



Draft Dzonkhag Disaster Management and Contingency Plan



Dzonkhag Administration

GASA

2017

Executive Summary

According to Section 77 of the Disaster Management Act of Bhutan 2013, Dzongkhag Disaster Management Committees are mandated to develop Disaster Management and Contingency plans, in consultation with the Dzongkhag sectors and other relevant agencies. Further, Section 78 mandates the Dzongkhag Disaster Management Committee to submit the Dzongkhag's disaster management plan to the National Disaster Management Authority through the Department of Disaster Management. Similarly, Section 79 of the Act mandates disaster management and contingency plans to be updated at least once a year and reviewed every five years.

With the changing risk patterns and frequency of disasters, formulation of Dzongkhag specific disaster management plan is an important strategy to strengthen local level disaster management systems and systematically reduce disaster risks.

The Gasa Dzongkhag Disaster Management Plan presents hazard, vulnerability and capacity profile for the four Gewogs. The plan also outlines priority disaster risk reduction, awareness raising and capacity building activities for Gasa and spells out the standard procedures for response in the Dzongkhag. An implementation and monitoring process for the plan is also included.

The Disaster Management and Contingency Plan is to be referred by Gewogs and sectors to ensure mainstreaming and integration of disaster risk management into their annual and five year development plans. It is required that every stakeholder within Gasa Dzongkhag Administration and relevant National Disaster Management institutions and agencies take ownership and fulfill their own roles and responsibilities to make Gasa a disaster resilient and safe Dzongkhag.

Acronyms

CBDRM	Community Based Disaster Risk Management
DDM	Department of Disaster Management
DM Act, 2013	Disaster Management Act of Bhutan, 2013
DM	Disaster Management
DDMC	Dzongkhag Disaster Management Committee
DT	Dzongkhag Tshogdue
GNH	Gross National Happiness
GT	Gewog Tshogdey
HVCA	Hazard, Vulnerability and Capacity Assessment
NASART	National Search and Rescue Team
NDMA	National Disaster Management Authority
RBP	Royal Bhutan Police
SDMP	School Disaster Management Plan

Table of Contents

Executive Summary.....	1
Acronyms	1
Table of Contents.....	2
Chapter 1: Overview of the Dzongkhag.....	4
1.1 Geography.....	4
1.2 Administrative Profile	5
1.3 Demography.....	6
1.4 Weather and Climate	7
Chapter 2: Dzongkhag Disaster Management System.....	7
2.1 Dzongkhag Disaster Management Committee (DDMC)	7
2.2 Functions of DDMC	8
2.3 Disaster Management Subcommittee	8
Chapter 3: Disaster Risk Profile of Dzongkhag.....	9
3.1 Hazard Assessment	9
3.2 Vulnerability Assessment.....	15
3.3 Disaster Management Action Plan (2018– 2022)	27
Chapter 4: Contingency Plan.....	52
4.1 Standard Procedures for Response at Dzongkhag level	52
Chapter 5: Implementation Mechanism.....	58
Annexure.....	60

Scope & Objectives

The Disaster Management and Contingency Plan for the Dzongkhag is prepared, as mandated by Disaster Management Act 2013. The plan was endorsed by the Dzongkhag Disaster Management Committee (DDMC) onand will serve as a document for reference by all relevant stakeholders – different Dzongkhag Sectors and Gewog Administrations - for implementation of prioritized disaster risk reduction and preparedness activities through mainstreaming. The plan will address all hazards in the Dzongkhags covering the whole disaster management cycle (*Pre-disaster-awareness, capacity building and mainstreaming, During-Disaster-Effective response and Post-disaster- Early Recovery and Reconstruction*).

The objectives of the Dzongkhag Disaster Management and Contingency Plan are:

- To ensure mainstreaming and facilitation for implementation of disaster risk reduction and preparedness activities in Dzongkhag;
- To ensure required capacities are developed for risk reduction, mitigation, preparedness and response;
- To increase awareness on disaster risks, risk reduction and preparedness measures in the Dzongkhag;
- To establish a coordination mechanism for emergency response and relief operations.
- To ensure safety of community, reduce loss to property; protect critical infrastructure, and environment and continuity of essential services.

Chapter 1: Overview of the Dzongkhag

1.1 Geography

Gasa, in the extreme north west of Bhutan, shares its borders with districts of Punakha, Thimphu, Wangduephodrang, and autonomous region of Tibet to the north. The total area is 3081.77 sq.km. Elevations in the district range between 1,500 and 4,500 meters above the sea level. The region experiences extremely long and hard winters and short but beautiful summer.

The Dzongkhag is administratively supported by four Gewogs namely Khatoed, Khamey, Laya and Lunana. Lunana is the furthest and most remote Gewog amongst the four. Gasa has a total population of 2970.

The Dzongkhag has some of the highest peaks in the kingdom. Over a hundred glacial lakes that are at the foot of these greater Himalayan peaks feed some of the major river systems in the country, including the Phochhu and the Mochhu rivers which join further downstream to form the Sunkosh, which eventually drains into the Bay of Bangal.

The whole Dzongkhag falls under the Jigme Dorji Wangchuck National Park and is the habitat for different species of birds and animals like the takin, musk deer, blue sheep, snow leopard, red pandas, raven, wild pheasants, snow pigeons, red billed cough, Himalayan black bear, tiger, etc. The Dzongkhag has about 68% of its land area under forest cover, out of which about 35% is scrubs forest, 27% under fir forest, 15% under mixed conifer forest, 4% under broad leafed forest and the rest as tsamdro.

A famed hot spring and series of Menchus with renowned medicinal properties are another important natural resources in the dzongkhag, drawing numerous locals as well as tourists. Every year a number of tourists pass through the region along its popular trekking trails, including the famous snowmen, one of the longest and most arduous of the treks in the world. The region's high altitude and extreme climate makes it difficult to practice agriculture but livestock is mainstay, particularly rearing of yaks.

