

Working Paper

PRACTICAL APPROACHES ON COMMUNITY BASED DISASTER MANAGEMENT PLANNING

Contribution to increasing the resilience of communities and capacity of local bodies to integrate disaster risk reduction into development to reduce the risk and manage hazard stresses and disasters

**MAINSTREAMING LIVELIHOOD CENTRED APPROACHES TO
DISASTER RISK REDUCTION**

Working paper no 1/DRRCC/IR/PA/NEP

October, 2009



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Authors pay sincere gratitude to following individuals and organizations for their contribution to the planning processes on which this paper is based

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Published by

Mainstreaming livelihood centred approaches to DRR project of Practical Action with funding support from DFID.

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Background

Many countries and communities are vulnerable to natural disasters related to their location and geophysical context; while the risk of technological disasters exists everywhere. Disaster risk reduction is one of the great challenges of development. Disaster risks can be minimized and losses substantially reduced by enabling local bodies such as Unions, VDCs and Municipalities to undertake planned interventions. Advance planning and the implementation of appropriate mitigation (development) strategies can significantly reduce the drudgery and cost of rescue, relief, resettlement and reconstruction. Community based disaster management plans integrated with development plans can initiate locally appropriate disaster risk reduction strategies and development activities. Community participation in the development and implementation of these plans ensures ownership which contributes to their sustainability.

This paper describes a practical approach to disaster management based on practical field experiences gained while preparing community based integrated disaster management plans for 59 village development committees² (VDCs) in Chitwan and Nawalparasi districts. The District Development Committees (DDCs), which are secretariats to their respective District Disaster Management Committees, have the mandatory role of controlling all development activities in their Districts. Both the DDCs have assessed the vulnerabilities of their constituent VDCs and Municipalities, and classified them into four categories (highly vulnerable, vulnerable, moderately vulnerable and less vulnerable). With financial and technical support from Practical Action Nepal, its local partners and other stakeholders and allies, the DDCs have prepared disaster management plans for the most vulnerable and vulnerable VDCs and Municipalities (DDC Chitwan, 2009 and DDC Nawalparasi, 2009).

Further information regarding the process can be obtained from Practical Action Nepal, DDC Chitwan and Nawalparasi and NGOs involved in this process at the addresses provided at the end of this paper.

Disaster management at local level

International policies and strategies recognize the importance of local level actions to reduce disaster risks (UNISDR, 2005). In many countries appropriate policies and strategies recognise community level actions on disaster risk reduction and include provisions for the integration of local disaster management plans into development planning. Appropriate institutions and resources are in existence right down to local levels (GOB, 1999; GOI, 2005; GON, 1990; GON, nd).

The Hyogo Framework for Action (2005-2015) prioritizes disaster risk reduction at local and national level and the establishment of strong and functional institutions to manage disasters (UNISDR, 2005). The action plan explicitly identifies the assessment of disaster risks, early warning systems, enhancement of community resilience capacity, reduction of hazards and risks and preparedness strategies and activities at all levels. The Disaster (Rescue) Act of Nepal, including its subsequent amendments, has highlighted the planned implementation of disaster management at district and national levels. The Local Governance Act of 1998 recognizes the indispensable roles of local bodies, such as VDCs, municipalities and DDCs in disaster management. The pending Disaster Management Act (drafted in 2008) emphasizes the need for

² Village Development Committees are lowest administrative and development units.

appropriate plans and institutions for disaster management at the local level; plans which integrate development and disaster risk reduction.

In Nepal, policies and institutions to respond to disasters have been established at central and district levels. Under the Disaster (Relief) Act of 1983, a National Disaster Rescue Committee, under the Chairmanship of the Prime Minister and which includes most Ministries and Departments exists at the National level. Similarly District Disaster Rescue Committees, under the Chairmanship of the Chief District Officer which include all District line agencies exist. These institutions coordinate rescue and relief activities. As their role is not proactive, but limited to response, they are widely regarded as ineffective.

The new draft “Disaster Management Act” which will supersede the 1983 Act recognizes the importance of preparedness and includes provision for the integration of disaster management plans into development planning with adequate institutions and resources right down to local levels. Disaster risks can be minimized and losses substantially reduced by enabling local bodies such as VDCs and Municipalities to integrate disaster risk reduction into their development plans. Advance planning and the implementation of appropriate mitigation (development) strategies can significantly reduce the drudgery and cost of rescue, relief, resettlement and reconstruction. Community Based Disaster Management, with the active participation of vulnerable communities, helps to identify local hazards and devise locally appropriate strategies and development activities which reduce disaster losses. Community participation in the development and implementation of these plans ensures ownership which contributes to their sustainability.

The provisions of these policies together with the needs of local communities have provided the impetus for the development of locally owned, community-based, multi-stakeholder disaster management plans which are integrated with the periodic development plans of VDCs and Municipalities within which these vulnerable communities reside. These plans should enable communities to prevent, reduce and effectively respond to stresses, shocks and potentially disastrous events. Indeed the implementation of such plans is an essential component of poverty reduction and sustainable development.

Disaster management planning process

As the DDC, VDC and Municipality plans are a local government priority, the development of the plans should be led by local and district level line agencies, supported by local and national stakeholders. The active participation of vulnerable communities and other appropriate stakeholders is essential. The planning process consists of the five major steps described below and illustrated in the flow-chart (figure 1). The process can be modified based on local contexts.

Different tools can be used to analyse vulnerabilities and risks and devise strategies to deal with different hazardous situations. Community level assessments of vulnerability and capacity are best conducted using participatory tools (Actionaid, *nd*; Blaikie et al, 1994; Cannon et al, 2003) This document describes a practical approach to locally based disaster management planning; involving communities, VDCs and District Authorities.

