

# Chapter 8

## Post-disaster Measures

The impact of flash floods causes considerable devastation to physical infrastructure, households, and livelihoods, but relief efforts are often short term and do not deal with the environmental, economic, and social impacts. Proper planning is required and work should be initiated based on an assessment of damage followed by sustainable rehabilitation work.

Returning a community to its original state is very challenging. Victims may have suffered not only physical loss, but may also have undergone significant mental trauma. Thus, any planning process must address and highlight the various socio-cultural and economic aspects of the community.

### 8.1 Damage and Needs Assessment

Damage and needs assessment is the first step after a flash flood event. Unless properly assessed, community needs cannot be prioritised. However, one should be cautious in the assessment process. In doing assessments, often the distinction between 'damage assessment' and 'needs assessment' is not clarified. Sometimes the need for a distinction is undermined, causing overlapping of one with the other.

After a disaster occurs, a lot of information can be gathered on the damage situation, but large amounts of information on damage and losses may overshadow the priority needs of the affected community. Damage assessment may not reflect the needs of the community. For example, if a flood damages the crops in a crop-surplus area where rich landowners are the most affected, the area may not need immediate emergency food-aid. But the crop damage may affect migrant seasonal labourers who usually come to the area to harvest those crops. They will be unemployed and may face starvation. In that case, they should be selected as a priority group for any food-aid programme, even if they are not directly affected by the flash flood.

It is very important to focus on the community needs instead of listing the damage. The vulnerability of the community should come first in a needs assessment. Community vulnerability is linked to a rights-based approach and attitude. It is the right of the most vulnerable people to receive priority in needs assessment. Their needs should be assessed first. For this, the relief and rehabilitation team of the CFFRMC should have proper skills and expertise. The following points should be considered in performing an assessment.

- The assessment should determine the magnitude and area of damage.
- The assessment should provide information on the quantity and types of support needed.
- The assessment can be useful in seeking external funds, as the figures and resources can be used to support claims.
- The assessment should record data for future reference.
- The assessment can identify the precise area where the sustainability of the watershed can be improved to reduce the possibility that such a disaster could recur.

Damage can be physical and quantifiable such as damage to structures and loss of assets, but losses can also be non-physical and difficult to quantify, such as productivity loss, injuries, and so on. A conceptual framework for damage and needs assessment is given in Figure 17. Table 4 simplifies and categorises some of the direct and indirect, quantifiable and non-quantifiable, physical and non-physical impacts.