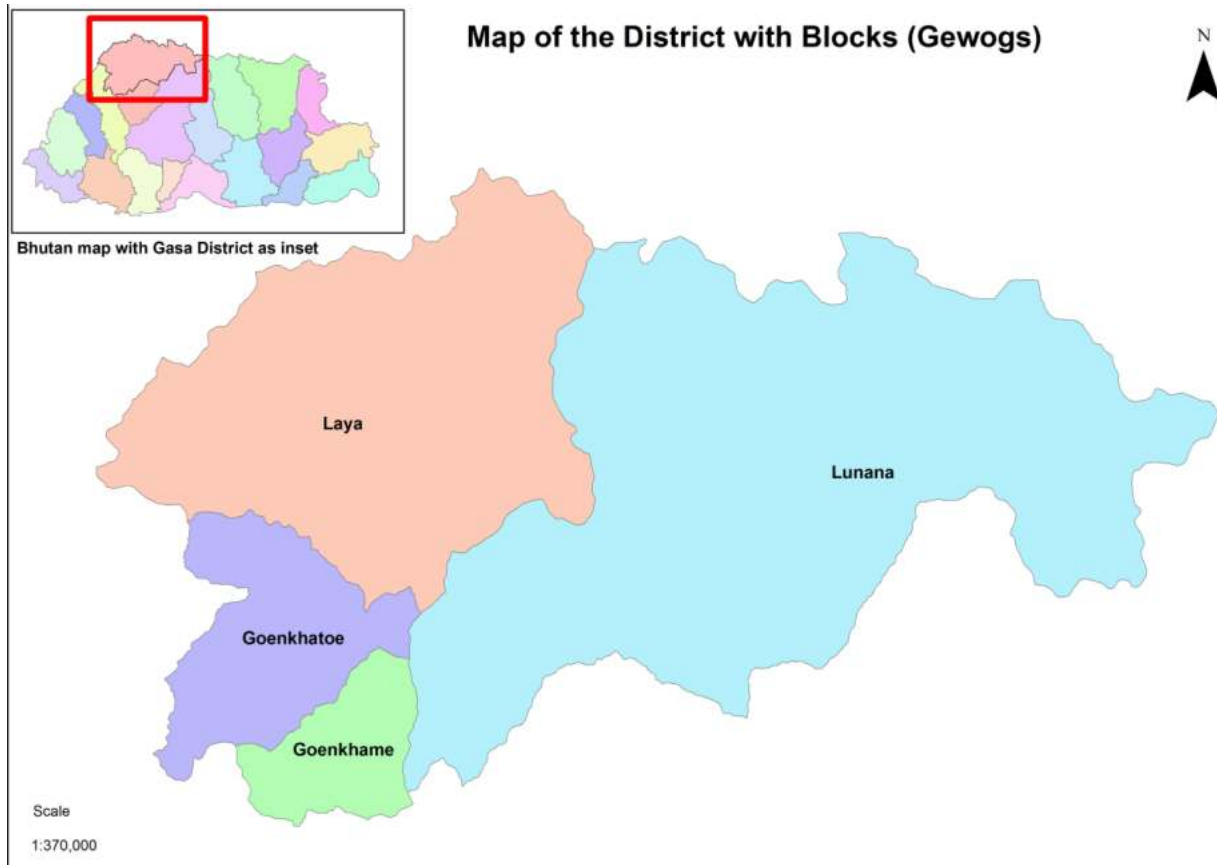


Figure 1: Dzongkhag Boundary Map (Source: NSB)

1.2 Administrative Profile

The Dzongkhag Administration is headed by the Dzongdag with various sectors representing line ministries working under the Dzongkhag's administrative jurisdiction.

As per the directive from the RCSC and the current OD exercise, the forest sector has been delink from the dzongkhag's RNR and merged with Territory division of Forest under the Ministry of Agriculture and Forest.

The other institutions in the Dzongkhag are the Dzongkhag's judicial system headed by the Drangpon and the Lam Neten respectively.