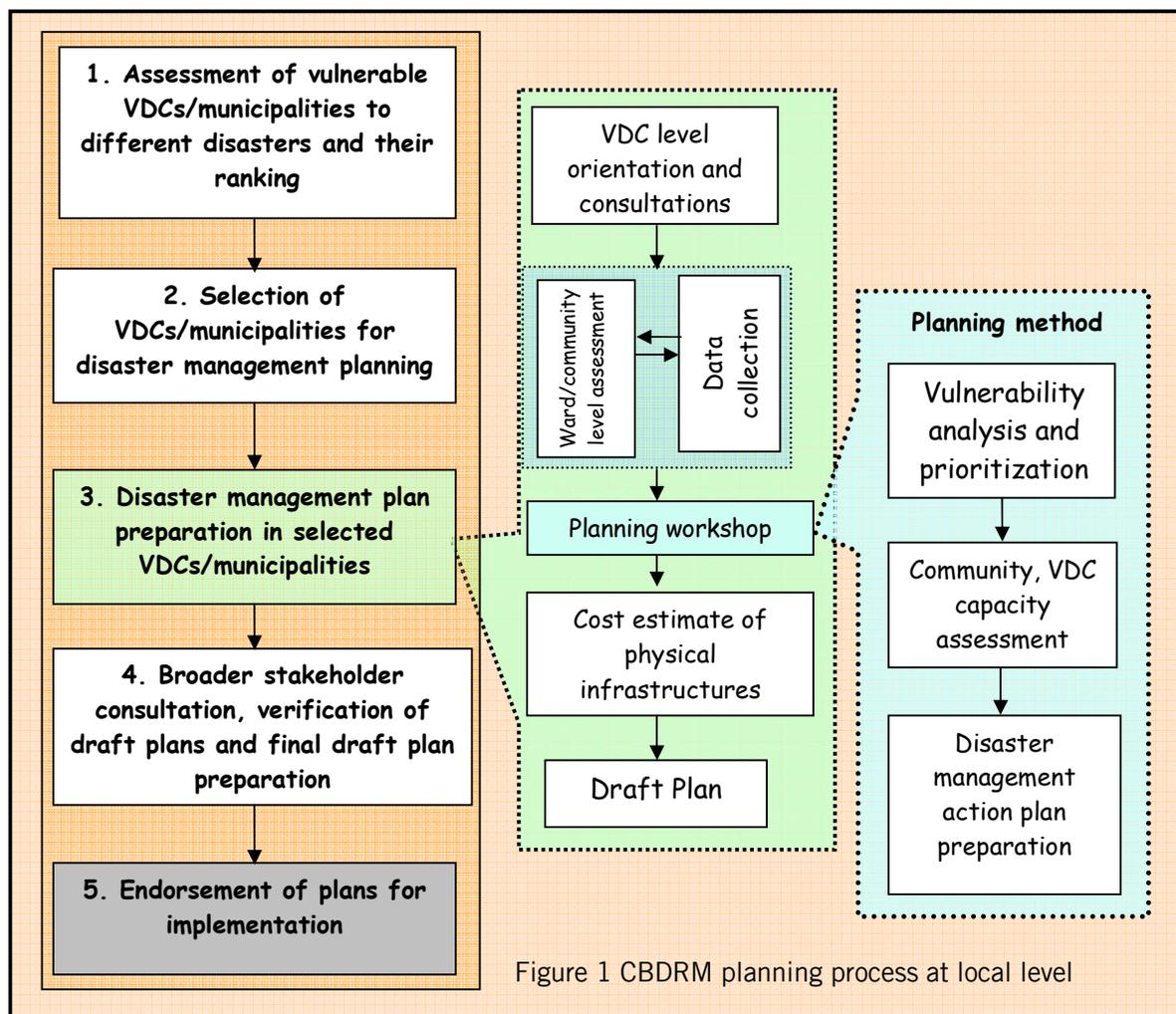


Figure 1 CBDRM planning process at local level

1. Assessment of VDCs, municipalities and their priority ranking

a) Vulnerable or potentially vulnerable VDCs and Municipalities can be identified by the existing hazards they face and the stresses and disastrous events and losses suffered in the past. Secondary information, from documents and records in DDC, VDC and Municipality offices is collected, analysed and collated.

Vulnerable VDCs and municipalities are grouped together on the basis of the hazards they face – e.g. VDCs vulnerable to flood, VDCs vulnerable to landslides, VDCs susceptible to drought, etc. Vulnerability factors such as existing hazards, levels of risk, exposure of population and threats to livelihoods and assets, coping strategies, degrees of resilience and issues of governance are all considered in categorizing the level of vulnerability of each VDC (e.g. highly vulnerable, vulnerable, moderately vulnerable, etc).

b) The ranking of the VDCs according to their vulnerability status is then discussed by representatives of the various stakeholder groups – members of District Disaster Management/Rescue Committee (DDMC), political party representatives, relevant I/NGOs, district level experts and VDC and municipality representatives. These deliberations provide an opportunity for the ranking of individual VDCs and municipalities to be changed. Detailed and objective information helps to minimize conflicts of interest and reduces the time taken to

reach consensus as to the vulnerability category of each VDC and municipality. In the event of disputes, the DDMC will make the final decision. The ranking identifies the most vulnerable VDCs that will be prioritized for the development of disaster management plans and the implementation of risk reduction initiatives in the context of limited resources.

2. Selection of VDC/municipality for community-based disaster management planning

- a) All the vulnerable VDCs and municipalities, no matter what their ranking, can be selected for disaster management planning provided that adequate resources and time are available. When resources are limited, it may be necessary to prioritise the most vulnerable and disaster-prone VDCs identified in the ranking exercise above. Political influences and other stakeholder interests may need to be taken into account in making these choices. The commitment to implement plans once formulated and other factors may also influence the choice of which VDC or municipality is prioritized. It is suggested that an independent arbitrator (possibly an NGO, a group of independent non-aligned experts or a consortium) should facilitate the inevitable consultation to choose which VDC or municipality should be selected. The DDC planning officers will need assistance.
- b) The overall leadership of coordinating the planning process should be taken by local government officials. A task force can be formed by the DDMC to steer the process which is facilitated by an independent advisor. The task force may be comprised of officers from the District Development Office, District Technical Offices, District Administration Office, District Agriculture and Livestock Offices, other relevant Government Offices and NGOs. The taskforce should be coordinated by the Planning Officer or Disaster Focal Person of the DDC. This provides the necessary link to the VDCs, municipalities and other stakeholders and ensures the integration of the DRR into District Development Planning.
- c) The taskforce should develop Terms of Reference and a work-plan for the CBDM process. It is important to define and agree a methodology (what is to be done, when, where, how and by whom) and budget. The ToR and work-plan should be approved by the DDMC or the DDC who should organize the necessary human resources, budget and other necessities from either government or other sources. Within the constraints of the ToR and the resources available, the taskforce may decide to employ consultants/service providers/supporting institutions to deliver specific components of the planning process.