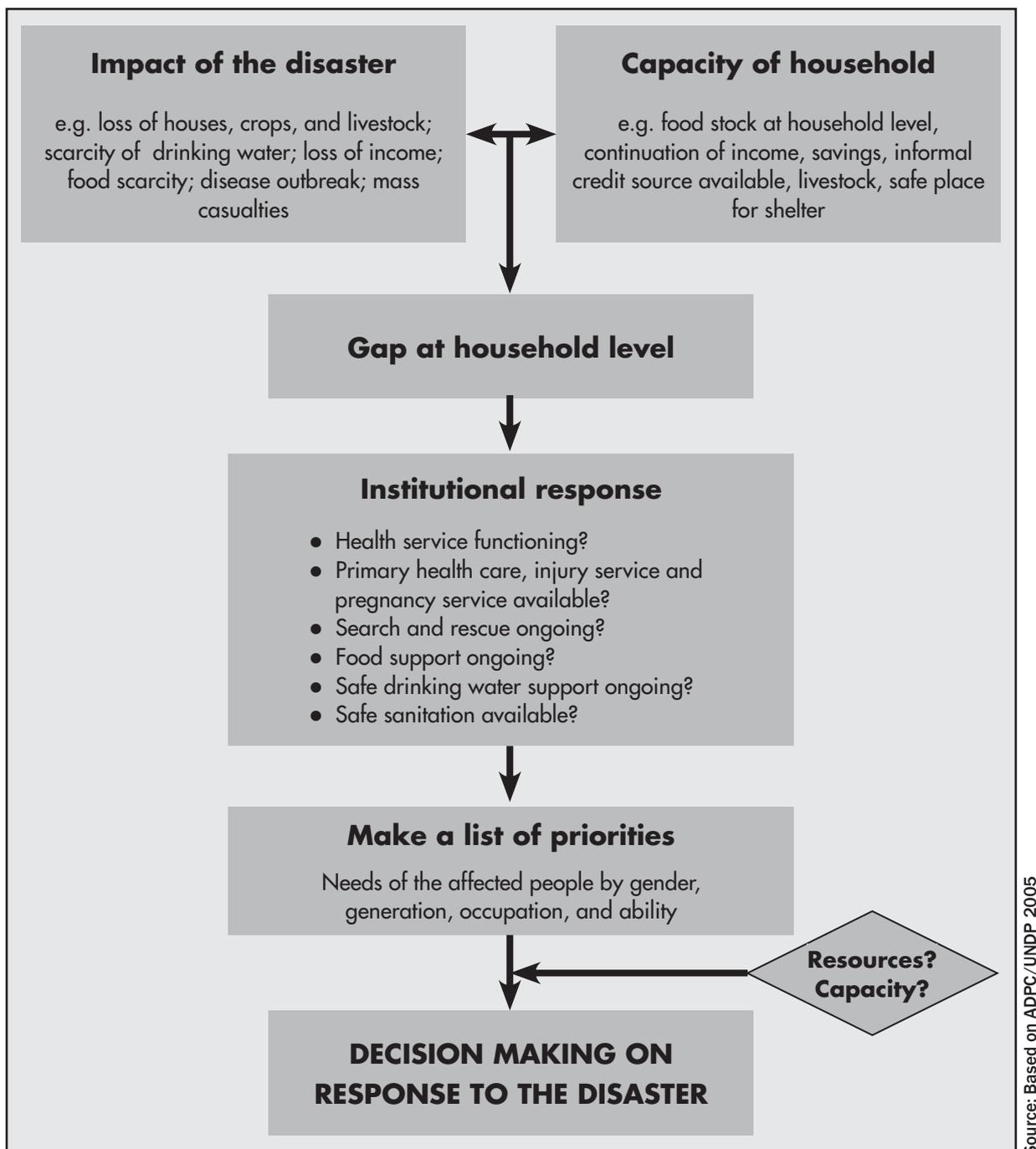


Figure 17: Conceptual framework for damage and needs assessment

### Socioeconomic assessment

Trauma stemming from a natural disaster can be very devastating and sometimes ends the survivor's interest in living (ADPC/UNDP 2005). Therefore, such losses must be assessed very minutely and carefully. It is difficult to correlate economic and social losses. These two elements complement each other, so assessment should be done to fulfil immediate needs. Assessment of very urgent needs like shelter, water and sanitation, medical facilities, and mental health counselling can be done.

### Environmental assessment

The impact of a flash flood on the environment should be assessed properly, as its effects are seen in the agricultural productivity, tourism, and economic growth of the area. Environmental damage caused by flash floods may include such things as soil erosion, sedimentation, and damage to ecosystems and biodiversity.

**Table 4: Some typical impacts of flash floods**

Impact	Physical/quantifiable/direct	Non-physical/non-quantifiable/indirect
Infrastructure damage	X	X
Household		
- Assets	X	
- Employment	X	X
- Injury <sup>a</sup>		X
- Death	X	
- Mental health		X
- Trauma		X
Economic loss/business		
- Assets (merchandise)	X	
- Labour	X	X
- Down time	X	X
- Productivity loss	X	
Agricultural loss		
- Crops destroyed	X	
- Surplus damaged	X	
- Field damaged	X	
- Equipment damage	X	
- Labour	X	X
- Time lost		X
<sup>a</sup> It is also common to consider injury as physical damage Source: ADPC/UNDP 2005		

## 8.2 Recovery and Rehabilitation Activities

While carrying out recovery and rehabilitation activities, various aspects of community needs must be assessed to ensure that the process is both holistic and integrated. A participatory approach must be adopted. Recovery and rehabilitation may include the following efforts.

### Location of reconstruction

People often show a great deal of courage in accepting their losses and trying to rehabilitate their property. Once water starts to recede, people return and try to rebuild their households, but rebuilding must be done carefully. A huge amount of debris is left behind after flash floods, and rehabilitation is often very difficult. Often due to sentimental attachment, people tend to rebuild at the original location. If possible, a new location should be carefully selected so that future flash floods do not impact on it.

New construction should be done so as to reduce exposure to potential future floods. Proper drainage should be established between settlements so that waterborne diseases can be eliminated.

### Health care

Health effects can appear immediately after a disaster and continue for a long time. Mental illness, disease, and malnutrition are very pronounced in these areas. Volunteers must be prepared to assist the community with mental and physical health. Extensive counselling is needed to help victims overcome the trauma of their losses.

Waterborne diseases are very common and severe at this stage, thus action should be taken to eliminate them. Good sanitary health and hygiene practices are also important.