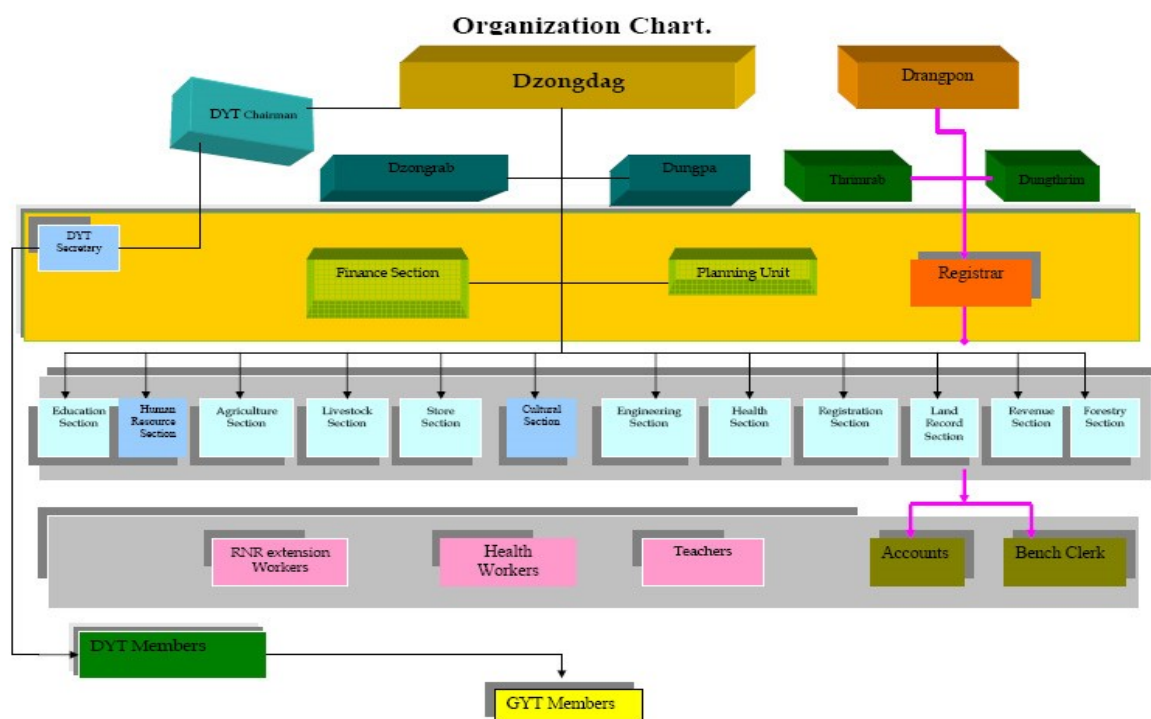


Figure 2: Organogram of Dzongkhag Administration

1.3 Demography

Gasa has the total population of 2970(PHCB, 2005). With a crude birth rate of%, a death rate of% and a natural population growth rate of%, the population is projected to For 2030.

Table 1: Key Demographics

	Gewog	Area (Sq. Km.)	No. of Households	Population		Health Facilities			Schools				
				Male	Female	Hospital	BHU	ORC	HS S/C S	MS S	LS S	PS/CP S	ECR/E CCD/NFE
1	Khatoed	287	59	250	306 (1D)	0	1	0	1	0	0	1	2
2	Khamey	149	125	456	508 (14D)	0	1	2	1	0	0	0	1

				(9D))								
3	Laya	967	262	600	698	0	1	1	0	0	1	1	1
				(2D)									
4	Lunana	1713.	185	389	433	0	1	2	0	0	0	1	1
		26			(2D)								

BHU – Basic Health Unit; ORC – Out Reach Clinic; HSS – Higher Secondary School; MSS – Middle Secondary School; LSS – Lower Secondary School; PS – Primary School; ECR – Extended Classroom; D=Disable person

1.4 Weather and Climate

The Dzongkhag experiences extremely long and hard winter season and short but beautiful summer. In winter, due to heavy snowfall, Laya and Lunana Gewog is cut-off from other region of Bhutan. The high altitude and extreme climate makes it difficult to practices agriculture but mainly depend on livestock.

Chapter 2: Dzongkhag Disaster Management System

2.1 Dzongkhag Disaster Management Committee (DDMC)

Gasa Dzongkhag Disaster Management Committee (DDMC) is constituted as below as mandated by the DM Act of Bhutan, 2013:

- a) Dasho Dzongdag, Chairperson (ex-officio)
- b) Dzongkhag Welfare Officer, member
- c) Chairperson of Dzongkhag Tshogdu (DT), member
- d) Gups of all Gewogs, member
- e) Thromde Thuemi, member
- f) Superintendent of Police/Officer-in-Charge, RBP, Gasa, member
- g) Drungchen, Gasa Rabdey, member
- h) Dzongkhag Disaster Management Officer, Member Secretary
- i) Any other member as may be co-opted in accordance with the rules framed under the Act

On the expiry of the term of the Gup/Thromdey Thuemi or in the event of resignation, the Chairperson of the Dzongkhag Disaster Management Committee shall designate the most appropriate official in the Gewog/Thromdey who shall represent in the DDMC during the interim period.

2.2 Functions of DDMC

The DDMC shall be responsible for coordinating and managing all disaster management operations in the Dzongkhag under the direction and supervision of the National Disaster Management Authority (NDMA). The DDMC and Chairperson shall function as mandated under section 31 & 38 of DM Act 2013.

In the case of a disaster, the Chairperson of the DDMC may exercise all or any of the functions of the DDMC, subject to ex post facto ratification of the Committee.

The DDMC is mandated to meet at least twice a year and to frame rules and regulations concerning the conduct of its meeting.

2.3 Disaster Management Subcommittee

The DDMC may, if it considers necessary, constitute a subcommittee at the Dungkhag, Thromde or Gewog level to assist the DDMC in the performance of its functions under the DM Act of Bhutan 2013.

The DDMC may frame rules and regulations under this Act to determine the composition and function of a sub-committee constituted under section 35 of the DM Act.

