



Assessing Damage after Disasters

A Participatory Framework and Toolkit

Assessing Damage After Disasters

- A Participatory Framework & Toolkit

Acknowledgments:

Financial Support: Cordaid, The Netherlands
Guidance and Advice: Binoy Acharya
Editorial Support: Arun Kumar
Photo Credits: UNNATI , Hunnarshala, NCPDP and Rushank Mehta

Authors: Vivek Rawal
Dinesh Prajapati

2007
UNNATI - Organisation for Development Education

Design: Rajesh Patel

Printer: Print Vision, Ahmedabad

Assessing Damage after Disasters

A Participatory Framework and Toolkit

Vivek Rawal
Dinesh Prajapati

Contents

Introduction	v
How to Use the Toolkit	vii
Multi Sectoral Damage Assessment Framework	ix
Chapter 1 Assessing Loss and Damage to Human Life	1
Chapter 2 Assessing Damage to Housing	9
Chapter 3 Assessing Damage to Community Infrastructure	19
Chapter 4 Assessing Damage to the Environment	27
Chapter 5 Assessing Loss of Livelihood	37
Chapter 6 Assessing Impact on Health	45
Chapter 7 Assessing the Psycho-social Impact	53
The impact of disasters on women	60
End Note	62
Glossary	63
References	65

Introduction

Disasters impact various dimensions of human life, both short term and long lasting. They can cause huge damage to human life, living conditions, social relationships, economic endeavours, goods and services, assets and environment. In the past, experiences of humanitarian response have shown that most of the times response is determined more by logistical capacities and other institutional factors of delivery agencies; rather than real needs of the affected communities. Damage Assessment, after any disaster, is a step of critical importance. A comprehensive and effective damage assessment is critical in planning the response to address the needs of the affected people and can avoid any potential humanitarian crisis. Various studies have shown that in the past few decades, the costs of disasters have multiplied manifold. In recent years, there is a growing awareness on issues of disaster risks and damages and the need to strengthen the efforts for meeting humanitarian needs with a developmental perspective. Not only are preventive and mitigation measures required, but also the response and recovery need to be planned with a view to reduce vulnerability in future. Any post-disaster response is based on an assessment of damages to understand the nature and extent of impact on various aspects of human life and living conditions. From the past experiences, it has been learnt that damages are measurable, but without getting in to the subjective dimensions, the human sufferings can not be fully understood.

This booklet has been developed with the objective to give field practitioners working in post-disaster humanitarian response, a participatory and vulnerability focused framework and appropriate effective tools to carry out the multi-sectoral damage assessment. The purpose of developing this toolkit has been to support a comprehensive understanding of the impact in a participatory manner. It is our hope that the toolkit will equip multi-disciplinary teams with a range of tools and techniques that are intensive, iterative and participatory- to gather useful and accurate information of various types of damages after 3 to 4 weeks of disaster. It will bring about greater reliability, accuracy and help build community consensus on issues of nature and extent of impact. Use of participatory methodology will further build accountability of humanitarian actions towards the affected community.

Drawing upon various methodologies in different sectors such as housing, infrastructure, social & economic sectors, this toolbook tries to help consolidate information aspects of various damages and simplify it for use at the grassroots during humanitarian needs. The effort in this guidebook has been to cover major losses and damage in different sectors and explain the need for required information. It further suggests a tentative format and appropriate tools for collection of the required information. Although this document concentrates on assessing losses from some natural hazards like earthquake, cyclone, floods and tsunami, the principles and much of the supporting material would apply to assessments of loss from other hazards as well. This guide only suggests a general overview and basic assessment tools and methodologies that help align the process of post disaster recovery with a community empowerment perspective. It may not be possible to classify all types of losses or damages into categories discussed in this guide. But most aspects of the damages are covered. This book draws working tools from knowledge gained through responses in past disasters by various agencies, PRA processes and our own field experiences of post disaster reconstruction. Suggestions or comments, if any, should be forwarded to UNNATI .

How to Use the Toolkit

'Assessing Damage after Disasters- A Participatory Framework and Toolkit' focuses on various impacts on human and social life. It identifies the need for information in different sectors and methods to collect these. This guide may not cover all types of information about the disaster impacts but will give a definite and credible overview of different dimensions and extent of damage while identifying the critical vulnerabilities. This manual may be useful for NGOs, Local Governing Institutions and humanitarian workers engaged in planning and responding in post-disaster situations.

The toolbook is organised in the following manner:

The first section identifies the key concepts related to the damage assessment framework. The subsequent sections are devoted to damage assessment of

- Loss & damage to Human Life
- Damage to housing
- Damage to community infrastructure
- Damage to environment
- Livelihood losses
- Impact on health
- Psycho-social impact

Each type of damage is discussed in form of three main questions.

- What do we need to know?
- Why do we need to know?
- How can we know?

Through these questions, the toolkit elaborates the various aspects in each sector that may be impacted and the information that needs to be collected. Sector wise tentative formats and appropriate methods have been suggested to support this process.

The toolkit can only help in capturing the extent of damage by quantitative and qualitative information. It does not cover the economic valuation of the same. Here, it will be appropriate to mention that damage assessment methodology has to have flexibility to be relevant in specific context and therefore, the methods, tools and formats provided in this guide are not to be considered rigidly. At some places particularly while discussing the assessment tools, some words from vernacular indian context have been used. The same have been explained in the glossary. Efforts to understand the underlying concept, modifications and alterations must be made according to the context in which the toolkit is proposed to be used. This book hopes to provide a framework for such use.

Multi Sectoral Damage Assessment Framework

As we know that disasters affect various aspects of human life, the damage assessment framework has to take an integral view based on an understanding of various sectors. The different dimensions of life are inter-related. The recovery after the disaster depends on coping with various impacts of the disaster. For example, housing reconstruction is linked with livelihood rehabilitation and these engagements can be therapeutic for overcoming mental trauma. This indicates that our understanding of the impacts has to be comprehensive and multi-sectoral.

The framework for damage assessment needs to be participatory in nature and involve the communities that have been affected, so that people can make decisions about the recovery process. The damage assessment framework in this manual is based on certain key concepts of vulnerability reduction, social inclusion, community participation and gender equality. It is important to understand these key concepts, so that wherever required, the methods and tools of damage assessment can be customised as per the contextual needs.

KEY CONCEPTS

Vulnerability Reduction

Vulnerability is the likelihood of harm and damage to life or conditions conducive for the well being. The vulnerability may exist due to many reasons such as geographic location, physical state, social exclusion and marginalisation, economic instability or environmental conditions. The disaster impact is directly proportional to the vulnerability. Vulnerability is also weakness and lack of capacity to overcome consequences of disaster impacts. In the past few years, there has been an improvement in understanding to accord greater importance to reduction

of the vulnerability to disasters. Development programmes, all over the world, are trying to mainstream disaster mitigation aspects. Similarly, there is increased realisation amongst humanitarian workers that post-disaster response and recovery initiatives should be planned with the perspective of reducing the vulnerabilities of the affected communities. Therefore it is required that the damage assessment is done with the perspective that there can be clear targeting of the vulnerable members of the community during the response. The categories of vulnerable families should be identified in consultation with the local communities. This process

may identify families such as widows, orphans, old aged, physically or mentally challenged, chronically ill, HIV positive, pregnant women, landless labourers, etc.

Social Inclusion

The concerns of exclusion and marginalisation arise from the structural inequities that exist in our communities and the social set-up. The inequities within the communities, leading to differential access to resources and opportunities for economic and social actions may be due to many traditional, customary or historic reasons and are further strengthened by the present socio-political and economic processes. Social Inclusion aims at positive actions contributing towards removal of these inequities. So it is important to focus on an

inclusive approach not only in terms of the outcomes of the policy but also in terms of participation in the process of decision-making. The idea of social inclusion is extremely significant during the damage assessment to ensure equal benefits of the public policy to all the affected members of the society. It is important that all excluded and marginalised sections of the society are identified and are focused on during the damage assessment.

Community Participation

For the objective of effective post disaster response, involvement of the affected stakeholders in damage assessment is critical. The idea of participation involves information, consultation, decision making and collective action. It essentially, is rooted in the idea of empowering

people, so as to build community's capacities and provide a facilitative environment to participate effectively in the process. Damage assessment process too has to develop a methodology that involves affected community and its various stakeholders. Participatory processes ensure that the affected community is not merely a passive recipient of relief and rehabilitation projects; but is engaged in gaining control over the processes of rebuilding their own lives. In situations where the community may have been overwhelmed with disaster, the damage assessment process can create facilitative mechanisms for supporting the affected community to regain their hope.

Gender Perspective

Gender relations as a part of the social and cultural context, determine the extent of resilience or vulnerability during the disasters and shape the community's capacity to cope with it.

Women's economic activities are less visible. The primary responsibility of caring for children, elderly and the disabled is also borne by women. Therefore, gender analysis in the damage assessment is an important tool. There is increasing evidence from various studies that women are impacted more in any disaster situation. It is, therefore, important to get gender disaggregated data so that an inclusive approach can be developed.

SCOPE AND OBJECTIVES

With the above key concepts, damage assessment focuses on vulnerability and contributes towards reducing it through response and development programming. Before we get into details of multi-sectoral assessment and the tools required for it, let's look at the objectives of such an assessment.

