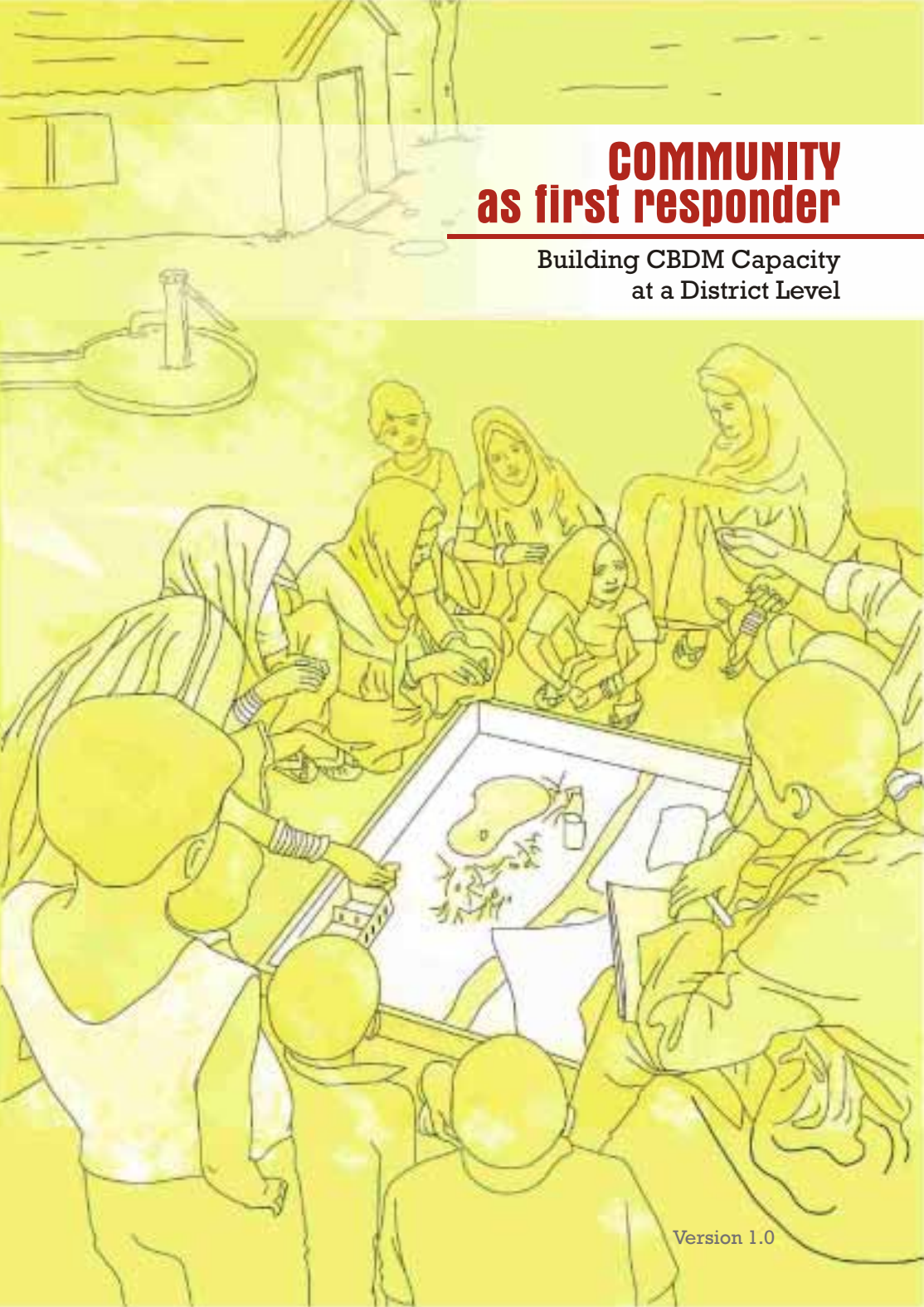
COMMUNITY as first responder

Building CBDM Capacity at a District Level



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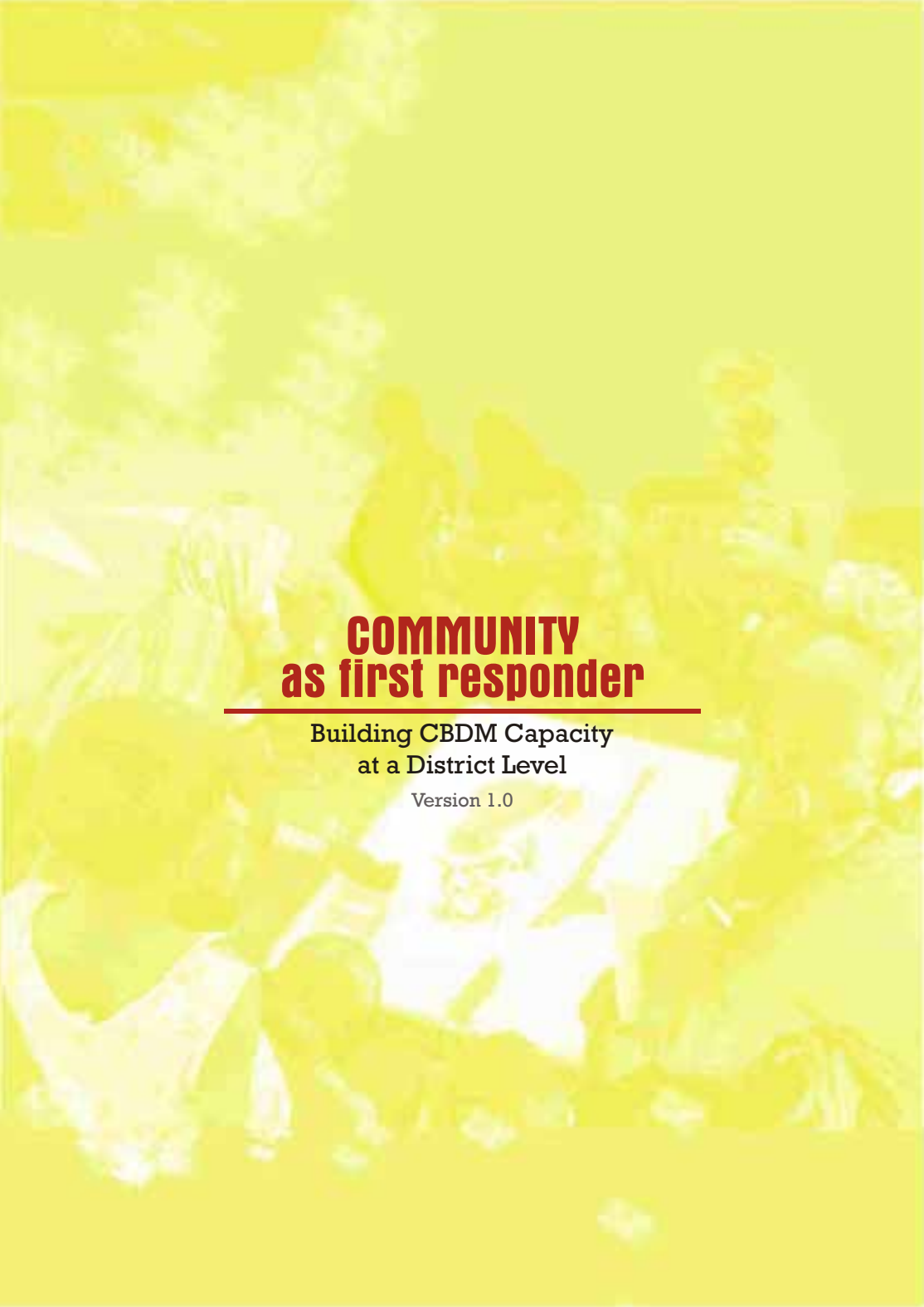

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Version 1.0

SEEDS is a non-profit voluntary organization working to make vulnerable communities resilient to disasters. For this, SEEDS adopts a multi hazards, locally based approach seeking to empower communities through awareness generation, training and action.

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The Community as first responder is a part of the "Localizing the HFA, Intergrated Community Based DRR through School and Hospital Safety". An effort to make community based disaster risk reduction an integral component of school and hospitals. The initiative is supported by European Commission Humanitarian Aid Department in partnership with Christian Aid, Emmanuel Hospital Association (EHA) and SEEDS.

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Preface

The 21st century received a harsh welcome with numerous disasters striking different parts of the globe. The concern which arose in unison was "How do we reduce the impact of these disasters?"

Increase in disaster risk has been a uniform phenomenon throughout the world. The complex nature of disasters and related issues like climate change and urban risk have fuelled the intensity of impacts. The impact of disaster is felt most by the community and the local administration as they are the first to confront and respond immediately in the exigency of any emergency. With the wealth of knowledge the local people possess about their problems and solutions, communities can very well be elevated from their position of being the worst sufferers. Sustainable and effective disaster reduction initiatives can only be ascribed to the spontaneous participation and involvement of the people, local administration and grass root level organizations. There is a trenchant need to take into account the potential of the local resources and capacities in order to include communities in the disaster management process.

Community based initiatives have always been part of the disaster management process in an informal way. However, "COMMUNITY BASED DISASTER MANAGEMENT" – a term coined within the NGO sector – is now increasingly being recognized by national and local level governments, and policy makers. This handbook – Community as first responder – is a conscious effort to orient the district administration and local level NGOs on the issues related to CBDM.

Since its inception in 1995, SEEDS has actively engaged communities through all of its programmes and capacity building activities. Following intense cogitation, SEEDS evolved this handbook for field practitioners and local government officials, stressing the need of CBDM. Reinforcing the fact that development projects must integrate community participation. The toolkit suggests guidelines to the district administration and local level NGOs for mainstreaming community participation. It is an attempt to compile a comprehensive and practical resource book based on our experiences. The genesis of this document is especially attributed to our work in Himachal Pradesh under the project School Earthquake Safety Initiative, Shimla (SESIS). The knowledge gained and the lessons learnt from this project prompted us to capture our process and give it a shape of this handbook. Beginning with a brief introduction on CBDM, the handbook highlights the methodology for risk reduction and other cross cutting issues which must be taken into consideration while planning for CBDM.

We at SEEDS hope that this handbook would facilitate practitioners in assessing risks and planning for actions in partnership with other stakeholders. The handbook does not attempt to provide a set of standards or blueprint for CBDM, but it does provide a broad and flexible framework which can be adapted to different contexts and project interventions. We sincerely hope that it sets the course of action to reduce potential risks and ensure community participation. We look forward to your feedback and valuable inputs.

Manu Gupta
Executive Director, SEEDS
(2009)





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Introduction

It has been felt that a top-down approach to disaster management fails to concentrate on the specific local needs of vulnerable communities, as it does not take into account the potential of local resources and capacities. Though the approach of motivating individuals to understand disaster risks and taking action against the same has always existed, streamlining it in the process of Community Based Disaster Management (CBDM) has been very recent. The evolution of community based processes can be traced back to the Great Hanshin Awaji Earthquake of 1995. In the wake of this tragedy, the Hyogo Framework for Action was adopted in 2005. It promotes CBDM as one of the key lessons learnt from past disasters. Since then, the vitality of the community in the disaster management processes has been realized at various national and international forums like Delhi Declaration on Disaster Risk Reduction and the Third Asian Ministerial Meeting on Disaster Risk Reduction.

As the community is the first respondent in any emergency situation, there is a need to build the capacity of communities. By enhancing their skills and traditional coping mechanism, the losses from disasters can be minimized. This handbook aims to raise awareness on various hazards faced by people, and to encourage the community to assume a sense of responsibility to protect itself and to support public and institutional efforts geared towards disaster preparedness, management and mitigation. It aims at helping the community to take a lead in the disaster management process.

The planning and coordination of the disaster management process can be more effective if there is active involvement of the Government agencies as well as local NGOs. The district administration, in particular, plays a vital role as it acts as a critical link between communities and the state. With the adoption of the National Disaster Management Act, 2005 the Indian Government has displayed its commitment towards inducing disaster risk reduction into its policies and planning. The policies and programmes intended to develop mechanisms for an integrated approach towards disaster management activities are implemented at the micro level through the District Disaster Management Authority (DDMA). The DDMA is the core body responsible for strengthening the capacities of grass root level officials, the community and other stakeholders. Realizing the crucial role of district authorities in carrying forward the policies and plans, this publication offers guidelines for the implementation of CBDM at the disaster level. This handbook helps in facilitating and guiding local government officials as well as grass root level community organizations to be prepared for any impending disaster through the implementation of CBDM in their respective areas. It gives a holistic approach of

the issues to be taken into consideration by the local level authorities while planning for the community.

It is important to impart training to the community and other stakeholders on prevention, mitigation and response processes. These trainings are imparted through district government authorities involving local NGOs in the process. For sustaining the efforts, there is also a need to institutionalize the process by empowering Panchayati Raj institutions to take measures for prevention, mitigation and response to the disasters. These efforts are sustained through continuous monitoring and evaluation on part of the officials as well as the community. This handbook elaborates on the tools, methodologies and actions to be taken for effective coordination and management by the district government officers as well as the local NGOs.

This handbook, however, does not limit itself only to those working directly with the communities. It can be adapted for various stakeholders, including private entities, who are involved in reducing risks of the communities. This handbook also includes sections on cross cutting issues of gender and disability, and emerging issues of climate change, urban risks and safety of critical lifeline structures such as hospitals, schools and community structures.


AZARDS
CBDM
RISK
DISASTERS
HAZARDS
EXPOSURE
CBDM
CBDM
RISK
RABILITY
VULNERA
CAPACITY
HAZARDS
CBDM
VULNERABILITY
DISASTERS

Chapter

1

Understanding the Fundamentals

As a pre-cursor to understanding the concept of CBDM, it is essential to get acquainted with the basic concepts of disaster management and the inter-relation between them.

HAZARDS

It may be defined as a potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

VULNERABILITY

It is a set of conditions and processes resulting from physical, social, economic, and environmental factors, which increase the susceptibility of a community to the impact of hazards.

DISASTERS

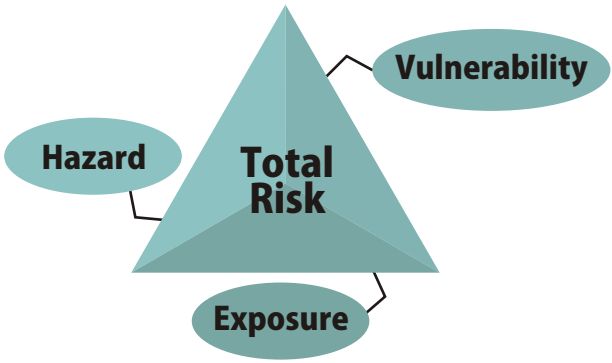
Disaster is a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources.