3. Disaster management planning of selected VDCs and municipalities.

In order to ensure that all VDC and municipality stakeholders have a similar understanding regarding vulnerability and disasters, orientation workshops need to be held. Discussions on the theoretical and practical aspects of disaster risk reduction should increase the awareness of participants to the need for and advantages of disaster management. Following such orientation, VDC personnel will be able to identify hazards and vulnerabilities in their respective communities. Enlightened stakeholders can inform other members of their VDCs and communities thereby increasing the pool of disaster-sensitive persons. This will facilitate the identification of vulnerable communities within their respective VDCs.

The members of the taskforce need to coordinate, facilitate and monitor the planning processes and methods in the field. Timely feedback to the consultants/service providers/supporting institutions helps to address the needs and priorities of the stakeholders active in different VDCs. Monitoring of the process by Chief District Officer, Local Development Officer and other members of the DDMC makes overall planning more effective.

VDC/municipality disaster management planning should follow the following steps:

3.1 Ward and community level assessments

Wards are sub divisions of VDCs or Municipalities and consist of different villages, settlements and communities. Wards and communities identified in the orientation workshops should be visited to collect information on the hazards and stresses to which they are exposed. Using participatory vulnerability assessment methods and tools, information on local experiences, losses, coping strategies, capacities and resilience to the impact of hazards can be collected. This enables communities to identify their vulnerabilities, capacities and gaps. This information, while essential for the preparation of community-based disaster management plans, also provides a pool of information for the development of VDC disaster management plans. It may not be possible to visit every community (nor every family in each community) by the consultants or taskforce members. During the VDC orientation workshops, it should be possible to identify a representative sample of communities to be visited. Vulnerable communities within wards can be clustered on the basis of similar vulnerabilities. Facilitators may need to visit as many areas and sites as possible to collect and verify information. All information needs to be recorded and collated for later interpretation and use.

3.2 Data collection

Relevant information can be collected from VDC/municipality records and from communities using questionnaires or checklists. Data should include information on the numbers and groups (aged, children, women, etc) of people, assets and livelihoods, natural resources and infrastructure affected by locally occurring hazards, and the capacities and resources available. Information on capacities should include the ability of the community to cope and manage the impacts of hazards and shocks, the availability of services and facilities (health posts, shelters, ambulance, fire service and trained personnel). Past events and their impacts are of particular relevance. The information from community discussions and checklists can be checked against information recorded in relevant VDC offices. All information should be triangulated and cross checked for verification.

Ward or community level assessments and information collection from wider primary and secondary sources can be side by side and back and forth. This provides opportunity for triangulation and validation of information.

3.3 Planning workshop

Following the collection of information from wards and communities, a planning workshop should be organized for as many stakeholders from each VDC/municipality as possible. Workshops can be organized for individual VDCs or for up to three similarly vulnerable VDCs. There are both benefits and constraints in organizing workshops together for more than one VDC. It provides opportunity to adjoining VDCs to manage disasters in coordinated way. Where more than one VDC is involved, detailed plan development can be carried out in separate groups. Care must be taken to ensure that representatives of the most vulnerable communities are represented as they are most frequently disenfranchised. The participation of local government officials, such as DDC Planning Officer or members of the DDMC is essential for the legitimacy of the planning process. Other participants should include:

- VDC president, vice president, secretary and relevant staff
- Ward members or representatives of political parties whose constituency includes the VDC/municipality

- Representative of the local Nepal Red Cross Society that includes that VDC or cluster
- Community forest user groups. Other resource user groups
- Representatives from among disaster affected/vulnerable community
- Individuals well known to disasters and their coping
- Representatives of women and marginalized communities
- Representatives from civil society/NGOs/INGOs working in the field of disaster management in the VDC
- Representatives of respective government line agencies in the VDC or respective area such as agriculture, forestry, livestock development, health, security etc.

Initial orientation of the participants is needed to ensure a common understanding of disaster management. The duration of the planning process is dependent on the understanding and engagement of the participants. Past experience suggests that a four day residential workshop is usually sufficient; the first day being devoted to orientation on disaster management while the following three days are devoted to the development of the disaster management plan based on the available data.

3.3.1 Planning methodology

The participants from each VDC will initially examine and verify the information that has been collected from different sources relating to their specific VDC. Where members from more than one VDC are participating in a workshop, common issues such as methods for analyzing and prioritizing data can be discussed in plenary. Issues specifically relating to a particular VDC will be discussed in a separate group. Facilitators will help to maintain focus of groups, clarify misunderstandings and defuse disagreements. The stakeholders representing each VDC or municipality will be guided through a three stage process; situation (vulnerability and risk) analysis, capacity analysis and the drafting of a disaster management plan.

a) VDC/municipality vulnerability/situation analysis

Information collected from different parts of the VDC (see 3.1 and 3.2 above) relating to hazards is examined. Initially all the prevailing hazards are listed. The table 1 below relates to a VDC in Nawalparasi district in Nepal.

Table 1: List of hazards

HN	Hazards	HN	Hazards	HN	Hazards	HN	Hazards
1	Flood	5	Thunder	9	Cold wave	13	Loo (heat stress)
2	Wildlife intrusion	6	Epidemic	10	Windstorm	14	Dog bite
3	Fire	7	Hail	11	Earth quake	15	Insect/pest outbreak
4	Snake bite	8	Drought	12	Explosives (from sugar mill)		

HN: Hazard number (the numbering can help as code for further analysis)

Building on the data collected in communities and supplemented by the participants' own recollections of past events, the severity, frequency and impact of hazards and stresses are discussed and tabulated as below.