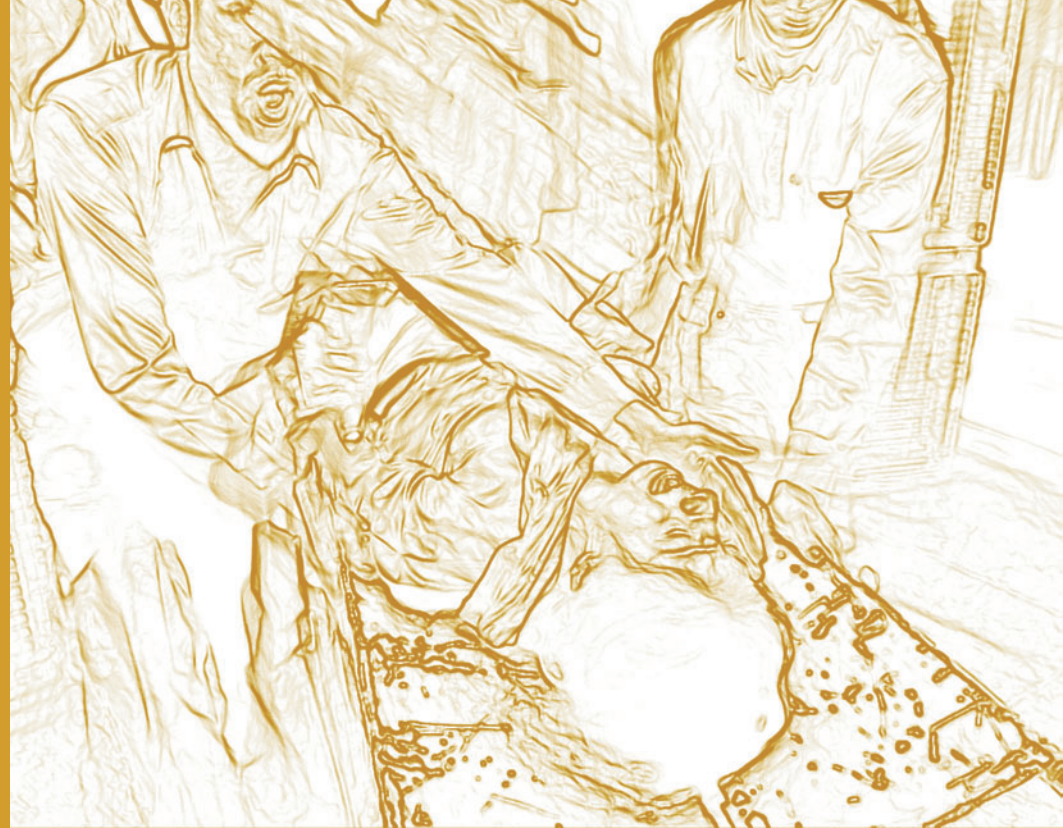
Post-disaster damage assessment can be broadly divided in two parts first, **situation assessment** and second, **needs assessment**. The first part focuses more on description of the situation on the ground, depicting magnitude and impact of disaster on population and infrastructure. It basically answers the question- "what has happened?" The second part tries to articulate level and type of assistance required for the affected population. It focuses on the question- "what needs to be done?" The damage assessment covers the nature and extent of a disaster, priority needs of the affected community, particularly the vulnerable people. It must provide the extent and type of damage and identify secondary threats, resource availability and the capacity of local response. Finally, the assessment process should make recommendations that define and guide further actions, interventions and resources needed to formulate long-term rehabilitation or developmental strategies. The post-disaster assessment is taken up at different time intervals, once immediately and then after some time, to

fully understand the damage and its impact on various aspects of life. Initial rapid assessment is to determine relief and immediate needs and to understand the broad pattern of the damages. The focus of this manual is the detailed **Multi Sectoral Assessment** that is conducted after some time to determine long term recovery and development requirements. It is usually conducted about fifteen days to a month after the disaster depending on accessibility and status of immediate needs. It covers critical sectors in terms of long term recovery such as housing and infrastructure, livelihoods, environment and psycho-social aspects and tries to estimate the quantum of damage. It can also identify the needs for external assistance.

In the following chapters, damage assessment framework for various critical sectors based on these key concepts is presented. The damage assessment framework tries to identify and measure tangible damages caused immediately and their long term manifestations. The intangible damages are also identified but it may not always be possible to measure its quantum and put an economic value to it. One could possibly attempt modeling exercises, which are not covered here. The overall purpose is to develop a framework which can guide us to arrive at a comprehensive understanding of the damage. It is important that the damage assessment process and tools are transparent, flexible, adaptable, credible, inclusive and participatory.

Chapter 1

Assessing Loss and Damage to Human Life



The loss of human lives affects many other aspects of the lives of the survivors which are critical for a dignified living.

Assessing Loss and Damage to Human Life

Safety of human life is one of the prime objective of any humanitarian action. The life of any human being is invaluable for the family, friends and for the larger community and social groups. Risk to human life during natural disasters varies depending on factors such as gender, age, social status, etc. The inequalities, poverty and other social imbalances contribute to this risk. The disaster may not cause deaths but injury or disability and stress and trauma to the affected persons. This has grave ramifications on the lives of the affected, their relatives and friends. Besides such impact, the loss of human lives may affect other aspects of the lives of the survivors that may be necessary for dignified living such as ability of the families to earn and the loss of care and protection providers. This loss due to the natural disasters is most overwhelming and brings focused attention to the region. The loss of human life shapes the humanitarian response, as this is the greatest loss that any affected region has to bear. The loss of human life, therefore, is the most critical part of any damage assessment. The following section focuses on varying degrees of such losses in the event of natural disaster.



WHAT WE NEED TO KNOW AND WHY

The first information regarding this loss is to determine the baseline data related to the number of families residing in the affected area, where the damage assessment is being undertaken. The loss and damage to human life can be understood by its varying extent such as i) deaths, ii) permanent disabilities, iii) major injuries, iv) minor injuries and v) missing. Details of minor injury, major injury and permanent disability are essential to formulate immediate care and support system; as well as to plan long-term support and follow-up mechanisms. In cases of death or injury, information like death certificate by police or authorities, injury certificate by hospital or the government doctor is needed for government support or compensation. Similarly, in case of missing people, it is important to understand if legalities like police complaint have been registered or not, which may be essential for the affected families to access government assistance. It is also important to know whether they have received government assistance or compensation to cope with the distress.

Data should be segregated gender wise, age wise or occupation wise to develop deeper understanding. Details of occupation also provide a hint of economic status of families. Similarly, details of family members of the affected person are essential; as it enables us to determine the number of earning members and dependents within the family. It might be possible that a person, who has died or has become permanently disabled, was the only earning member of the family. It would enable us

to understand the family structure (nuclear family or joint family) and their support system. It also gives information relating to woman headed family or old age family.

When we assess loss of life, it is important to pay attention to certain special groups of people who tend to get left out in the enumeration process. Migrant workers, tourists and travelers or unregistered informal sector workers may be difficult to estimate because of the lack of such records. After disasters, it may be difficult to ascertain the accurate figures of such groups. In the aftermath of disaster, some times locals leave or evacuate the place for long time, even such people sometimes are left out in enumeration due to the lack of reliable sources of information. All this information helps in the effective targeting of the humanitarian response.

ASSESSMENT METHODOLOGY & TOOLS

Though assessing the loss of life should not be such a complex task, reality suggests otherwise. Past experience shows that usually the official figures about the loss are either underestimated or overestimated. After the Gujarat earthquake, it was mentioned that nearly 100000 deaths had occurred; which was soon corrected by the Government to be around 30000. The Government of India, after one month, put this figure at 19727. However, the Gujarat State Disaster Management Authority states the number of reported deaths to be 13805. It is, therefore, essential to have an assessment methodology



that uses the community information and is credible for the humanitarian response planners. Following assessment tools and methodologies are proposed for assessing loss of human life.

Informal Discussions

Assessing loss of life is a difficult task for the field practitioners because at the time of assessment, the community may be under severe trauma. It is, therefore, very important to have an empathetic attitude and support the people in such difficult times. Instead of making the assessment through structured participatory tools, it is best to go around in the village and meet people informally, to understand the extent of the loss. It is important to transect through the village and go to areas inhabited by different community groups to be with them. It is very important to understand the demographic context of the village, particularly with regard to informal workers, travelers, visitors and migrants to get an idea of the death toll. Informal discussions with the people about the tragic event will slowly reveal the number of human lives lost. At the time of making such assessments after disaster, it is important to ensure that any social-cultural ritual, if being undertaken by the community, during such period is respected and empathy expressed. Similarly, an empathetic attitude is necessary even while enquiring about injuries and the injured. It is also necessary that the field practitioners do not hurry finishing the assessment; and instead proceed at a pace that does not disturb the affected community.

Secondary Sources

Collecting information from secondary sources is also important. Loss of life is estimated by community institutions, media and the Government and many a time they may come up with different figures. It is important that the damage assessment report mentions all the figures published under different sources. These figures may be based on community's own estimate, media assessment, local government functionary's report, etc. As the time passes, the number of deaths and missing becomes clearer. The purpose of the damage assessment tools is not to arrive at one particular number by applying any logic or rationale, but to understand the context and extent. The accurate numbers in a specific location may be found out through a community based survey once the community has begun to recover and is in a position to deal with the loss.



Information Compilation

From these sources - informal discussions and secondary reports, the information about various human life damages should be compiled. The government data that is available from the district or local officials should be obtained and shared with the village to ensure appropriate confirmation. As the community may be under severe trauma due to bereavement and injuries to their loved ones, any dialogue must be conducted sensitively. Addition of more information may be useful for the entitlement and monitoring of the response programme by the community. This stage of compilation can go a long way in ensuring inclusion of the marginalised community members.

Family No.	Name of the main survivor of the family (mention both male and female)	Detail of deaths, missing and Injury										Government assistance	
		S.N.	Name	Relation to the survivor	Age	Sex	Death	Missing	Permanent disabilities	Major Injury	Minor Injury	Yes	No
1.		1.											
		2.											
		3.											

Chapter 2

Assessing
Damage to Housing



The quality of construction, materials used, construction technology, type of dwelling, location, etc. contribute to the vulnerability of built structures and affect the extent of damage.

Assessing Damage to Housing

Good housing conditions are a prerequisite for the well-being of a family. Housing is not only a shelter for a family to live in, but also in many cases, a setting for an economic enterprise. The catastrophic events can cause varying degrees of damage to houses depending on various factors. The quality of construction, materials used, construction technology, type of dwelling, location, etc. contribute to the vulnerability of built structures and affect the extent of damage. The restoration of respectable habitat for the affected families is usually one of the primary objectives of humanitarian response. To ensure reduction of vulnerable constructions in the post-disaster period, an assessment of the extent and type of housing damage is required. The following section focuses on the information needed to understand various attributes of people's housing that might be affected by disaster.

WHAT WE NEED TO KNOW AND WHY

The geographic location of the settlement is the first information needed to understand the impact of the disaster. The location describes its setting with respect to land forms and proximity to natural features such as lakes, rivers or sea. The assessment should further elaborate, in terms of urban or rural, size, typology on the basis of design and structural system, types of ownership and functional usage, etc. Additionally, information about the average dwelling size, average number of inhabitants per dwelling unit and average area should also be



collected. The number of dwellings in the affected area needs to be determined, specifying in each case whether they are single- or multi-family, owned by men or women, as freehold, state conferred or customary title, rented or without title. The issues like land title and tenancy are important to understand for planning for housing.

The houses need to be categorised based on the extent of damage. This helps in formulating a suitable response. Participation of the affected people in the process of enumeration is essential, as recovery policies and responses are based on this database. Number of houses affected and the extent of damage may be categorised as; i) Completely destroyed houses or the buildings which are beyond repair; ii) Partially damaged houses which are repairable; iii) Houses with minor damage and iv) Undamaged houses. The indicators for such categorisation may require inputs from housing professionals. This assessment should also identify the various prevalent construction materials and techniques. Information on quality of existing dwellings, disaggregated by its conditions or the type of construction materials (mud, bamboo, wood, brick, reinforced concrete, etc.) can help us in estimating financial, material and skill resources required for reconstruction. Damage depends on both the types of disaster and the type of construction. Poorly built dwellings sometimes, even with seemingly so-called strong materials like RCC, tend to be the hardest hit. These comparisons, therefore, provide important clues and relation between types of disaster and vulnerability of shelter for post-disaster reconstruction and help in developing safety guidelines.