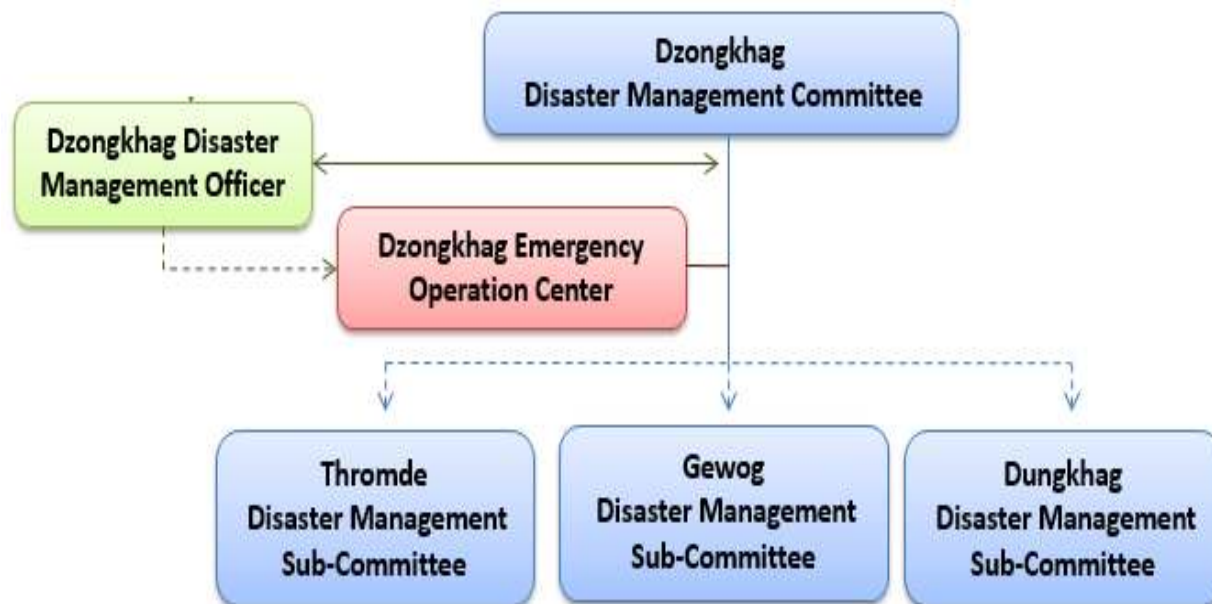


Figure 3: Dzongkhag Disaster Management System

Chapter 3: Disaster Risk Profile of Dzongkhag

3.1 Hazard Assessment

Gasa Dzongkhag has experienced several disasters over the last 20 years, the most devastating being the September 18, 2011 Sikkim earthquake of M 6.9, which caused widespread damages to rural homes and government infrastructure. The other major and recurrent hazard has been windstorms that have resulted in extensive damages to roofs of rural houses and government infrastructure. The Hazard, Vulnerability and Capacity Assessment (HVCA) process carried out in the Gewogs also identified other hazards such as – forest fire, structural fire, flood, landslides, thunder storms and pests and diseases. The hazard assessment of each Gewog, as per consultations with the community, is presented below:

1. Khatoed Gewog

Table 2: Khatoed Gewog Hazard Assessment Table

Hazard	Secondary Hazard	When it could occur	Probability of occurrence	History of past disaster	Impact
Flash flood	landslide	June , July and August	High	2009, 2016, 2017	Washed away Tsachu ,shops ,bridges and electric poles
Windstorm		Oct, Nov and Dec	Medium	2014	Blown away roof of 06 HHs
Hailstorm		March, April and May	Less	2015	Damage agriculture products (Potatoes, green leaves)
Earth quake	Landslide, structure fire	Anytime	unpredictable	2011	Damage to 18 hhs ,highway and Dzong
Fire		Dry season	high	2006, 2008	Damage to old and antique structures

2. Khamey Gewog

Table 3: Khamey Gewog Hazard Assessment Table

Hazard	Secondary Hazard	When it could occur	Probability of occurrence	History of past Disaster	Impact
Hail storm	Crop damage/ vehicle damage	March, April, August , September	High	1979,2015	200 acres of Paddy crop damaged, 6 acres of Potato crop damaged, 60 fruits trees damaged
Rainfall	Flash flood, crop damage, outbreak of diseases	June- October	High	1990-2017	5 acres of paddy field damaged, crop production affected
Landslide/ Flash flood	Structural damage/injury/death/road block/field damage	July-September	High	2010,2012	2 hhs damaged, 5 acres land, irrigation channel damaged, road block
Wind storm	Structural damage/fire/death &injury/roadblock/ crop damage	March, April, October	High	2005	25 hhs damaged, crop damage
Sinking land	Structural damage, agriculture land, life threats to domestic animals and human	Unpredictable	High	2010, 2017	23 hhs (56 acres of land damaged)
Drought	Paddy nursery wither, vegetable damaged, outbreak of diseases, drinking water source dry up	March-April	Medium	2005, 2007, 2008, 2010, 2012, 2014	10 acres of paddy nursery affected, few infants, old age people affected, 30 hhs drinking water source damaged, 5 acres of vegetable land damaged
Earthquake	Structural damage/ fire / death/injury/ roadblock/ landslide/flood	Unpredictable	High	2009	8 hhs affected

Cattle Diseases outbreak	Death of livestock animals	Unpredictable	Medium	1953	100nos cattle dead
Fire	Structural damage/forest fire/injury & death	Unpredictable	Medium	1998-2001	8 hrs affected,10 acres of forest area

3. Laya Gewog

Table 4: Laya Gewog Hazard Assessment Table

Hazard	Secondary Hazard	When it could Occur	Probability of Occurrence	History of Past Disaster	Impact
Heavy Snow fall		unpredictable	high	2009	Damage of herd / killed many yaks
cyclone	Flash Flood	unpredictable	low	2009	Damage Bridges/ Killed many Cattle
cyclone	Landslide	Unpredictable	low	2009	Damage Bridge/Mule Track/
Earthquake	Flash Flood/ Landslide	unpredictable	high	2011	22 house with minor damages/1 Lhakhang/school
Avalanche	lake outburst	unpredictable	high	2012	Damage 3 bridges
fire		predictable	high	2013	distroy pristine forest of 30 acres
Avalanche	lake outburst	unpredictable	high	2015	Damage 5 bridges/ wash away mule/3 cow
heavy Rain	landslide/formation of artifical lake	unpredictable	high	2017	Damages Bridges
human wildlife conflict		unpredictable	high	2016-2017	distory of Statue/ Lhakhang/yaks Chadrop

4. Lunana Gewog

Table 5: Lunana Gewog Hazard Assessment Table

Hazard	Secondary Hazard	When it could occur	Probability of occurrence	History of past disaster	Impact
1. Earthquake	<ul style="list-style-type: none"> • GLOF • Landslide • Avalanche • Structural fire • Formation of artificial dam • Falling of boulders 	Unpredictable	High	2011 (Sikkim earthquake)	6 HH affected
2. Windstorm	<ul style="list-style-type: none"> • Structural fire • Cost to live and properties 	January-March	High	2015	2/3 rd of HH affected
3. GLOF (Glacial Lake Outburst Flood)	<ul style="list-style-type: none"> • Flash flood • Cost to live and properties • Disease outbreak 	May-September	High	1994	<ul style="list-style-type: none"> • Whole gewog affected • Loss of 4 people
4. Landslide	<ul style="list-style-type: none"> • Cost to live and properties • Structural damage • Blockage of mule tracks 	April-August	Medium		
5. Heavy snowfall	<ul style="list-style-type: none"> • Avalanche • Ice slide • Inaccessibility of routes • Loss of livestock • Pasture land 	December-March	High	2010	Loss of a child