Table 2: historical overview of disasters

SN	Year*	Hazard	Location	Damages
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				Human death	Crop (Quintal)	Physical Infrastructure (houses)	Land (Hectare)	Domestic Animals (Nos.)	Forests (Hectare)	Cash, Jewelry (NRs.'000)
1	2017	Flood	Ward 1-9	25	Paddy – 20000	100	67	500	67	100
2	2019	Flood	Ward 1-9	NA	Paddy – 18000	125	100	800	50	200
3	2027	Fire	Ward 6	3	Paddy – 1000, Wheat – 500, Other – 500	100	NA	500	NA	800
4	2028	Fire	Ward 7	NA	Paddy – 200, Wheat – 100, Other – 100	25	NA	50	NA	300
5	2037	Fire	Ward 6	NA	Paddy – 100, Wheat – 50, Other – 100	20	NA	75	NA	400
6	2045	Fire	Ward 7 & 8	NA	Paddy – 150, Wheat – 100, Other – 120	30	NA	125	NA	700
7	2059	Fire	Ward 7	NA	Paddy – 100, Wheat – 50, Other – 50	15	NA	20	NA	150
8	2060	Fire	Ward 1	NA	Paddy – 50, Wheat – 30, Other – 30	5	NA	18	NA	750
9	2035	Drought	Ward 1-9	NA	5000	NA	NA	NA	NA	NA
10	2045	Drought	Ward 7, 8, 9, 3, 2	NA	3000	NA	NA	NA	NA	NA
11	2054	Drought	Ward 1-9	NA	60000	NA	NA	NA	NA	NA
12	2025	Hail & Storm	Ward 1-9	NA	2000	35	NA	NA	NA	NA
13	2032	Hail & Storm	Ward 1-9	NA	1500	25	NA	NA	NA	NA
14	2041	Hail & Storm	Ward 1-9	NA	3000	NA	NA	NA	NA	NA
15	2063	Pest attack	Ward 1-9	NA	4000	NA	67	NA	NA	NA
16	2064	Pest attack	Ward 1-9	NA	3000	NA	83	NA	NA	NA
17	2065	Pest attack	Ward 1-9	NA	1000	NA	100	NA	NA	NA
18	2040	Mosquito, Epidemic	Ward 1-3	100 dead 100 affected	NA	NA	NA	NA	NA	NA
19	2044	Mosquito, Epidemic	Ward 7-9	3 dead 75 affected	NA	NA	NA	NA	NA	NA
20	2054	Mosquito, Epidemic	Ward 1-9	500 affected	NA	NA	NA	NA	NA	NA
21	2022, 36, 39, 44, 51, 53 & 58	Fog	Ward 1-9	20	Mustard – 2000, Other – 3000	NA	NA	100	NA	NA
22	2042 to date	Env Pollution	Ward 1-9	50	NA	NA	NA	NA	NA	NA
23	2051, 52, 55, 59 & 63	Water logging	Ward 1-9	NA 35000	100	NA	NA	NA	NA	NA
24	2045, 54 & 57	Snake bite	Ward 1, 2, 7 & 9	5	NA	NA	NA	NA	NA	NA

Note:

1. The years are Vikram Sambat as practiced in Nepal. This is 57 years and about 3 months and 15 days ahead of Gregorian calendar (A.D.)
2. Some of the hazards listed, such as in table 1 above, may not appear in the historical timeline as they might be “normally” occurring annual small-scale stresses, or very infrequent events. Discussions among the participants will determine whether they need to be included in the draft plan]

Analysis and discussion of the frequency, severity and losses from each event and the reasons for these impacts will help participants to understand why planned interventions are needed to reduce their impact and aid recovery. Participants will begin to recognize how their communities can improve their resilience.

The hazards and stresses can be categorized into high, moderate and low impact events on the basis of the losses to life, property, land, livestock, infrastructure and natural resources. The frequency in which such events occur is relevant. For example, an earthquake may cause massive losses, but occur very infrequently. A combination of severity and frequency will determine the importance of a particular hazard with respect to its impact on the affected community.

Table 3: Severity and frequency of different hazards

	Hazards										
	Flood	Fire	Drought	Hail & Storm	Pest attack	Disease epidemic	Cold wave	Env Pollution	Water logging	Snake bites	Haz N
Severity	High	Medium	Low	Low	Low	Low	Low	Low	Low	Low	
Frequency	Medium	High	Low	Low	Low	0	Low	Low	Low	Low	

Suggested indicators:

High frequency hazard: One that has occurred at least twice in 5 years or 3 times in 10 years.

The occurrence of the hazard appears to have increased in recent decades.

Medium frequency hazard: One that has occurred 1 to 2 times in the last 5 years or at least twice in the past decade.

Low frequency hazard: Hazards that have occurred only once in the last 10 years or more.

Highly severe hazard: One that has caused severe damage in past events.

Medium severe hazard: One that has caused moderate damage in past events.

Low severe hazard: One that has not created a situation where external support has been sought. The affected family or community has been able to cope and manage using their own capacities and resources.

Each hazard or stress experienced in both the past and present may not necessarily have affected every community within the VDC to the same extent. Some communities may have been severely affected while others remained almost untouched. In order to reflect the reality of this situation, community or ward wise ranking of identified hazards and stresses is therefore necessary. Four categories are used to classify the impacts (frequency and severity) of particular hazards at ward or community level; high, medium, low and negligible. Participants need to agree on this classification. Using information collected at ward and community levels, a matrix can be constructed for each VDC or municipality.

Table 4: ward wise ranking of hazards (based on past events)

Hazards	Wards								
	1	2	3	4	5	6	7	8	9
Flood	High	Medium	Medium	High	Medium	High	High	Medium	High
Fire	Low	0	0	0	0	Medium	Medium	L	0
Drought	Low	Low	Low	Low	Low	Low	Low	Low	Low
Hail & Storm	Low	Low	Low	Low	Low	Low	Low	Low	Low

Pest attack	Low	Low	Low	Low	Low	Low	Low	Low	Low
Mosquito epidemic	0	0	Low	0	Low	Low	Low	Low	Low
Cold wave	Medium	Low							
Environment Pollution	Low	Low	Low	Low	Low	Low	Low	Low	Low
Water logging	Low	0	Low	0	0	0	0	0	0
Snake bite	Low	0	0	0	0	0	Low	Low	0

Suggested indicators:

High: The hazard occurs frequently and is extremely damaging. Communities suffer large losses and recovery takes a long time. External support is needed.

Medium: The damage caused by the hazard are less, but still significant. Recovery requires external support.

Low: The hazard causes relatively little damage and the community is able to cope without external support.

Zero: The hazard either did not occur, or if it did, it caused negligible damage.

As plans are made to deal with future events, the participants need to be made aware of changes in circumstances which may alter prevailing conditions. Factors which may have an influence on future events include development activities such as road or bridge construction, embankment works, population growth, changes in cropping patterns, etc and the impacts of climate change. Future vulnerabilities in the face of such changes need to be taken into consideration. The exposure, sensitivity and resilience of different livelihood strategies and assets to particular hazards and stresses are of particular relevance with respect to future hazardous events. Detailed consideration of the location and number of exposed households, the location of fields and their exposure to flooding and erosion is important.