ASSESSMENT METHODOLOGY & TOOLS

Developing an appropriate methodology for housing damage assessment is one of the most critical aspects of the post-disaster response. As this information forms the bases of reconstruction assistance to the affected communities; it needs to be transparent and participatory, so that affected communities formulate and shape reconstruction assistance. Often, the information is gathered in a non-transparent manner. Its inaccessibility to people leads to contestation for maximisation of benefit by the articulate and the influential members of the communities. To avoid this, it is important to use a reliable and people friendly methodology. Some of the tools that are appropriate for making the housing damage assessment are as follows:

First tool that may be used in the affected area is a transect walk. Transect walk through the disaster struck village, through its varied locations and habitations, is very useful for the purpose of reconnaissance and gives an overview of the extent and type of damage. It helps us further in customisation of the household survey.



Village Transect

	Weaver families	Dalit families	Drain	Rabari families	Patel families
Land use	Village house	Small huts babool trees	Natural water drain	Village House	Houses shops
Type of house	Semi pucca houses	hutments	Hutments	Semi pucca houses	Pucca houses
Extent of damage	Major repair	New Const. Required	New const. reqd.	Minor repair	Not affected
Type of damage	Vertical cracks in foundation & plinth partial collapse of wall & roof	Total collapse	Badly Damaged	Wall cracks. Tilting of walls in some cases, mud walls collapsed	
Problems	Flooding Low lying area	Excessive wetting of houses	Encroachment blocking the water	Flooding near natural water drain	

Village transect gives us a comparative overview of different parts of village settlement with regards to the damage that may have affected the settlement. With this method, it is possible to relate the damage type and its extent to various geographic aspects. If the damages have any particular pattern, these can also be identified. The adjacent example shows the houses near the drain were primarily huts and due to their vulnerable location have collapsed completely. On the other hand, the pucca houses on higher ground, belonging to Patel families, are not affected. Such kind of analysis can be done using habitat mapping and the village transect.

Habitat mapping

The next step is to develop a habitat map using PRA tools and techniques. In large settlements having varied castes and social classes, care should be taken to ensure that it is done in parts involving different stakeholders and then collated together. Affected houses should then be located on this social map with the help of the affected community and a list should be prepared. This list should be verified with the local village revenue official and variations, if any, must be recorded. By locating all houses, along with the representation of damage categories, described earlier on a map, it is easy to visualize the hardest hit areas and thus requiring priority attention in terms of support. The affected houses should be numbered, so that when detailed information on aspects of size, materials and technology, damage type, ownership, vulnerability, etc. is collected, it can be related with the map and shared with the community.





Collapse of north and west walls of the house. Also partial collapse of concrete roof slab

Photographic Documentation

Each damaged house should be documented using photographs. These should show damage to various parts of the house. This documentation is important because any Government assistance or insurance compensation could then use it as a basis for assessment. It also helps professionals in advising any repairs or dismantling that may be required.



Diagonal cracks near the window on east wall



Big vertical crack near the window on south wall



Damage to plinth on south-west corner



Damage to internal wall of kitchen



Crack between concrete slab and wall visible on east wall

Household level Survey

The household level survey helps categorise each structure in the village depending on its extent of damage. It is proposed that the household level survey is conducted using the following two formats. The first format builds database on damage categories and construction materials. The second format is of technical nature, and identifies various types of damages that may have occurred in different components of the house. The first format is useful for administrative policy responses and the second format is useful for identifying technical solutions for disaster safety in the local context.

S.N.	Name	Vulnerability category of owner	Reconstruction needed, repair not possible	Major repairs required	Minor repairs required	Present status (where they are living)	Type of ownership of land	Materials		Details of government support
								Wall	Roof	



House No.:	Name:		Address:		
Building component	Type of damages		Potentially repairable (If yes, mark ✓)	Irrepairable (If yes, mark ✓)	No of places damages has occurred
Foundation and plinth	1.1	Cracks			
	1.2	Partial destruction			
	1.3	Scouring			
	1.4	Settlements			
Wall, columns and openings	2.1	Vertical cracks			
	2.2	Tilting of wall			
	2.3	Corner separation			
	2.4	Partial collapse			
	2.5	Bulging and delamination			
	2.6	Diagonal cracks near openings			
	2.7	Cracks at beam-column junction			
	2.8	Buckling of columns			
Roof	3.1	Cracks			
	3.2	Partial destruction			
	3.3	Total destruction			
	3.4	Cracks near the junctions of cantilevered elements			
	3.5	Cracks on separation of roof with the wall			

Chapter 3

Assessing Damage to Community Infrastructure



When essential parts of social life of the community are affected, it restricts many important functions of the community.

Assessing Damage to Community Infrastructure

The infrastructure required for various goods and services that are essential for well being of people is frequently damaged due to disasters and affects people's lives adversely. Basic services like drinking water, access roads, sewage disposal, electricity, etc, if affected can pose, not only difficulties for the community but also challenges for the humanitarian workers in undertaking rescue and relief operations. Infrastructure damage includes - not only the damage to basic services, but also to public buildings essential for providing education, health care or those serving other social functions. In addition to these, there are many community owned infrastructural facilities like religious places, community halls, animal shelters, fodder lands or forests, old monuments, tanks and wells, check dams, minor dams, etc. Damage to community infrastructure adversely affects or restricts important functions of the community. Typically, the community infrastructure involves high capital and social process costs. Given the nature and importance of such community infrastructure, it is imperative to design it with all appropriate safety considerations. For the assessment of damage to infrastructure, after a catastrophic natural event, we need to make assessment of the following aspects:



WHAT WE NEED TO KNOW AND WHY

The assessment of infrastructural damage should cover all the components of public delivery systems of goods and services located in the affected community. These goods and services may be provided by the public institutions, local community collectives-formal or informal and other civil society institutions. We can look at three categories that need to be included in the assessment.

- i. **Public buildings** These include anganwadis, schools, health centres, community halls, panchayat's building, PDS shop, vocational training centres or any other government structures. The disaster may damage these buildings and affect the services being provided through them. Usually, the public buildings also serve as rescue centres, after the disaster; and if they are damaged, the affected community may face difficulties in coping.
- ii. **Basic services** The basic services such as drinking water supply, access roads, sewage disposal, drainage, electricity and communication are very important for the community's well-being. In any event, if these services are disrupted, many a life may be threatened due to the possible outbreak of diseases or other such problems. Therefore, damage assessment must try understand how these services have been affected, the extent of damage in terms of quantum and the people it serves. Some times, damage to these services may be qualitative. For example, contamination of the

drinking water. So it is essential to understand such impacts in the damage assessment. Similarly, we are aware that the access to basic services in any community is still not equitable and that the coping capacities differ. Hence, another critical aspect to be included in damage assessment is to determine the worst affected in the community due to disruption, so that appropriate priority and targeting may be assigned during the recovery process.

- iii. Community owned infrastructure Much of the infrastructure may be community-owned in many settlements affected by the disaster. Community owned infrastructure is the outcome of various collective social processes- formal or informal, at the community level. The infrastructure may belong to different social groups within the community or to the entire village. It is essential to understand the damage to such infrastructure in terms of its spread, quantum, type and extent. The examples of such infrastructure are tanks, wells, community hall, animal shelters, religious buildings and spaces, cooperative buildings, charitable trust buildings, etc. The extent and type of damage to the community-owned infrastructure should be assessed. Here, it is essential to identify the worst affected within the community.





Infrastructure Mapping

Infrastructure mapping is a tool to get an overview of the services and infrastructure available in the village to different communities. These are shown on the map prepared by the village community members and the damage is discussed. The adjacent map shows an example where it becomes clear what is damaged in the settlement. It shows that damage to the road affects the connectivity of the village to the neighbouring village, which is important for their trading activities. Three out of five wells and two out of four handpumps have gone dry due to changes in the ground water table and therefore, 19 dalit families and 9 families of potters are facing difficulties. The damage to the school has affected the education of 74 children. Similar information can be understood about other infrastructure also. This tool helps in determining the geographic extent of the damage and the affected stakeholders.

Village Level Survey

A detailed village survey to determine the infrastructure damage to each type of facility in the settlement is important. The survey is conducted for each public building, basic services and community owned infrastructure to understand the extent of damage, number of families affected, then a step in ascertaining changes should be included, such as the ground water getting dry, etc. are documented to develop a database which can then be collated at the larger administrative levels.

S.N.	Type of source/service available	Service available to (area, community, settlement)	Impact on service (Write about changes in availability, quality, quantity or any other aspect)	Post disaster available source/service	No of affected families	Status of source		
						Undamaged	Repairable	Not repairable



Photographic Documentation

Photographic documentation of the damage is a good practice. The infrastructure damage of the village is usually addressed by different agencies. For example, the schools may be under the department of education and roads & wells may be under panchayats. The decision-making regarding these infrastructure may take a long time and may be done at a distant location; photographic documentation about the post-disaster status, therefore, helps in making the correct decision about repair or replacement. The adjacent photographs show infrastructure damage in a tsunami village of Car Nicobar island.



Damage to the village water tank structure



Flooding in the primary school building



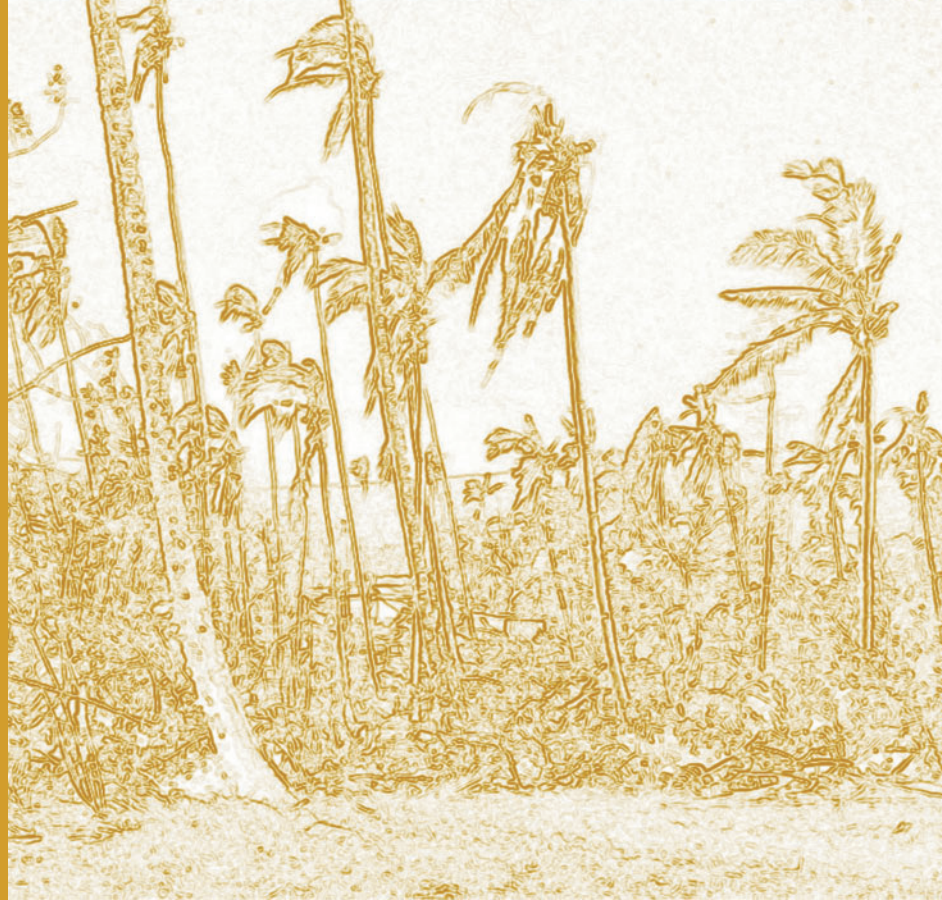
Main approach road of the village has been washed away



Damage and flooding of the Panchayat building

Chapter 4

Assessing Damage to the Environment



Various environmental changes due to such extreme events can prove to be catastrophic for the human society, particularly the local communities.