6.Structural Fire	<ul style="list-style-type: none"> Neighbor's HH 	Unpredictable(Winter season)	Medium	2010	Affected 1 HH
7.Altitude Sickness	Huge resources loss	Unpredictable	Medium		Loss of 3 lives(human)
8.Avalanche	<ul style="list-style-type: none"> GLOF Live cost 	December-March	Medium	1960's	15 lives (human)

Table 6: Hazard ranking by Gewogs

Hazard/ Gewogs	Structural Fire	Wind storm	Earth quake	Forest Fire	Hails tone	Flash flood	Avalanche/heavy snowfall	GLOF	Drought	Land slide
Khatoed	2	7	3		5	8				
Khamey		9	5	4	10	10			7	
Laya	3	8	9.5	5			8.5			
Lunana	6	10	9	0			8	6		6
Total score	11	34	27	9	15	18	16.5	6	7	6
Ranking	6	1	2	7	5	3	4	9	8	9

(Score; 1 to 10 (10 highest, 1 lowest, 0 unknown), Overall Rank: (1 = highest and 9= Lowest))

Most hazards are seasonal and can be expected at the particular time of the year. Windstorm occurs mainly during the seasonal change in the months of Nov – Dec and March - April. Similarly, earthquake and flashflood was ranked second in Dzongkhag. Therefore, flood awareness and windstorm safety notifications and advisories should be made accordingly.

Extra precaution should also be taken during busy agricultural activity periods and during festivals when people are completely engaged and may not be able to respond to a disaster/emergency immediately. Table 15 below shows the seasonal activities of 4 Gewogs under Gasa Dzongkhag. The seasonal calendar may also be used by the Dzongkhag and relevant agencies to plan for awareness/ training activities in the community. Although agricultural activities are carried out throughout the year, only the busiest months have been reflected as P & H in the table.

Table 7: Seasonal Calendar of Four Gewogs

Months and Activities													
Sl #	Gewogs	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	Khatoed	SF/D	P/D	P			H/M	H/M	M				SF
2	Khamey	D	D	W/S F	W	Y	P/C/Y/ M	M	M	H/ M	H/ W/ M	D	D
3	Laya	SF	SF	SF	M/P /F	P/ M/ C	C/M/F	F/T/	H/F	F/ H	F/ G	G/ W/ SF	SF/ W
4	Lunana	SF/ W/D /A/F	SF/ W/ D/A /F	SF/ W/A /P/F	SF/ P	M/ C/ G	C/M	M	M/C	M	SF /H/ G	SF /G	SF/ A/D /G
D= Dry season, P=Plantation/Sowing, F= Festival, M=Monsoon, W: Windstorm, H=Harvesting. Y- Flood, S-Hailstorm, SF=Snowfall, C=Cordycep collection/Auction, G- Seasonal Migration, A = Avalanche													

3.2 Vulnerability Assessment

Vulnerability assessment for the Gasa Dzongkhag is carried out based on the underlying vulnerabilities identified during the HVCA process in the each gewog:

1. Khatoed Gewog

Table 8: Khatoed Gewog Vulnerability Assessment Table

Hazard	Element at risk	Why they are at risk?	
		Physical /Material	Social/ organizational
Flashflood	Tsachu pond, tsachu wall, RWSS, Lives and arable land, Road, bridges, power supply	<ol style="list-style-type: none"> Inadequate implementation of work Weak planning 	Lack of public awareness
Windstorm	Structure damage (Household,poles)	Absence of wind resilience structure	Lack of proper planning and poor construction

	Threat to lives		
Hailstorm	Crops	Un affordable for protection materials	
Earth quake	Lives, buildings ,crops ,roads,	Poor construction Lack of earthquake resilience structure	Lack of awareness
Fire	Lives, building , forest	Use of low quality electrical materials Poor handling of cooking and lighting equipment (LPG, Candles, butter lamp etc.)	Lack of fire resilience structure Lack of public awareness Carelessness of the people

2. Khamey Gewog

Table 9: Khamey Gewog Vulnerability Assessment

Hazard	Element at risk	Why they are at risk	
		Physical/Material	Social/Organization
Hailstorm	Crop, property, pest outbreak	Poor method of garage construction, protection measures not affordable	No proper data, no Soelkha as it used to be done in the past
Rainfall/land slides/flash flood	Structure, lives of human, domestic animal, road, crop production, outbreak of Pest and diseases, Paddy field, water sources, bridges, Mule Track	Poor methods of construction, -poor drainage, planning of road construction, -poor cultivation methods, -Lack of bioengineering adopted, poor waste management	-no proper monitoring, planning and management, lack of knowledge

Wind storm	Structure, lives of cattle(s), human, roads, electricity, communication	Poor construction methods, poor quality of electrification, stacking of firewood near the households	Traditional way of construction, limited budget, lack of knowledge on disaster
Sinking of land	Structure, Agriculture land, farm roads,	Geologically unstable, no proper drainage system, blasting during road widening	Lack of knowledge
Drought	Agriculture crop, drinking water sources, human diseases	Climate change(erratic rainfall)	No proper data maintained No preparedness
Earthquake	Structure , lives of human, domestic animal, roads, flash flood/landslide, bridges	Weak construction methods, unstable land	No formation of monitoring team
Fire	Structure, lives of people and domestic animal	Poor electrification materials	Poor management, Lack of knowledge

3. Laya Gewog

Table 10: Laya Gewog Vulnerability Assessment Table

Hazard	Element at risk	why they are at risk	
		Physical/material	social/orginazational
Avalanche	structures/ human lives, livestock, pasture, dairy production, muel track, drying water source, aesthetic view, Glacier Lakes	geographical Location	unaware of Climate Change, Traditional norms