The production of a hazard map for each community or ward is a useful resource that brings together this information in an understandable form. The relationship between hazard, exposure, sensitivity and resilience is simply displayed.

Both qualitative and quantitative information is valuable in assessing both current and future vulnerabilities. Much of this information will have been collected at community level prior to the planning workshop. Information such as 6,000 people are extremely exposed to flooding in Ward 5, or winter crops in N hectares worth X,000 rupees are vulnerable to drought and cold waves in Ward 3 contribute to a more detailed picture of the vulnerability of individual communities or wards. The basis for formulating risk reduction plans is the relationship between the hazard, its nature, frequency and impact, and the exposure and sensitivity or resilience of the component or assets of the affected communities. A hazard that impacts negatively on many components or assets of a community or particular livelihood strategy indicates a high degree of vulnerability. Qualitative and quantitative information from community and ward assessments can be summarized in a table.

Table 5: vulnerability summary for individual community or ward.

Qualitative categorization (based on livelihood assets)									
Vulnerable elements	Flood	Fire	Drought	Hail & storm	Insect/pest	Inundation	Cold wave	Snake bite	Hazard N
Human population	High	Medium	0	Low	0	0	Low	Low	
Land	High	0	0	0	0	0	0	0	
Crop/grain	High	Medium	Medium	Low	Medium	Medium	Medium	0	
Livestock	High	Low	Low	Low	Low	0	Low	Low	
Infrastructur	High	Medium	0	Low	0	0	0	0	

es										
Element N										
***Quantitative information below helps to categorize hazard up in the table ***										
Vulnerable elements	Flood	Fire	Drought	Hail & storm	Insect/ pest	Inundation	Cold wave	Snake bite	Hazard N	
Human population	6000	3*	0	0	0	10	25	10**		
Land	467	0	0	0	0	0	0	0		
Crop (NRs ,000)	26,000	3300	2000	2000	15000	10000	20000	0		
Livestock	1300	50	0	0	0	15	10	0		
Infrastructures	©	100	0	0	0	40	0	0		
Element N	XX									XX

* 3 people are likely to be killed based on the past experience although rescue to human and livestock is given priority.

** 10 incidents are likely to take place each year

© 1000 houses, 2 culverts, 1 km road, intakes of 2 irrigation channel, 1 school building

Four categories of hazards, based on destructiveness, frequency of past occurrence and degree of vulnerability are identified. Earthquakes (many rated 0 in earlier assessments) and other low level hazards may in the future become more frequent or increase in intensity. They cannot be ignored. Expert information (for instance climate change predictions) may ultimately need to be taken into consideration, but for the current purposes of developing the VDC disaster management plans, they can be omitted.

The remaining hazards need to be prioritized based on their severity and frequency and the vulnerability of the specific ward or community.

Table: 6: summary of hazard analysis

	Flood		Fire		Cold wave		Hazard N	
	High	Medium	High	Medium	High	Medium	High	Medium
Severity & Frequency	1	1	1	1	-	-	-	
Ward level Assessment	5	4	-	2	-	1		
Vulnerability Assessment	5	-	-	3	-	1		
Total	11	5	1	6	1	2		

Table 6 draws information from tables 3, 4 and 5. Hazard 1 (flood in this example) has the highest score (11) in the high category and also scored (5) in the medium category. Similarly, hazard 2 (fire in this example) scored second highest score (1 in high and 6 in medium categories). Although both fire and cold wave have 1 point on high category fire has the potential to create disastrous situations. This sort of analysis provides an objective view of the disaster risks faced by the people in a vulnerable community and forms the basis for the preparation of the disaster management plan.

Past experience has shown that a plan can be prepared taking account of the three top-ranked hazards, as these have been demonstrated to have the greatest impact on the affected community. Management of these three hazards should enhance the capacities of the affected communities to manage less significant hazards. This is a rather arbitrary choice which may be over-ruled by the relevant VDC or DDC.

Many hazards are seasonal in nature, being most severe at particular times of the year. This particularly applies to weather-related hazards such as floods, droughts and cold waves. It is therefore useful to prepare a seasonal calendar which identifies when particular hazards most commonly occur. A simple seasonal calendar is illustrated below.

Hazard	Months											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flood												
Fire												
Cold wave												
Drought												

The calendar indicates that preparedness activities to cope with floods should be completed before the middle of June each year, while awareness activities on fire prevention should start in February. Some disaster events such as earthquakes, the outbreak of certain diseases and industrial accidents are unpredictable and therefore can not be anticipated.

b) Community and VDC/municipality capacity analysis

Having prioritized the hazards, the capacities of the community and VDC to cope with and manage disasters needs to be assessed. Disaster management congenitally includes four main elements; prevention, preparedness, rescue and response and rehabilitation and recovery. Some of the resources needed include early warning systems, boats, life-jackets, trained rescue groups, access, communications and emergency shelter. (This is not an exhaustive list). Alternative livelihood options or access to means of maintaining minimum standards of living for the duration of a disaster as well as the means to rebuild livelihoods are essential components of any disaster management plan.

Some of the necessary capacities are institutional, such as trained personnel, access to humanitarian support, health workers, etc and issues of governance. Others are to do with material inputs such as boats, rescue equipment, emergency food supplies, etc. Community awareness, preparedness and the existence of an evacuation plan (contingency plan) helps to limit losses and save lives. The physical infrastructure such as roads, bridges and embankments play an important part in protecting communities. A detailed analysis of what assets exist and what capabilities can be enhanced needs to be carried out in order to identify elements for inclusion in the VDC plan. The table below includes some elements identified in an incomplete capacity analysis.

