



Mock Flood Exercises in Communities
Utilising Community-based Early Warning Systems

© **Practical Action 2016**

I.S.B.N: 978-9937-8720-8-9

Photo: Practical Action

Practical Action encourages the use, replication and dissemination of information in this publication. Except where otherwise indicated, information may be copied, downloaded and printed for private study, research and teaching purposes or for use in non-commercial services with appropriate acknowledgement of Practical Action and as the source and copyright holder is given and that Practical Action's endorsement of users' views, products or services is not implied in any way. All requests for translation and adaptation rights and for resale and other commercial use rights should be made via practicalaction@practicalaction.org.np.

Preface

With human casualties of more than 400 and billions of dollars of lost properties every year, Nepal ranks as world's 30th most vulnerable countries to floods. Many communities in other countries, like Nepal, are reeling under similar situations. Had communities received information about flood risks well before the flood reached them through an early warning system (EWS) capacitating the communities to take preventive measures; this alarming rate of loss could significantly reduce if not eliminated. Apart from saving human lives, EWS allows livestock, important documents and the valuables to be moved to safer places.

There are numerous instances of successful EWS that have reduced the number of casualties and the magnitude of property loss. Practical Action has been implementing flood early warning practices in Nepal since 2002. The Sendai Framework for Disaster Risk Reduction has incorporated substantial increment in access to EWS as its seventh target.

This booklet is about mock flood exercises based on EWS and is based on a decade long experiences at Nepalese communities. This experience has enhanced the capacity of communities and humanitarian actors alike; thereby reducing the loss of lives and properties significantly. These guidelines are prepared based on experiences and learnings of carrying out mock flood exercises in communities. Practical Action works in collaboration with organisations such as the Nepal Red Cross Society, different government bodies and non-governmental organisations (NGOs). Numerous professionals and activists have contributed in developing mock flood exercises. We express our sincere appreciation to DIPECHO, ZURICH. USAID/OFDA for their support to us in developing EWS.

I appreciate the hard work of Lok Narayan Pokhrel, Dinanath Bhandari, Buddhi Ram Kumal, Rupendra Basnet, Buddhi Poudyal of Practical Action to prepare this document and thanks are due to Khem Nepal of IFRC and Gehendra Gurung, Colin McQuistan and Chris Anderson of Practical Action for their contribution to review the manuscript. Our sincere gratitude goes to Jodi Sugden, Upendra Shrestha and Archana Gurung of Practical Action who edited the language to bring the document at this form.

Last but not the least, this publication will assist actors and facilitators develop their skills and facilitate such exercises to enhance community resilience. It is necessary to contextualise the steps, process and scenarios based on local hazards, vulnerability, risks and available resources in terms of tools and equipment. However, the steps and processes mentioned herein will be useful to all actors and facilitators.

Thank you
Achyut Luitel
Regional Director

Acronyms

CDMC	: Community Disaster Management Committee
DAO	: District Administration Office
DDC	: District Development Committee
DEOC	: District Emergency Operation Center
DHM	: Department of Hydrology and Meteorology
DM	: Disaster Management
EW	: Early Warning
EWS	: Early Warning System
LDMC	: Local Disaster Management Committee
NRCS	: Nepal Red Cross Society
PWD	: Person with Disability
SMS	: Short Message Service
SAR	: Search and Rescue
VDC	: Village Development Committee

Table of Contents

Introduction to mock flood exercises	6
Objectives and expected results	8
Structural and institutional requirements	10
Mock flood exercises	12
• Preparatory phase	12
• Exercise phase	16
Monitoring, review and revision	28
References	30
Annexes	32
Annex 1- Resources, equipments and materials for the execution of mock flood exercises based on flood EWS at community level	
Annex 2- Scenario and script of mock flood exercises	



Introduction: Mock flood exercises

Mock flood exercises are trails to avert real flood situations by preparing in advance. The exercises are carried out by imagining about flood scenarios and carrying out measures as if in real situation. These exercises enhance the capacity of communities and humanitarian actors, particularly their skills and confidence to plan and execute responses to a flood event. This document describes mock flood exercises based on EWS; the methods described are based on past mock exercises and real-time actions taken to prevent losses and damages by river bank communities in Nepal. This publication will be useful to communities, community facilitators and organisations working at the community level, to enhance their capacity in order to reduce flood risk through the application of EWS.

Flood EWS involves systematic and continuous monitoring of potential flood hazards and sharing of this information with relevant actors - particularly vulnerable communities - to improve their preparedness and response measures. Flood EWS comprises four interrelated components: (1) Flood risk knowledge, (2) Risk monitoring, (3) Communication and dissemination of risk information, and (4) Response. The mock flood exercise is carried out to test the effectiveness of these components, particularly monitoring, communication and response, and the capacity of different actors and community members to take coordinated action to avoid losses by using early warning information during real flood events.

The exercise is entirely based on EWS and on communities receiving flood risk information well before the flood reaches them. The community is then able to use their knowledge and skills to receive and disseminate the information to enable well-coordinated response measures. The lag time -the time that a community takes to reach allocated safe location after receiving an early warning - should always be less than the lead time - the time between the flood warning being issued and the flood to reach the community.

Mock exercises are held in areas at risk of flooding and require individuals, groups and organisations use the tools and procedures they would need during the real event. Therefore, the whole exercise is made as realistic as possible, to help enhance efficiency and skills in preparation for real flood events.