Assessing Damage to the Environment

The state of environment has a critical effect on the quality of life of the communities. The environment not only provides various resources (such as food, water, and energy) but essential services (such as the dilution and transformation of waste, the regulation of the water cycle, carbon sequestration, the maintenance of biodiversity and recreation) also, to sustain the well-being of human society. Extreme natural events are also part of ecosystem, in a way. However, as ecosystem and human social systems interact, various environmental changes due to such extreme events can prove to be catastrophic for the human society, particularly the local communities. It is, therefore, essential to understand and assess the impact of natural disasters on environmental aspects. The loss of many environmental resources like soil, trees, etc. can be assessed directly. However, some damages are indirect, particularly those to the environmental services such as reduction of pollution, carbon sequestration, provision of wild life habitat, etc. To study these in post-disaster damage assessment, we need to breakdown various environmental components, resources and services and assess each of them.

WHAT WE NEED TO KNOW AND WHY

To understand the damage to the environment, we need to know the changes that occur in the ecosystem. However, it may not be possible immediately or within a short time. The following checklist can give us some idea about what various ecosystems provide.



Ecosystem	Goods	Services
Agro-ecosystem	Food & Fibre crop	Maintain watershed functions (infiltration, soil protection, purification and stabilisation)
Forest-ecosystem	Fuel-wood & Fodder	Maintain aquatic marine and wild life habitats
Freshwater-ecosystem	Timber	Provide pollinators, organisms important to agriculture
Coastal-ecosystem	Non-timber products (honey, herbs, etc.)	Build soil organic matter
	Drinking and irrigation water	Remove air pollutants
	Fish	Emit oxygen
	Seaweeds	Buffer water flow
	Hydro-electricity	Dilute and carry away the wastes
	Genetic resources	Cycle nutrients
		Moderate weather extremes and impacts
		Moderate disaster impacts (mangrove, barrier reefs, sand dunes)
		Sequester atmospheric carbon

Source: compiled from information available at World Resources Institute (2001)

In post disaster situation, following changes, if any, need to be looked into as they may affect the above mentioned goods and services that ecosystems provide.

- ▶ **Unique/unusual land form changes (geomorphic changes)** Such changes can occur due to seismic or volcanic events. Even landslides or mud slides could bring about these changes to some extent.

- ▶ **Changes in natural drainage** Due to changes in the course of natural drainage like rivers due to appearance of some sudden blocks or set backs, damage can occur. These changes can have further impact on life, assets and livelihoods, etc. which might have been covered under other sector assessment. But the changes in natural drainage can have long term impact on wild life, local ground water table and the micro-climate in the region.
- ▶ **Soil degradation** The disasters can damage the soil by causing-erosion, salinity, silting. Such degradation can affect the productivity of the land. The recovery process may be short or long term. The damage in agricultural fields will directly affect the community engaged in farming. The loss of other lands like common land, land used for other purposes can also adversely affect important services. It is important to assess the type of damage to land and soil, its quantum, location and existing use and ownerships.
- ▶ **Destruction of Trees** Disasters like cyclone, floods, storm surges, tsunami, land or mud slides can destroy a large number of trees. It is important to assess the number of trees, the species of trees and location of such damage.
- ▶ **Water Contamination** Any adverse effect of the disaster on drinking water resources or supply is extremely important for assessment. It is critical to know if availability or quality is affected. Any contamination may have health repercussions. It is also important to know whether the damage is temporary or permanent, reversible or



irreversible. The ground water table, surface water bodies like ponds, tanks, lakes, springs or rivers need to be covered in the assessment.

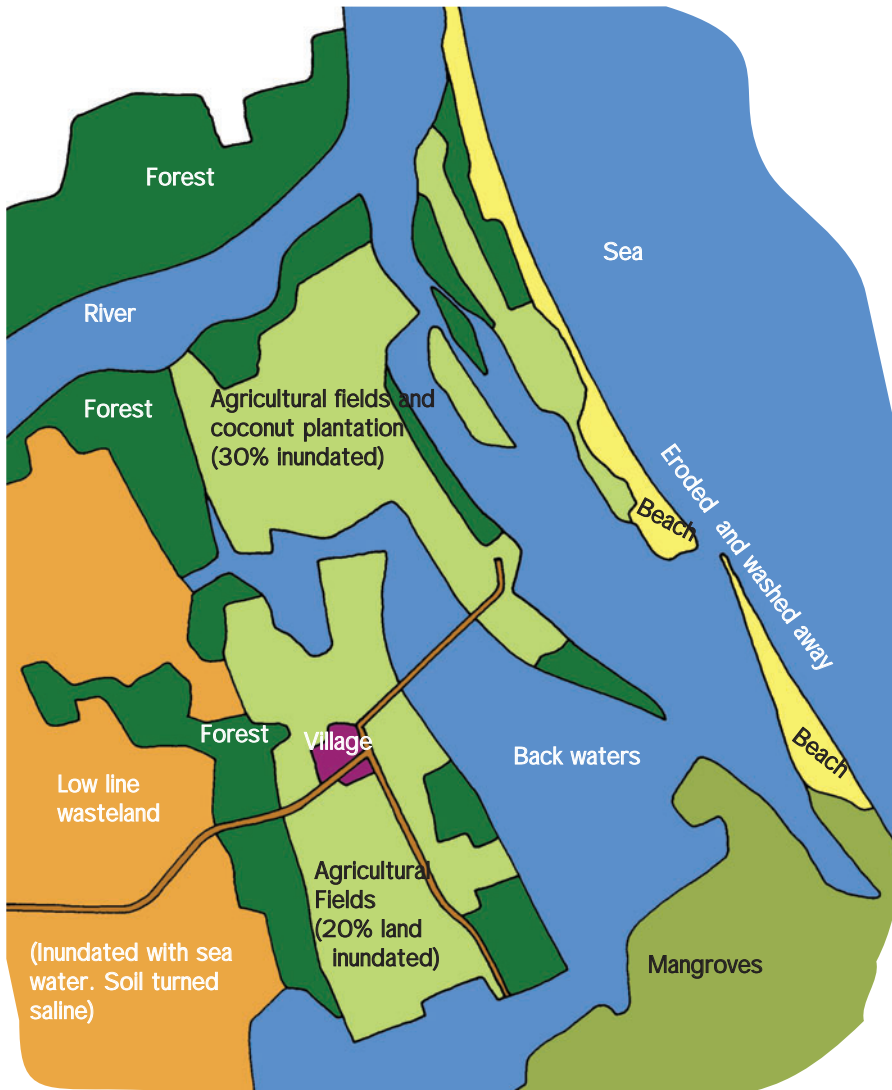
- ▶ **Loss of unique plants & animals or their habitat** Disaster can bring about changes in environment which in turn can destroy habitats. Unfavourable conditions can affect nesting and breeding places of the animals leading to loss of unique plants or animals in the affected area. Any type of loss to wildlife areas strategic to affected region will be of particular concern. Protected areas have greater importance for larger societal benefits. If conditions are affected in the protected areas, it can lead to loss of flora and fauna that may be of critical significance for the region or nation for the preservation of its biodiversity.

ASSESSMENT METHODOLOGY & TOOLS

The environmental damages need to be assessed on the discussed framework using participatory methods and tools so that local context, knowledge and dependencies, that are linked with natural resources are properly understood. The impact on environmental elements like water, land, vegetation and wildlife gives us a general overview of goods and services that may have been affected. The tools suggested assess the damage to these natural resources.

Resource Mapping

The village resource map shows various natural elements of the ecosystem in which the human settlement exists. Mangroves, backwaters, beach, coconut plantations, provide ecological and economical setting for the habitat of the coastal community. This context is easily understood with this resource map. The damages due to the disaster on these natural elements of the ecosystem are likely to affect the community directly, in addition to long term environmental damage at a larger level. The resource map shows the geographic extent and scale of such environmental damage.



Village Transect



	Sea	Mangrove	Back waters	Beach & Sand dune	Village	Plantations
Land type	Estuary		Back waters	Sandy, low to medium upland	Sandy, silty, average elevation 2 mtrs. from sea	Clayey, low lying
Species	-		Variety of fish	Few coconut trees	Few coconut, casurina and jackfruit trees	Coconut
Uses	Ecological balance		Fishing	Protection from high tide	Residential and commercial activities	For economic benefits
Wild life habitat		Variety of fish breeding	Variety of fish	Nesting of turtles	-	-
Ownership		Forest dept.	Forest dept.	Village panchayat	Panchayat, individual ownership	Private farms
Water source	-		-	-	Wells, shallow handpumps	River
Damage		No damage	Fish reduced	Badly eroded and washed away	Some houses partially damaged	Inundated, soil turned saline
Stakeholder Affected		-	Fisher community	Fisher community	People staying close to the beach	Farm owners and labours

The village transect is undertaken through various areas of the village and its surroundings, along with the key community members. As various environmental resources have many uses, the impact can be understood and discussed with the village community members. In this example, transect through a coastal village affected by tsunami shows its protection by natural barriers like mangrove and sand dune and only partial impact on the settlement. Coconut plantations, which has economic value have been inundated with sea water and the soil has turned saline. The beach which provided breeding & nesting grounds to turtles has been washed away. Natural sand dunes have also been slightly eroded due to tsunami.