A hazard becomes a disaster only when communities and structures are too weak and vulnerable to withstand its force. Hazards similar in nature or magnitude can have varying impact on communities depending on their vulnerability. This relationship can be defined in the form of an equation:

Disaster = Hazard + Vulnerability

Though it is impossible to avoid the occurrence of a hazardous event, it is possible to reduce the vulnerability of a community, to prevent the hazard from turning into a disaster, or reduce its impact. Besides vulnerability, exposure of the community to hazard adds to its risk and damage. Total Risk is therefore composed of three variables viz. hazards, exposure and vulnerability. Total Risk reduces if any one of the variable reduces. Also, if any of the variables is eliminated, there is no risk. The same can be illustrated in the form of a “Risk Triangle” wherein all three variables are represented by the sides of a triangle and risk being represented by the area of the triangle. The reduction of any one factor to zero reduces the probability of Total Risk to zero. For example: if there is no population living near the flooding river, there is no risk at all. Alternatively, if the community is well aware of the

floods and have enough coping capacity, it is less vulnerable. Hence, there is little or less probability of total risk.



Overall, the impact of a disaster is determined by the interaction of hazards with factors like degree of vulnerability and resilience of communities. The relationship between risk, hazard and vulnerability shows that risk can be reduced either by reducing the severity of hazard or by improving the protection of elements at risk.

$$\text{Risk} = \frac{\text{Hazard} \times \text{Vulnerability}}{\text{Capacity}}$$

Since the occurrence of hazards is unavoidable, it is important that vulnerability is reduced in order to reduce risk. It means that disaster risk of a social group exposed to a particular hazard can be reduced by minimizing their vulnerabilities and building high coping capacity. Community Based Disaster Management aims to reduce the disaster risks by addressing vulnerabilities and enhancing the coping capacities of the community. By engaging people in identifying, analyzing and treating disaster risks, CBDM puts the community at the centre of risk reduction activities.

Chapter

2

Community Based Disaster Management

What is a COMMUNITY ?

A community, in context of disaster management, can be defined as a group of people that may share one or more things in common, like living in the same environment, similar disaster risk exposure or being affected by the same disaster. An example of a community can be a group of people residing in the catchment area of a river which is affected by floods every year.

Why is COMMUNITY INVOLVEMENT required ?

The key aspect of community involvement is the sustainability of community level initiatives for disaster reduction. It is important that community is involved in the risk reduction process as they are the best judge for assessing the local constraints and opportunities. It is also important that the information generated is produced at the local level in the language and manner which can be easily understood by the community. Also, the people must be involved in decision making on policies and strategies. External agencies like Non-Government Organizations along with the Government may organize and implement community level programs before and after disasters. However, such efforts are discontinued once the external support ends. In order to sustain risk reduction activities, partnership, participation and empowerment of local communities is essential.

What is the ROLE of COMMUNITY in risk reduction ?

As mentioned, a community is the best informant of their surroundings, opportunities and constraints. These may include knowledge on disaster warning signs, locally safe and vulnerable areas, experience of past disasters as well as traditional wisdom which plays an important role during, after, and before disasters. Hence, the role of community is seen as vital in risk reduction process such as:

I A high level of disaster preparedness amongst community reduces disaster impacts.

ii An active community helps to save, evacuate and mobilize people to safe shelters or locations, before external aid arrives.

iii An active and organized community proves to be instrumental in organizing resources required for basic survival like food, clothing and shelter after a disaster.

What is COMMUNITY BASED DISASTER MANAGEMENT ?

The concept of putting the communities at the forefront gave rise to the idea of community based disaster management. CBDM is the process in which community at risk are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce vulnerabilities and enhance their capacities. Community Based Disaster Management is a community driven, bottom −up approach. Adversely, the top bottom approach lead to greater dissatisfaction amongst the communities as the needs are identified as per the perception of the authorities. Under the CBDM approach, the local community not only becomes part of creating plans and decisions, but also becomes a major player in its implementation and further monitoring. Through CBDM, people's capacity to respond to emergencies is increased by providing them with more access and control over resources and basic social services.

In case of disasters, communities have more to lose because they are the ones who are directly hit by disasters. They are the first ones to become vulnerable to the effects of such hazardous events. At the same time, the communities stand to gain when they can reduce the impact of disaster themselves. CBDM empowers the community to address the root causes of vulnerabilities by transforming social, economic and political structures.

For integrating the concept of CBDM, SEEDS has developed a methodology which may be adopted by the local authorities, grass root organizations and the community as a whole.

Chapter

3

How should we do it:
Methodology for CBDM

The process of CBDM must commence with proper identification and participation of different stakeholders. It is crucial to engage representatives of different stakeholder groups in all decision making processes. A good governance system provides a favourable environment for stakeholders' participation. Hence, the authorities should facilitate networking and coordination within the community.

The ultimate goal of CBDM is to build upon communities' capability to manage disasters themselves. It is not advisable to have preconceived notions of what the community considers as vulnerable conditions. Due recognition must be given to the fact that people know about their locality and history and the "outsiders" might ignore a lot of important information. The participatory approach provides opportunity for a local community to evaluate their own situation based on their experiences. Local communities should be made to engage themselves in all aspects of disaster management. People must be involved in all phases of CBDM process to encourage responsibility and accountability over the intervention.

Risk assessment should be conducted incorporating people's perception of local vulnerabilities and capacities. Strategies must be developed that would ensure that voices of those who are most vulnerable, like women, the disabled etc, are heard and given importance. Although the community should be given a greater role in decision making and implementation processes, CBDM must not ignore the importance of scientific and objective risk assessment and planning.

The CBDM process can be followed according to these steps:

STEP 1

Selection of the Community

Though no community is immune to disasters, an intervention will have to make a selection as it is practically not possible to cover the entire population. A CBDM program should be run keeping in mind the disaster that is most likely to happen, and the communities that are most likely to be hit by the disaster. The selection of communities is usually undertaken with a focus on the most vulnerable communities in a given location. The selection process recognizes the opportunities, as well as limitations of the vulnerable groups. The selection of a community is governed by the following criteria:

- Purpose of the selecting organization
- Cost analysis
- Comparative size of the affected community in past disasters
- Severity of the community's exposure to disaster risks due to geographical vulnerability

Purpose of the selecting organization

In most cases, the CBDM process is carried out based on the mandate of the implementing organization. It is up to the implementing agency to decide the target group. For example, if an organization aims to serve the most marginalized and deprived, it would train and enhance capacities of only marginalized communities living below the poverty line. Another example is of organizations whose mandate is to reach out to women. Then their focus would be to look into the role of women in the CBDM process. This can be carried out by formally or informally organizing women into groups.

Cost analysis

According to this criterion, all the returns from a proposed program are expressed in terms of money. The process involves, whether explicitly or implicitly, weighing the total expected costs against the total expected return of one or more actions in order to choose the best or most feasible option. Cost analysis is typically used by governments to evaluate the desirability of a given intervention. The aim is to gauge the efficiency of the intervention in terms of the available resources and the targeted population.

Resources available for disaster risk activities are scant and limited. Also, the decision makers often measure the effectiveness of an intervention in terms of the ratio of cost incurred over the impact on number of people. The guiding principle should be to list all of the parties affected by an intervention, and place a monetary value of the effect it has on their welfare to avoid any mistake.

Comparative size of the affected community in past disasters

This method is applicable in a post disaster situation when an organization chooses to implement its proposed program in the affected area. If a large number of people are affected in a particular area, it becomes the center of attention for the interventions of an organization. Also, an intervention area might be chosen on the basis of the habitation unit overlooking the administrative unit under which the communities fall. For example, in Rajasthan (India), people reside in isolated hamlets known as “Dhanis”. The village is scattered over a large area in the form of small settlements. Hence, for an intervention only a limited number of these hamlets might be selected rather than the entire village.

Severity of the community's exposure to disaster risks

This method is an objective assessment of the risks and vulnerabilities that the communities are exposed to. Different communities have their own perceptions regarding vulnerability and capacity depending on their locality and experiences gained from past disasters. The selection of a community through an assessment process is complex and involves an array of activities like hazard mapping, economic assessment, capacity assessment etc.

A methodology to select the communities at risk has been evolved by SEEDS team based on research and field experience with different communities which are exposed to different hazards. The methodology, which has been discussed in the subsequent chapters, scientifically identifies the intensive risk hotspots. The identification of the community at risk has an inherent focus on gender, children and people with different abilities.

Building Risk Profile of the Community

Select the appropriate administrative unit based on the requirements of the intervention

Based on the requirements, there should be identification of the administrative unit. An "Administrative Unit" refers to the divisions made by the government based on the governance system prevailing at that level. These divisions are made differently for the urban and rural areas. In an urban context, it is the state, district, municipal corporations and wards; in rural context it is blocks, wards and villages.

In this step, it is required to identify the scale of the primary area of intervention which will be larger than the actual intervention area. For example, if intervention requires to be implemented in a village, then the primary area of intervention would be block. Like wise, if intervention is to be implemented in block, then district would be the primary area of intervention.

Build risk profile for primary area of intervention

This step requires collecting all relevant data for assessing the vulnerabilities, capacities and resources for the primary area of intervention. The data collection is done through the available secondary sources, like government reports. The profile should be brief yet exhaustive in terms of information. The following chart depicts the information which is required to be collected for building the risk profile of primary area of intervention. The information should be descriptive and analytical such that it reveals the exact level of vulnerability existing in the given area.

Information Head	Information Required
A. Vulnerability Atlas of the region	A. Hazard maps, Risk maps and Vulnerability maps of Country, State and Districts
B. Hazard Profile of the region	B. List the prevalent hazards and the history of hazards
C. Disaster Trend Analysis	C. Disaster trends are usually derived from past history of disasters. There are particular months or periods during which a particular region faces a type of disaster. For eg. Cyclones, Floods etc.

D. Geographical location	D. Location of the Region Geographical terrain Basic climate profile Total area in square kilometers Proximity to sources of hazards such as mountains, sea etc. Fault lines, depression areas etc. Number of districts, blocks, villages Urban areas Rural areas Maps demarking the region
E1. Demographic data	E1. Demographic data: a. Information about total population b. No. of male, female and children < 5 yrs c. Sex ratio
E2. Socio economic data	E2. Socio economic data: a. Density of population b. Classification of the population i.e. scheduled caste/ scheduled tribe/ below poverty line c. Poverty index d. Occupation: engagement of population in primary, secondary and tertiary sectors e. Rate of unemployment
E3. Infrastructural facilities	E3. III Infra-Structure: a. Total number of schools: pre-primary, primary, secondary and higher secondary schools b. Total number of health centers: primary health centers, dispensaries and hospitals c. Transportation facilities d. Communication facilities e. Disaster response facilities safe shelters, community centers f. Modes of transportation and their accessibility g. Availability of professionals – doctors, teachers. h. Veterinary for live stocks i. Drinking water resources j. Any facility that is regionally important
F. Environment status	Study environment reports and describe the current status. For example: deforestation, impact on marine resources, coral reef etc.

Identify high, moderate and low risk areas

Based on the data collected, identify high, moderate and low risk areas within the primary area of intervention. Identification of these areas should be further substantiated by government reports and other relevant publications. Those areas where probability of occurrence of a hazard is less can be categorized as low risk area. For example, in the case of earthquakes, those areas in zone II would be a low risk area, while those in zone V would be high risk. Similarly, for coastal areas, such categories could be arrived at depending on occurrence of cyclones in the past. However, the decision of categorizing the areas cannot be done on the basis of prevailing hazards alone, but also the level of vulnerability and capacities to withstand a disaster.

STEP 3

Identification of Intensive Risk Hot Spots

Once the primary area of intervention has been categorized into high, moderate or low risk area, it is important to identify the most vulnerable area or the "intensive risk hot spots". These areas can be termed as the most vulnerable amongst the vulnerable. Though, within these areas also the most "doable" or the influential areas should be chosen for the initial intervention. This is done keeping the level of involvement of the community into consideration. It is important to work with a proactive community which has a better accessibility amongst others and can reach out to other villages easily during disasters. The community should be mobilized to facilitate trainings and capacity building of neighboring villages and to participate in all risk reduction activities. The identification of these areas is done by multiplying the vulnerability with hazards. This can be done by quantifying them according to the "Scalogram method" which is again based on the Marshall's Centrality Index. Both the scores, that is, for hazards as well as vulnerability must be calculated separately for every area and the intervention area must be decided accordingly.

The concept of centrality is used to identify settlements which are at central locations (with facilities), and hence can reach out to other settlements which lack facilities. The Scalogram method is used to assign weights based on the presence/absence of facilities. If each facility has a centrality value of 100, that amount can be apportioned between the settlements that possess that function. Hence, if many settlements possess the facility then their individual scores will be low. If the facility is rare, then any settlement possessing that facility will score higher. This technique is especially useful in cases where detailed data concerning the functional characteristics of settlements are largely lacking and if limited time or money are available to gather them.

Steps to quantify vulnerability

- Identify the facilities available in the identified high risk areas.
- Mention the population using these facilities.
- Group these facilities into broad heads. For eg., Education, Health, Public transport etc.
- For each group identify the range of services available from the lowest service providing entity to the highest facility providing entity. For example if the group is education, then the lowest can be Anganwadi or Nursery and the highest facility can be University.
- Mark 'X' against each available facility.

- For example, if the Primary area of intervention is Block, then against each village from village A to village G, following are the facilities available.

Village	Population	EDUCATION						HEALTH				
		Anganwadi	Primary School	Secondary School	Higher Secondary School	College	University	Primary Health center	Community Health center	Dispensary	Clinic	Hospital
A	10,00000	X	X	X	X	X		X	X	X	X	X
B	8,00000	X	X	X	X			X	X	X	X	
C	500000	X	X					X	X			
D	400000	X		X				X	X	X	X	X
E	200000	X	X					X	X			
F	100000	X	X	X	X			X				
G	80000	X						X				

- In order to identify the most influential area, along with the qualitative data, it is required that we also quantify the above data.
- To identify the most vulnerable area we give a score of 100 to each main facility. For example, in the above case, give total of 100 against Education and Health.
- Divide this 100 amongst the sub facilities, for example if education has 6 sub facilities, divide 100 into 6 sub facilities. Each facility will be 16.50 [approx]. Likewise Health has 5 sub facilities and each facility will bear a score of 20.
- Now further, divide this total amongst the number of villages to give them an equal score. Like, 16.50 would be divided by 7, that is, the number of villages.