Table 7: capacity assessment

SN	Capacity indicators	Hazards					
		(1)	(2)	(3)	(4)	...	(N)
1	Early warning & communication	L	L	0	0		0
2	Rescue equipments and tools (boat, life jacket, rope, tube, ambulances, fire extinguisher etc.)	0	N/A	N/A	0		0
3	Trained rescue and first aid workers, fire fighters	L	L	L	L		L
4	Access to natural resources water, forest, land etc	0	0	M	L		0
5	Temporary shelter & food storage facilities	L	L	L	L		L
6	Relief materials and distribution mechanisms	L	L	L	L		L
7	Diversified options for livelihoods of vulnerable	L	L	L	L		N/A
8	Access to service providers (agriculture office, health office), ambulance, security posts and markets	L	L	L	L		0
9	Present cooperatives, committee, organizations etc.	M	M	L	L		0
10	Community barren land for temporary shelter etc	S	S	S	N/A		N/A
11	Community, political leaders' disaster awareness	L	L	L	0		0

12	Access road to vulnerable community	M	M	M			M
13	Culture to support victims	M	M	M	M		
...						
N	Emergency fund						

S = Sufficient, M = medium, L = Low, 0 = Zero, N/A = not applicable

c) Preparation of disaster management work-plan

A plan of action which takes account of the different measures needed to be taken at the different stages of the disaster management cycle is prepared. The plan takes into account the prioritized hazards identified in the foregoing phases of the workshop.

Pre-disaster phase

As most hazards cannot be controlled, measures taken in advance of the impact of a hazard or stress are aimed at reducing the vulnerability of the exposed communities. Preventive and preparedness measures focus on increasing the resilience of community assets and livelihoods to prevailing hazards. Who and what is vulnerable and exposed and what measures can be taken to reduce this exposure has been identified in the vulnerability analysis. Appropriate actions need to be incorporated into the plan. These measures are among the most important elements of disaster risk reduction (DRR) as prevention reduces the losses experienced and reduces the costs of recovery.

The strategies include both immediate and long-term term activities. Immediate strategies such as evacuation preparedness, stockpiling of medicine, water purifiers, etc need to be revised annually based on the likelihood and severity of the anticipated hazard. This will be identified in the annual contingency planning process. Long-term strategies should include improved watershed and natural resource management, the establishment of realistic, functional mechanisms and policies for disaster prevention, reduction and management. The livelihood strategies, geographic, climatic and socioeconomic context of the vulnerable community will all influence the strategies that are considered in devising a plan to reduce the vulnerability of the community to identified shocks and stresses. Overall the plan should aim to increase their resilience while satisfying their immediate and long-term development ambitions and reducing poverty in a sustainable fashion.

It may not be possible for all the strategies identified to be implemented immediately by either the communities or local bodies. Other appropriate stakeholders who might lead and support the process in the future should be identified.

While local communities and stakeholders best know local issues and availability of resources, outsiders from appropriate government departments and other agencies can be approached to carry out identified tasks which are beyond the capacity of local communities. Appropriate outside advice and expertise can feed into the community planning process.

During disaster phase

Rescue and relief activities dominate this phase. In some instances (e.g. fire) reducing the spread of the hazard is important. During severe flooding, rescue, emergency management including evacuation, temporary shelter for victims, the distribution of relief materials, access to first aid and other health issues, and the fulfilment of basic needs (food and water) are the main requirements. Interventions need to be sensitive to the needs and rights of the affected. During severe disasters, external support may be needed. How to gain access to external humanitarian agencies is an important component of the plan.

While relief needs differ for different disasters, communication with and access to the affected is always essential.

Post disaster phase

Reconstruction and rehabilitation is now the main focus. The repair and reconstruction of damaged homes and infrastructure, reclamation of degraded agricultural lands, rehabilitation of the displaced members of the population and the re-starting of livelihood activities are the main priorities at this time. An important objective of the rebuilding process is to reduce the impact of future hazards. Attempts should be made to “build back better”, thereby reducing the risk of future disasters. Flexible strategies will allow communities to learn from past experiences, thereby reducing their future exposure. The adoption of alternative and diversified livelihood strategies is of paramount importance and plays a large part in increasing the future resilience of exposed communities. Many pre disaster phase and post disaster activities appear similar, resembling development activities. In practice disaster risk reduction is a core component of development.

Proactive and coordinated actions taken on the ground by the vulnerable communities generate positive impacts in disaster management. Generally, smaller issues are often ignored but they play an important role in disaster events, for example, neglecting fire extinguishing after cooking or picnicing. Raising awareness on similar issues might sometimes, be overlooked by the planners who think they are not important. Some mal-practices such as slash-and-burn and shifting agriculture practices might be so firmly embedded in local culture that they are not perceived as hazardous and are consequently overlooked or not disclosed. In one planning process communities hesitated to disclose their practice of making and selling liquor. This was one of the main contributors to deforestation. Awareness of all the causes, contributory factors and impacts of livelihood strategies to increasing vulnerability is crucial in community based disaster management planning. People will not give up their traditional practices unless better alternative options for livelihoods are made available. Appropriate policy needs to be coupled with access to technologies that encourage this transformation.

A simple format of a work-plan is given below. An example of a plan is provided as an annex to this document.

A. Action plan for overall vulnerability reduction and disaster management

Strategy 1: Human resources and institutional development					
SN	Activities	Lead responsibility	Support	Timeline	Estimated cost
1					
2					
Strategy 2: Improving infrastructure					
1					
2					
Strategy 3: Strengthening natural ecosystem					
1					
2					
Strategy 4: Diversifying opportunities for improved livelihoods					
1					
2					

Strategy 5: Necessary policy and governance development					
1					
2					

B. Action plan for specific hazards in priority

Hazard: A

Preparedness strategies					
SN	Activities	Lead responsibility	Support	Timeline	Estimated budget
1					
2					
Coping (rescue and relief) strategies					
1					
2					
Reconstruction and rehabilitation strategies					
1					
2					

3.3.2 Estimated costs of physical infrastructure

Physical infrastructure such as embankments, check dams, access roads and shelters may be identified as necessary to reduce the exposure of some communities or VDCs. Similarly early warning systems, rescue equipment and other costly hardware may be identified in the plan. Estimating the cost of these resources should be undertaken by technical personnel from the VDC and DDC in consultation with the relevant communities. This will involve site visits and feasibility studies before costs can be inserted into the plans. As costs are steadily increasing, the insertion of estimates for large-scale structures is best undertaken shortly before implementation.

4. Stakeholder consultation and plan verification

The draft plan prepared using the above protocol needs to be documented by the consultant/service provider. Following distribution and discussion by the VDC or municipality stakeholders who prepared the plan, the plan may be amended to incorporate their feed-back.