Village Survey

Assessing damage to water sources

S.N.	Source	Total no.	Affected no.	Change in available water quantity	Water quality			Remarks
					Potable	Not potable but usable for irrigation	Not usable for irrigation	
	Wells							
	Borewells							
	Handpumps							
	River							
	Canal							
	Ponds and lakes							

Assessing damage to land

S.N.	Type of land use	Total area	Affected area	Area under each type of damage				Remarks
				Erosion	Siltation	Inundation	Changes in salinity	
	Agricultural land							
	Forest land							
	Wasteland							
	Common land							
	Wet land							
	Mangroves							
	Salt pan							
	Mines							



Assessing damage to vegetation cover

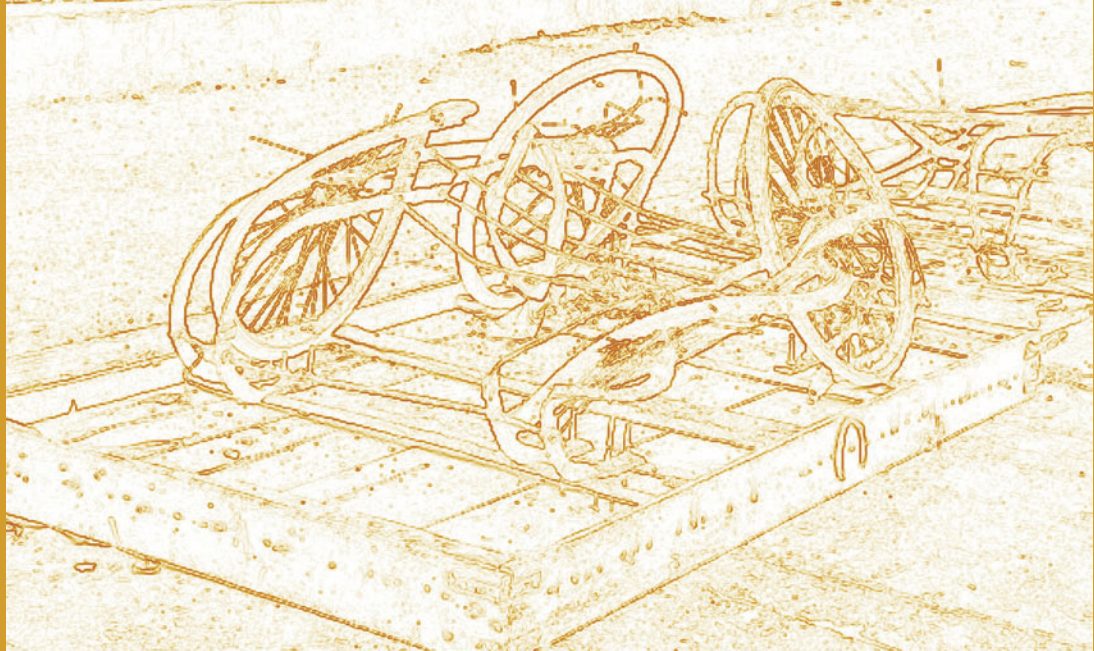
S.N.	Type of vegetation	Yield or number per unit area		Species available before disaster	Species impacted	Remarks (Note endemic and exotic varieties)
		Pre-disaster	Post-disaster			
	Grasses					
	Bamboo					
	Non timber trees					
	Timber trees					
	Plantations					
	Road side trees					
	Aquatic plants					
	Coral reefs					
	Mangroves					

Assessing damage to marine, terrestrial and wild life

S.N.	Species	Category (Common/ Endangered/ Rare)	Total numbers	Changes in food availability	Changes in available habitat		Remarks
					For nesting	For breeding	
	Marine						
	Terrestrial						
	Wild						

Chapter 5

Assessing
Loss of Livelihood



Damage assessment needs to take a comprehensive view to understand the economic impact, taking into account the complete production and service chains of various livelihoods. In any disaster, not only is the income and productivity of the affected region adversely impacted, but also the goods and services available to people.

Assessing Loss of Livelihood

Disasters have significant ramifications on the socio-economic well being of the community. Disasters affect people in various occupations to varying degrees. Various livelihood activities are interlinked. Impact on any of these is likely to cause disruption in other related activities as well. Different occupations experience varying extents of vulnerability to different disasters. For example, farmers may be more vulnerable in droughts, fisherfolk in tsunamis and cyclones and artisans and industries in earthquake. These are just examples of some occupations being more vulnerable in certain disasters than others. However, damage assessment needs to take a comprehensive view to understand the economic impact; accounting for the complete production and service chains of various livelihoods. This means that in any disaster, not only are the income and productivity of the affected region adversely impacted but also the goods and services available to the people.

Loss of economic assets, employment; reduction in income, critical consumption of food and expenditure on education and health care need to be assessed to understand the impact of the disasters. The economic impact on the families, the communities and the region needs to be assessed in context of poverty and vulnerability. The economic impact has critical bearing on the capacity of the community to cope with the post-disaster situations.



WHAT WE NEED TO KNOW AND WHY

To understand the loss of livelihood and economic losses as a result of disaster, we need to know the livelihood patterns and occupational profile of a region. Primary occupations, as well as secondary occupations of the affected community need to be mapped and inter linkages must be understood to know the type and extent of impact. These economic activity chain links need to be understood well as rehabilitation depends on restoring the complete chain and making conscious developmental interventions. Another important aspect about the livelihood impact is that it is not equal or same for each family even with same occupation. As the assets and access to resources varies, the impact and capacity to cope with also varies. The poor and socially vulnerable families need to be identified.

The economic losses can be broadly categorised into two types - direct and indirect. Direct damages include losses to i) means & assets and ii) employment & income. Information on the loss of employment and income makes it possible to ascertain the decrease in the population's well-being and provides inputs for the design of rehabilitation and reconstruction strategies, programmes and projects employing the otherwise unemployed. The example of direct damages to agriculture, fisheries and local trade & production of goods are indicated in the table on the following page.

Indirect damages include losses in terms of likely production, future employment, income, etc. due to direct damage caused by the disaster

until the community recovers. Estimated time for recovery and re-establishing of production and supply chain is a critical factor in ascertaining the approximate extent of indirect damages. The extent of efforts required for recovery, prevention and mitigation are also considered for assessing indirect losses. The exact nature of such damages is fully known only after some time of the disaster. But a framework can provide a fair idea about the type and extent of indirect damages.

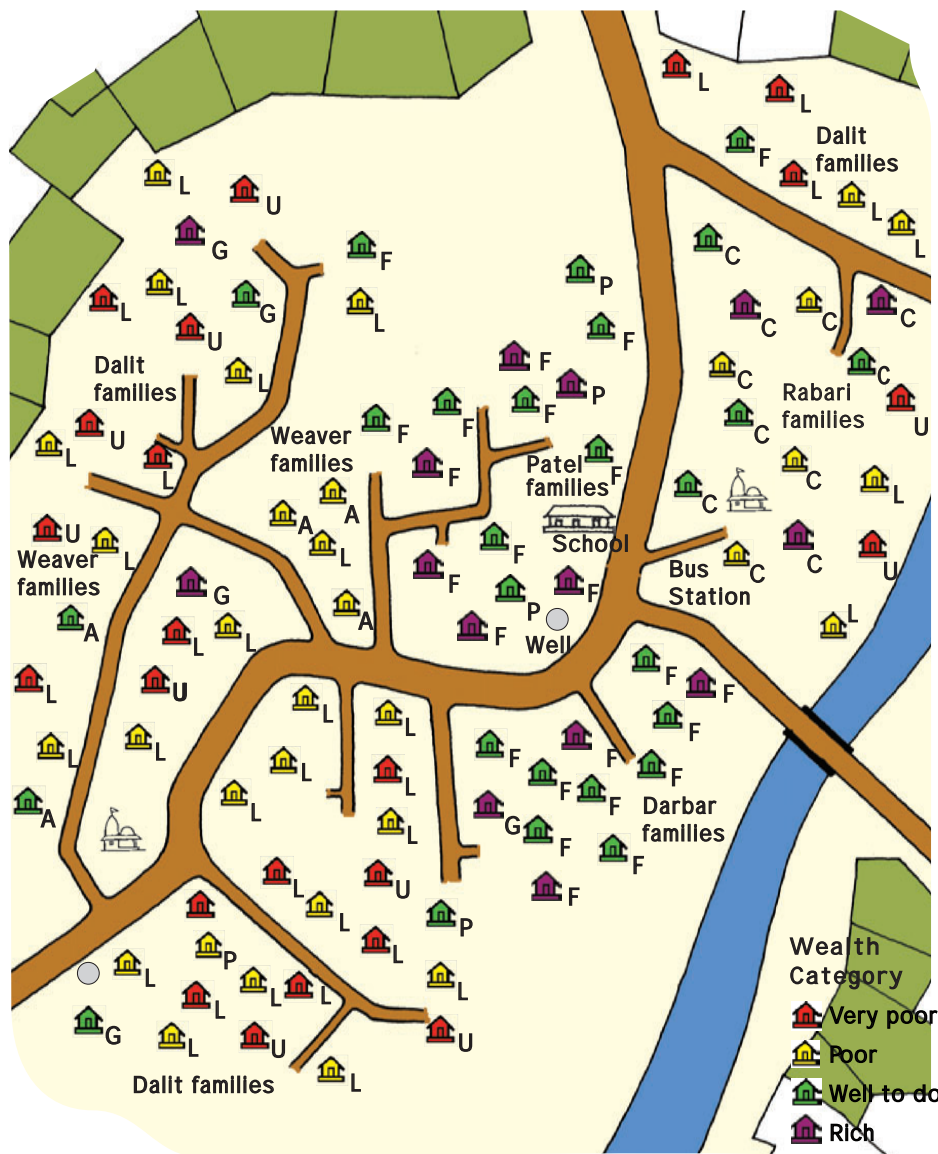
Aspects likely to be damaged	Agriculture	Fishearies	Local trade and production of goods
Source/Assets	<ul style="list-style-type: none"> Loss of farm lands due to erosion, salinity or sedimentation Loss of livestock 	<ul style="list-style-type: none"> Rivers, ponds and lakes due to pollution, environmental degradation or any other cause 	<ul style="list-style-type: none"> Loss of buildings, vehicles, etc.
Tools, equipment and Infrastructure	<ul style="list-style-type: none"> Infrastructure and tools such as ploughs, carts, tractors, storage sheds, etc. Damage to irrigation structures like check dams, canals, etc. 	<ul style="list-style-type: none"> Boats and nets Fisheries and aquaculture infrastructure 	<ul style="list-style-type: none"> Machinery, tools and equipment or spare parts
Inputs & products	<ul style="list-style-type: none"> Seeds, fertilizers, etc. for subsistence crops and cash crops Harvested crops 	<ul style="list-style-type: none"> Catch/ production of fish, prawns, etc. 	<ul style="list-style-type: none"> Stocks - goods under processing; finished goods; raw materials
Access to inputs and resources	<ul style="list-style-type: none"> Availability of resources, skills and knowledge for repairs or replacement Capacity to procure 	<ul style="list-style-type: none"> Availability of resources, skills and knowledge for repairs or replacement Capacity to procure 	<ul style="list-style-type: none"> Availability of resources, skills and knowledge for repairs or replacement Capacity to procure
Employment and Income	Loss of Income of employed people due to temporary paralysis of activities - for both men and women engaged in the economic activity - for different type of ownerships such as individual entrepreneur, cooperative, self help group, etc.		