Earth Quake	structures/ human lives, livestock, muel track, drying water source, aesthetic view, Glacier Lakes	poor construction materials, Lack of Technical support then	
Human wildlife conflict	structures/ human lives/antiques, crops, extinction of wild life,	geographical Location, lack in assigning of caretaker	lack of cooperation, incentive
Heavy Snow fall	structures/lives,Pasture, dairy production,	Environment situation	
cyclone	structures/ human lives/antiques	poor construction materials, Lack of Technical support then	lack of access road, qualified leaders & Engineers, Lack of awareness
Fire	structures/ human lives/antiques	lack of safety measures installed	Lack of awareness

4. Lunana Gewog

Table 11: Lunana Gewog Vulnerability Assessment Table

Hazard	Element at risk	Why they are at risk?	
		Physical/ Material	Social/ organizational

1. Earthquake	Structure, lives (oldage and children) structural fire, mule track and bridges.	Non-engineered structure Poor usage of building materials	<ul style="list-style-type: none"> • Lack of knowledge about do's and dont's during earthquake Lack of awareness Unattended to children and old age
2. Windstorm	Structure, live and properties (human and livestock) Structural fire	Non-resilience structure Non-engineered structure	Ignorance for the modern technologies Traditional norms
3. GLOF	5 villages, bridges, mule tracks, properties and institutional infrastructures	Location of the village Geographical location of the village	No other options to safe relocation
4. Landslide	Structures, live and properties, routes and bridges Human and livestock, properties, routes	Heavy snowfall during winter and heavy downpour in summer No vegetation	Lack of awareness
5. Heavy snowfall		Global warming Geographical location No shelter constructed for livestock	Ignorance/negligence

6.Structural fire	House, Dzong, Lhakhang, Properties, Livestock, Human (old age and children)	<ul style="list-style-type: none"> • Improper installation of Bukhari •lack of butter lamp case in house and lhakhangs. 	<ul style="list-style-type: none"> •Lack of awareness to family Ignorance Negligence of participation in social gatherings
7.Altitude sickness	New visitors(human) children and older people	Stocking of hay on roof	Poor knowledge on mountain sickness Adaptation to the environment
8.Avalanche	Lake outburst, human and livestock, structures and properties	Geographical location of the gewog Need to cross high passes Global warming	Lack of awareness

Various kinds of capacities existing in each Gewog corresponding to different hazards have been outlined below. Physical capacities are those that are present in the Gewog which can withstand or reduce the impact of the hazard up to certain extent. Economic capacities include resources households and communities can rely on for recovery and re-construction in the aftermath of a disaster. Social capacities include strengths inherent in the community in terms of community cooperation or knowledge that would be useful during disasters.

1. Khatoed Gewog

Table 12: Khatoed Gewog Capacity Assessment Table

<u>Hazard</u>	<u>Capacity</u>	
	<u>Physical</u>	<u>Social /Institutional</u>
Flash flood/ land slide	Excavator and backhoe, football ground ,basketball court, Organic vegetable, Production centre	Deesups (13), RBP(17), DoR, Ritual to local deities , School, BHU, Sonam Tshongkhang,RICBL,
Windstorm	Good nailing of the roof with better anchored, better ventilation	Deesups (13), RBP(17), School, BHU,RICBL
Hailstorm	Right varieties seed for right season Immediate help to the victims	MoAF,Dzongkhag,Agriculture sector and Extension,RICBL

Earth quake	Open ground for evacuation, excavator and backhoe, solar lightning system , network connectivity , Family aid kits , Organic vegetable, Production centre (mineral water)	BTL, TCell, ICTO ,RBP,Deesup, ritual , FCB,BHU,RICBL
Fire	Firefighting equipment, water reservoir ,lake, fire extinguisher , Family Aid Kits	RBP, Deesup, teachers ,monks, shopkeepers , FCB,RICBL, BHU, Production Centre (mineral water)

2. Khamey Gewog

Table 13: Khamey Gewog Capacity Assessment Table

Hazard	Physical Capacity	Social/ Institutional Capacity
Hailstorm	Alternative crops Available raw materials for construction of garage	Support from Agriculture sector & crop insurance Do <i>Soelkha</i> on time (2 times a year) Ladam and Ridam, BOB, RICBL, BDBL
Rainfall/landslides/flashflood	Abundant stones for construction of road Open area at BCS, BHU, JDNP, RNR-EC,	DoR Machineries BCS, JDNP, DoR, Sonam Tshongkhag, Shops Social cohesion BOB, RICBL, BDBL
Wind storm	Available of local resources (Timer & Stones) Labour available Properly anchored roofs	Dzongkhag support DDM Insurance Farmers Groups(financial support) Soelkha 8 nos of Desungs Social cohesion BOB, RICBL, BDBL

Sinking of land	Available arable land for relocation Available Timber and stone resources	Social cohesion (23 hhs) Dzongkhag, DDM, NLC, MoAF BOB, RICBL, BDBL
Drought	Abundant water Irrigation channel Road network	Support from Agriculture sector, Soelkha offering Sonam Tshongkhang and shops BOB, RICBL, BDBL
Earthquake	Open area at BCS, BHU, JDNP, RNR-EC,	8 nos of Desungs Support from Dzongkhag, DDM, BCS, Shops Social cohesion BOB, RICBL, BDBL
Fire	Open area at BCS, BHU, JDNP, RNR-EC,	8 nos of Desungs Support from Dzongkhag, DDM, BCS, Shops, RBP at Gasa Social cohesion BOB, RICBL, BDBL

3. Laya Gewog

Table 14: Laya Gewog Capacity Assessment Table

Hazard	Physical Capacity	Social/institutional Capacity
Avalanche	Early Warning Alarm, Helipad, Geographical Location, Ration Stock, FCB, Hay Stock, Torch light	BHU, RBA and IMTRAT, Chopper Service, alternative water source, communication services
Earth Quake	Helipad, availability of Local Tent(Bja), livestock product, Plenty of Ponny, Large evacuation Ground, Sangzey, Cordyceps	BHU, RBA and IMTRAT, Chopper Service