There are five chapters in this document. The first chapter provides a brief introduction to mock flood exercises and flood EWS. Chapter two explains the objectives and anticipated outcomes of mock flood exercises. Chapter three describes prerequisites including the EWS setup for an exercise to take place. Chapter four illustrates the process, steps and actions to be taken while carrying out an exercise. Finally, chapter five recommends monitoring, participatory review and necessary improvement of mock flood exercises based on learning and the ever-changing context of vulnerability and capacity.

A scenario and simulation script has been included in an annex; however, this is just a guideline and should be adapted at the local context.



Objectives and expected results

Mock flood exercises are built on EWS to enhance the skills, knowledge and capacity of communities and other key stakeholders to effectively respond to flood events.

Objectives of mock flood exercises:

- To enhance the skills and capacity of vulnerable communities and other key stakeholders through the practice of coordinated actions and the use of EWS
- To aware community members on what to do when they receive a flood warning (practice makes one perfect) <http://www.bbc.com/future/story/20150128-how-to-survive-a-disaster>
- To institutionalise the regular testing and improvement of response processes and activities
- To reduce loss of lives and assets

Expected results:

- Persons and institutions responsible for risk monitoring and risk communication (e.g. gauge readers, Community Disaster Management Committees (CDMCs), task forces and volunteers) understand EWS and are confident to communicate and disseminate flood risk information timely and effectively.
- The capacity of communities and key stakeholders to respond to floods with coordinated actions is enhanced.
- The lag time is increased which means communities receive information as early as possible and they are left with relatively more time to prepare and escape.
- Communities have skills to respond to risk quicker and systematically.
- Escape routes to safe shelter are tested and ascertained for real flood event
- Necessary areas of improvement are identified for future course of action and necessary improvements.
- Current status of safe shelter, communication equipment, search and rescue tools, human resources and other aspects of the flood response system are assessed.
- Community people better understand how to cooperate and support those in need of support and evacuation and to transfer important movable assets, livestock and to manage the emergency shelter to provide temporary refuse.



Structural and institutional requirements

Established flood EWS including community response institution is necessary to stage a mock flood exercise. Community-based EWS includes four interconnected components that need to be established: risk knowledge, risk monitoring, communication of risk information and response capacity.

1. Risk knowledge

Vulnerable communities and other key stakeholders need to be well informed about flood risks and its dynamics including the potential risk to different settlements, the lead time and lag time of floods, the level of rainfall and flooding upstream, and the relevant alert, warning and danger levels. In addition to knowing risk and other information, communities must frequently monitor and receive updates on rainfall and flood projection during monsoon so that they know when to start preparations.

2. Risk monitoring

In Nepal, the Department of Hydrology and Meteorology (DHM) is responsible to establish and operate meteorology and hydrology stations in order to monitor rainfall and flood events. Sufficient qualified human resources and efficient modern equipment should be available for continuous rainfall and flood monitoring. At present, both manual and automatic equipment are used by DHM to monitor rainfall and floods. During monsoon when flood risks are at high, the stations should be able to monitor constantly using automatic monitoring devices. In such case, staff at the hydrology stations verify measurements and improve reliability of the automatic system.

3. Communication of risk information

The role of effective communication in EWS cannot be overemphasised. It is essential to inform vulnerable communities with rainfall and flood risk updates. Functional, reliable, and robust equipment, committed and qualified staff and volunteers, and strong communication channels with built-in back up is necessary to ensure the timely flow of information to the target audiences. Generally, risk information such as rainfall level is communicated downstream using established communication channels such as telephones, internet and radios when the monitoring stations figure alert and danger levels.

As the risk information reaches the designated focal persons in the community, the early warning task force and volunteers are galvanised to disseminate the warning alert using an appropriate tool such as a whistle, siren or megaphone. Volunteers also rush door-to-door to reach those needing further assistance like the people with disabilities. Different colour flags may also be used.



4. Response capacity

Structural and institutional requirements for successful community response to risk information include: (a) Institutions such as Disaster Management Committees (DMC) at the community and municipality levels and task forces with specific responsibilities regarding: communication, search and rescue, first aid, shelter management, and social security; (b) Regular training for these institutions and task forces to perform their roles and fulfil their responsibilities; (c) appropriate and sufficient equipment for different tasks; and (d) safe shelter with basic facilities and an access route.

Mock flood exercises

A mock flood exercise should follow a systematic process, explained hereunder:

1. Preparatory Phase

In Nepal, the most appropriate months for mock flood exercises are between April and June right ahead of monsoon. June 5th is world environment day and that can be considered a goodtime in this regard. All preparations, including the establishment of the prerequisites mentioned in chapter three must be completed in an advance for an effective exercise. Holding the exercise prior to the monsoon does benefit communities and other actors in two ways. First, people remember the processes during the rainy season and second, communities and stakeholders are more likely to identify any deficiencies in the system and repair those beforehand. However, the community can decide when they wish to conduct the exercise and it can be done throughout the year. Since it involves the mass mobilisation of people and their assets, good preparation by the mock drill organisers is a must.

Preparation by CDMCs and task forces

The CDMCs, task forces and volunteer teams need to ensure everything is functioning. This entails reviewing the list of stakeholders, the communication channel, the evacuation route, safe shelter, rescue equipment and the human resources to mobilise and manage. CDMCs and task forces should hold separate and joint meetings to update their preparations, decide and implement necessary actions. The following paragraphs do provide checklist of preparations.