Village	Population	EDUCATION (100)						HEALTH (100)				
		Anganwadi (16.50)	Primary School (16.50)	Secondary School (16.50)	Higher Secondary School (16.50)	College (16.50)	University (16.50)	Primary Health center (20)	Community Health center (20)	Dispensary (20)	Clinic (20)	Hospital (20)
A	10,00000	X 2.35	X 3.3	X 4.125	X 5.5	X 16.5		X 2.85	X 4	X 6.67	X 6.67	X 10
B	8,00000	X 2.35	X 3.3	X 4.125	X 5.5			X 2.85	X 4	X 6.67	X 6.67	
C	500000	X 2.35	X 3.3					X 2.85	X 4			
D	400000	X 2.35		X 4.125				X 2.85	X 4	X 6.67	X 6.67	X 10
E	200000	X 2.35	X 3.3					X 2.85	X 4			
F	100000	X 2.35	X 3.3	X 4.125	X 5.5			X 2.85				
G	80000	X 2.35						X 2.85				

- Then make a total of the facilities available in each village. The highest score makes the village less vulnerable and vice-versa.

Village	Popul-ation	EDUCATION (100)						HEALTH (100)					Total
		Anganwadi (16.50)	Primary School (16.50)	Secondary School (16.50)	Higher Secondary School (16.50)	College (16.50)	University (16.50)	Primary Health center (20)	Community Health center (20)	Dispensary (20)	Clinic (20)	Hospital (20)	
A	10,00000	X 2.35	X 3.3	X 4.125	X 5.5	X 16.5		X 2.85	X 4	X 6.67	X 6.67	X 10	61.965
B	8,00000	X 2.35	X 3.3	X 4.125	X 5.5			X 2.85	X 4	X 6.67	X 6.67		35.465
C	500000	X 2.35	X 3.3					X 2.85	X 4				12.5
D	400000	X 2.35		X 4.125				X 2.85	X 4	X 6.67	X 6.67	X 10	36.65
E	200000	X 2.35	X 3.3					X 2.85	X 4				12.5
F	100000	X 2.35	X 3.3	X 4.125	X 5.5			X 2.85					18.125
G	80000	X 2.35						X 2.85					05.2

- Based on the above table, the most vulnerable village is “G” and the least vulnerable is “A”.

Steps to quantify hazards

The hazards in each village and the possibility of disaster occurrence are given weightage on quantitative basis. The data is compiled based on the history of past disasters in that particular area. The scores are given against each disaster based on probability of its occurrence.

Villages	Earthquake	Floods	Landslides	Forest Fire	Cyclones	Drought	Tsunami	Total
W	10	5	5	1	0	0	10	30
X	5	5	0	0	10	5	0	25
Y	10	0	0	0	0	5	5	20
Z	10	5	0	1	5	0	5	26

High Probability = 10
Medium Probability = 5
Low Probability = 1
No Probability = 0

Based on this example, the intensive risk hot spot is village W.

Tools for Risk Assessment

Participatory Community Risk Assessment is the core of Disaster Risk Reduction (DRR) process. Risk Assessment needs an understanding of the community by the implementing organization and field practitioners. For carrying out the risk assessment process, certain tools can be used. These are termed as the Participatory Rural Appraisal or PRA tools.

"Participatory Rural Appraisal" (PRA) is a methodology which has gained prominence due to the paradigm shift from top-bottom approach to bottom up approach. The vulnerable communities and groups are the main actors in disaster management. They have knowledge about their locality, history of disasters in their place and how disasters have affected them over time. For collecting this information PRA methods are used. It is a means of collecting different kinds of data, mobilizing intended communities and evoking their participation, and opening ways in which these communities can participate in decision making. The innovative nature of PRA has helped people to express themselves and expose various dimensions of their lives. In PRA local people are not seen as beneficiaries, but as partners in the research and development process. In PRA, data collection and analysis are undertaken by local people, with outsiders facilitating rather than controlling.

PRA has been applied in every domain of development and community action, both urban and rural. PRA techniques are equally applicable in urban settings but it has been felt that urban areas need a different approach because of their complex nature. Though being utilized in a variety of settings, their significance is highlighted more in rural areas.

The purpose of PRA is to enable development practitioners, government officials, and local people to work together and plan appropriately according to the needs of the local people. The convenient entry points for conducting PRA exercise are the local community leaders like, the Sarpanch or the youth. However, one must be sensitive enough to include people from every section of the community including the women and the aged. Also, different set of people might have different outlook towards an issue, like, procuring water might be the foremost problem for women but for the male livelihood tops the agenda. Therefore, diverse viewpoints must be incorporated while conducting PRA.

PRA techniques can be combined in a variety of ways, depending on the topic under study.

While some of the tools are generic which can be used at the initial stage of an intervention, certain tools are more specific which are used during the implementation of community based disaster management. Before implementing the direct PRA methods in the field certain methods, like reviewing the secondary data, may be used to support the learning process.

Review of Secondary Data

- It includes collection and review of existing data and information relevant to the area
- Review of secondary data is useful to get an initial picture of the situation of the target community both in socio-economic and institutional context.
- Secondary data can be processed in two stages:
    i. Identification and compilation of the material
    ii. Analysis of the collected information

Direct Observation

- It concerns obtaining first hand information by systematically and directly observing the events. For example, relationship between the people of a community.
- Observations are analyzed afterwards for patterns and trends.
- Hypothesis arising out of verbal information should be cross checked,
- This tool can be used strategically in any phase of the implementation of CBDM.

Given below are few of the direct PRA methods which can be modified or developed into new tools.

Semi-Structured Interviews

- Semi-Structured interviews are carried out in an informal and conversational way.
- The individual interviews and group interviews form the part of semi structured interviews. It is advisable to take not more than an hour for an individual interview and not more than two hours for a group interview.
- The interviews should be structured in advance.
- It is important to include women as respondents and take their perspective on issues.
- Semi structured interviews can be conducted at individual level, household level or community level.

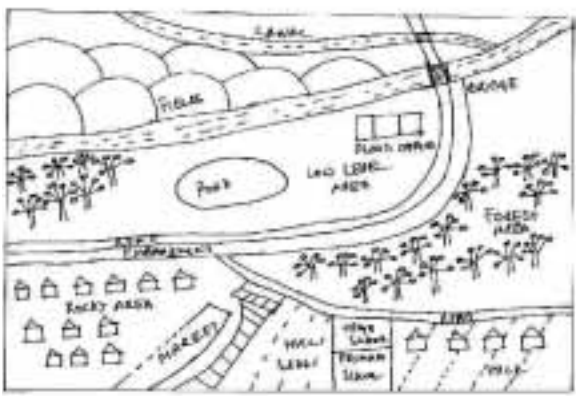
  – Individual or key informant interviews: These are interviews with selected individuals who have long experience with community or specialized knowledge.

- Household interviews: Households may be selected from each socio-economic category in the population and interviews can be conducted in these specially selected houses.

- Focus group interviews: Focus group interviews are conducted with a special focus on a group of people (6 to 10 in number) who have certain factors in common. This helps to get specific views and perspectives on certain issues. Focus group discussions are conducted based on age groups, owners of specific resources, people involved in a specific role or activity.

Mapping

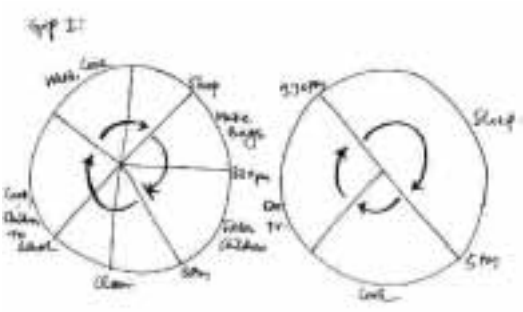
To start with the process, one should obtain a base map of the region from the local authorities. Also try to get satellite imageries and maps of the particular area. To enrich the maps with detailed attributes, GIS mapping can be used. Along with these maps, the community must also be involved in drafting a map of their own area. Mapping helps in visually representing the physical attributes and various resources in the community. The maps are of different kind like hazard maps, social maps, resource maps, vulnerability maps etc. Community and resource maps can be combined with a hazard map to come up with a local vulnerability map where one can easily identify settlements, resources and infrastructure threatened by a certain hazard.



Activity Calendars

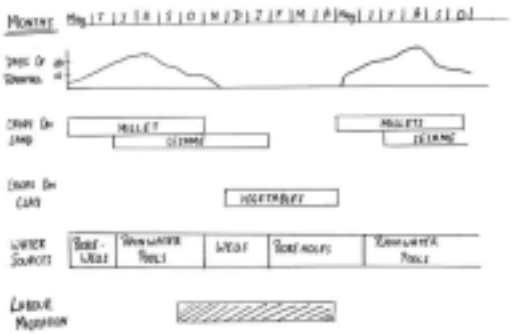
An activity calendar is useful in getting insights into the type of activities implemented by a community or household in a day, month, season or a year. It helps to understand the problems related to the activities performed and a comparison can also give leads on changing patterns and trends. Activity calendars can be made for any period of time. The most useful are the daily activity pattern and the seasonal activity calendar.

- **Daily Activity Profile**



The male and female members of the community are separately asked in chronological order their usual activities during a day, the duration of these activities and the location of where the activity it is being implemented. Activities should be inclusive of productive, reproductive and socio- cultural aspects. The purpose is to understand the working pattern, peak work loads and other problems related to the activities. Also, the daily activity profile gives a clear idea of the time which may be utilized for the proposed program activities.

- **Seasonal Calendars**



The seasonal calendars help to visualize the timing and duration of hazards across the year. Seasonal calendars depict various physical and socio economic phenomena occurring in various months. It shows the main activities, problems and opportunities throughout the annual cycle and help identify the months of greatest vulnerability, difficulty and variations.

Source: Mukherjee, Neela
Participatory Rural Appraisal: Methodology & Application

Matrix Ranking / Scoring

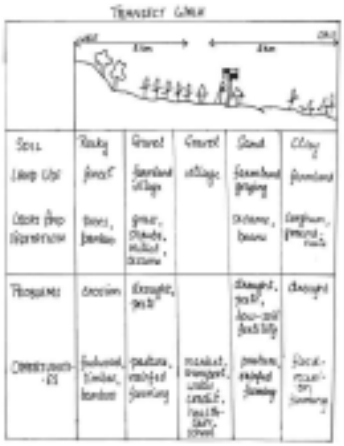
Matrix ranking is used to find out the degree to which different hazards affect people, property, community resources, infrastructure, and other elements of the community. A rank or score is given to disasters to find out which disaster has the most or least effect on the community.

Name of Hazard	Severity of community exposure to risk	Readiness of community to engage in DRM	Accessibility of the community
Flood	4	1	2
Typhoon	2	1	3
Tsunami	3	1	2

Matrix Ranking

Transect Walk

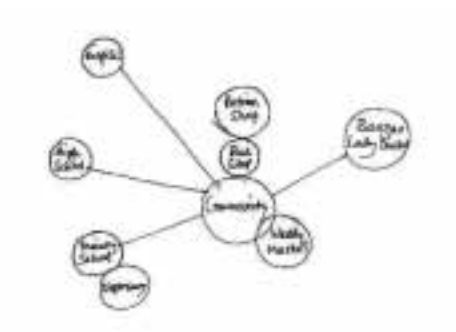
Transect walk refers to walking systematically with the people of the community through the area and discussing various aspects of specific locations. The discussion can cover the area's physical environment, land uses, amenities and the needs and problems related to them. It also helps to identify danger zones, safe areas, natural resources and land use patterns. Transect walk is usually done during the initial phase of an intervention.



Source: Mukherjee, Neela
Participatory Rural Appraisal: Methodology & Application

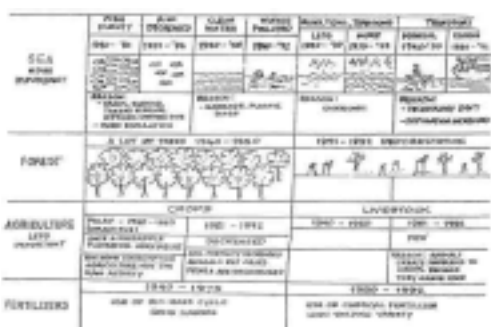
Venn Diagram

Venn diagram or chapati diagrams are used to generate insights on the relative importance that local and external institutions have on the community. The participants use their own criteria to determine effective and ineffective services. Circles of different sizes are drawn which depict the importance of the issues. The diagram also indicates the relationship of the community with different institutions, denoted by the distance between the circles.



Historical Profile

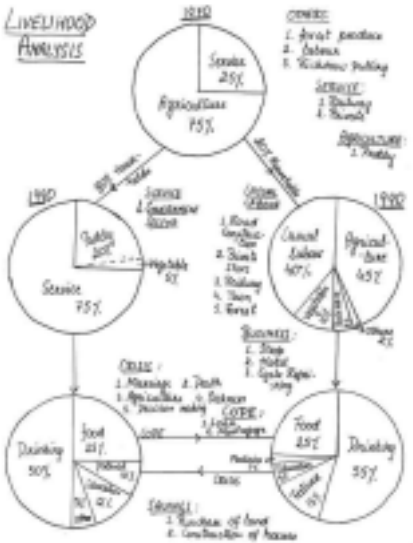
In a historical profile, the villagers provide an account of how different aspects of a particular area have changed over the years. It helps a great deal in revealing the changes and trends that have come about over a time, especially in terms of the intensity and number of disasters. Historical profile may be measured through the methods of historical transect and time line.



Source: Citizenry Based & Development-Oriented Disaster Response.
Center for Disaster Preparedness.

Livelihood Analysis

This helps in learning about people's lives and the intricacies of the economic structure prevailing in the community. It depicts the different livelihood pattern of a particular area, how they are affected by disasters and what are the coping strategies of the people.



Source: Mukherjee, Neela
Participatory Rural Appraisal: Methodology & Application

With the use of these tools, the process of risk assessment is carried out. Risk assessment integrates the results of scientific knowledge, secondary data and community perceptions. The assessment process is carried out by first, assessing the capacities and vulnerabilities, second, stakeholder analysis and third, by identifying and coordinating with community based organisations.

Methodology for Risk Assessment

Community Risk Assessment can be carried out as a prelude to all programs and activities. It uses the various participatory tools to get an understanding of people's exposure to natural hazards at the grass root level. It is also called Vulnerability and Capacity Assessment(VCA).

Vulnerability and Capacity Assessment is concerned with collecting, analyzing and systematizing information in a structured way on a given community's vulnerability to hazards. Vulnerability assessment analyzes the factors that generate the vulnerability of the community members and looks into the root cause of these. These vulnerabilities can be categorized into physical, social and economic. Capacity assessment is used to identify resources and strengths of the community used to deal with and respond to crisis. Here, capacities refer more to people's abilities to recover after the impact of disasters and during periods of stress.