Human wildlife conflict	Compound Bow, electric fencing, wealth, Bhutanese Mastiff	Park Office, RBA, Imtrat, Chopper Services, communication services
Heavy Snow fall	Ration Stock, High Quality bedding, yaks and ponny, stock Fire wood, Local made clothes, salt stock,	Chopper Services,
Fire	availability of Water, RHF stocks, livestock Product, shop, high capacity H2o Bowl	Park Office, RBA, Imtrat, Chopper Services, communication services, wealthy society

4. Lunana Gewog

Table 15: Lunana Gewog Capacity Assessment Table

Hazard	Physical capacity	Institutional Capacity
Earthquake	Free safe and open space Two storied houses	FCB BHU Enough ration stock 50% subsidy for helicopter services Adequate cash for recovery FWS(wireless services)

		Availability of local tent(Bja)
Windstorm	Strong walls Anchoring of roof	FCB BHU Helicopter services Gewog civil servants Adequate cash for recovery Traditional knowledge of taking shelter inside the house FWS(wireless services)
GLOF	Free Open space	FWS Awareness to the people Installation of early warning machines at river bank at different location
Landslide		Awareness FWS (wireless services) Alternative routes Enough manpower
Heavy snowfall	Zinc sheet roofing Insulated housing structure	Enough stock Helicopter services Enough pack ponies(yaks and horses)
Structural fire	Availability of stream nearby village	Awareness Civil servants Temperature advantage for fire

		fighters FWS(wireless services) Adequate resources for recovery Park services
Altitude sickness	Network coverage in whole gewog	Helicopter services BHU Good numbers of riding pony FWS(wireless services)
Avalanche		Awareness BHU Helicopter FWS(wireless services) Alternative routes Enough manpower

Overall, in all the Gewogs there are certain capacities and some level of awareness on prevailing hazards and some knowledge on the measures to take to reduce risk before and during disasters. Following are summary of capacity needs in Dzongkhag:

1) Risk Reduction and Mitigation

There is need to build capacities in the Dzongkhag engineering cell and Dzongkhag DM Officer to lead both structural and non-structural mitigation activities in the communities, schools, health facilities, etc. Rural homes, school structures, health facilities and cultural structures have been particularly vulnerable in past earthquake events. Therefore vulnerability assessment of old and important/ public structures are important to determine strengthening needs or replacement decisions. In terms of earthquake, and also other hazards, there is need to strengthen the construction quality monitoring system to ensure constructions adhere to standards and building codes.

Landslide is also a priority hazard for Gasa and there is need to build capacities in the Dzongkhag to raise awareness in the community on ways of land management and carrying out mitigation in structures such as roads, schools, lhakhangs, etc. that suffer from recurrent landslide damage.

Community groups such as community forest groups and system of having Re-suups, Me-suups, Chu-suups, etc. need to be encouraged. Also there is still need to raise awareness within the Dzongkhag and in the communities on key messages for risk reduction and preparedness.

2) Preparedness

For preparedness there is need to ensure early warning capacities for heavy rainfall, thunderstorms, avalanches, hailstorms, and other such extreme weather conditions and have systems in place to provide the early warning/ advisory to the affected communities in time. Capacities also need to be built in terms of raising community awareness on risks and family preparedness. Similarly preparedness capacities need to be developed in important public institutions such as schools and health facilities.

3) Response

In terms of response, capacities for - Search and Rescue, First Aid, conducting various assessments (rapid, damage, safety etc.) need to be built at various level. There is also need to support and organize volunteers for response and coordinate with existing volunteer organizations such as Desuups. For effective response, Standard Operating Procedures (SOPs) need to be developed for each Gewog. Simulations and drills should be carried out to test and practice the procedure. At the Dzongkhag level, EOC should be established along with related Standard Operating Procedures (SOPs).

3.3 Disaster Management Action Plan (2018– 2022)

Table 16: Dzongkhag Level Action Plan (DRAFT)

Hazard Severity	Priority Areas	Key activities	Target	Responsible Agency	Supporting Agency	Time-line (FINANCIAL YEAR)	Budget (Nu.M)
Structure Fire	Awareness and Education	1. Conduct DDMC meeting bi-annually as per the DM act of Bhutan 2013.	DDMC Members	Dzongkhag	DDM	2018-2019	
		2. Providing training on use and operation of firefighting equipment	Monks, Lhakhang caretakers, civil servants, local	DDMO and RBP	NaSART	2018-2019	0.50
		3. Sensitizing on fire safety measures including proper electrification	leaders, businessmen	Engineering Sector	Dzongkhag	2018-2020	0.50
		4. Observed Dz. DRR day	Dzongkhag	Dzongkhag	DDM	2018-2023	
	Enhanced risk reduction and mitigation	1. Developed and provide hazard zonation map.	Dzong and Govt. Offices	Dzongkhag Engineering Section	DDM, RBP, LR Section	2018-2019	0.50

		2. Procure and install Firefighting equipment.	Dzongs, Lhakhangs, Schools	Dzongkhag	DDM, RBP (FSD)	2018-2019	1.00
		3. Monitor proper electrification.	New & existing civil infrastructure	Dzongkhag Engineering	DDMO	2018-2023	0.30
	Enhanced preparedness, response and recovery levels	1. Fire Mock drills	Dratshang, School, Hospital	DDMO, RBP	DDM, MOE, MOH	2018-2023	0.20
		2. Health EMT trained	Health officials	DHO	DDMO, MOH	2018-2019	0.50
		3. Additional VHF sets	20 Nos. for gewogs	Dzongkhag, DDMO	DDM	2018-2019	0.20
Earthquake	Awareness and Education	1. Sensitizing on earthquake risk, Dos & Don'ts	Government officials, monks, businessmen and to public	DDMC	DDM	2018-2023	0.50
		2. Basic training on earthquake resilient structure construction	Local Carpenters	Dzongkhag Engineering section and	DDMC and DDM	2018-2020	0.30