## Post-disaster activities

Immediate rehabilitation activities:

- work to drain the floodwater
- maintain the hygiene and sanitation of victims to check spread of disease
- supply hygienic water
- mobilise health personnel to the injured and sick people
- ensure the availability of basic food items in the market at affordable prices
- ask agencies for help on needs
- ensure the fair distribution of relief materials

Intermediate rehabilitation activities:

- prepare immediate restoration plan and decentralise the responsibilities
- seek external help by communicating with related agencies
- coordinate external restoration activities
- help people get reconstruction materials such as wood and roofing material
- educate people in reviving damaged crops and help them get seeds, fertiliser, and external support
- help needy people to get work for their day-to-day maintenance. Activities such as food-for-work can be brought to the area so that poorer sections of the community can work to earn.
- facilitate reconstruction by ensuring that the rebuilt houses and bridges are safe against the next flood

Rehabilitation activities when normalcy returns:

- review the effectiveness of the preparedness measures and decide what the deficiencies were and what improvements are necessary in preparing for the next flood
- a restoration plan should be prepared as per the revisions
- facilitate the start of income generating activities for the poor
- facilitate growing new crops according to the situation and needs
- start those activities that can be done by the community and seek help from external agencies for those that cannot
- coordinate the work being done by different aid agencies
- conduct the next cycle of preparedness

Source: JVS 2003

Water sources often are affected by flash floods, and the contamination and inadequacy of water increases the difficulties. Quite often water sources are buried by debris. Thus, water of adequate quality and quantity must be provided.

### Enhance economic vitality

The direct effect of a flash flood is seen in the economic condition of the community. Prosperity achieved over a lifetime is shattered in seconds. Thus, rehabilitation of economic activities is important for the resilience of the community

Various economic activities need to be carried out to boost the local economy. The availability of important commodities like electricity, kerosene, gas, and so on must be established as soon as possible. Transportation routes must be rebuilt to improve the transmission and transaction of goods. Reconstruction and strengthening of river training works, must be ensured. Agricultural planning is an important measure to enhance economic viability.

Immediate jobs, as well as long-term businesses, are required for community resettlement. Distribution of relief items during the disaster is not always sufficient, so various livelihood support programmes must be conducted. These activities are beyond the scope of local communities and NGOs, and, therefore, external assistance should be sought.

Temporary work schemes like debris clearance, construction, and so on can help victims by providing jobs from which they can earn their daily needs. Different trainings on income generating activities can help communities who have lost their livelihoods. Initiating various training programmes (handicrafts, carpentry, electrician training, masonry, sewing) in small-scale household businesses can enhance people's ability to earn a living. Providing soft loans can help them restart their businesses. Such initiatives should include all stakeholders.

While reclaiming farmland, special attention should be made to reduce future risk. New farming techniques should be adopted and emphasis should be given to planting cash crops. Crops like bananas, peanuts, and melons can be grown in flood affected areas. While reclaiming the slopes, the focus must be on checking the topsoil and enhancing the infiltration capacity of the soil. Agroforestry and sloping agricultural land technology (SALT) are some very beneficial methods for mountain agriculture (Bhatta 1999).

### **Enhance social and gender equity**

Richer members of the community often have an advantage, even in disasters, and receive more during distribution of relief. It must be ensured that every person benefits equally.

After a disaster, women can be affected by domestic violence as men's frustration at the situation is vented on them. They may suffer badly from physical and mental violence. Effective advocacy must ensure the safety of women in such areas.

### **Enhance environmental quality**

Conservation of the environment is the key to reducing the occurrence of floods. Land use planning and protection are needed. People must be aware of the resources and their advantages (see Chapter 5).

## **8.3 Enhancing the Community's Resilience**

Flash flood disasters act as a cross-check on the resilience of a community. Resilience is a community's capacity to regain its original state. Even after vast destruction, relatively resilient communities stand by themselves and work to rebuild their property.

Characteristics that enhance resilience include vibrant leadership, shared goals and values, established institutions and organisations, positive socioeconomic trends (stable and healthy population and diversified economic base), constructive external partnerships and linkages, and the availability and use of resources and skills (Gardner and Dekens 2007).

There is now a lot of emphasis on building the resilience of communities towards natural hazards. Various changes in natural resources utilisation can challenge the resilience of a community. Changes include shifts in biophysical conditions; the expansion of infrastructure such as buildings, facilities, and roads; the erosion of traditional knowledge and practices; natural population growth through a reduction in mortality due to improved nutrition and health care; immigration of permanent and transient residents; natural resource extraction; development of commercial agriculture and horticulture; protection of strategic interests and national security; war; and tourism development (Gardner and Dekens 2007).

**Learning:** Learning from past experience is an important tool for enhancing the resilience of a community. People can identify the magnitude and extent of risk by incorporating the flash flood event with past similar events and can prepare accordingly.