Main objectives of VCA:

- To reduce the impact of hazards through mitigation, prediction and warning, and preparedness
- To build capacities that would help reduce country's vulnerability
- To reduce the ways in which people are affected by poor governance, discrimination, inequality and inappropriate access to resources and livelihood
- To tackle the root causes that lead to vulnerability

VCA can be successful only with the active participation of all community members. It is comprehensive and covers all important variables in a community. It gives equal consideration to the physical/material, social/organisational and attitudinal/motivational aspects of a community according to class, gender, age etc. VCA is carried out in the following manner:

Collection and Analysis of Data

Collecting data on the demographic, socio economic and infrastructural details of a given area is a pre-requisite for the commencement of an intervention. These details would build the capacity profile of the community and also help in realizing the gaps within the capacities of the community. The gaps, once realized, should be strengthened for reducing vulnerabilities.

The demographic details include the size of population, geographic boundaries, male-female ratio, number of children, single parent, physically challenged etc. The socio-economic details include division of the community on the basis of social classes, number of people living below poverty line, rate of literacy, education facilities, occupational patterns etc. Critical infrastructure facilities include a number of key facilities available in the community, which encompasses health centers, education centers, public buildings and other public facilities. The assessment of these facilities should be done qualitatively in terms of its structural strength. The total number of health centers, schools etc should also be mentioned in order to deduce whether these facilities are adequate or inadequate. The collection of data on the infrastructural facilities is usually covered in Step 3. However, Step 4 requires a more intensive analysis of different parameters of these facilities.

Hazard, Risk and Impact Assessment

Based on the hazard profile of the community, the risks are to be detailed out and the impacts required to be assessed and treated. Hazard, Risk and Impact Assessment is facilitated through community workshops and focus group discussions. Assessing the hazards, risks and impacts involves the following process:

a. Hazard Profile

Based on the data on hazard zonation, the hazard profile of the intervention area must be defined. The risk profile built for the primary area of intervention may also be utilized for outlining the hazard profile.

b. Impact of Past Hazards

To know the frequency of disasters, hazards are listed down along with the dates of occurrence. Along with this, the impact of each hazard should also be noted. For example:

Hazards	Date of Event	Impacts of Hazards
Earthquake	2006	Minor shaking. No major Loss
Forest Fire	Frequent during hot summers	Loss of vegetation and grass affected in a lack of fodder for livestock and increase of wild animal terror in agriculture land and danger to houses located near forest.
Landslide	Frequent during rainy season & major destruction in 2008	Damage to roads and agriculture land, natural spring water pollution, Blockage of main roads and link roads for remote location villages
Human Animal Conflict	Frequent, 3 cases in year 2008	Losses of agricultural crops, domestic animal loss, threat to human being and their livestock, increase in wasteland and pastureland. Terror to human being mainly children and women due to wild animals

c. Elements at Risk

Against each hazard, it is required to identify the elements which are at highest risk, that is, who is at risk? It can be community, infrastructure, houses, children, women or livelihood. The level of risk for each of these elements should then be classified and marked into High, Low or Moderate.

Sr.No.	Hazards	Who are at Risk?	Risk Rating		
			High	Moderate	Low
1	Earthquake	Entire village panchayat community especially women, children, people with disabilities and old age people, property, community infrastructure including community resources	Yes	-	-
2	ForestFire	Cash crops, grazing land and agriculture land near forest areas wild animals and forest vegetation, livestock fodder, natural water resources	Yes	-	-
3	Landslide	Community, infrastructure, water bodies, livestock, communication, mobility and agriculture land, cash crops, etc	Yes	-	-
4	Human Animal Conflict	Farmers and their livelihoods as well as live stock and agriculture land and villagers	Yes	-	-

d. Impact Assessment and Risk Treatment Options

It is important that the identified risks and impacts are treated to reduce the vulnerability of the community. After identifying, the probable risks the treatment options are listed below. The risks require to be treated in a way that it enhances the coping mechanism of the community. The risk treatments may be divided on the basis of different phases of disaster, that is, before, during, after and non-disaster situation.

Hazards	Risks	Risk Treatment
Earthquake	Damage to life and property	To create awareness among people regarding earthquake resistant structures, both pubic and private Awareness camps on disaster management for the entire Gram Panchayat Training of task forces and Disaster Management Community members on disaster management Construction of alternate safe routes and safe shelters to deal with emergency situations
Forest Fire	Grassing land, forest vegetation, wild animals and crisis of domestic fuel wood and community	To construct fire walls in forest fire prone areas Maintenance of forest by cleaning of pine trees & waste dry leaves with joint initiative of Panchayat and Forest Department. Roping of trees other than pine Awareness in villages villagers regarding forest fire Training of task force to prevent forest fire
Landslide	Infrastructure, resources, roads, agricultural land and community transportation and mobility blocked in remote locations	Construction of retaining walls in landslide zones Roping of trees nearby roads and risk management during construction of link roads to avoid landslides Proper rain water drainage management to avoid landslide during rainy season awareness camps on landslides
Human Animal Conflict	Villagers and their livestock, cash crops and livelihood	Construction of safety walls to avoid wild animals in agriculture land Growing of fruit trees instead of pine trees in forest Sterilization and export of monkey should be started to reduce human animal conflict from this area Joint initiative of village panchayat and forest department to reduce human animal conflict

Identify Problems, Solutions and Responsibilities

After having identified the hazards and resources, th community should be consulted to identify the problems, solutions and the entity that would be responsible to solve it. For adequate participation of all stakeholders, a workshop can be conducted putting the community at center stage. The workshop must involve the local organizations, government level officials, and community members. The participatory joint workshop with the community, local government authorities and NGOs gives the opportunity to create a consensus on the identification of solutions and also helps define roles and responsibilities of various stakeholders in the community.

i. The workshop should be well represented by the community representatives like, community leaders, women, and individuals from various occupational background, elderly members, youth clubs, and government officials working in the intervention area.
ii. The facilitator should group the members such that the groups are well represented by all the stakeholders.
iii. The group members should individually identify the problems. Depending on the number of people in the workshop, the facilitator can ask to identify one or two or five problems faced by the community.
iv. Once the problems are identified, they can then be broadly categorized into different heads such as health, education, agriculture, transport and communication, and water and sanitation.
v. Now each group must be allotted one problem and asked to detail out the sub-problems and their solutions.
vi. Lastly, they should identify who would be solving these problems, an NGO , community or local government authority.

For example:

Water & Sanitation				
Sub Problems	**Solutions**	**Responsibility**		
		NGO	**Local Government**	**Community**
Wells are not cleaned	Should be cleaned every month		✓	✓
Broken pipes	Maintenance & repair of pipes		✓	✓

Stakeholder Analysis

There are multiple stakeholders or actors within and outside the community who can influence the effectiveness of CBDM process. It is therefore essential to recognize these stakeholders who will be directly or indirectly involved in the CBDM process. These stakeholders can be grouped into external and internal categories or the primary and secondary stakeholders. As a precursor to the CBDM process, the roles of each stakeholder must be clearly spelt out and the level of power and influence of each stakeholder group should be ascertained. This may be done by assessing with the stakeholders the impact of disasters on them. It is important to take their interpretation of the impact of disasters and how they can specifically help mitigate or manage the disasters. The internal stakeholders play an active micro level role in the process. They are the direct recipients and responders of all the disaster management initiatives. The internal stakeholders essentially include the community and its sub-groups such as women and occupational groups. The local community is not only part of creating plans and decisions but can even become a major player in the implementation of CBDM. On the other hand, the external stakeholders equally influences the process at the macro level. These include local government, community based organizations (CBOs), national and international level agencies and private sector. The external stakeholders are responsible for a number of activities from local planning to promoting policy, national plan and legal procedures for CBDM. They predominantly provide the technical, financial and political support.

Having identified key stakeholders, it is required to analyze their level of awareness and influence in order to develop plans and strategies such that the final objective of reducing disaster risk and making communities more resilient is achieved.

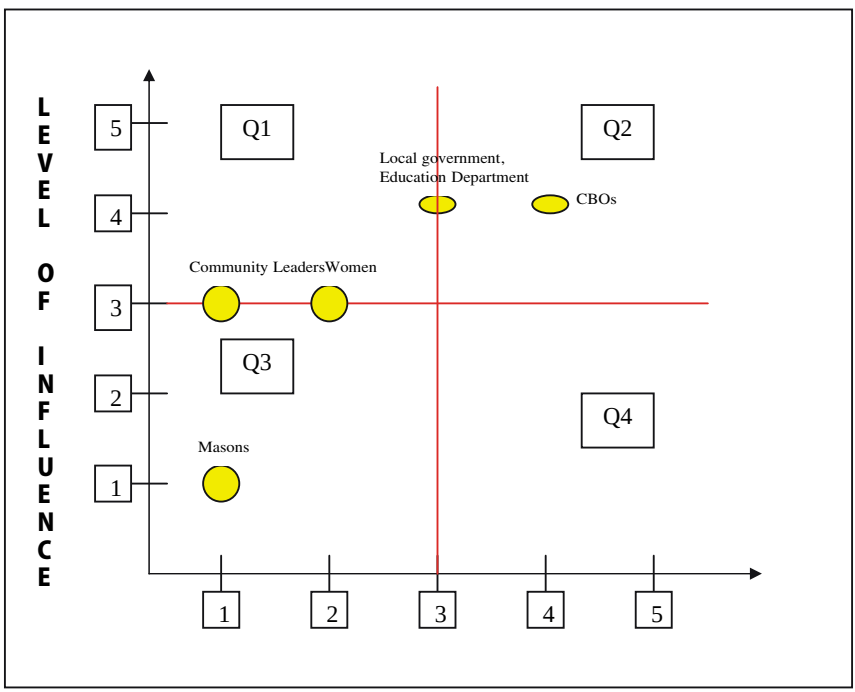
- **Level of Awareness:** It is the amount of information and knowledge about the disaster risk reduction activities.

- **Level of Power:** It is the amount of influence which a stakeholder has on the community level activities.

Both level of awareness and influence can be scaled from 1-5 on a XY axis. The lowest number indicates low level of awareness and influence, while highest number indicates high level of awareness and influence.

For example:

Stakeholders	Level of Awareness	Level of Influence
Local Government	3	4
Women	2	3
Masons	1	1
Education Department	3	4
Community Leaders	1	3
CBOs	4	4



The above diagram

Q1: Depicts low level of awareness and high level of influence

Q2; Depicts high level of awareness and high level of influence

Q3; Depicts low level of awareness and low level of influence

Q4: Depicts high level of awareness and low level of influence

The main objective of stakeholder analysis is to understand the capacity of the stakeholders and formulate strategies such that after implementation of an intervention, the stakeholders attain highest level of awareness and influence to reduce disaster risks. One such strategy is through training and capacity building. Training of people within the community is an important component of the risk reduction process. The aim of training is to enhance the technical and organizational capability of the community on issues of first aid, search and rescue, evacuation management, relief operations management and emergency shelter management, damage and need assessment and safer construction practices. The trainings require to be given to:

i. Community at large
ii. Special community groups

Special community groups may include masons, farmers, teachers, staff of the local authorities, health workers etc. These groups would require special training, as they can influence risk reduction measures. Training masons and making them aware of safe construction practices (construction of buildings as per building codes, or structures resilient to earthquakes) is a mitigation measure, which would reduce impact of disasters. Similarly teachers influence children and their knowledge with regard to disasters and preventive measures would help in saving lives of children. In a similar vein, farmers and fishermen require training on early warning and even alternate livelihoods to reduce their vulnerability.

However, it is required that the knowledge of the groups and community at large be assessed to make the specific trainings more focused. Hence, **Training Need Assessment** requires to be carried out so that it facilitates to prepare training modules and various materials for training.

Identification of Community Based

Organizations

Local Community Based Organisations (CBOs) should be identified and entrusted with the activities of CBDM. They are the change agents of the community and hence, should be part of the intervention from the beginning. If there are no local organizations present, then the field team requires forming a Community Based Organization (CBO). A CBO should ideally have the following characteristics:

- The members of a CBO must have common goals and objectives.
- The members should have representation from all sections of society, especially from vulnerable groups.
- The members should have agreed to mobilize community funds for disaster management activities.
- The CBO must have required leadership to mobilize communities.
- The members should have aptitude and required skills for conducting disaster risk activities with the community.

Different CBO groups which can be formed are:

i. **Task Force Groups**: These groups are formed to act during emergency. They are specialized groups trained for First Aid, Search & Rescue, Fire Safety, Relief Coordination, Early Warning Systems, Shelter Management and Damage Assessment.

ii. **Disaster Management Committee (DMC)**: DMCs are formed with representatives from the community who will be the nodal entity to coordinate response and mitigation plans.

iii. **Village Development Committee**: This committee is inclusive of key members from DMC. This committee specially looks at execution of mitigation and development issues such that it reduces risks and vulnerabilities of the communities and gets integrated with development plans.

For sustained awareness and participation of the community, the existing groups like the SHGs and youth groups might be utilized. The influence, spread and hold of these groups over the community is very strong. Hence, they would prove instrumental in disseminating the knowledge and skills during the process of CBDM.

STEP 5

Community Risk Management Planning

Community Risk Management Planning is the route through which all stakeholders make or propose concrete measures for risk reduction based on the level of risk that they are exposed to, capacities and resources they have and require for reducing their vulnerabilities. During the planning process, mitigation strategies are drafted for the identified risks. Community Risk Management Planning includes:

i. Disaster Management Planning
ii. Training & Capacity Building

The plan requires to be updated frequently by the community along with the government authorities and local organizations.

Disaster Management Planning

Based on the risk assessment, disaster management planning requires to be carried out by the community. To move forward in the disaster reduction process, it is necessary that the community builds agreement about what can be achieved. For this consensus building, certain principles have been identified.

Within disaster management planning, the following steps are carried out:

a. Allocate Roles and Responsibilities and Identify Progress Indicators

Having identified the risk treatment for each hazard, it is then required to allocate various tasks to the stakeholders. The roles and responsibilities have to be then monitored jointly by the community members. The tasks assigned should be performed within the time frame as decided by the community members. The allocation of tasks should be shared with the whole community.

Risk	Risk Treatment Activities	Specific location in the project area	Responsibility	Monitoring indicators
Structural damage to school building	Retrofitting of school building	Kasumpati	School authority and Gram Panchayat	Review of the structure every 6 months

For assessing the progress of the tasks, monitoring should also be carried out and the indicators for it must be predetermined. Skill based trainings can be included and various task force groups can be involved in the process.