(a) First meeting of the CDMC

The CDMC is the steering body for a mock exercise. They should meet to plan and allocate duties and to carry out the actions. The first preparatory meeting of the CDMC may decide the following things:

- Date and time to conduct the exercise
- Scenario of hazard/disaster (See Annex-2 for a sample)
- Scale of the disaster (to identify the settlements involved) in the exercise
- Updated roles and responsibilities of task forces
- Action plan for preparation
- Necessary resources and equipment
- Coordination and collaboration with stakeholders including risk monitoring and communication team,

rescue and other agencies. For example: gauge readers, relevant security office, local government body, health offices, among others.

- Required external assistance for human resources, equipment and logistics.
- The agendas and date for next meeting. Follow on meetings can be organised as per need.

The CDMC should also:

- Share the exercise plan with the relevant authorities and organisations and request their participation
- Allocate responsibilities to members and task forces with deadlines

(b) Meeting of task forces and coordinated activities

The task forces should meet and coordinate with one another in preparation for the exercise. Four are given as examples below: an 'early warning task force', a 'search and rescue task force', a 'first aid task force', and an 'emergency shelter management task force'. Their actions should include but not be limited to:

Early warning task force

- Assign roles to members, (e.g. to communicate with the river gauge reader, to operate local communication devices such as the siren, and to practice to fulfil these roles).
- Update information to be shared at different stages.
- Update the contact list and telephone numbers of all key stakeholders and institutions (e.g. the gauge reader and the district emergency operation centre) and community people to provide these numbers to concerned volunteers.
- Ensure that equipment is sufficient and functional.
- Create an action plan to raise community awareness of the exercise
- Door-to-door visits to inform households in person and in detail.

Search and rescue task force

- Update household and population data (incorporating details like male, female, children, senior citizens, disabled and pregnant) including delivery date. Share the updated data with task forces and CDMC.
- Assess the people requiring external assistance for evacuation and assign roles to volunteers to support them.
- Identify the route and assembling place for those needing external assistance. Consult other task forces such as health and social security.
- Ensure the availability of search and rescue equipment like (life jackets, ropes, boats, torches etc.)
- Coordinate with other task force members to orient communities.

First aid task force

- Update or request to update the contact numbers of ambulances, health centres, health workers, pharmacies, security forces, among other crucial contacts.
- Determine the assembling point for primary treatment, care and referral in consultation with search and rescue team and inform other teams.



- Ensure the availability of first aid kit and other necessary materials as per requirement.
- Assign roles to first aid task force members.

Emergency shelter management task force

- Assess and update the capacity of emergency shelter to accommodate local population
- Identify alternative shelter and evacuation routes if necessary and inform other task forces accordingly
- Assess the required materials for the emergency shelter and ensure safe drinking water and basic services there.
- Arrange for special requirements to particular groups of people disabilities (PWD), children, elderly and people under certain medical conditions.
- Assign volunteers with specific roles for support and security in the shelter.
- Manage logistics in the shelter including food and clothes in case of an overnight stay
- Allocate site and make arrangements for livestock, poultry and storage of belongings ascertaining their safety and security.
- Take necessary procedures and arrangements for transfer to another (safer) shelter if required.

Similarly, other task forces should also meet and prepare to fulfil their responsibilities. This should include the assignment of roles and responsibilities to steer the process and the monitoring of actions for future references and improvements. Each task force should ensure that their activities are in order, led properly and well monitored.

(c) Second meeting of the CDMC

Once task forces complete meetings and necessary preparation as mentioned above, the CDMC should meet for the second round to review progress in preparation and plan ahead.

- Review all preparations (the status of progress to be presented by the task force leaders and others upon whom responsibilities are allocated).
- Prepare additional, complementary activities if required to strengthen and expedite the preparations.
- Integrate the action plans of task forces on raising awareness and harmonize their implementation. Set up the process and timeline for their implementation.

(d) Awareness campaign in community:

Communities need to be well informed about the event, including what it is and what is it for. Therefore, an awareness-raising campaign is necessary. Such campaigns take up to a week depending upon the size of the community and the location of households. The best time is just before the advent of the rainy season. The campaign should make clear the communities about how EWS works for them, how the exercise will be conducted including the meaning of different warnings such as through sirens and the responses to be made thereafter. Volunteers can use flyers, posters and demonstrations as tools to share information. The tasks should include:

- Inform community people about the exercise through door-to-door visits, group discussions, short plays,

posters, pamphlets and other appropriate measures.

- Clarify for the community the difference between alert, warning and danger levels of rainfall and flood including their respective implications (necessary actions to be taken).
- Explain how information is received and shared in the community including the meaning of different signals. For example: duration of siren blowing, use of different colour flags and instructions to be followed.
- Practicing the evacuation of people requiring special assistance (e.g. the elderly, PWD, new mothers, pregnant women, children, among others), including required preparation.
- Orienting the community on what they need to bring with them during evacuation (during exercise and in the real emergency) and prioritizing the belongings to bring to safe location (like cash, important documents and grain).
- Informing and requesting people to book the date, start time and the duration of the exercise.
- Orienting the community on the task forces and their roles in the community. Discussing the time it will take for people to reach safe shelter, which route they should follow, who will guide them, what equipment to bring, among others.
- Share the point of emergency contact with each settlement/family and familiarize the volunteers with these points of contacts. Note: Awareness campaigns are worth organizing even without a mock drill exercise taking place.

