifying packets should not be more than US$ 4.00[2] . One community worker, ideally a science school student of a higher class, representing the community, would be able to pack at least 150 units per day. The whole effort for the production of 1000 packets should not take more than two days involving a total of 6 person days.

Equipment to be kept handy The following equipment should be kept handy to facilitate preparation of the water purifying packets: (a) one stone grinder, (b) one weighing scale with appropriate weights, (c) three pans, (d) three spatulas, and (e) plenty of dry and empty polythene packets.

[2] Excluding labour cost and fixed initial costs for the utensils.

Annex-IV

Guideline for Preparing Oral Rehydration Saline

What is it? It is a low-cost rehydration drink that is useful to fight diarrhea.

Method of preparation: Take one litre of boiled and cooled water. Add (i) two teaspoons of molasses/ sugar/ honey, (ii) ¼ teaspoon of salt, (iii) ¼ tea spoon of bicarbonate of soda (if unavailable, use salt instead). Stir the mixture well. The drink is ready.

Alternative method: Take one litre of water (boiled and cooled), add four finger scoops of sugar/ molasses and a three finger pinch of salt. Stir well. The drink is ready.

Do not boil or heat up the pot Keep the mixture cool. The mixture can be used up to six hours after its preparation.

Use of ORS: Give the dehydrated person (or the patient suffering from diarrhea) sips of the drink every five minutes, day and night, until she/he begins to urinate normally. An adult needs three or more litres per day, whereas a child requires one to two litres per day.

Even if the patient is vomiting, keep giving ORS drink. If the patient is unable to sip or drink, take her/him to the nearest hospital/healthcare camp.

Note: An available mixture can be bought from local stores (ten sachet costs around US$ 1.00). Check the date of expiry before purchasing these sachets. The method of preparation is written on the sachet, please read that carefully.

Annex-V

Purifying Drinking Water by Using Tablets

Water from contaminated sources can be treated at home by using commercially available halogen-releasing tablets. Freshly released halogen is supposed to kill unwanted bacteria and other microbiological elements present on the water. These water purifying tablets are available in market at affordable costs.

Direction for Use of Halotabs:

- Take 1.5 to 3.0 litres of water in a non-metal (earthware/glass/ melamine) container with lid.
- Dissolve one Halotab (containing 15 mg Halazone USP) tablet in the water, stir and put the lid on.
- Allow at least half an hour for the action of halogen.

Water is now ready to use. It will remain germ free as long as the container lid is kept closed.

Annex-VI

Household-level Questionnaire for the Estimation of Flood Loss

General Questions:

Name of the household head: ……..

Number of people living in at the time of flood: …….male . …….female ……..Children below 12 ……. Children below 5 …….. infant/neonatal…….male/female above 65.

Area under the household: ……..acres …….. decimals

How was the family affected:…… slightly …….. partially …….. fully

Number of deaths during flood: ……

Cause (please narrate) ……

Could the corpse be cremated/buried? Yes/No.

If yes, where? ……

Number of the injured: ……

Did anyone fall sick? Yes/No.

If yes, for how many days? …… days.

What was the name of the disease? Cholera/Diarrhea/Typhoid/……...(any other)

Could treatment be provided? Yes/No.

If yes, how? And what is the cost? ……

If no, why not? ……..

What was your house made of?

Roof: Tile/CI sheet/biomass;

Sidewalls: CI sheet/ wood/ brick wall/mud wall/othermaterial .....

Floor: Cemented/mud layer/wood/others……

A: Damaged Dwellings and Household Utility

House/Dwelling unit		Latrine (……)		Tubewell		Livestock shed	
No.	Bd. Tk	No.	Bd. Tk	No.	Bd. Tk	No.	Bd. Tk

B: Non-crop Production Loss

Livestock		Poultry		Trees		Culture (fish) pond	
No.	Bd. Tk	No.	Bd. Tk	No.	Bd. Tk	Kg escaped	Bd. Tk

C: Agricultural Loss

Seed bed lost		Seedling drowned		Standing Crop - partially		Standing Crop - fully	
Acre	Bd. Tk	Acre	Bd. Tk	Acres	Bd. Tk	Acres	Bd. Tk

D: Medical expenses caused by flood with supporting papers

Note: The unit of value is mentioned in Bangladesh Taka. It will be Rs. (Indian) for India and Rs. (Nepalese) for Nepal.