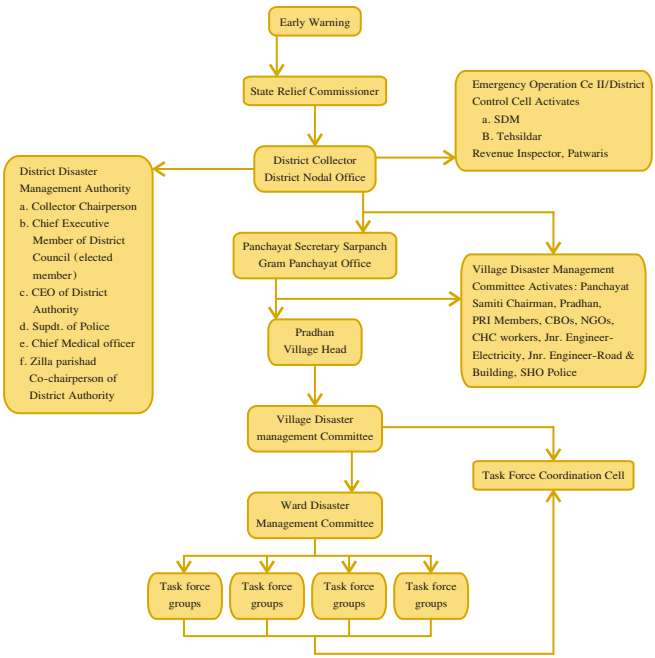
b. Define the Communication and Early Warning Mechanisms

A clear line of communication must be defined while planning the disaster management activities. It is important to establish networks from the community level to the highest level government authority for proper sharing and dissemination of information amongst all the stakeholders. This helps to increase communication efficiency in the event of disaster, reduces the scope of rumours and helps to improve the functioning of the post disaster activities.
It is also a pre-requisite for an early warning mechanism to be in place. The aim is to contribute to the safety of community by facilitating precautionary measures. The local government should be committed to the development of a community level warning system and link it further to the national warning system. Channels used for issuance of warning messages must be accessible to different vulnerable groups in the community. The Regional Meteorological Department must also be functional at any given point of time.

A warning system comprises:

1. Forecast on hazard occurrence
2. Communication of warning
3. Action by community members

The illustration below depicts the early warning mechanism, which is triggered from the highest authority at the State level and percolates till Ward level. This system can, however, change depending on the region.



c. Disaster Management Plan

Disaster management plan is a comprehensive guide prepared by the community, for the community and is of the community. The plan must be made available to everybody in the community for their information. It comprises the steps that a vulnerable community must follow in order to combat disaster risks. It includes Standard Operating Procedures (SOPs) of the stakeholders as well as detailed mitigation plan. The plan includes details such as evacuation maps as well as resource maps which describe the available resources and capacities of the community. Disaster management plans at the grass root level must be integrated with the National Disaster Management Plan of the country.

d. Disaster Management Maps

The indigenous hand drawn disaster management maps are developed with the help of the community and have been helpful for them to understand their vulnerabilities, capacities and their role at time of a disaster. There are also modern techniques like geospatial technologies which can very well corroborate the already available information for eg. the GIS maps which have been used to formulate various maps such as vulnerability mapping, food security index. An amalgamation of both the modern as well as indigenous methods of mapping can prove to be a boost for enhanced understanding.

CBIS – Community Based Information System is also a popular tool for collection of data related to community, including mapping of different locations and detailing them in such a way that the map acts as a mirror to the community. The notable feature is that the data collected is community driven and participatory in nature.

Training & Capacity Building

As discussed earlier, training must be provided to the community at large as well as to the special technical experts such as masons, farmers, teachers, community leaders and local authorities. To enhance the understanding of individuals, families and communities about hazards, disasters, vulnerabilities, risk reduction and preparedness, the community must be oriented through training and other capacity building efforts on an ongoing basis. Training & capacity building aims at increasing the coping capacities of the communities, community organizations and specific groups of the community. Training need assessment helps to define the gaps in the knowledge and capacity of the community at large. This further helps in designing specific trainings for different groups. Local authorities and grass root level organizations must commit themselves towards conducting community orientation sessions along with other awareness activities.

Training and capacity building can vary based on contextual needs of the community. However, some of the components can be as follows:

a. Sensitization Training to Community Organizations /Community

This includes a basic orientation on the concepts of disaster management. The grass root level organizations, local authorities and the community need some amount of expertise on disaster risk assessment and planning. Need for training and capacity building in CBDM must gradually come as a demand from the community. Only if there is a demand, will the process be sustainable.

b. Specific Group Trainings

As discussed earlier, specific group trainings are required keeping in mind specific occupational groups. These groups include masons, farmers, teachers etc. Specific modules are prepared for such trainings after conducting a basic need assessment. The specific group trainings are held only after a basic orientation in disaster management.

Specific group trainings might include training masons and making them aware of safe construction practices which is a mitigation measure and would reduce impact of disasters. Similarly teachers influence children and their knowledge with regard to disasters and preventive measures would help in saving lives of children and would also increase awareness of children. Also, livelihood training should be given to farmers/fishermen to develop alternative means of livelihood in case of any calamity.

STEP 6

Community Led Implementation

Community led implementation basically looks at the participatory planning process, both, from the small term as well as the long term perspective. While small term implementation involves the immediate response and recovery strategies, the long term implementation revolves around mitigation and preparedness efforts. The implementation is done by the community whereby the identified local NGO or CBO along with the local government authorities are involved in the facilitation process. This includes monitoring of activities such that they are carried out periodically and have a greater and sustained impact on reducing vulnerability. Currently, the community led operations are focused more on disaster management during an event of disaster. Equal worth must also be given to the relief and rehabilitation interventions.

The community led implementation focuses on the following:

- Mitigation Plan
- Preparedness Plan
- Response Plan
- Recovery & Rehabilitation Plan
- Risk Communication

Mitigation Plan

Mitigation activities can be planned separately for different sectors to arrive at a comprehensive risk reduction strategy. The mitigation activities are community led and both long term and short term activities should be clearly compartmentalized. The various sectors which can be utilized for planning are education, health, livelihood (agriculture, fishing etc.) transport and communication, water and sanitation and critical infrastructure development. For each sector, the risk reduction plan should identify short term problems as well as provide a strategy to resolve them. At the same time, for development purposes a long term mitigation plan should be identified and followed for building the community's resilience. The community based organizations and local government play an important role in integrating the mitigation plan into the developmental activities.

Steps for formulating a Mitigation Plan:

- All the relevant stakeholders should be consulted and open discussions with the

community representatives should be held. The discussions should involve getting their inputs, identifying resource needs and the possible solution.

- For each sector, the short term risk reduction measures and long term risk reduction measures should be identified. For example, in the construction sector, the short term measure identified is to carry out retrofitting for all the critical life time structures while the long term measure may be to build capacity of the engineers, masons and also monitor that the new buildings adhere to the building codes.
- The resources required should be mentioned according to human, financial, technical, material, physical and social needs.
- It should clearly mention the responsibilities and the time frame required to complete risk reduction activities.
- Mitigation plan should be further linked with the development plans of the community.
- For each specific short term and long term activity, the budget requirement must be estimated. If the budget is estimated in advance, it is easier to plan the development activities by the local authorities.

Mitigation Plan Matrix

	Problems		Solutions	Resource Needs					Responsibility		
	Short term	Long term		Physical	Social	Human	Technical	Financial	NGO	Govt	Community
School	Building not Safe	No grants available to improve and expand infrastructure	1. Awareness		✓	✓		✓	✓	✓	
			2. Gram panchayat makes provisions to improve facilities	✓		✓	✓	✓		✓	
			3. Community may also contribute through funds to retrofit school			✓		✓			✓

Preparedness Plan

A good preparedness plan would help attend to the immediate needs of the affected population in minimum time possible. It can strengthen the response functions of a community. Under a preparedness plan, a community should be capacitated with trainings and facilitated to practice the skills that would help them to be prepared during the event of a disaster. This includes training various groups of the community on issues like early warning and communication, shelter, relief management, search and rescue, fire fighting and first aid. These groups are termed as the task forces. Task forces are the specialized groups for the community that are formed during the CBDM process. The set of volunteers are chosen and trained to perform activities related to saving lives and emergency response. These task forces conduct periodic simulation exercises and mock drills. Drills are conducted to ensure the readiness of the community for disaster response. Community level drills are the key for the sustainability of community level preparedness action. The drills emphasize the needs of

special vulnerable groups within the community like children, the elderly and disabled. In non disaster time, it is required that these community groups carry out periodic drills and evacuation along with updating of disaster management plans on a sustained basis. As part of the preparation plan, it is important to identify the “high risk” areas for different disasters and instruct the community to relocate from these areas in time of crisis. A stock of food, medical supplies and other emergency items must be created to ensure adequate supply at the time of disaster.

Response Plan

During the period immediately following a major disaster or emergency, strategic response planning assumes prime importance. Well planned out preparedness actions to identify requirements and mobilizing resources to the affected area can help to ensure timely response in case of disasters. Immediately after the disaster, the district authority acquires a vital role in the activation of the response plan. At the onset of the disaster, Emergency Operation Centre becomes a nodal point for the overall coordination and control of relief work. The primary function of these EOCs is to facilitate smooth inflow and outflow of relief and other disaster response related activities.

Survivors often have to be moved to make-shift relief camps because their places of residence are damaged or at risk of damage. Relief camps usually come up in school buildings, sports stadia, places of worship or other community buildings. Temporary shelter management is a complex task. Food, water, power, heating/cooling, and toilets need to be organized for the occupants. Many people are injured or traumatized and need professional help of doctors or counselors. Security is another issue of concern, as bad elements take advantage of such situations. All these tasks fall under the larger ambit of relief management.

In addition to these tasks, the authorities are also required to restore communication networks and conduct joint assessment of damage with help from other non-government agencies. The Emergency Support Functions (ESFs) allocated to different departments are also channelized through the district level authorities. The ESFs during a disaster time are operation services, resources, infrastructure, health, logistics, and communication and information management. Each ESF is allotted to specific line department and are performed with assistance form a nodal officer. In addition to this, all departments, divisions and agencies shall prepare their own action plans in respect of their responsibilities. The Standard Operating Procedures (SOPs) shall also be followed by the line departments during normal times, warning stage, disaster stage and post disaster stage.

Recovery and Rehabilitation Plan

During the post disaster scenario of recovery and rehabilitation, the local authorities and CBOs or NGOs have the most vital role to play. Immediately after a disaster, committees should be formed at the community level in order to have a coordinated response after the disaster or emergency. These committees need not be formed separately, but the already existing task forces may be utilized for the purpose. These committees can help organize initial and subsequent assessments of disaster affected areas and determine the extent of loss and damage and the volume and nature of relief required. The main activities to be covered under this plan are as follows:

- In the recovery stage, the committee/task force members should facilitate the community at large to stabilize in the post disaster scenario. The primary activities mainly include psycho social activities such as trauma counseling, providing alternate source of livelihood in case of loss of livelihood, construction of transitional or intermediate shelters, and child care activities.
- In both the recovery and reconstruction stage, the community groups should monitor that risk reduction measures are incorporated and the communities are trained for the same.
- The community should facilitate the rehabilitation process along with the local authority and grass root level organizations.
- It is also necessary for these groups to evaluate and monitor activities to ensure that there is equal and fair allocation without any gender or caste biases.

Risk Communication

Risk Communication is different from a general public awareness activity. "Public awareness" is an external approach, wherein experts outside the community create public messages for risk reduction as perceived by their understanding. "Disaster Risk Communication" is an internal approach, wherein the stakeholders collectively form a clear understanding about risks and mitigation actions. Risk communication is used to prevent, solve or mitigate the risk problems with customized information (risk messages) for specific target groups. It is a social process in which different types of communication (like one-way, two-sided or multi-sided dialogues) are applied depending on the circumstances and the phase of the planning process.

In order to address specific groups, risk communication should be formulated on the basis of the information received, social values and needs perceived by the community. It also requires study on the behavior pattern of the specific individuals and groups. Having assessed

the behaviour, it should locate appropriate channels of communication which would be useful in communicating risk reduction activities. At the same time, the communicators who are chosen should have ample influence on the community. All the stakeholders must form a common understanding about risks and actions needed to reduce risks.

Risk communication primarily has the following objectives:

- Facilitate exchange of ideas and perceptions for creating a consensus on understanding about the nature and impact of existing risks.
- Standardize strategies and methodology or approach for risk treatment.
- Influence decision makers to formulate policies and programmes that would induce DRR issues.

Risk communication can be carried out through distribution of materials like posters, leaflets, brochures, booklets and videos. Awareness can also be generated by organizing events for risk communication, like rallies, meetings, conferences, celebration of a disaster day or week, or exhibitions. These events can act as platform for a rigorous discussion amongst the community members. Risk communication must be an ongoing activity.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Chapter 4

Sustainability

Sustainability of CBDM means the ability to, or the capacity of a community to maintain CBDM activities over time. It means that the community has a safer place to live, its vulnerability to disasters is reduced and that it has improved capacity to cope with future disasters. Sustainability of CBDM results from substantial community participation, how well a CBDM intervention has created a positive impact on the community, and the degree of community cohesion achieved.

It is imperative to assess whether the CBDM approach has made communities disaster resilient or not. For this, constant monitoring and evaluation of the interventions is required. This process must be participatory in nature in order to ensure maximum output. All the stakeholders devise a monitoring and evaluation system as a shared task in order to measure progress and take appropriate action in case of any gaps. The monitoring and evaluation of risk reduction measures will strengthen accountability and improve future actions.

Involvement of local CBOs or NGOs and government agencies throughout the process of disaster management is essential. While the implementing agency might exit, it is important that the local agencies are capacitated through training and involvement in participatory activities to carry out DRR activities in the absence of the implementing agency. It is also required that the Panchayat Raj Institution (PRI) members are mobilized and trained to carry out disaster management (DM) schemes. The provision of funds under DM Act of India, has stipulated funds for each Gram Panchayat to plan for DM activities. PRI should be trained to use these funds judiciously such that they are capable of reducing vulnerabilities in their villages. Linkages to the Panchayati Raj system can assure sustainability at a longer run. Not only the formal organizations, but even the community at large must be given training at regular intervals to enhance their capacities.

Committees such as Village Disaster Management Committee (VDMC) and Village Development Committee (VDC) should own the process of disaster management planning and the task of regularly updating it. Other local groups like women Self Help Groups (SHGs) might also be utilized to sustain the efforts. Establishment of "Village Knowledge Centers" can further help to consolidate both risk reduction and development activities. A "Village Knowledge Center" is a knowledge and information hub which can enhance the knowledge and reduce the vulnerability of the community. The information provided can be from various subjects related to health, education, livelihood, early warning, weather forecast, agriculture etc.

To support the trainings and other monitoring and evaluation activities, funds are required. It is important for the community to develop its own economic base so that it would have the financial capability to respond to future impacts of disasters. Seed money is needed to start

the fund. This can come from an NGO initiative, the local authority or from the private sector. However, the fund will sustain only if it is constituted by contributions from the community. The community fund does not always need to begin only with cash contributions. Community members can sell old stock and scrap to generate funds. It can begin with small steps, depending on the economic level of the community.