2. Mock Flood Exercise

Although vulnerable people should be prepared to respond to disasters at any time, flood preparedness must start in April in Nepal in anticipation of the start of the monsoon. The following protocol has been developed to guide community level mock flood exercises. This is the basic, community-level protocol; other agencies like government and humanitarian actors can adapt the exercise depending on their role. Community people and key stakeholders need to be fully trained and aware of the methodology to execute the exercise in the event of a real flood.

The exercise is carried out in three stages based on the level of flood risk:

Alert Level



An assigned focal person (generally the chairperson of the CDMC or the EWS task force coordinator) receives information that the flood level in the monitoring station is increasing towards warning level, or that rainfall has exceeded the threshold in the catchment. This information is received from the gauge reader in the hydrology station, related institutions or upstream community people. This information indicates that a damaging flood is likely to occur.

Actions to be taken by CDMC and task forces:

- Immediately organise an emergency meeting of CDMC and task forces to check on their preparation
- Early warning task force members inform the community by blowing (sirens, whistle etc.)
- Volunteers in every village/settlement inform communities about the situation and alert them. Volunteers



also display a blue flag.

- Volunteers of the task forces remind community about the things to do and not to do during this stage and what to do if the warning or danger level is reached. This can be done by using a megaphone, door-to-door visits, showing flags or other appropriate means of communication. Volunteers may need to help some people with psychological counselling also.
- Responsible people inform other communities (particularly the downstream community) through phone or SMS.

After the alert is received, community people should take the following actions:

- Storing belongings, which have to left at home in a safe place.
- Select things to be moved to a safe location like the emergency shelter and prepare packages of emergency items like medicines.
- Call family members back to the home if they are out and prepare livestock for transfer to a safe place.
- Wait for further updates of the flood situation that will be provided by the relevant task force members.

In a real flood event, if the first warning is received at night, the community should form a group in every village/settlement that will remain awake to receive updates on the flood situation. The early warning task force members should get in touch with the gauge reader and related authorities (Emergency Operation Centre, District Administration Office, Security forces) and request them to monitor and share updates. They should also offer updates from the community and stay in touch with volunteers in each settlement and different task force members. They should follow up the monitoring station frequently to ascertain whether the flood is increasing or receding and update other volunteers and community people accordingly.

Warning Level

When the flood level at the monitoring stations (For example Chisapani of Karnali River, Chepang of Babai, Kushum of Western Rapti, Devghat of Narayani, Chatara of Koshi in Nepal) reaches the warning level, focal contact persons receive the warning information. As mentioned above, there could be a range of information sources. These different information sources provide backup communication channels so that if one fails the others can still work on it. The responsible community person also should be in touch with these informants for two-way communication.

In a real flood event, if the information is received from an automatic device such as a display board or an SMS or from an unknown source, it should be verified contacting reliable authorities such as the gauge reader, emergency operation center or the focal person at the disaster management authorities. Once the information is verified and confirmed, the following actions should be taken:

- A responsible member of the early warning task force should blow the siren. (Note: the roles to blow the siren and use the megaphone should have already been allocated and designated)
- This is the warning siren. The siren should be blown for one minute the first time, and then stopped for one minute followed by another one minute of blowing the siren. The total time period for this should be three minutes. This alerts the volunteers that the flood has reached warning level so they can rush to inform the relevant communities accordingly. If the community covers a large area, there may be the need of more than one siren to blow at different places. Such places need to be predetermined and responsibility allocated beforehand.
- Once the siren is blown, the task force volunteers should inform the community using a megaphone, door-to-door visits, and other means of communication. They should inform them on what to do at this stage - this information is crucial for the communities.
- The community should follow the instructions and be prepared to listen for further updates and instructions.
- The community should be ready to move and prepared to be evacuated to the safe shelter. This is the last opportunity to check whether the movable items and belongings are ready and things to be left behind have been placed safely.
- Soon after the warning level information is received, task forces like search and rescue, emergency shelter management and first aid should be mobilised and be ready to fulfil their responsibilities.
- Volunteers should be prepared with required equipment to support/rescue the most vulnerable, (e.g. the elderly, the infirm, children, PWD, etc.)
- If there is very short lead time or the flood is likely to worsen, volunteers should prioritise the most

vulnerable one during evacuation. After the completion of these activities, the coordinator of task forces should be informed about that. All should wait for further information and the community should be requested to be patient and follow the instructions.

- Updates on the situation and preparations should be provided to the local authorities, and requests for their assistance should be made as and when necessary.
- The designated persons of the early warning task force should inform other communities (particularly downstream) about the updates.

In the event of a real flood, the chairperson of the CDMC and the coordinator of the early warning task force (or other designated person) is responsible for contacting the risk monitoring station every 10 – 15 minutes to receive flood updates, (i.e. increasing, stable or decreasing), to be relayed to task force volunteers in the settlements.

In mock flood exercises, information on the danger level should be relayed 10 minutes after completion of all preparedness activities. In real flood events, the time period may be longer.



Note: There may be 3 phases (alert, warn and evacuate) of EWS warning based on rainfall monitoring. However, in case of flash floods (generally in small catchments prone to torrents), which occur within six hours of rainfall, all the above activities should be initiated just after receiving the first warning. The community should evacuate immediately to a safe place right after the rainfall crosses the threshold level.

In larger watersheds, when there is high rainfall upstream, this first warning should be considered as the alert stage, and the focus should be on monitoring the flood level at the hydrology station. There is no immediate need of evacuation as the flood may not worsen. Frequent communication with the gauge station may be necessary so that task forces receive regular flood updates.