**Diversity:** Knowing how and what diversity is required to enhance resilience comes about by learning through experience. Various kinds of ecological and social diversity can reduce the risk of vulnerability. Changing cropping patterns, stall-feeding livestock to discourage pasture degradation, and improving the forest area are some ecological practices that enhance resilience. Further, the process of economic diversification does not mean that everyone in a social-ecological system will benefit. Lack of equality and equity within such

systems may prevent or erode resilience and increase vulnerability among disadvantaged groups (Gardner and Dekens 2007).

**Local knowledge:** Local knowledge can be a primary factor in building resilience in a community. People know their own area best, so they are more aware of the activities that are needed. Underestimation of local knowledge can increase vulnerability rather than strengthening the effectiveness of resilience procedures (see Chapter 4).

**Self-organisation:** Resilience procedures cannot be effective or complete unless the community is united with a common aim. People have different types of expertise; there is a need to bring all the expertise to one forum to address the disaster and its effects. Organising people can be very site-specific and should also incorporate minute details about local customs and religions. If these details are ignored, there can be continuous disputes about authority, rather than working together for resilience.

**Linkages and partnerships:** Linking with responding partners and stakeholders is necessary. There must be appropriate links to import support and relief.

A community must be integrated and addressed properly to enhance resilience. Issues that need special attention in building resilience in communities include the following.

- In addition to physical needs, counselling is needed to help survivors overcome the mental trauma of losing family members and property.
- The recovery plan must address gender issues and link marginal people.
- It is important to draw on the support of the community by being adaptable, flexible, and patient, and work on their livelihood support programmes.
- Use of local material and labour for reconstruction should be encouraged, thus restoring the local economy.
- Prepare the community to reduce future vulnerability as the recovery proceeds.

## 8.4 Monitoring and Evaluation

The monitoring and evaluation (M&E) role of the CFFRMC is very important. The recovery process and effectiveness of the programmes should be monitored, evaluated, and fed back into the process. Monitoring provides management with timely, accurate, and complete information on the effectiveness of the CFFRMC and its teams. It even provides information and enables stakeholders to assess progress and to take timely actions/decisions to ensure progress is maintained according to schedule (ADPC/ECHO/UNESCAP 2004). Financial and administrative provision for M&E of the CFFRMC should be made during the formulation of the latter. M&E can be done by a supporting NGO or a district-level government representative.

Monitoring is beneficial in implementing any project (including flash flood risk management) for the following reasons:

- determining what actually happened rather than what was planned
- promoting the approach and its transparency
- understanding changes
- learning lessons
- identifying problems and priorities in projects

Monitoring can be done in three phases: process monitoring, effect monitoring, and monitoring the significant change. Monitoring and evaluation of flash flood management activities are conducted with the following objectives, which in turn help improve the effectiveness of CFFRMCs (ADPC/ECHO/UNESCAP 2004) in order to:

- determine the full extent of positive and negative outcomes and impacts, usually at the end of a project or programme
- identify lessons that can be applied to future programme strategies and improve effectiveness of interventions
- document experience for advocating for policy change and institutionalisation
- collect data demonstrating the quality and effectiveness of the process that can be used for institutional marketing
- ensure and demonstrate accountability
- improve monitoring methods
- critique their own work
- see where strengths and weaknesses lie
- compare the programme with others like it
- share experiences
- see if work is costing too much and/or achieving too little

It is important to maintain transparency in allocating relief. CFFRMCs must maintain records of resources and expenditures. Public auditing of all financial activities must be done to ensure that relief and support reaches those in need.

## **8.5 Managing Information for Future Reference**

Programmes are often implemented only during disasters, and no one keeps records of the events for future reference. Managing information for future reference is important because it:

- gives planners a vision about the deprived people who need appropriate long-term support
- provides a reference point to allow development workers and researchers to find out the cause of disasters and their magnitude and duration in the watershed; this information can be used to support integrated watershed management
- quantifies the loss of life and property
- explains the constraints on preparedness that caused extensive loss
- describes what went wrong regarding evacuation and temporary settlements
- gives ideas for further improvements to reduce future losses

CFFRMCs should keep records of all flash flood events and associated damage, along with their own activities in response to the flood. In coordination with various organisations, CFFRMCs should collect the relevant information on forecasting and warning available to the people: flood preparedness; crop management before, during, and after flood situations; and so on.

Information on the damage and losses caused by individual flash 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. CFFRMCs can keep records of maximum flood levels at different locations, which can facilitate post-flood investigations by technical agencies.