Also, a Village Disaster Management Plan cannot stand alone. It needs to be linked with District Development and Disaster Management Plan. The grass root Disaster Management Plan has to be linked upward such that there is convergence of the approach between village level, block level, district level and state level plans. Such linkages are to be promoted by institutionalized bodies like Gram Panchayat or be incorporated by the implementing agency during training and development phase. There is also a need to tie up with other local level institutions and services like the schools and police.

A field test of the Community Disaster Resilience Fund (CDRF) is currently underway with GROOTS International and the National Alliance for Disaster Risk Reduction (NADRR) NGOs in India. CDRF aims to provide small grants for strengthening community-led disaster risk reduction. The focus of the CDRF is on seeding successful models for disaster risk reduction and scaling them up to promote safer communities. The basic idea of CDRF is to demonstrate community led initiatives that facilitate identified at-risk-communities to become increasingly aware of their vulnerabilities and undertake collective analysis of risks, identify priorities and fix an agenda for action, plan, implemention, and monitor and evaluate. The CDRF is planned as a broad multi-partner initiative, involving a variety of civil society, governmental, and private sector partners in advisory, selection and implementation roles.

Chapter

5

From Grassroots to Policy

Advocacy is required to influence people, policies and systems in order to bring change in the community. The Disaster Risk Reduction (DRR) activities need to be included sectorally as well as internalized within institutions to sustain the efforts on a long run. Hence, DRR should be part of culture and to inculcate that culture, greater advocacy efforts are required. Advocacy for different groups of stakeholders can be carried out through workshops at different levels within the government sector as well as at the community level.

Advocacy at different levels is based on the type of issues which are being addressed. These issues can be divided into the following categories:

- Understanding community's potential in DRR: These issues are related more to the governance system, their capacities and the inter relationship of government and communities. The government functionaries must be oriented towards DRR issues for which capacity building efforts are required. It is required for the community and government to have a consensus on integrating DRR. A strong integration of the views of the community and government can help to achieve sustainable development on the long run. Enough resources are also needed for installing basic infrastructure such as early warning systems, safe shelters, community shelter.

- Building community's perspective on vulnerability: A community must realize that it has the power to influence the decisions of the government and it should take efforts to make the system realize its responsibilities and proactively fulfill them. There is lack of enthusiasm on part of communities to carry out DRR activities periodically, primarily because of lack of understanding of CBDM on the whole. Advocacy, therefore, should intervene at the community level understanding of the issues. Attempts must be made to incorporate potential measures for reducing climate change impacts into overall development planning. To reduce the impacts of climate change, it is necessary to work across sectors and with active participation of local communities.

- Mainstreaming DRR: Usually, disaster management is observed to be the last priority for the government. Though the government responds actively and immediately after a disaster, often adequate efforts are not made to reduce or mitigate the impact of disasters. Hence, the DRR approach must be integrated into the present development policies. It is essential to develop tools and strengthen capacities for mainstreaming DRR into development programmes and activities. Partnership with other developmental organizations and donors at all levels for better coordinated plans and strategies for main streaming DRR may be carried out. Government should integrate DRR into all sectors like health, housing, agriculture and education and allocate a budget line for the same.

Inculcating the DRR approach into poverty reduction programmes has already begun through initiative like National Rural Employment Guarantee Scheme, National Rural Health Mission and Sarva Shiksha Abhiyan.

Chapter

6

Women as Partners

The socially constructed roles assigned to women manifests itself in the form of marginalization in the social, economic, political and cultural spheres of life. Women become especially vulnerable at the time of a disaster. For example, more women died than men and children after the Indian Ocean tsunami in 2004. This was not due to chance, but due to gender inequalities. Their roles as care takers meant that when the tsunami hit, they put the safety of their children and assets before their own survival. Furthermore, women spent their lives within their households and had very limited experience interacting with others outside this private space. This, in combination with the social expectations of what is acceptable for women, contributed to the large number of casualties amongst women. When their clothes were ripped off by the debris, many women died indoors rather than allow themselves to be exposed to the shame of running outside naked to escape. During the initial response to the tsunami, women found it difficult to access relief and rehabilitation support as they were not often involved in its distribution or in decision making processes.

Important gender concerns are overlooked not only by the community members, but also by decision makers. The situation of a woman during a disaster must be understood both in terms of their capacity as well as their vulnerability. In addition to the general effects of natural disaster and lack of health care, women are vulnerable to reproductive and sexual health problems and increased rate of sexual and domestic violence. The special security, safety and health concerns of women remain unattended in post disaster situation.

A gender conscious approach is required while implementing CBDM. It goes beyond awareness on gender issues and taking action to transform prevailing unequal gender relations throughout the process of disaster risk management. During the implementation of CBDM, the role of women should be defined clearly and they must be engaged as equal partners in disaster management.

Looking at the roles that a woman plays, it is of vital importance to involve her in the mitigation process. They must be involved not only in planning and consultation but also at the decision making level. Women participate actively in community social networking and can mobilize people on a large scale to address their most pressing needs. This kind of community organizing is essential for disaster preparedness and mitigation. Hence, their representation in the community task forces and disaster management committees is a must. Womens' experiences can also contribute to the process of assessing vulnerabilities and capacities and identifying measures that could strengthen their capacity. The information on the needs of the community must be obtained both from men and women and their involvement must be visible at all stages of decision making. Also, sex disaggregated data must be collected to identify and provide for gender specific needs. Recognition of needs,

better access to education and health facilities, decision making power and mobilization through stronger social networks can help women to cope and recover better, decrease their vulnerability and become more self-reliant in a crisis situation.

After the 1993 earthquake in Latur, Maharashtra, Swayam Shikshan Prayog had partnered women's collectives in the state for post-earthquake reconstruction. The initiative recognized women's collectives as central to the participation of communities in reconstruction. In 300 villages, across Latur and Osmanabad districts, women's collectives were mobilized to educate house owners, supervise and monitor construction to ensure earthquake safety of their houses, provide feedback on progress and redress grievances of house owners. In a nutshell, the women played a role in which they mediated between the state and disaster-affected communities. Since the completion of the project in 1998, SSP continues to partner with women's collectives on a broad based community development strategy. As a result, 12,500 women are organized into 703 women's savings and credit groups. While these savings and credit groups are a source of credit for production, consumption, short-term and long-term credit needs, they also take initiatives to collectively address local developmental issues such as water, housing, education, and healthcare.

Chapter

7

Enabling Participation

Persons with Disabilities (PWD) are particularly vulnerable during disasters due to their specific needs and barriers. They suffer specific disadvantages in coping with a disaster and may face physical, cultural and social barriers in accessing the services and support to which they are entitled. In addition to having a difficult physical environment, they are excluded from educational and livelihood opportunities. They are also the poorest of the poor and have limited access to health care, shelter, food, education and employment. They are more likely to work in hazardous conditions – all factors that increase the risk of illness, injury and impairment. Discrimination and exclusion also make it much harder for people with disabilities to break out of poverty. PWDs are especially vulnerable to disasters, both on account of impairment and poverty yet they are often ignored or excluded at all levels of disaster preparedness, mitigation and response. It is, therefore, required that the specific needs of the PWDs be addressed by integrating them into disaster risk reduction process.

The needs of PWDs have to be considered before, during and after disaster. Their participation in community based activities must be ensured so that their needs are met. The participation of the PWDs and their families throughout the decision making process will ensure an equitable and effective programme. The concept of universal design or barrier free design must be incorporated. Inclusion of this concept would provide a level of accessibility for people with disabilities. For example, ramps must be present in every public structure. Physical assistance, assistive devices or installation of ramps maybe necessary to ensure these persons are not disadvantaged or trapped in a dangerous situation. Special focus should be given to develop and install PWD friendly tools and equipments to empower them.

People with visual or hearing impairments are unlikely to notice warning signals and quick evacuation routes during a disaster situation. Hence, their needs must be kept in consideration while planning for evacuation. Also, an ability based identification of the PWDs must be conducted and they must be incorporated into the task forces. Allocating a special space for the PWDs should become a precursor to the development of community contingency plan. It is also necessary to address the specific needs of PWDs during risk and resource mapping. This may include: accessible drinking water, sanitation sources, accessible shelters, rehabilitation centers and healthcare services.

There are certain guiding principles for the officials as well as the community for the inclusion of PWDs into CBDM:

- Authorities must collect data on the number of people with disabilities and the nature of disabilities they suffer from.

- Basic training must be imparted to the local authorities on identification of PWDs and their specific needs, knowledge about referral resources, and inclusion of disability issues in disaster management planning.

- Staff, volunteers and managers of the local CBOs and NGOs should be sensitized towards disability issues, which would help them understand difficulties encountered by PWDs.

- Training and sensitization campaigns must be held for community level disaster management committees and community volunteers on disability issues.

- Professional staff specialized in disability should be recruited. (Example: physiotherapist, occupational therapist, Braille teacher, psychologist etc.)

Chapter

8

Tackling Urban Risks

Urban communities are believed to have different sets of problems from rural communities. The urban population is extremely heterogenous in nature, it is also extremely difficult to divide urban areas into the same administrative units as the rural areas. Moreover, in urban areas people commute from one place to another on daily basis for the purpose of education, jobs etc. Considering this constant shift of population in urban areas, CBDM plan for the urban communities should have a different approach.

A result of environmental degradation is the huge inflow of rural population to urban areas. The major consequence of this phenomenon is the increasing pressure on land, which escalates poverty and leads to illegal squatting and abuse of land. Within the urban population, the migrants living in slums are most at risk. In the bigger picture, these communities pose challenges to disaster risk planning as they tend to fall outside the formal processes of urban governance. The 'every-day risk' of the urban poor from malnutrition, inadequate health care, substandard housing, unemployment and illiteracy makes them highly vulnerable to disasters. The vulnerability of the urban environment can be attributed to:

- Unplanned urbanization: Rapid and haphazard growth of the cities exceeds the capacity of urban governance to adequately plan and control development. This uncontrolled urbanization paves way for mushrooming of slums, reinforcement of poverty and diminishing cities' ability to deal with disasters.

- Social and physical degradation: The poor migrants move into localities which have old buildings and poor maintenance conditions, narrow access of roads and ageing infrastructure which poses threats in terms of hazards like fire.

- Urban risk has been neglected: To a large extent the local authorities have ignored urban risk. Schools, hospitals, essential facilities, housing, commercial and institutional property are poorly constructed and designed without considering the minimum safety standards. In most of the mega cities, the structures are highly vulnerable to natural hazards.

- Impact of climate change on urban cities: Urbanization is one of the impacts of climate change. With the changing climate, the livelihood of the rural communities has been affected. Climate change poses serious threats of sea level rise, floods, coastal erosion and salination of surface and ground water. The rural communities have started migrating to the cities in search of livelihood, thereby putting further stress on natural resources.

- Insufficient knowledge, experience and capacity: There are significant deficiencies throughout cities and mega cities in terms of inter-institutional coordination, warning systems, incident command and control, resources for response, relief, recovery and rehabilitation practices. There is a need to assimilate disaster risk reduction in the ongoing operation of a city by disseminating information and building capacities of the communities as well as the governance structure.

Mainstreaming of Risk Reduction requires:

a. More decentralization and institutional arrangements through city mandates and improved local governance
b. Integration of urban disaster risk reduction directly into development planning process
c. Training and capacity building of the local authorities
d. Risk sensitive urban planning and development tools
e. Enforcement of life safety construction
f. Risk reduction regional cooperation and mechanisms

Tools for Urban Risk Reduction are:

i. Geographic Information System (GIS) tools for establishing hazards, vulnerability and capacity profile of cities.
ii. Community Planning – This includes understanding capacity of the stakeholders , disaster management planning and maps, risk and resource profile, training and capacity building of stake holders including the city officials.
iii. Community Based Information System – comprises early warnings, incident command and control system, ward level task forces.

For the planned development of a city, issues relating to the environment, climate change, alternative energy sources and recycling waste need to be addressed. The urban governance system can do this successfully with the active participation of the residents of the city. This concept is called shared governance. By motivating its citizens, the government can seek their active participation for making the city environmentally sustainable. One such example is of the Bhagidari scheme run by the Govt. of Delhi.

Bhagidari literally means “collaborative partnership”. This scheme seeks to promote a meaningful partnership between the government agencies and citizens, basically covering the provision of civic services. Aiming to develop a “joint ownership”, the Bhagidari scheme utilizes processes and principles of multi-stakeholders like citizen groups and NGOs. Through this scheme the focus has shifted from passing on the responsibility to sharing, the responsibility. The Resident Welfare Associations (RWAs) and Merchants and Traders Associations (MTAs) have now become an important part in the programme implementation.

The government, along with the citizens, can carry out a detailed risk assessment of their areas and plan strategies accordingly. Other than the formal citizen groups, women groups or SHGs are very active in the urban areas among the middle and poor segments. They can act as dynamic agents of change and help in percolating the measures for tackling urban risk to the lowest level. Within an urban area, formally established institutions like schools, hospitals, and universities may be utilized for carrying out awareness activities. Looking at the overcrowding and mushrooming of illegal settlements, the government should rework the enforcement of land-use planning. This would help a great level in lowering burden on the present infrastructure.

Chapter

9

Investing in Safety of Schools and Hospitals

Community lifeline structures include the critical structures (like schools, hospitals), key administrative buildings (like office complex) and places of mass gathering (like temples). Special focus is required towards the safety of these structures because the failure of these buildings can cause more number of casualties and their destruction can worsen the situation as they are seen as potential emergency relief shelters. It is also evident that the occupants of these buildings such as teachers, students (in schools), and patients, doctors and health workers (in hospitals) are not prepared for disasters. They are, therefore, most vulnerable in event of disasters. It is important that they are trained and made aware of the actions to be taken during a crisis situation. Hence, it becomes imperative to inculcate this aspect in CBDM.

Promoting a culture of disaster safety and increasing the level of awareness on building safety amongst the stakeholders is crucial to the process of CBDM. All the critical structures must be made disaster resilient by assessing them for disaster safety. This process can be efficiently carried out with the help of the community and steps can be taken to strengthen or retrofit the structures. The authorities should also take up steps for training on safe construction to the masons, engineers, contractors and even the carpenters. Capacity building is needed in construction sector for disaster resistant construction. A small investment in capacity building can reap better outcomes in future.