After the focal person receives third notice, i.e. danger level, the following actions should be taken:

- Blow the siren. At this stage, the siren should be blown continuously for two minutes and stopped for half a minute. Then again it should be blown for another two minutes and stopped for half a minute. This should be repeated four times for 10 minutes in total.
- After the siren is blown, all task forces should be mobilised with their assigned roles and responsibilities to support and rescue communities.
- The EWS task force volunteers should disseminate the order to evacuate to a safe place through the designated safe route. Volunteers should visit door-to-door and use megaphones and other media. They should remind people what to do and how to do it, as people are likely to forget owing to fright. The message to deliver via megaphone should be prepared and practiced beforehand so that the volunteers do not mistakenly convey misleading information.
- Search and rescue task force volunteers should assist the most vulnerable people (who should be identified and located in advance).
- Volunteers should console community to be patient and ask them to follow their guidance to move calmly to safe place and support others in the evacuation.
- Volunteers should ensure information reaches all vulnerable people and they reach safe place.
- The volunteers should also ensure if the communication has reached to the most vulnerable houses, individuals and community. They should also ensure people in need of rescue are rescued in time.
- The designated person has responsibility to disseminate updates to other communities (particularly downstream) through phone calls or SMS.
- Once the community people reach safe shelter, shelter task forces in coordination with the CDMC should count head and ensure everyone has arrived. A monitoring team can be instrumental in helping task force volunteers ensure no one is left behind.
- First aid and social protection volunteers should fulfil their roles to help needy people. Past experiences have shown that people can become emotional and frightened even in a mock flood exercise. Therefore, psychological counselling can be pivotal.
- Those with leadership responsibilities (including the task forces) have a crucial role to reassure the community that they and their belongings back home are safe and they can get external support when needed.
- The EWS task force should keep contacting the gauge reader every ten minutes to receive the flood updates.

Actions to be taken by communities after receiving the danger level warning:

- Move to safe shelter with prepared belongings (certificates, cash, medicine, etc.).
- Follow instructions circulated through megaphone. Follow the evacuation route as guided by the volunteers.
- If people do not understand the instructions, they should ask volunteers for clarification without any unnecessary arguments.
- If someone is in need of help, this should be communicated to the nearest volunteer first rather than communicating among selves since community people engaged themselves in helping each other without proper coordination might cause an unmanageable situation like overcrowding which can lead to other unanticipated events.
- Those who are able to move without external help should move themselves to the safe shelter.
- The ones in need of external support should be arranged to head to safe shelter at warning level in and should not wait flood to reach danger level.
- Help volunteers to count people and ensure that all have arrived.
- Volunteers should be informed if someone is missing.

Note: In the event of a real flood during the night, people need to use torches, with volunteers showing the way at cross roads. It is appropriate that community asks support from locally based security forces. Enough torch lights should be arranged in advance.



Actions to be taken in the safe shelter

- People should follow the instructions given by volunteers, remain patient and refrain from arguments.
- People should not start or propagate rumours about the flood risk
- Volunteers should provide psychosocial counselling and ensure that everybody is safe.
- Shelter management volunteers should help maintain peace and order and ensure that communities and their belongings are safe.
- Family members should stick to one another to possible extent. If there is insufficient space for families to sit together, arrangements should be made for men and women to stay separately.
- Volunteers should communicate with the gauge reader and security agencies for updated flood risk information. The information sharing should not invoke panic.
- People in need of medical attention should be referred to nearby health posts or hospital. Volunteers should request external support if required.
- Drinking water, food stuff and other basic needs should be managed appropriately to ensure there are adequate supplies for the duration of their stay.
- People generally stay for one hour in the safe shelter during a mock flood exercise, and this period can be used to inform the community about responding to flood risk with the help of EWS and the actions to be taken in the event of a real flood.

Finally, the leadership should thank all who involved and contributed in mock drill. They should state that the exercise is designed to strengthen people's ability to successfully respond to flood events and to check whether the response system functions. They should not criticize anyone and should let the community know when the exercise is over (as if the flood has gone down and the warning level is decreasing) and request people to return to their homes feeling safe. Task force volunteers should support vulnerable people to return their way back homes and help community members to return back with their belongings.

In recent years, the intensity and magnitude of floods has increased beyond the anticipated level and for longer periods of time. It is likely to worsen in the future owing to different factors including climate change. The shelter may be insufficient to accommodate the population or the location itself may be unsafe in the case of extreme flooding. Therefore, a situation may emerge in which people assembled in the emergency shelter may have to go to other shelters. In such case, the CDMC may need to organise some orientation on how to manage such a situation. This may involve external support for rescue, prioritizing people to be attended first and the use of rescue boats, airlift or other means of transport. For example, it may be appropriate for a demonstration on how to line up and transfer people from the rooftop of an emergency shelter to a rescue helicopter or boat.





Monitoring, review and revision

It is essential to collect feedback from all stakeholders including community people and organise a review meeting of the CDMC and task forces as soon as possible after the exercise comes to conclusion. This review should include an assessment and evaluation of good practices, areas for improvement, skills to be strengthened and so on. This also should evaluate the adequacy and quality of equipment, required training, further practices and the sufficiency of human resources in each task force. A monitoring and feedback team should be formed at the beginning of the exercise and assign the responsibility of monitoring, review and report back to the committee. This could include people from different stakeholder groups including the community. The responsibilities of the monitoring team should include:

- Monitoring the whole process of the exercise including the function of task forces and communities
- Monitoring the time taken to share information, particularly the time taken to relay messages from the gauge station to the community.
- Monitoring the coordinated actions of task forces including time taken, efficiency and areas for improvement. Evaluating whether the task force volunteers, the CDMC, and other external supporters fulfilled their assigned responsibilities.