Occupational Vulnerability Analysis

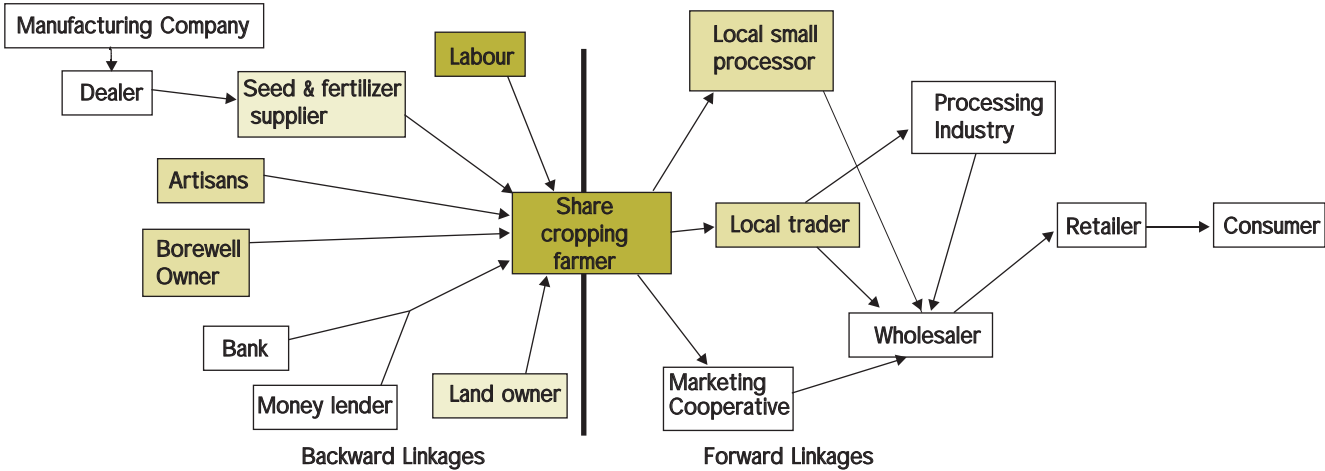
The wealth ranking tool provides information about the comparative economic status within the village. The tool encourages the communities to develop their own criteria and common understanding based on factors like land holding, livestock, other assets, regularity of income, etc. The adjacent map shows an example where communities like patel, darbar and rabari, primarily land and cattle owners, are financially better off as compared to communities like dalits and weavers who are mainly artisans or casual labourers. Different occupations of people and economic status can be analysed in conjunction with social vulnerability to understand critical needs of the worst off families. This tool also builds sensitivity towards the needs of this group.

Assessing Damage after Disasters
- A Participatory Framework & Toolkit



Occupational Network Analysis

The impact of the disaster on any particular occupation impacts all other stakeholders who have backward and forward linkages. The following example of a sharecropping farmer shows such occupational linkages. The impact of the disaster shown in different shades of the colour indicates varying extent. Similar networks should be studied for each occupation. Impact analysis should be made for each stakeholder occupation as per the following matrix.



S.N.	Type of occupation	No. of people Involved			Pre-disaster		Post-disaster		Reason for any change
		Men	Women	Children	Work availability (No. of days)	Income	Work availability (No. of days)	Income	



Livelihood Survey

The household level economic loss can be assessed through detailed survey for each working member in the family to ensure gender disaggregated data. Given varied forms and nature of access, control and ownership of assets such as land, house or livestock, etc., understanding these complexities is essential. Household level survey reveals livelihood losses at family level and can be aggregated at larger levels of village, taluka and district to understand the overall scenario.

Family no.	S. N.	Name of each working member in family	Sex (M/F)	Primary occupation	Type of ownership	Source and assets		Tools and equipments		Inputs and products		Expected loss of work		Any new opportunity
						Total	Loss	Total	Loss	Total	Loss	No. of days	Income	
1.	1.													
	2.													
	3.													
2.	4.													
	5.													
3.	6.													
	7.													
	8.													

Chapter 6

Assessing
Impact on Health



Health risks are aggravated after disaster, due to worsening living conditions and disruption of available health services.

Assessing Impact on Health

Disasters put the affected community's health at risk. Negative impacts on health can be a direct result of the disaster or of subsequent degradation in the living conditions and the environment. The assessment of impact on health may be required, as part of the overall assessment, for identifying the possible fall outs of the disaster. Such assessment is crucial to ensure protection to human life. Health surveillance ensures that there are no epidemics or other health hazards due to the prevalent conditions.

WHAT WE NEED TO KNOW AND WHY

Health risks are aggravated after disaster, due to worsening living conditions and disruption of available health services. The living conditions worsen due to environmental degradation, population concentration in small areas, lack of basic services, etc. Some times, nutritional intake is affected post-disaster. In such conditions, it is necessary to observe the situation, particularly the families with infants, pregnant women, old aged, disabled, chronically ill, HIV positive members, etc.

Health hazards may arise due to i) site conditions such as water stagnation, mosquito breeding, high population density, etc.; ii) deficient services such as contamination of water, lack of safe sanitation, lack of sufficient water, light and ventilation in shelters; or iii) lack of nutrition



and safe storage facilities for food. These aspects lead to diseases in the affected communities. Some times disasters can lead to health hazards due to other factors- such as population displacement might bring people in contact with different microbial surroundings; to which they may be less immune. The following table is an indicative list of likely diseases in post disaster situations.

Some likely diseases in post-disaster situation	Possible contributing factors
Diarrhoea	Overcrowding, contamination of water & Food, lack of hygiene
Measles	Overcrowding, low vaccination coverage
Acute Respiratory Infections	Poor ventilation in temporary shelters, overcrowding, lack of blankets & clothings
Malaria	Water stagnation and mosquito breeding
Meningitis	Contaminated water, overcrowding in areas where disease is endemic
Tuberculosis	Overcrowding, lack of nutrition
Typhoid	Poor personal hygiene, lack of sanitation
Scabies	Poor personal hygiene, Overcrowding
Anaemia	Poor nutrition
Hepatitis	Lack of hygiene, contamination of water and food
HIV/ AIDS	Loss of social organization, Poor transfusion practices

Some diseases may be endemic to the disaster affected region. Worsened conditions may further aggravate the situation. For example, a region where incidence of malaria is high; any flood situation may further increase risk of mosquito breeding and hence increase health risks. Identification of such situations demands immediate preventive measures. Therefore, assessment should take into account regional patterns in the past. Another important aspect that needs assessment for humanitarian response planners, is the extent of interruption of the health care services.

ASSESSMENT METHODOLOGY & TOOLS

Community Health Surveillance

Health surveillance is a structured process of identifying early signs of adverse effects on health of the disaster affected people through periodic monitoring. Surveillance reveals the type, magnitude, pattern and trend of health problems through periodic and systematic collection of health related data. This helps us understand the probability of outbreak that may call for a public health response. Such response should provide the necessary care and protection to the affected people and help prevent further loss of life. The surveillance helps us improve the timeliness of the health response by capturing relevant data. The collected data is categorised in syndrome categories and public health professionals can initiate public health investigations and take requisite action.

A list of possible diseases based on the risks after a particular disaster should be prepared with help of public health professionals. The data relating to the prevalent conditions and incidence of disease should be collected from the local doctor, PHC or other health care providers. Particular attention must be paid to the vulnerable people, who may be at increased risk due to post-disaster situation. The proposed format provides a preliminary assessment on access to health services, drinking water, safe sanitation and sufficient nutrition for vulnerable families to help humanitarian workers and public health workers plan appropriate responses.

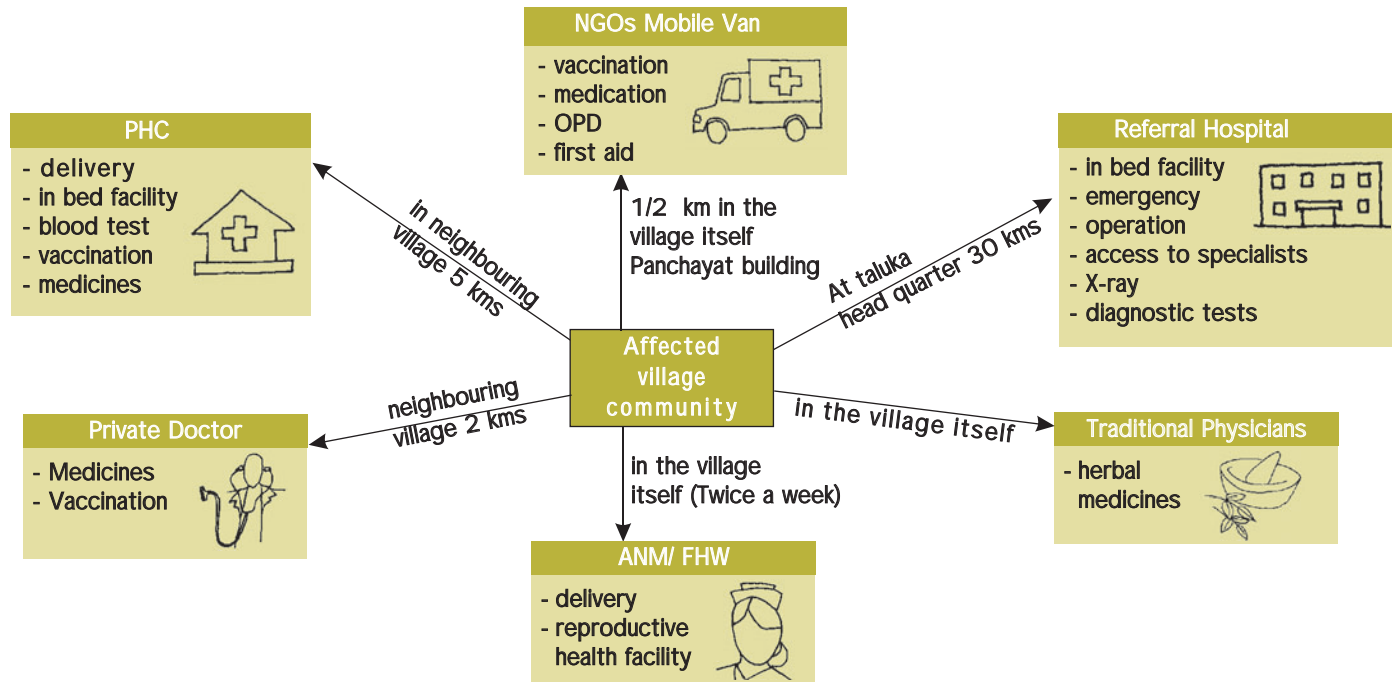


S.N.	Name of disease	Number of affected people											
		Week-1			Week-2			Week-3			Week-4		
		Male	Female	Child	Male	Female	Child	Male	Female	Child	Male	Female	Child
1.	Diarrhoea												
2.	Measles												
3.	Acute respiratory infections												
4.	Malaria												
5.	Dengue												
6.	Meningitis												
7.	Leptosprosis												
8.	Tuberculosis												
9.	Typhoid												
10.	Scabies												
11.	Anaemia												
12.	Hepatitis												
13.	HIV/ AIDS												

S.N.	Name of vulneable person	Symptoms	Vulnerability category	Medical service accessed Y/N	Type of medical service	Safe drinking water available Y/N	Safe sanitation facilities available Y/N	Sufficient nutrition available Y/N
1.								
2.								
3.								