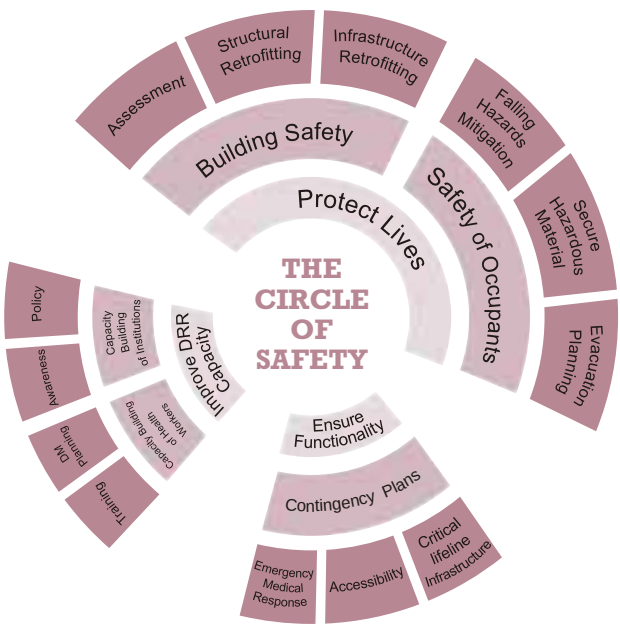
For safety of any lifeline structure, following things must be considered:

- Structural assessment and mitigation through retrofitting and repairs
- Non-structural assessments and mitigation
- Basic sensitization and orientation on disasters and preparedness
- Evacuation map and planning
- Formation of disaster management committee
- Formation of task forces for fire safety, search & rescue and first aid
- Training of the task forces
- Mock drill
- Disaster management plan

Amongst the lifeline structures, the most critical of all are the schools and hospitals. SEEDS has made efforts towards reducing the vulnerability of these institutions.

Hospital Safety

In line and spirit of the UNISDR-WHO Global campaign of "Keeping Hospitals Safe from Disasters", SEEDS as part of the Asian Disaster Reduction and Response Network (ADRRN) in collaboration with the Government of Gujarat is piloting a Hospital Safety Initiative. Hospitals and health facilities serve as the community's lifeline and assume a bigger role at the time of a disaster. However, if this critical machinery collapses then the situation is even worse than the disaster itself, exposing the community to a magnified risk. By ensuring that hospitals and health services are functional and safe during and after an emergency, we can address the larger goal of creating resilient communities. It is imperative to facilitate the participation of different stakeholders in the disaster preparedness process. Communities can assist the emergency health response by doing light search and rescue, triage of the victims at the site, security and crowd management at the site. However, they need to be trained in advance for effective delivery of their services. Along with the community, training and capacity building for health staff increases the chances of saving lives and allowing health services to remain up and running. Health personnel at all levels must become agents of risk reduction, helping to identify health risks and promoting strategies to minimize the impact of disasters on the affected population. The involvement of every stakeholder in the process of evolving the Hospital Disaster Management Plan is essential. This includes joint assessment of risks, preparation of preparedness plans, functional continuity plans and mitigation plans.



School Safety

During disasters, a special vulnerable group is that of school children who spend considerable time in school buildings that are structurally as well as non-structurally at high risk. As a lifeline structure, schools can act as important forum to address sustainable disaster reduction issues. A school structure has an additional function of a refuge center at the time of a disaster. Hence, it is essential for a school structure to be disaster resilient. School safety initiatives can be catalysts in initiating community based disaster management processes, which can be directly linked to state level planning, intervening through block level and village level disaster management planning. The School Safety Initiative of SEEDS has a four-pronged approach

i. Structural retrofitting of school buildings to prevent their collapse in future earthquakes.
ii. Implementing non-structural mitigation measures to avoid injuries from falling hazards in schools.
iii. Education on safe infrastructure for school management staff and construction workers.
iv. Preparing school disaster management plans and training school communities in immediate response, evacuation and first aid.

In a nutshell, the approach to school safety may be described in two broad categories: safe infrastructure and capacity building. The capacity building component comprises establishment of basic disaster awareness among all stakeholders – school children, teachers, school management and parents. Activities such as children-led risk assessments, curriculum based studies, practical lessons on preparedness, games and quizzes are carried out as part of basic disaster awareness. As part of training and development, select groups of senior students as well teachers and administration staff are given specific skill based training on aspects such as first-aid, search and rescue, evacuation and fire safety. Each task force is given specific roles and responsibilities based on possible disaster scenarios. As part of planning and implementation, school disaster management plans (SDMPs) are prepared. These plans are a compilation of basic set of actions before, during and after a disaster, along with an inventory of resources. These plans are made specific to each school and include details about its vulnerability and access to resources.

Chapter

10

Climate Change Mitigation & Adaptation

Climate variability and unpredictability can cause abrupt disruptions in the normal functioning of life. Increase in the intensity and frequency of disasters due to climate change have been felt over the past few years. Climate change puts at risk basic human needs such as access to food and shelter. The number of deaths due to climate change are also likely to increase further through a range of direct effects such as more intense heat waves, floods, and forest fires; through indirect effects such as decline in water quality and food insecurity; and through social and economic disruptions such as increased poverty and migration. Climate change would even aggravate the incidence of infectious diseases such as malaria and waterborne diseases like diarrhea and cholera.

The consequences of climate variability and climate change are potentially more significant for the poor in developing countries. The impacts of climate variability create challenges for the world's poorest communities as their livelihoods are likely to be more sensitive to climate change. For example, agriculture and forestry activities depend on local weather and climatic conditions. A change in those conditions could directly impact productivity levels and diminish livelihoods. These impacts may be related to more intense and frequent extreme events, like hurricanes or floods, and more long-term stresses, such as water scarcity and increased recurrence of drought.

Adapting to such climate change is a complex task. People have always adapted to variations in their climate, by making preparations based on their resources and their knowledge accumulated through experience of past weather patterns. However, with the climate becoming more unpredictable than ever, communities' past experience alone can no longer provide a reliable guide to the future. Accordingly, securing economic and social well-being of vulnerable people will increasingly require communities, scientists and policy-makers to work together to consider the implications of a changing climate. To lessen the impact of climate change on a country's development, people are working to integrate adaptation into mainstream development policies.

Adaptation can adopt a variety of forms, such as better education, training and awareness of climate change and more technical measures, like drought-resistant seeds and better coastal protection. Examples of adaptation can be as simple as reducing water use by saving and reusing grey water from washing machines for watering gardens or lawns, or harvesting water for watering fields and public gardens. Adaptation planning will be more effective if it is systematic and strategic. Such an approach will:

- Engage stakeholders
- Identify and set priorities for action

- Assign responsibility for action and monitor implementation
- Keep adaptation strategies under regular review

Stakeholder involvement is critical as local knowledge and memory of people on changing climate can help devise adaptation strategies. The role of women should be specially highlighted as they can help a great deal in planning and taking forward the adaptation strategies. Decisions on adaptation are made by individuals, groups within society, organizations and governments. Within the realm of CBDM, these stakeholder groups might carry out climate change assessment and plan strategies accordingly. Climate change assessments should be region specific considering the changes brought about within a particular time frame. These assessments can also be carried out by the Self Help Groups (SHGs) comprising of women. Early planning for the impacts of climate change is likely to bring considerable advantages.

CBDM should aim at securing food and livelihood for the community. While planning adaptation strategies, following things can be kept under consideration by the local authorities:

- Rural communities should be sensitized by directly involving them in various activities. The sensitization exercise will emphasize the importance of considering meteorological information in all agricultural decision-making processes, so as to minimize climatic risks and safeguard or even increase agricultural production.
- A well structured system of dissemination of information on climate and climate forecasting must be developed.
- Developing crop varieties that are more adapted to climate change. Farmers can inculcate harvesting a mix of different species and try to minimize risk and uncertainty.
- Efficient use of rainwater must be promoted.
- Decision-makers should be sensitized on the environmental and socio-economic implications of climate change.
- Forecast tables, indicating the beginning and end of the wet season, are made available. Calendars indicating the start of crop planting should also be made available to producers.
- For food security, seeds bank or community funds can be formulated.
- Promotion and distribution of alternative technologies like photovoltaic solar equipments and combustion fuels.
- Insurance schemes can be promoted amongst people.
- Health security for covering their needs in a crisis situation can be taken up.
- People must be made to realise the importance of alternative livelihoods, like cottage industry, as the unpredictability of a disaster might hamper their traditional livelihoods

Coastal Bio Shields are the coastal plantations to protect coastal areas from tsunamis, high tides, storm surge and cyclones. In addition, they serve as carbon sinks, as they help absorbing emissions of the greenhouse gas carbon dioxide and thus contribute to reducing the growing imbalance between carbon emissions and absorption. They also promote sustainable fisheries by releasing nutrients in the water.

Promoting a multi-layered and multi species bioshield could be an appropriate mitigating mechanism to encounter the possible disasters and reduce the damage and loss. This would also include shrubs and creepers, which would act as soil binders and prevent sand erosion. The species selected for bioshield development should be suitable to coastal conditions, economically beneficial and preferred by the communities. Selection and mixing of the species should also be based on the space and height of the selected coastal area. The two criteria adopted in the selection of species are:

i. Locally available and adopted species
ii. Species with both ecological and economic values (as suggested by the village community)

For establishing a healthy bioshield, the scientific soil management is vital for better and faster growth of the species. In this entire process, the ownership of local communities is brought to fore. The villagers develop a mechanism for management and maintenance of the bio shield.

Glossary

Advocacy: These are activities undertaken to propose alternatives or to effect changes in legislation, policies, programs and development approaches with the aim to clear out the factors and conditions that generate vulnerability at the community level.

Capacity: It refers to a combination of all the strengths and resources available within a community, society or organization that can reduce a level of risk, or the effects of a disaster.

Capacity Assessment: Identification of the people's coping strategies, resources available for preparedness, mitigation and emergency response and the analysis of who has control over the available resources.

Community: Community, in context of disaster management can be defined as a group of people that may share one or more things in common like living in the same environment, similar disaster risk exposure or being affected by the same disaster.

Community Based Organizations: They arise out of people's own initiatives. These include sports clubs, women's organizations, neighborhood organizations, religious or educational organizations. There is a large variety of these, some supported by national or international NGOs, or bilateral or international agencies, and others independent of outside help. Some are devoted to raising the consciousness of the poor or helping them to understand their rights in gaining access to needed services, while others are involved in providing such services.

Disaster: Disaster is a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope, using its own resources.

Disaster Management: The organization and management of resources and responsibilities for dealing with all aspects of emergencies, particularly preparedness, response and recovery. Disaster management involves plans, structures and arrangements established to engage the normal endeavors of government, voluntary and private agencies and local communities in a comprehensive and coordinated way to respond to the whole spectrum of emergency needs.

Hazard: It maybe defined as a potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Hazard Assessment: Identification, study and monitoring of any hazard to determine its potential, origin, characteristics and behaviour.

Mitigation: It refers to the structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Preparedness: It refers to activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary removal of people and property from threatened locations.

Reconstruction: It includes the replacement of buildings, infrastructure and lifeline facilities so that long term development prospects are enhanced.

Rehabilitation: It refers to activities that are undertaken to support the victims' return to "normal" life.

Risk: The probability of harmful consequences, or expected loss resulting from interactions between natural or human-induced hazards and vulnerable conditions. Thus risk is a consequence of the combination of the three factors – hazard, vulnerability and exposure.

Risk Assessment: A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat to people, property, livelihoods and the environment on which they depend.

Risk Reduction: It is the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

Vulnerability: It is a set of conditions and processes resulting from physical, social, economic, and environmental factors, which increase the susceptibility of a community to the impacts of hazards.

Vulnerability Assessment: The process of estimating the susceptibility of the elements at risk to various hazards and analyzing the causes which place these elements at risk. There are different categories of vulnerability: physical, social, economic, environmental and technical.

APPENDIX 1

Disaster Management Act, 2005

The Indian Government's commitment towards integrating disaster risk reduction into its policies and planning was reflected in the year 2005 with the adoption of the National Disaster Management Act. It aimed at strengthening institutions, mechanisms and enhancing capacities to build resilience and incorporate risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes.

The Act prescribes the guidelines for the State Governments to develop mechanism for coordinated and integrated approach towards disaster management and risk reduction activities. The Government, under the National Disaster Management Act, establishes State Disaster Management Authority. The execution of the policies at national level is adopted by the States and finally implemented through District Disaster Management Authority. Hence, District Disaster Management Authority plays a critical role during the event of disasters. The district collector, being the chairperson of the District Disaster Management Authority, is responsible for the direct execution of the policies. He is also the nodal authority to prepare disaster response and mitigation plans. The District Disaster Management Authority is the core body responsible for strengthening the capacities of grass root level officials, community and other stakeholders. The Disaster Management Act provides institutional framework for the stakeholders to practice community based disaster management and comply with the policies and guidelines exemplified in the Act. The Act has also made specific provisions for carrying out public awareness activities, ensuring formulation of disaster management plans and providing technical assistance to the vulnerable communities. For the efficient implementation of all these activities the DMA plays a very crucial role.

On-going Efforts

The approach of motivating individuals to understand disaster risks and taking actions against the same has always existed, but streamlining it in the form of CBDM process has been very recent. During the United Nations International Decade for Natural Disaster Reduction (1990-1999), a paradigm shift was observed from post-disaster relief and rescue to pre-disaster mitigation efforts. Another focus area was empowerment of local governments and involvement of grass-root level organizations and civil society in the decision making process. The evolution of community based processes can be traced back to the Great Hanshin Awaji Earthquake of 1995. In the wake of this tragedy, Hyogo Framework for Action was adopted in 2005. It promotes CBDM as one of the key lessons learnt from past disasters.

Policies, and institutional and legal arrangements combine to produce a disaster risk reduction framework that supports the implementation of DRR programmes, plans and projects. In this light, the programmes taken up by the Government of India has already set the course of action to reduce potential risks. In a recent effort, National Disaster Management Authority is developing guidelines for community based disaster management. On the lines of the National Disaster Management framework, the guidelines would entail:

- Enhancing community capacity in multi hazard prone area

- Setting up and training of village/panchayat and wards/municipal Disaster Management committees
- Prioritizing community and Panchayat's mitigation plans under various rural development schemes
- Integrating in annual development plan of the local bodies

The approach of CBDM has been recognized at various national and international forums. Government's commitment to global forums has also been effective in encouraging the establishment of a community based disaster management framework.

GOI- UNDP Disaster Risk Management Project, 2002-2008

This program was initiated by Govt. of India along with UNDP to demonstrate a sustainable model for mainstreaming disaster risk management at all levels, with focus on district and community level activities. The 4-year project aimed at multi hazard risk management and sustainable recovery plans at the community, gram panchayat, and district levels in the most hazard prone areas of India. The capacity was strengthened at national, state, district and community level to implement gender equitable mitigation strategies including preparedness plans, early warning systems, and well coordinated response and sustainable recovery. The linkage of disaster risk reduction and poverty reduction were integrated through the process of vulnerability reduction. The project was covered in 169 multi hazard prone districts of the 17 most multi- hazard prone states of India. The overarching goal of the DRM programme was "Sustainable reduction in disaster risk in the most hazard-prone districts in all states of India". One of the key lessons learned from the implementation of the programme is that the national programmes designed for the community level interventions can be implemented effectively only with the involvement of the states either directly or through other developmental partners such as NGOs.