Review meeting of CDMC

After completion of the exercise, the CDMC should again meet for review. During this review meeting, the monitoring team should submit their report. Based on the report and the outcomes of the meeting, the drill protocol can be revised.

The meeting should review:

- Whether the actions followed the protocol or not, and why.
- The capacity of all task forces and support organisations involved in the exercise.
- Level of access to timely information by all people and whether all followed the instructions.
- Whether flood early warning information reached the most vulnerable people in time or not.
- Strengths and weaknesses of the process and any necessary improvements.
- Publicising the meeting's conclusions and formulated politicise.

The CDMC should document meeting proceedings and make them public.



References:

<http://practicalaction.org/cbeews-practitioner>

<https://practicalaction.org/cbeews-facilitator>

<http://practicalaction.org/scaling-up-ews>

http://practicalaction.org/docs/region_nepal/early-warning-saving-lives.pdf

http://practicalaction.org/docs/region_nepal/practical-approaches-cbdrm.pdf

<https://practicalaction.org/safer-nepal>

https://practicalaction.org/region_nepal_ews

<https://practicalaction.org/IA15000181NEP-banke-bardia-flood-warning#case>

<https://practicalaction.org/disaster-risk-reduction-nepal>

Reports on mock flood exercises



Annexes

Annex-1. Resources, equipment and materials for the execution of mock flood exercises based on flood EWS at community level

(a) Communication Equipment: Hand operated siren, mega phone, blue/yellow /red flags, telephone, radio, whistle, chart of EWS mechanism, communication channel, and list of telephone numbers, among others.

(b) Rescue Materials: Boats, ropes, life jackets, volunteer vests, stretchers, sticks, rubber tubes, among others. Locally available resources can be used in making of rescue materials like: life jackets made up of waste plastics bottles, boats made up of drums, ropes made with locally available resources, etc.

(c) First aid kit: Kit boxes with complete set of first aid materials

(d) Contact List: List of phone numbers of contact persons. Early warning communication dissemination chart.

(e) Checklist: List of things to do for volunteers to refer to if needed

(f) Materials for temporary shelter: Basic needs like (water, food, light, clothes, tarpaulins, utensils, etc.)

The exercise should be completed by all members of the CDMC and task forces and it is particularly important that PWD, pregnant women, new mothers, children, elderly and humanitarian agencies like the Red Cross participate, to test the existing capacity to respond to floods. The exercise does improve resilience and confidence.

Annex-2. Scenario and script of mock flood exercises

A scenario should be developed to execute a mock flood exercise. The scenario explains how the exercise begins, how it is driven forward and how it ends. It explains how the flood early warning components, particularly risk monitoring and communication functions and how people respond to the information. In reality, there are different practices in different places; in some districts, flood risk information goes from gauge reader to the focal person in the community and response activities in community are initiated on the basis of the information. In other districts, the emergency operation centre conveys flood risk information to local government authorities and they share this with the CDMC, who then convey the information to communities through the task forces.

Therefore, the scenario of the mock flood exercise should follow the real local practice of communication. Shorter and more efficient the communication channel, faster the information reaches the community. The scenario should be as relevant to the real incident as possible and guided by the script where necessary.

In some communities, it is done in two steps- warning and evacuation. But many other communities use three steps: alert, warning and evacuation. The three-step practice gives more time to prepare and is helpful where there is a short lead time and a long lag time. This is also useful in communities who need to be evacuated based on rainfall monitoring; particularly those who live in the areas prone to flood brought by torrential rains.



Scenario

It is summer monsoon. According to news from the weather forecasting division, there may be heavy rains in the 'western hills and Terai region'. The cloud is getting dense and moving north and is raining heavily in the hills of Karnali. The coordinator of the early warning task force, Basant Chaudhary has requested his neighbours Ramesh Bam, Ram BK, Shivaji Saud, Rabindra Singh and Dhansari Magar to call their relatives in the hills and get an update on the situation. The hilly region (upstream catchment) has witnessed incessant rainfall which has increased the likelihood of flooding. Having been affected by the devastating flood almost every consecutive year, Basanta and his neighbours are aware and alert to receive rainfall updates and take responsive actions in time.

.....After few hours.....

Basant receives a phone call from the gauge reader at the water level monitoring station at the foothill.

Gauge Reader : Hello, I am gauge reader Parbati Gurung from Chisapani. Are you Basant there?

Basant : Hello, Yes I am. Namaskar, I am Basant speaking.

Gauge Reader : The flood level is increasing in Karnali River. It rose from 8m to 8.5m in just half an hour. I guess, it may reach 9m (alert level) soon. Just calling to let you know about this.

Basant : How many meter reached; again? Did you just say 8.5m? Is it going up rapidly?

Gauge Reader : Yes! Currently it is going up and up. Please keep contacting me.

Basant : Ok...ok, Thanks!

...Basant calls Gauge Reader every 15 minutes to know the flood level information... after some calls

Basant : Hello Parbati sister, I am Basant again. What is the level (of flood)?

Gauge Reader: Now 9m. (9m is alert level for Basant's community)

Basant : Thanks! We will do necessary preparation. Please keep informing us time to time.