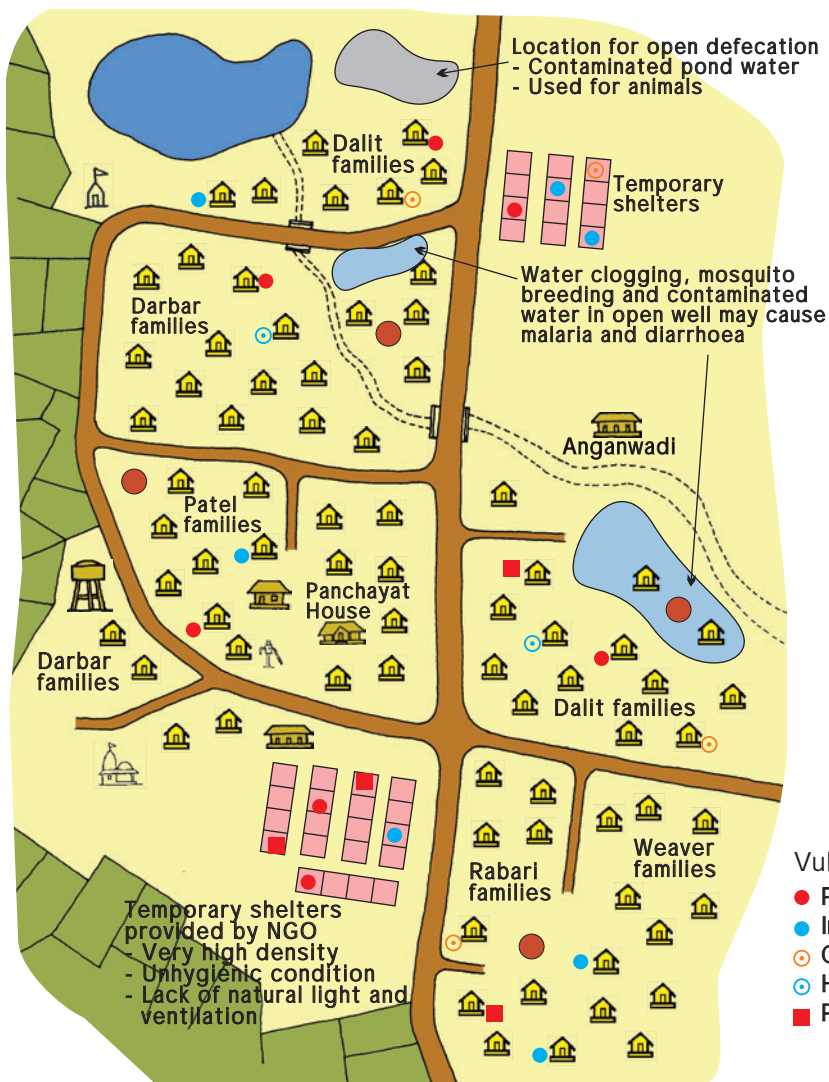
Mobility Map for Health Services

This tool helps identify the extent and quality of health care services available to the affected community. The example shows various health care providers and services can be accessed. It also indicates the distance, frequency of availability and the types of services available. The example indicates how such information is represented in mobility map.



Health Risk Mapping

Health risk mapping is a tool to map the possible health risks after a disaster in the village. It identifies all the possible factors and places which may pose health hazards. The map prepared with help of community members identifies locations that might be over crowded, water logged or used for open defecation, polluting soil and water. This can help in identifying vector breeding sites and developing control mechanisms. In addition, the map also identifies the vulnerable community members who may be at greater risks. This information can help mobilise the community to act against possible effects. Humanitarian workers can use this information to plan preventive measures against possible outbreak of epidemics.



Chapter **7**

Assessing
the Psycho-Social Impact

The people affected by the disaster need psychosocial care; as every one is traumatised. It is just the extent that varies.



Assessing the Psycho-Social Impact

In the past few years, there has been a better understanding of the impacts of disaster. The disasters affect not only physical and material life of the community, but also psychologically. These impacts are linked with the social structures and support systems, that in turn, affect the coping capacities. It is increasingly being recognised that psychosocial care of the affected families in the aftermath of disaster can go a long way in restoring normalcy in their lives. But before such response can be developed and appropriate care can be provided, it is essential that we have some understanding of the kind and extent of trauma affecting communities, families and individuals.

WHAT WE NEED TO KNOW AND WHY

The first thing to know is the mental trauma that disaster affected individuals might be facing. It is reflected in their emotional reactions of anger, irritability, panic attacks, sleeplessness, withdrawal from activities, increased anxiety, nightmares in children, etc. These are some of the universal responses amongst people who experience events beyond their coping capacities. These are not manifestations of abnormal behaviour but normal responses to an abnormal experience. The extent and persistence of the trauma which people face is also linked with their post-disaster experiences. The ongoing difficulties hamper the recovery process, thereby, prolonging the incidence of these emotional reactions. The other important aspect relates to need for



psycho-social care for all the disaster affected people. It is just the extent that varies. Greater extent of trauma may mean more frequent care and for longer durations. Generally, men, women and children experience different degrees of such emotional reactions.

The post-disaster trauma may be due to physical reasons such as injuries, burns, fractures, illness, etc. or psychosocial aspects like bereavement, alcohol/ drug abuse, etc. or socio-economic aspects like homelessness, displaced living and unemployment, etc. These factors may be studied after the disaster. The following checklist of symptoms can be particularly useful in identification of the extent of trauma.

Behavioural symptoms	Physical symptoms	Emotional symptoms	Relational changes
<ul style="list-style-type: none"> ■ Loss of interest in life ■ Reduced activity, no energy ■ Overactivity and inability to rest ■ Difficulty in concentration ■ Sleep disturbances ■ Flashbacks ■ Use of intoxicants and drugs 	<ul style="list-style-type: none"> ■ Headaches ■ Tiredness ■ Tense muscles ■ Palpitation/ irregular heartbeat ■ Poor appetite, pain in abdomen, vomiting sensation 	<ul style="list-style-type: none"> ■ Anger ■ Irritability ■ Fear, vigilance, anxiety ■ Helplessness, sadness, guilt ■ Repeated thoughts ■ Frequent mood swings 	<ul style="list-style-type: none"> ■ Disagreement, arguments ■ Lack of emotion ■ Too much dependence on others

Severe trauma can also lead to post trauma stress disorder (PTSD) where many of these symptoms may be seen together. Usually reliving of trauma in dreams or nightmares, complete withdrawal from activities, panic reactions and outbursts can be indicative of PTSD. However, with education, support, anxiety management and lifestyle modifications it is possible to overcome PTSD.

ASSESSMENT METHODOLOGY & TOOLS

Observing and Listening

For understanding the psycho-social trauma that one may be experiencing, observation and listening is the most essential methodology to understand the type of trauma and its extent. Its manifestation may be different in different people. Therefore, a general understanding of the possible symptoms helps the care-giver in observing and identifying the same. Quiet observation and active listening allows the affected person to open up and share her/ his feelings. During this sharing; one learns about the extent of psycho-social trauma that people, families or the communities experience. Through attentive empathetic listening, one can understand the extent of trauma and the likely pace of recovery. However, for the people to open up, it is essential to be in an informal and comfortable situation. During the interaction with people who are facing traumatic situations, care should be taken not to interrupt, question or probe. Instead a feeling of trust, empathy and understanding should be developed.



As mentioned earlier, post disaster difficulties also increase the traumatic experiences of the affected persons. It is, therefore, important to understand the difficulties that persons may be facing in coping with their day to day life. Difficulties in access to compensation or relief support in form of essential things- food, clothing, etc. may be factors contributing towards their inability to overcome their trauma. These need to be identified and addressed.

Symptom Prevalence Matrix

It is not possible to survey the affected community and collect data regarding the number of people with particular symptoms. It is only through informal community discussions, meetings and personal contact with the households that one can observe these symptoms. Of course, information by others can also be added. This information can be collated later in the following format to get the overview and understanding of various symptoms common prevalent in the community. As we know that emotional reactions may be different for men, women and children, such observations need to be recorded to provide disaggregated comprehensive understanding of the extent of trauma faced by the community.

The following table, as an example, shows that in affected community, many young children and women experience nightmares and sleeplessness, men display symptoms like withdrawal from activities, anger, irritability and frequent mood changes and the old display feeling of helplessness and sleeplessness. With this information, the care giver will have better understanding and can provide appropriate support to each group.

Symptoms	Adolescent children		Women	Men	Old
	Girls	Boys			
Nightmares	••	••	•		
Sleeplessness	••••••	••••••	•••••	••	•••
Headache/ bodyache	••	•	•••	•	•
Flashbacks	•••	•	•	••	
Loss of concentration	••••••	•		•••	
Withdrawal from activity	••	•	•••	•••••	••••
Hyperactivity				••	
Anxiety	••	••	••••	••	••••
Breathing problem/ choking					
Palpitation			••	•	••
Tiredness			•••		•••
Anger		•••	•	•••••	•
Sadness/ helplessness	••••	•••	•••••	•••	•••••
Irritability	•	••	••	•••••	
Frequent mood changes		••	•••	••••••	••
Other _____					

Preparation of Case Cards

Severe traumatic conditions can be identified through the above processes and detailed case cards may have to be prepared. A case card is like a case history and it is important to record the symptoms, personal & family background possible for such reactions. This helps in engaging psycho-social experts. Such cases may require more specialised support on a continuous and regular basis. The case cards are a helpful tool to design for the professional intervention. This is done by keeping records of visits, changes observed and related issues.



Assessing the impact on women in disasters

With the past experiences in many disasters, it has been well established that the social inequities are enhanced during disasters. Considering the gender inequities in a patriarchal social set up, it is recommended that a clear focus on assessing the impact on women, is maintained. While studying the impact on different aspects of human life in terms of housing, infrastructure, livelihoods, etc., emphasis needs to be maintained on collecting gender segregated information. A clear gender framework helps in capturing the important aspects of vulnerabilities in the damage assessment.