The draft plan should then be shared with the relevant government and civil society organizations at District level for comment and feedback. A consultation workshop can be held for this purpose. National Ministries and relevant Departments such as the Ministries of Home Affairs, Disaster Management and Local Development should be consulted for comments and feedback.

The final plan should incorporate all the relevant comments and feedback that have been received.

5. Approval of plan and implementation

The final plan should be endorsed by the respective VDC or Municipality Council and approved for inclusion in their local Development Plan. Similarly the plans of the different VDCs and municipalities within one District should together be endorsed by the DDC Council and approved for inclusion in the District Development Plan. The DRR plans should form part of the Periodic Development Plans of both the relevant VDC/municipality and DDC. As DRR is an essential part of sustainable development, there are different possible roles for outside communities, agencies

and stakeholders in the plan. These stakeholders might not have initially been involved in the planning processes, but the plan should be communicated to all concerned stakeholders who might be able to contribute to the implementation of the plan. Coordination among various stakeholders and agencies is crucial for the ultimate implementation of the plan.

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Annex: Example of CBDM Plan

1. VDC/Municipality/community:

2. Brief introduction of the VDC/Municipality/community:

3. Process and methodology adopted:

4. Disaster Management plan

A. Activities for overall vulnerability reduction and disaster management - Activities to different hazards help to enhance risk reduction and resilience capacity to many hazards and bring tailored benefits.

a. Human resource & institutional development

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Form VDC level Disaster Management Committee (DMC)	VDC	Community	2065/8/30	1000
2	Formation of ward level DMCs in each vulnerable ward	VDC, DMC	Community	2066/9/30	2000
3	Primary health care training to 3 females & 3 males from each ward	VDC, DMC	District Public Health Office (DPHO)	Initiate this year	(To be estimated)
4	Rescue training to VDC level DMC and selected volunteers to different hazards	VDC, Red Cross	District Development Committee (DDC)	2065/11/30	(to be estimated)
5	12 week field based vegetable training to 40 people from ward 1, 4, 6, 7 & 9 and 30 person from ward 3, 5 & 8.	VDC	District Ag. Dev. Office (DADO)	Initiate this year	50000
6	Disaster preparedness training to DMC members, political leaders and community groups	VDC, DMC	DDC, Red Cross, NGOs	2065/12/30	150,000
7	Formation of VDC level communication network and channel within VDC and district to circulate disaster related information	DMC, VDC	DDC	2065/12/30	5000
8	Establish emergency fund in the VDC and update it annually	VDC, DMC	DDC, donors	2065	500,000
N	Organize awareness campaigns in the communities and display messages on hoarding boards (10) at VDC premises, cross road, weekly (haat bazaar), school premises etc.	DMC	All concerned	"	

b. Physical Infrastructure development

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Increase spill way up to 15 meters by widening bridge span of ward no.1.	VDC, DDC, DWIDP	community	2065/12/30	To be estimated
2	Construction of culvert at spur No 3 in ward 6	"	Community	2065/12/30	
3	Construct culvert (90 cm 3 Hume pipes are needed) near Shiva temple in ward 7 for water drainage during monsoon	"	"	2066/02/15	

4	Construct culvert (90 cm 3 <i>Hume</i> pipes) near agriculture field of Ram Narayan Kohar in ward 7 and link the road to <i>Supr</i> in ward 9 down to <i>Srirampur</i>	„	„	2066/10/30	
5	Gravelling of 1.5 km road at ward 8 from Lala Yadav's home to <i>Chaurniya ghol</i> with culverts across (3 <i>Hume</i> pipe culverts may be sufficient).	„	„	2067/11/30	
6	Drainage arrangement of 1.5 km road from ward 1, <i>Chauraha</i> to ward 3, and 1 km from Shirva temple at ward 7 to 8 <i>Mahagholand 500 meter from Dudhnath's house to Durga temple at ward 2</i> to avoid water logging on the access road in ward on 1 and 2, and bridge over Katarniya ghol to join Parsauni, and heighten and strengthen roads.	„	„	Initiate this year – to be completed as soon as possible	
7	Repair and complete canal of ward 6 and repair damaged culvert of ward 6 by heightening and widening it.	„	„	2067	
8	Construction of 1.5 meter wide drainage in villages in ward 7	„	„	2068	
N	Construction of 15 feet bridge on Katarniya ghol at ward 3 road joining <i>Prasauni</i> VDC	

c. Natural resource improvement

SN	Activities	Lead	Support	Timeline	Tentative costs
1	River bank plantation of Narayani from ward 1 to 9 to halt further river cutting	VDC, DMC	District Forest Office (DFO)	Initiate this year	30000
2	Improve <i>ghols</i> located in ward 1 (<i>Supr 17</i>), <i>Madarwa Ghol</i> in ward 3 & ward 9, and between ward 1 & 4 <i>Gaidamari Ghol</i> for fish farming	VDC	DADO, District soil conservation Office (DCCO)	„	50000
N	Promote agroforestry and private forestry as shelter belt	Community	DFO, NGOs, CBOs	Annually	

d. Income generation improvement

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Provide commercial vegetable, banana farming, bee keeping and livestock training to 45 households (5 from each ward)	VDC	DADO, District Livestock Support Office (DLSO)	Initiate next year	25000
2	Provide trainings on forest based small cottage and industrial trainings like <i>Doko</i> , <i>Dalo</i> , <i>Tokari</i> , <i>Muda</i> etc.	„	DDC, DFO	„	25000
3	Provide off-farm income generation skill improvement training to occupational castes.	„	DADO, DFO	„	210,000

5	Promote group savings in every ward	VDC, DMC	DDC, NGOs	,,	2000
N	Promote income generation opportunities to vulnerable communities; such as fish farming in <i>ghols</i>	VDC	Community, DADO	annually	

e. Policy development and improvement (community role will be to remind their concern to policy makers)

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Influence concerned to amend and increase the standard norms for relief materials	DMC, VDC	DDC, DDMC	Initiate this yr	
2	Influence concerned to increase the time limit for relief materials up to 6 months for disaster victims	DMC, VDC	DDC, DDMC	,,	
3	Influence concerned to provide at least NRs. 200,000 to families who lost their member due to disaster and free medicines to disaster victims	VDC, DDC	DDMC	“	
4	Influence concerned to review <i>Gandak</i> agreement between Nepal & India and update.	VDC, DDC	Nepal Government	ASAP	
5	Arrange the mechanism for rebating the bank loan to victims	“	,,	,,	
N	Develop locally affordable building code and introduce	“	Community		