(Basant informs this to CDMC Coordinator Prem Bahadur BK and members of Early Warning Taskforce)

Basant : Prem jee, there is heavy rain upstream. Now, the level of flood has reached 9m in Chisapani.

Prem : Oh, it has? Please request all members of the early warning task force and volunteers to disseminate the alert information to the community using the megaphone and whistle. I will inform all committee and task force coordinators to meet and take necessary actions.

(Basant requests early warning task force members and volunteers to disseminate the flood alert in every settlement/village using the siren and megaphone)

Alert Message

Members of the early warning task force and volunteers disseminate the flood alert information in the community. Some members are whistling as prescribed, the way they have been trained. Sundar Ram Thapa (the siren holder) becomes ready to use the hand operated siren when he hears the whistle. All members of the CDMC immediately move towards the identified safe place for the emergency meeting and decide to mobilise all task forces and volunteers in the community.

In the meantime, the EWS task force volunteers are blowing whistles and using microphones as prescribed.

Whistle starts to blow (Shir ri ri ri ri ri ri)

The designated persons start to use the megaphone to disseminate the following message:

"Dear villagers, the river level is increasing. We have received information that it is likely to reach the warning level soon. Please be prepared. If outside, ask your family members find safety. Place your assets in a safe place. Prepare the livestock for transfer."

Again, the whistle blows..... (Shir ri ri ri ri ri ri). (If the villages are geographically spread out, the message should be repeated in all relevant places, at the same time if possible, and continued for five minutes. In reality this may take more time.) Some volunteers walk with blue flags.

After the alert is disseminated, task forces (search and rescue, first aid, shelter management etc.) assemble at a specified junction to prepare.

The search and rescue task force prepares the lifejackets, ropes, stretchers, rubber tubes and boats. Then, they collect the list of PWD, new mothers, pregnant women and elderly people. Others task forces also prepare in accordance with their roles.

Basant calls security force to inform about the situation.

(after sometime.....)

(Basant calls the gauge reader again. He knows that the flood level has reached 10m at the gauge station. Likewise, the local flood level is also gradually increasing. The warning level for this community is 10m. Basant informs the chairperson of the CDMC that the flood has reached the warning level. Basant also gives instructions to Sundar Ram Thapa.)

Basant : Sundar Ram ji, the flood has crossed the warning level (10m), please blow the siren.

Sundar Thapa : Okay, okay.

(Siren starts to blowHuin.....Huin.....Huin)

Warning Message

Sundar Ram Thapa blows the siren for one minute and stops for another minute. Again, he blows the siren for one minute and stops. It takes three minutes in total.

After blowing the Siren, Kashi Ram Sharma (designated member of the early warning task force for megaphone operation) starts to disseminate the flood information to the community. Other members of the early warning task force conduct door-to-door visits, some of them with yellow flags, disseminating the warning level information.

Prem receives phone calls from the District Emergency Operation Centre, the Nepal Red Cross Society and the Area Police Office giving updates on the flood situation and what the community is doing. He replies very briefly. Basant calls the coordinator of the early warning task force in the downstream community.

Kashi Ram: Dear villagers, please listen carefully. The flood level at Chisapani is at 10m. You should have heard the siren. Now please prepare your belongings to carry to the safe place. Pack up dry food, a clean drinking water bottle and necessary clothing. Ask the volunteers if you need help. If family members are out of the home, confirm their status and call them back if they are close otherwise ask them to find a safe location or join us at the safe shelter. All need to be ready to leave. At any time, we may need to head to the safe place.

(Right after blowing the siren, all task force members visit the settlements and advise people again to prepare their important belongings. The search and rescue task force prepares their equipment for providing assistance to vulnerable people. The emergency shelter management task force and the first aid task force also become ready.)

Haidar Ali (a member of the search and rescue task force): Oh, Mukhiya Uncle! Did you hear the siren blow and the megaphone giving the warning level information?

Manbir Rai: Oh! I did not hear the whistle. Suddenly! I heard the siren. But my grandson (Dhane) heard it for sure.

Haidar Ali: Oh, oh, Mukhiya Uncle. Place any assets you will not bring to the safe shelter safely at your home and prepare the belongings you should bring. Start walking immediately after that. Other people may need to go to the safe shelter any minute. Mukhiya Uncle! If you have guests at home, inform them about this and lead them towards the safe place.

Manbir Rai: Yes, Yes! I will do as you advised.

Volunteers start displaying yellow flags in the villages and try to reach those who cannot hear the siren.

In the meantime, the emergency shelter management task force members allocate separate places for men and women. The search and rescue task force members are assisting those households with the most vulnerable people to go to the safe shelter.

Emergency shelter management task force members have already identified and DMC decided that the Sundar Nagar (Place name neighbouring to the community) is a suitable place if any people have to transfer, and also inform Prem.

Dhankumari Rana (Coordinator of the emergency shelter management task force): Hello, Prem ji ! Please inform the people of Sundar Nagar and the local sub-chapter of the Nepal Red Cross Society. Four sick people and 10 - 15 children may need to stay there overnight, as they will find it difficult to stay here overnight.

Prem: Hello, are you Hari Mahato ji (Coordinator of Sundar Nagar Committee) The flood has crossed the warning level, so we are preparing to go to a safe place. We may need your help at any time. Please be prepared and inform Hitram Sawad of NRCS.