A simple example may help us understand this more easily. If drinking water sources are affected in a community where it is considered to be a responsibility of the women to fetch water for the household, drudgery involved may increase for them without affecting the men. Gender inequality in the society impacts women, not only to a greater extent; but also in more ways than men. A comprehensive picture from following frameworks can be very useful for developing the disaster response not only in addressing the immediate needs and priorities of women, but also to reduce some long term vulnerabilities arising out of gender inequity. As we are aware that our social set up is highly stratified by castes and classes, the situation of women in different strata of the village community may be different. It is important, therefore, to understand different stakeholder women groups. The following framework should be used for each stakeholder group of women. Gender Analysis framework is useful to understand activities and extent of role in decision making regarding various aspects that govern daily life and may have been affected in the disaster.

- **Activity Profile** There may be changes in the activity profile after the disaster for both men and women. For example, contamination of water sources may result in

increased distance traversed for fetching potable water for the family. Activity profile shows genderwise engagement in daily life activities (productive, reproductive and social).

- **Access and Control Profile** Access and control profile should differentiate between access to productive resources like equipment, labour, capital, credit, inputs, education, training, etc. and role in decision making regarding its allocation and use. This analysis helps identify the impediments for women to participate equitably. For example, if women have no control over income, the essential nutrition and special health needs of women may suffer. Access and control profile provides insight into capacities, constraints and vulnerabilities.
- **Analysis of influencing factors** The disaster may cause changes in family headship, economic situation due to loss of assets and employment, natural resource degradation in the village, mental trauma amongst people, etc. This may affect women's situation and status significantly. The access and control profile may change. Activities may change.
- **Needs and priorities** On the basis of above analysis, the needs and priorities identified must be articulated by stakeholder women groups.

Based on above framework, the following matrix helps in gender analysis of post disaster situation. This analysis matrix should form a part of comprehensive multi sectoral damage assessment.

Gender Analysis Matrix

Stakeholder women group	Labour		Access to resources and decision making		Arising constraints	Vulnerabilities	Capacities
	Pre-disaster	Post-disaster	Pre-disaster	Post-disaster			

END NOTE

This toolkit provides a framework for assessing loss of human life, housing and infrastructure damage, environmental damage, loss of livelihoods and psycho-social impacts. Not all types of damages have been covered under these categories. For example, the disaster may also cause many development projects to be delayed or suspended in the affected area. This toolkit has covered the most critical aspects for the field practitioners. PRA tools like social mapping, transect, focus group discussions, semi structured open ended surveys have been used for appropriate sectoral assessments.

Sectoral assessment of damages when compiled and analysed together provides direction to target vulnerability. For example, social mapping may need to be seen in conjunction with wealth ranking and housing damage to understand and identify the most vulnerable and poor families for targeting in housing programme. Therefore, the sectoral information collected through various surveys and other methods must be read in conjunction with each other to get a comprehensive view. Merely identifying one sector and associated tools and methodology,

therefore, may not give a complete understanding for planning the response programme. It is important to adopt comprehensive multi-sectoral perspective of damage assessment within a participatory framework.

The participatory framework and methodologies render the damage assessment process transparent and accountable to the communities, affected by the disaster. The information gathered through these tools and methodologies remains as much with the community as with the response planners. As a result of this process, the damage assessment works as the first step towards empowered community participation in subsequent response. The key concepts of vulnerability reduction, social inclusion, community participation and gender perspective form the four pillars of the processes of damage assessment.

The relevance and usefulness of the framework and tools in this book can only be maintained by taking advantage of experience with their use and by adding to them. It is important to continually test, review and rewrite the damage assessment methodologies. The tools and methods provided in this book should be suitably modified. More tools and methods can be designed and added in the toolkit.

GLOSSARY

ANM	Auxiliary Nurse Midwife. ANM is village level health extension worker to support implementation of women and child health programmes.
FHW	Female Health Worker
PHC	Primary Health Centre. It is village level government institution to provide health services mostly for out-patients.
PRA	Participatory Rural Appraisal
RCC	Reinforced Cement Concrete. It is cement concrete with steel reinforcement bars and is used for many types of structures and components, including slabs, walls, beams, columns, foundations, frames, etc.
Rabari	Cattle rearing community in western parts of India, particularly Kutch and Saurashtra region of Gujarat.
Dalit	Dalit literally meaning 'the oppressed' is a term that is used to refer to people who are considered not having a caste in Indian caste system. Historically, there has been attitude of discrimination against the dalits.
Darbar	A caste indicating a community of land owners, which has usually dominated the political sphere in the villages historically.
Patel	A farming community of land owners usually part of so called 'upper castes' in Indian caste system.

PTSD	Post Trauma Stress Disorder indicates a psychological disorder when extreme symptoms of emotional distress are visible.
Kutcha	Temporary, something that is not long lasting. Usually used to signify type of construction.
Pucca	Strong, something that can last a long time. Usually used to signify type of construction.
Anganwadi	Child care centre run by the Government mostly under Integrated Child Development Scheme and therefore also known as ICDS centre.
Panchayats	An elected local governing body at village level which has constitutional status as third tier of the Government in India.
Nagarpalika	Also called municipality, it is the elected governing body in towns and cities like panchayats in villages.
Ward sabha	Municipality is generally divided in wards and the general body of the ward comprising of all adult citizens is referred as 'ward sabha'.
Gram Sabha	The village general body comprising of all the adult village people is referred as 'gram sabha'.
PDS	Public Distribution System is village level distribution set up of Government of India to ensure food and other basic needs for the poor at subsidized cost.
Brahmin	Under Indian caste system, brahmin is considered the highest caste. Traditional custodian of all rituals and religious practices and historically having high influence on the ruling castes.

REFERENCES

- Handbook for Estimating the Socio-economic and Environmental Effects of Disasters, 2003, Economic Commission for Latin America and the Caribbean (ECLAC)
- Disaster Loss Assessment Guide, 2002, Australian Emergency Manuals Series, Emergency Management Practice, Emergency Management Australia, State of Queensland, Australia
- Post-Disaster Damage Assessment and Need Analysis, Workshop report, April 24-28, 2000, Asian Disaster Preparedness Centre, Bangkok
- Rising From the Ashes: Developing Strategies in Times of Disaster 1989. Mary Anderson and Peter Woodrow Boulder, Colorado: Westview Press.
- Participatory Planning Guide for Post-Disaster Reconstruction, 2004, EPC-Environmental Planning Collaborative, Ahmedabad, India and TCG International, LLC, Washington, DC
- Damage Assessment After the Paso Robles (San Simeon, California) Earthquake: Lessons for Emergency Management, 2004, David A. McEntire and Jill Cope, the Natural Hazards Center, University of Colorado
- Understanding the Economic and Financial Impacts of Natural Disasters, 2004, Charlotte Benson & Edward J. Clay, Disaster Risk Management Series No. 4, The World Bank
- Natural Resource Damage Assessment: Methods and Cases, 2004, Amy W. Ando, Madhu Khanna, Amy Wildermuth, Suzanne Vig, Waste Management and Research Center, University of Illinois
- Community Damage Assessment and Demand Analysis, 2005, Mihir Bhatt, Mehul Pandya and Charlotte Murphy, Experience Learning Series 33, All India Disaster Mitigation Institute, Ahmedabad, India

- Socio-economic Impacts of Natural Disasters: A Gender Analysis, **2004**, Sarah Bradshaw for United Nations Economic Commission for Latin America, Serie Manuales 33 (English translation of original Spanish document) On line PDF document. Available through ECLAC: www.eclac.cl/publicaciones/UnidadMujer/8/LCL2128/lcl2128i.pdf
- Gendering Vulnerability Analysis: Towards a More Nuanced Approach, **2004**, Maureen Fordham. In G. Bankoff, G. Frerks, & D. Hillhorst (Eds.), Mapping vulnerability: Disasters, development, and people (pp. 174-182), Earthscan, London
- Consultations with the Poor: Methodology Guide for the 20 country Study for the World Development Report 2000/01, **1999**, Poverty Group, Poverty Reduction and Economic Management Network, The World Bank
- Whose Reality Counts? Putting the first Last, **1997**, Robert Chambers, Intermediate Technology Publications, Bath, UK
- PRA in Central Asia: Coping with Change, **1996**, compiled by Carolyn Jones, INTRAC and Institute of Development Studies, Sussex, UK
- Participatory Rural Appraisal Methodology and Applications, **1993**, Neela Mukherjee, Concept Publishing, New Delhi, India
- Participatory Appraisal of Natural Resources, **1997**, Neela Mukherjee, Concept Publishing, New Delhi, India
- Psychosocial Care for Individuals by Community level Helpers, **2000**, Information Manual Supercyclone, K. V. Kishore Kumar et al., India: Books for Change
- Psychosocial Care for Survivors Riots, **2002**, Information Manual-1, Antara Sen Dave, K. Sekar et al, India: Books for Change
- Women, Disaster Reduction and Sustainable Development, **2002**, compiled by Elaine Enarson, the Inter-agency Secretariat for the International Strategy for Disaster Reduction (UN/ISDR), Geneva.
- Gender Manual: A Practical Guide for Development Policy Makers and Practitioners, **2002**, Helen Derbyshire, Social Development Division, Department for International Development (DfID)

UNNATI - Organisation for Development Education is a voluntary non-profit organisation registered under the Societies Registration Act (1860) in 1990.

UNNATI works with a mission to promote social inclusion and democratic governance so that the vulnerable sections of our society are empowered to effectively participate in mainstream development and decision making processes.

The above aim is accomplished through providing strategic issue based support to development initiatives in Gujarat and Rajasthan. This is carried out by undertaking collaborative research, public education, advocacy, direct field level mobilisation and implementation with multiple stakeholders. While we work at the grassroot level to policy level environment for ensuring basic rights of citizens, we derive inspiration from the struggles of the vulnerable and strength from the partners. UNNATI works on two thematic areas.

1. Social Inclusion and Empowerment

In order to promote social inclusion of the vulnerable in the development process, for their empowerment, several activities are carried out in collaboration with various stakeholders like, awareness campaigns, perspective building workshops, public education, direct mobilisation of the community on rights of the dalits, disabled and for gender equity. Field level activities are coupled with research and advocacy to establish their legitimacy and rights.

2. Civic Leadership in Governance

In order to enable citizen leaders to effectively participate in governance in a democratic way several activities are carried out to strengthen the capacity of elected representatives (Panchayats and Nagarpalikas), through training and information support. Through public educational campaigns, the participation of citizens (gramsabha and wardsabha) are mobilised for building a responsive citizen.



उन्नति

UNNATI - Organisation for Development Education

G - 1/200, Azad Society Ahmedabad

Phone: 079-26746145, 26733296, Fax: 079-26743752

Email: psu_unnati@unnati.org