B. Action plan for specific hazards in priority

Hazard: Flood

Preparedness activities before flood

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Organize and store rescue materials, water purification chemicals, boats, life jackets, ropes etc in VDC office and different wards	DMC, VDC	DDC, Red Cross, NGOs	Each year May	(For 6000 people)
2	Update communication channel and contact points	DMC	VDC, NGOs	Each year May	
3	Prepare and package dry foods, emergency goods	Community	DMC	Each year May	
4	Store important documents, jewellery and cash in safer places, review and update contingency plan	Community	VDC, DMC	Each year before monsoon	
5	Monitor flood, rainfall and weather locally and by using communication channel, media and other updates	DMC, community	VDC, DDC, NGOs	Each year during monsoon	
6	Clean drainage, identify evacuation and carry out mock drill exercises in ward no 1, 3, 4, 6, 7 and 9.	DMC, community	“	Each year May-June first week	
N	Update record of child, pregnant, old age, disabled groups and their special needs among vulnerable communities	DMC, community	“	Each year May	

During flood

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Mobilize rescue and search group	DMC	Army, police force	Immediately	
2	Guide disaster victims to safer places and temporary shelter.	Volunteers	Rescue team	„	
3	Arrange primary health service to disaster victims and send them to hospitals as needed	Rescue group, DMC	DPHO	„	
4	Record damages for effective post disaster management	DMC, VDC	DDC	„	
5	Coordinate with organizations to collect relief materials	DMC, VDC	DDC, NGOs	„	
N	Coordinate District Disaster Relief Committee for search, rescue and relief activities	DMC, VDC	DDC	„	

Post disaster activities - flood

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Assessment of causes and impacts, review rescue and relief	DMC, VDC	DDC, DDRRC	After disaster	
2	Arrange treatment for injured, relief for affected	DMC, DPHO	VDC, DDC	„	
3	Manage temporary shelter effectively and coordinate with other organizations in need.	DMC, VDC	Red Cross, DDC, NGOs	„	
4	Manage drinking water, health, communication, food etc in temporary shelter	„	„	„	
N	Arrange for rehabilitation and reconstruction of affected assets	„	„	„	

Disaster risk reduction Plan – Fire

a. Human resource and institutional development

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Form ward level Fire Fighting Sub-committee (FFS) in ward 6, 7, 8, 9, 1 & 3	VDC, FFC	DDC, NGOs	2065/6/30	2000
2	Arrange fire fighting machines, instruments and provide orientation to FFC and FFS to operate them	VDC, FFC, DMC	DDC, NGOs	2065/9/30	To be estimated
3	Provide orientations to households on fire prevention and suppression in ward 1,3, 6, 7, 8 and 9	VDC, DMC	DDC, NGOs, CBOs	Every year during dry season	10000
4	Raise awareness on fire through radio, FM and TV	DDC	Media, NGOs	“	30000
5	Provide trainings and awareness on improved cook stoves	„	„	Five year target	526750
N	Organize mock drills, street drama, folk songs to raise awareness	DMC	Red Cross, community	Annually before and in dry season	

b. Physical infrastructure development

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Construct deep wells; 2 at ward 7 and 4 each in ward no 2, 3, 4 and 5	VDC	DDC	2065/10/30	To be estimated
3	Arrange 1000 meter 6 inch water delivery pipe with DMC/VDC	''	''	''	
4	Arrange one diesel pump set for ward 7, 8, & 9; one for ward 1, 2 & 3; one for 4, 5 & 6.	''	''	''	
5	Construct shelter for 300 people at ward 7 and another at ward 2 near <i>Durga Temple</i>	''	''	''	
6	Improve Pathalhawa Ghol (has perennial water source) at ward 8 and 9 by constructing about 3 km both-sided dam for water availability to suppress fire.	''	''	''	
N	Construct concrete ladder to reach water in <i>Pathalhawa ghol</i> at two locations	''	''	''	

e. Policy improvement and development plan

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Arrange mechanism for compensation, resettlement and recovery for victims	Nepal Government	VDC, DDC, NGOs, DMC	As and when needed	
2	Arrange the mechanism for rebating the bank loan to victims	''	''	''	
N	Provision free tree logs to fire victims for building houses destructed by fire	''	''	''	

During fire

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Inform community and fire extinguishing teams of fire incident as soon as possible such that vulnerable get time to escape and secure their assets	Ward level committee, VDC, DMC	Community people	Immediate	
2	Arrange rescue and evacuation operation for human, livestock and others involving fire fighting experts; first aid and send to hospital.	Rescue team, Army, Police	DMC, Community people, health post, DMC	''	
3	Extinguish fire with the help of rescue and fire fighting team using local wells, pond, tap, tube wells, soil etc.	Community	DMC, outside actors	''	

After fire

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Record keeping of damages (population, cash, assets, livestock etc.)	DMC	VDC	Immediately after	
2	Request for compensation, arrange temporary shelter	Victims	DMC, VDC	„	
3	Plan for reconstruction and rehabilitation of physical infrastructures and fire victims	DMC, VDC	DDC	„	
4	Arrange resettlement and livelihood recovery for victims	DMC, VDC	Community, NGOs	„	

Cold wave (winter fog) - preventive measures

a. Human resource and institutional development plan

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Provide trainings on agriculture to develop local resource persons; 1 from each ward.	DADO	VDC, DDC, DMC	2065/6/30	180,000.00
2	Explore frost tolerant varieties and crops	DADO	„„„ community	Continuous	
3	Apply preventive measures and fungicides to crop rot	DADO	Community	Each year	
4	Arrange firewood, warm clothes and heater before winter	Victims			
N	Establish sample green houses for crop growing that could be replicated with locally available materials.	community	DADO		

During fog

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Consult technicians and use prescribed measures	Community	DADO	Immediate	
2	Use firewood & heater to warm people	Affected	Community	Immediate	
3	Provide better care to child and old age people	Community	DPHO	During stress	
N	Prevent crop nurseries by shading to the extent of possible	Community			

After Fog

SN	Activities	Lead	Support	Timeline	Tentative costs
1	Make valuation of exact damage and send record to district disaster committee and DADO	DMC, Victims	DADO, VDC	Immediate after	

Note: tentative costs not mentioned need to be estimated.