Objectives of the GOI – UNDP DRM Programme are:

i. National capacity enhancement to institutionalize the system for natural disaster risk management in the Ministry of Home Affairs
ii. Environment building, education, awareness programmes and strengthening capacities at all levels in natural disaster risk management and sustainable recovery. (Development of manuals and training modules, dissemination of IEC materials, awareness campaign strategy and implementation for disaster reduction and recovery.)
iii. Multi hazard preparedness, response, and mitigation plans for disaster risk management at state, district, block, village and ward level in 169 most multi-hazard prone districts of 17 selected states.
iv. Networking knowledge on effective approaches, methods and tools for disaster risk management.
v. Developing and promoting policy frameworks at state and national level.

Hyogo Framework for Action, 2005

India, along with 168 other countries adopted the "Hyogo Framework for Action (HFA)" in January, 2005. It was a pledge to make world safer through risk reduction efforts such that it substantially reduces losses by 2015 – in lives, and in the social, economic and environmental assets of the communities and countries. The Hyogo framework offered guiding principles, priorities for action, and practical means for achieving disaster resilience for vulnerable communities. The goals and actions were considered with specific

emphasis on cross cutting issues like multi hazard approach, gender perspective and cultural diversity, community and volunteer participation, capacity building and technology transfer.

HFA was based on three strategic goals:

- Integration of disaster risk reduction into sustainable development policies and planning.
- Development and strengthening of institutions, mechanisms , and capacities to build resilience to hazards.
- Systematic incorporation of risk reduction approaches into implementation of emergency preparedness, response and recovery programmes.

The five priorities for action under HFA are:

i. Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation.
ii. Identify, assess and monitor disaster risks and enhance early warning.
iii. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
iv. Reduce the underlying risk factors.
v. Strengthen disaster preparedness for effective response at all levels.

Delhi Declaration on Disaster Risk Reduction, 2007

It focused to build community resilience for sustainable development against the threat of disasters, which is perpetrated by unplanned urban settlement and impacts of climate change, both in Asian and Pacific countries.

Delhi Declaration, 2007 called for following actions:

i. Implementing Hyogo framework for Action
ii. Take effective steps towards impacts of climate change
iii. Integrating DRR into recovery and reconstruction
iv. Encouraging innovative public private partnerships
v. Regional mechanisms amongst regional stakeholders to work together more closely towards greater coherence and harmonization of their efforts as a generic point of entry for enhanced regional cooperation.

Third Asian Ministerial Meeting on Disaster Risk Reduction, 2008

It was organized to review the implementation of HFA , both in Asian and Pacific countries. The overarching goal was to exchange the knowledge on practical ways of implementing disaster risk reduction efforts at national and local levels. Effectively Kuala Lampur declaration was adopted on December 4, 2008, which was the outcome of this meeting.

The Declaration called for national and regional stakeholders for:

i. Promotion of public private partnerships.
ii. Application of high technology and scientific application to DRR.
iii. Involvement and empowerment of local governments and civil societies.
iv. Mobilization of resources for DRR.
v. Engagement of media in increasing coverage for DRR.
vi Public awareness and education for DRR.

APPENDIX 2

Village and Household Selection Flash Cards

Village Selection

General

Interview Number
Date of Interview
Name of the Ward
Ward Member Details
- Name
- Age
- Sex
- Occupation
- Educational Qualification

Area of the Ward (kms)
Panchayat Details
- Name of Pradhan
- Name of Panchayat Secretary

Indicators

Location and road/sea accessibility	Kms
Nearness to the sea From nearest trade center/market From nearest town Road / sea condition to the village Road / sea condition in the village	
Transport availability	**Frequency**
Ferries Private Buses Govt. Buses Auto Rickshaw Jeeps Tractors Others	

Population profile	Ward	Number
Men		
Women		
Children below 10 years		
Total		

Households in the ward	Number
Above Poverty Line	
Below Poverty Line	
Scheduled Tribe	
Others	
Total	

Other Details	Number
Elderly people	
above 65 years living alone	
above 65 years with family	
Children below 10 years	
Disabled	
Number of single parent families	

Economic status of village		Number
Occupational Pattern	Fishermen	
	Farmers	
	Masons	
	Labourers	
	Shop keepers	
	Govt.employees	
	Carpenters	
	Contractors	
	Others	

Industries or shops	Type	Number
Industries or shops in village		
Industries or shops near village		

Infrastructure				
Housing		**Condition after Disaster**		
Types	Number	Fully damaged	Partially damaged	No damage
Pucca Semi-Pucca Katcha Govt. Quarters Restaurants Guest houses Public Building Other				

Types	**Construction material used**
Pucca Semi-Pucca Katcha Govt.Quarters Restaurants Guest Houses Public Building	

Utilities		
Water facilities	Types	Number
	Public Taps Check Dams Borewells Hand Pumps Water Tank	
Electricity	Providers/utilities	Number
	Sub stations Street lights Household (invertor) Government(Generator sets)	

Local institutions			
Schools	Anganwadi/Creches	Primary School	Sec./Higher Sec. School
Number of schools			
Number of teachers			
Number of students			
Construction material used for schools			
Condition after disaster			
Damaged			
Partially damaged			
No damage			

Health			
Sector	Number	Condition	Remarks
CHC			
PHC			
Veterinary			
Hospitals			
Doctors			
Nurses			
ANM			
Paramedical staff			
Private clinics			
Ambulances			
Medical shops			
Labs			
Dispensaries / Subcentres			

Public places	Number	Condition	Remarks
Religious places/structures			
Community hall			
Panchayat office			
Police station			
Petrol stations			
Gas depots			
Co-operative stores			
Fair price shops			
Food godowns			
Banks			
Youth clubs			

Sanitation	Number	Condition	Remarks
Community toilets			
Garbage disposal sites			
Vehicle for Solid Waste Management			

Livestock	Number
Cows	
Buffaloes	
Bullock	
Goat	
Pig	
Poultry	

Community based Organizations	Details
Name of the Organization	

Agriculture Patterns		
Number	Major crops cultivated	Land under cultivation

Communication	Number	Condition	Remarks
Telephone exchange Mobile phones VHF sets STD/PCO booths Sirens Local methods of Emergency Communication			

Leadership pattern	
Names of people well respected by majority of villagers	
Who deals with govt. officials	
Major activities undertaken by Panchayat in last one year	
Results	

Hazard & vulnerability profile	Impacts				
Hazard types	Human lives	When it occurred	Property	Occupation	Response of villagers
Tsunami					
Earthquake					
Cyclone					
Forest Fire					
Flood					
Drought					
Landslide					

What would villagers need help with?		
Remarks		
Problems	Govt. contacted	
	YES	NO

Interviewer's observation
a] Is there a strong and clear leadership emerging in village?
b] How would you rate the community's
c] Based on your assessment , should this village be covered under the project?

Household Selection

General

Name of Village
Ward Number
House Number

Details of the Family

Category: APL / BPL / Others
Men
Women
Total
Children below 10 years

Above 65 yrs living alone
Above 65 yrs living with family
Handicap
Single parent family

S. No	Name	Occupation	Sex	Age	Edu. Qual	Income/ Month	Relation with the Head

Infrastructure

Housing Type
Pucca/Semi pucca/Kutcha
Present Condition

Construction material used

Facility Available	Condition
Water Electricity Sanitation Telephone Mobile Radio Television	

Livestock	Numbers
Cow/Bullock Buffaloes Goat Pig Poultry	

Effect of disaster on household

Disaster	Household	Occupation-Farming	Occupation-Non Farming
Tsunami Earthquake Cyclone Forest Fire Flood Drought			

Help received from government

Grants
Relief material
other

APPENDIX 3

Need Assessment Interview schedule

Need Assessment / Training Needs Assessment Interview Sheet

Name of the interviewer Date

Personal information

1. Name Telephone number

2. Location
District Tehsil
Patwar circle Union Council(UC)
Village

3. Sex Male/Female

4. Age

5. Educational background
1. Primary (1-5) 2. Middle (6-8) 3. High (9-10)
4. Higher secondary (11-12) 5. College/University (12 above)
6. Nothing 7. He/she dropped out in_____class (grade)
(Please fill out with class number he/she dropped out.)

6. Family information
6-1 Number of members

7. Job information
7-1 Kind of Job 7-2 Income rupees/year
7-3 Place for working
1. Outside Union Council (UC)/ Block Office (BO)area 2. Union Council (UC)/ Block Office (BO) area 3. Village 4. Scattered family group area(near house)
5. Others ( )

Lifestyle

8. Daily routine (Time of waking up and going to bed, activities in the morning, afternoon, and evening etc.)

9. Places where he/she goes often

Places	Freq.	Trans.	Places	Freq.	Trans.
Market			Neighbour's house		
School			Friend's house near his/her house		
Mosque			Friend's house inside village		
Health center			Friend's house outside village		
Hospital			Relatives' houses near his/her house		
Government office			Relatives' houses inside village		
Government office (Tehsil)			Relatives' houses outside village		
Government office (District)			Others ( )		

10. Frequency and objectives of going out of his/her living area

10-1 Living area (his/her opinion that he/she think area as his/her living area)?

1. Out side UC/BO area 2. UC/BO area 3. Village
4. Scattered family group area(near house) 5. Others ( )

10-2 Frequency

1. Everyday 2. 3-6 times a week 3. 1-2 times a week
4. Several times a month 5. Once a month 6. Several times a year
7. Never

10-3 For what (multiple)

1. Job 2. Hospital/health center 3. Market
4. School 5. Mosque 6. Friends' houses
7. Relatives' houses 8. Others ( )

Information

11. Information transmission

11-1 People who convey information concerning village to him/her (list 3 main people)

1. Family 2. Neighbours 3. Friends near his/her house
4. Friends inside village 5. Relatives near his house 6. Relatives inside village
7. Schools 8. Village leader 9. Others ( )

11-2 People who he/she convey information concerning village to (list 3 main people)

1. Family	2. Neighbours	3. Friends near his/her house
4. Friends inside village	5. Relatives near his house	6. Relatives inside village
7. Schools	8. Village leader	9. Others ( )

12. Contact person in emergency (If you have problems, who do you contact?) (list 3 main people)

1. Family	2. Neighbours	3. Friends near his/her house
4. Friends inside village	5. Friends outside village	6. Relatives near his/her house
7. Relatives inside village	8. Relatives outside village	9. Schools
10. Mosque	11. Village leader	12. Others ( )

13. Information Source (Which information source is useful? Please fill out with his/her priority.)

13-1 Media

Source	Priority
Radio	
Telephone	
Television	
Mobile phone	
Newspaper	
Internet	
Others ( )	

13-2 People and place for information (list 3 main sources)

1. Family	2. Neighbours	3. Friends near his/her house
4. Friends inside village	5. Friends outside village	6. Relatives near his/her house
7. Relatives inside village	8. Relatives outside village	9. Schools
10. Market	11. Mosque	12. Village leader
13. Panchayat / Local govt. office		14. Others ( )

Knowledge related to earthquake

14. Did you know that the place was an earthquake prone area before the earthquake you experienced?

1. Yes 2. No

15. Do you know that each earthquake has its own cycle of occurrence?
1. Yes 2. No

16. Do you know how many years is the cycle of earthquake occurrence in your place?
1. Yes (years) 2. No

17. What is the cause of death in earthquake?
1. Building collapse 2. Furniture damage 3. Tsunami
4. Fire 5. Landslide 6. Others ( )

18. Damages of his/her house caused by last earthquake?
1. Complete destruction 2. Wall was collapsed 3. There were cracks on the wall
4. Furniture damage 5. No damage

19. Problems after earthquake (2 serious problems to be chosen)
1. Rescue 2. Evacuation 3. Lack of food
4. Lack of water 5. Lack of houses 6. Health
7. Lack of information 8. Rebuild or repair houses 9. Others ( )

20 People who made houses before the earthquake?
1. Masons near his/her house 2. Masons inside village 3. Masons outside village
4. Construction company 4. Neighbours 5. Others ( )

21 People who made or repaired house after the earthquake if houses had damages?
1. Masons near his/her house 2. Masons inside village 3. Masons outside village
4. Construction company 5. Neighbours 6. Others ( )

22. Information/knowledge about earthquake he/she had before the earthquake (multiple)
1. His/her living area is earthquake prone area 2. Mitigation measures
3. Things to be prepared 4. Cause of death 5. Way of rescue
6. Evacuation place 7. Damages of houses caused by earthquake
8. Effects to livelihood 9. Others ( )

Disaster Management

23. Necessary information/knowledge for earthquake disaster reduction (list any 4 main)
1. Mechanism of earthquake 2. Mitigation measures 3. Things to be prepared
4. Cause of death 5. Ways of rescue 6. Evacuation place
7. Damages of houses caused by earthquake 8. Effects to livelihood

9. Disaster management system in community (UC/BO/village) level
10. Disaster management system in community (neighbors) level 11. Others ( )

24. Important things for disaster reduction (What is important for earthquake disaster reduction?) Please rank options.

Option	Priority
Earthquake safe construction	
Stock of food and water	
Know how to save lives during earthquake and evacuation route from houses to open area	
Communication among community/neighbors in daily life	
Disaster education for community people	
Others ( )	

25. People or organizations that should be in charge of disaster management. Please rank options.

Option	Priority
Central government	
District office	
Union Council/Block Office	
Village	
Neighbours and you	
Family and you	
NGO	

Problems and needs on livelihood

26. Current problems and needs on livelihood and the priority/importance level

Current problems on livelihood			Current needs to improve livelihood		
	Problems	Priority		Needs	Priority
A			A		
B			B		
C			C		
D			D		

27. Future problems and needs on livelihood and the priority/importance level (problems and needs in long term)

Future problems on livelihood			Future needs to improve livelihood		
Problems		Priority	Need		Priority
A			A		
B			B		
C			C		
D			D		
E			E		
F			F		

Resource/Knowledge Centre (KC) & training needs

28. Necessity of Knowledge Center (KC)

1. Yes 2. No

29. Expected place of KC (multiple)

1. School 2. Mosque 3. Market
4. Health center 5. Local government office 6. Others ( )

30. Information provided in KC which he/she needs (list 3 information)

1. Disaster 2. School (what children do) 3. Market
4. Health 5. Climate 6. Industry (agriculture)
7. Village (including village meeting) 8. Others ( )

31. Training needs for health education (information he/she need for health) (list any 3)

1. Water 2. Nutrition 3. Disease
4. Injury 5. Mental care 6. Others ( )

Question for only female

32. Can you go to market? (Go to market without any problems among your family members)

1. Yes 2. No

33. Can you go to friends' houses or relatives' houses? (Go to without any problems among your family members)

1. Yes 2. No

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