[After a few times, Hitram Sawad calls Prem and informs him that the sub-chapter of NRCS and the community of Sundar Nagar are ready to support them. He says they can provide food and shelter for 20 people]

Jitendra Thapa (Coordinator of the search and rescue task force): All members of the task force are reporting to me that all community people are ready to go to a safe place.

Dhankumari Rana: The emergency shelter is ready and I have informed Sundar Nagar that they may need to accommodate us.

Shanti Sharma (Coordinator of the first aid task force): All members of the first aid task force are also ready.

(All members of the CDMC and the task force coordinators are at the Chowk. They communicate with one another for about 5 minutes to ensure everything is at place and they are ready to start the next stage)

(Meanwhile, the police officer in charge calls Prem to inform him that they are ready to mobilise police personnel. Basant receives the call from the staff of the municipality and Sarita Pokharel, the Secretary of the committee receives a call from a F.M. radio station enquiring about the community situation.)

Lautan Chaudhary (volunteer) is operating a "Nepal Flood Early Warning" application on his mobile. He gets information from the mobile app that the flood level has reached 11m (the danger level for this community). Basant receives a call from the chairperson of NRCS, and receives the same flood information.

Basant: The flood has reached danger level. I will call Parbati Sister for confirmation.

All gathered People: Yes, yes. Please call and ask (for confirmation).

(Basant calls to Parbati. But her phone is busy. So, he calls to another staff-Ramji Tamata.)



Reply to Basant from Ramu Tamata stating that the flood level has reached 11m and is rising

Basant : Oh, yes. Flood has reached danger level and increasing. We must evacuate as soon as possible.

Prem: Dear all we should evacuate now.

All gathered people: Oh, oh, Lets go....Lets go.....Lets go

Danger Message



Sundar Ram Thapa begins to blow the siren. As this is the third warning. He blows the siren for two minutes and stops for half a minute. Then again, he blows the siren for another two minutes and stops for half a minute. He repeats this four times, for a total of ten minutes.

Community starts evacuating. Task forces (search and rescue, emergency shelter management, first aid, etc.) accelerate with their allocated tasks

Search and rescue task force members provide assistance, using their equipment, to the most vulnerable ones helping to take them to a safe place.

Early warning task force members and volunteers disseminate the danger level information in every village using the megaphone and door-to-door visits, instructing people to go to the safe shelter. The volunteers who are mobilised for door-to-door visits are using red flags during this. Task force members and volunteers remind people what to do and what not to.

Volunteers are also at the crossroad to show people the safe route leading to the emergency shelter. They also advise people who are under pressure to keep calm and request them to follow the instructions.

Community people are also encouraged to support one another. For instance; Prem, Basant, Sundarram, Sarita, Jitendra, Dhankumari and Shanti have been involved to bring goats, chickens, utensils, among others from their neighbour's houses. Rabindra has taken responsibility of keeping personal property safe, with which Prem is also able to help. Janaki ensures that all the community people have been rescued. She also informs her father, who works in a different village and tells him not to worry. The monitoring team also ensures that all people are evacuated and have reached the safe place.

Basant disseminates the danger level information to the downstream community and informs his friends who live elsewhere via SMS.

Four or five young people who are expert in swimming stay stand-by at the village for rescue. All the other community members arrive at the safe shelter.

Dhankumari starts checking names to ensure all people have been rescued and are in the safe place.

Volunteers are delivering psychosocial counselling to all who are traumatised.

The coordinator of the early warning task force is in constant contact with the gauge reader to receive flood level information.

After about half an hour, all people are assembled in the shelter and all heads are counted.

Information about decreasing flood level is received as the rain has already stopped uphill.

(Prem BK announces: Dear villagers, please listen to me. We have received information that the flood level has gone down and is now below the warning level. So, we can now return back to our homes.)

In the event of a real flood, we must follow the same process!

This is mock flood exercise. Thanks to all for your participation. Congratulations to you all for the success.

(All members of task forces and volunteers are requested to support community people to return to their homes.)



The renowned economist Dr. EF Schumacher established Practical Action in 1966 to prove that his philosophy of 'Small is Beautiful' could bring real and sustainable improvements to poor people's lives. With its Head Office in the UK, Practical Action works in more than 20 countries including India through its country and regional offices in Bangladesh, Kenya, Nepal, Peru, Sri Lanka, Sudan and Zimbabwe. Practical Action's approach is guided by its vision of a sustainable world free of poverty and injustice, in which technology is used for the benefit of all.

In Nepal, Practical Action started its work during 1979 and signed General Agreement with Social Welfare Council in 1998. In its current strategy period 2012 -2017, Practical Action is more focused for leveraging large scale change that contributes to poverty reduction, technology justice and sustainable wellbeing for all. The strategy focuses on four areas of work in particular where Practical Action has recognised expertise, which are:

- **Access to energy** – Sustainable access to modern energy services for all by 2030.
- **Agriculture, markets and food security** – A transition to sustainable systems of agriculture and natural resource management that provides food security and livelihoods for the rural poor.
- **Urban waste, water and sanitation** – Improved access to drinking water, sanitation and waste services for urban dwellers.
- **Disaster risk reduction** – Reduced risk of disasters for marginalised groups and communities

Practical Action has been working on community based EWS (early warning systems) in Nepal since 2002 - specifically on systems which give early warning of flood.



Practical Action

Narayan Gopal Sadak, Panipokhari,
Maharajgunj, Kathmandu

Phone: +977-1-4423639/4423640

Fax: +977-1-4423632

Email: info@practicalaction.org.np

Web: www.practicalaction.org