			DDMO			
Enhanced risk reduction and mitigation	1. Develop Dzongkhag Hazard map.	Dzongkhag & Gewogs	DDMC Dzongkhag and gewog	Dzongkhag Engineering and Land Record Section	2018-2019	0.60
	2. Retrofitting of critical civil infrastructure	Schools, Lhankang, BHUs, RNRs	Concern Agency	Dz. Engineering, DDM, MoWHS,	2018-2023	4.00
	3. Refresher course for SAR team annually	RBP, Dessung and Relevant Dz. Staff	DDMO and RBP	DDM, NaSART	2018-2023	0.60
Enhanced preparedness, response and recovery levels	1. Mock drills	Dzongkhag and all gewogs	DDMO, Dessung and RBP	BHU	2018-2023	
	2. Stock piling / resource mapping	Dzongkhag	DDMO and Dzongkhag procurement	DDMC and DDM	2018-2020	2.00

				Officer			
--	--	--	--	---------	--	--	--

Windstorm	Awareness and Education	1. Awareness on building wind resilient structures (especially roofing)	Gasa town and all Gewogs	Dzongkhag Engineering section and DDMO	Dzongkhag	2018-2023	0.300
	Enhanced risk reduction and mitigation	1. Develop hazard map.	Dzong, Lakhangs, offices, shops,	Dzongkhag and gewog administration	DDM/dzongkhag engineering sector and RBP	2018-2023	0.30
	Enhanced preparedness, response and recovery levels	1. Procuring relief item (eg. CGI Sheet, Tarpoline, etc.)	Dzongkhag and all gewogs	Dzongkhag and gewog administration	DDM/BHU/RBP/RICB	2018-2020	1.00
Flash flood	Awareness and Education	1. Identify and provide awareness on safe evacuation site	Gasa town and all gewog	DDMC and Gewog	Dzongkhag	2018-2019	0.10
	Enhanced risk reduction and mitigation	1. Construction of Retaining walls and Gabion walls	Hazardous area within Dzong and Tsachu.	DDMC and Dzongkhag engineering sector	DDM	2018-2023	3.00
		2. Plantation and developing land terracing.	Hazardous area within Dzong and Tsachu.	DDMC, JDNP and Agriculture sector	Dzongkhag	2018-2021	1.50

Enhanced preparedness, response and recovery levels	1. Formation of SAR Team.	Dzongkhag and Gewogs	DDMC and RBP	DDM and NaSART	2018-2020	0.50
	2. Stock piling of rations.	1MT	Farm shop	Dzongkhag Agriculture Sector	2018-2023	0.50

Table 17: Khamey Gewog Action Plan

Hazard severity	Priority area	Key Activities	Target	Responsibly agency	Supporting agency	Time line (FY)	Budget (nu.m)
Hail storm	Awareness and education	-Advocate for public 2 times in 5 yrs -enforcement of Laa-dam and ree-dam -Soekha 2 times in a year	5 Chiwogs people	Gewog Administration	Dzongkhag, DDM DoR RICBL	2018-2023	0.200

	Enhanced risk reduction and mitigation	-distribution of green house and net house	-50 nos green house 5 nos of net house	Gewog Administration	Dzongkhag	2018-2023	0.525
	Enhanced preparedness, response and recovery levels	-Reserve stocks in Sonam Tshongkhag -	100 hhs	Gewog Administration	Sonam Tshongkhag	2018-2023	
Rainfall/flashflood/landslide	Awareness and education	- Awareness by Extension staffs on timing of traveling unnecessary	100 hhs	Gewog Administration	Dzongkhag, DDM, RBP, BCS	2018-2023	
	Enhanced risk reduction and mitigation	-Adopt bioengineering works -construction of Gabon wall -construction of concrete irrigation	-20 acres of land	Gewog Administration	JDNP, Dzongkhag, DDM, PHPA,RBP, Dessung	2018-2022	4.000

		channel					
	Enhanced preparedness, response and recovery levels	-Maintenance of drainage -Dissemination of Disaster information -Train public	5km of irrigation channel -100 hhs	Gewog Administration	DDM, Dzongkhag, RBP,BHU,JDNP, BCS, Sonam Tshongkhag	2018-2023	0.100
Wind storm	Awareness and education	-awareness for public on construction	100hhs	Gewog Administration	DDM, Dzongkhag,	2018-2023	

	Enhanced risk reduction and mitigation	-Felling of trees around the structure	Around institutions, public structure	Gewog Administration	JDNP,BPC	2018-2023	0.050
	Enhanced risk reduction and mitigation	-Felling of trees around the structure	Around institutions, public structure	Gewog Administration	JDNP,BPC	2018-2023	0.050
	Enhanced preparedness, response and recovery levels	-Proper roofing and anchoring -Procurement of fire fighting materials	100shhs	Gewog Administration	Dzongkhag, RBP, DDM	2018-2023	1.000
Sinking land	Awareness and education	- Awareness and assessment by extension staffs on alternative strategies for cropping	23 HHs of Khailo chiwog	Gewog Administration	DDM, DGM, Dzongkhag	2018-2023	1.000

	Enhanced risk reduction and mitigation	-proper drainage -conversion of land -Soil Test	-100 hhs	Gewog Administration	DDM,NSSC, DGM	2018-2023	0.100
	Enhanced preparedness, response and recovery levels	-Rehabilitation -Stock reservation for recovery	-23 hhs	Gewog Administration	DDM, NLC, Dzongkhag, Sonam Tshongkhag	2018-2023	
Drought	Awareness and education						
	Enhanced risk reduction and mitigation	-Construction of reservation Tank	100 hhs	Gewog Administration	Dzongkhag, JDNP,	2018-2023	3.000

	Enhanced preparedness, response and recovery levels	-Reserved stock -Alternative cropping	100 hhs	Gewog Administration	JDNP, PHPA, BTF, WWF, WHO, UNICEF, UNDP	2018-2023	
Earth- quake	Awareness and education	-awareness for public on disaster management -Training & mock drill	100 hhs	Gewog Administration	DDM, Dzongkhag,	2018-2023	0.100
	Enhanced risk reduction and mitigation	-Proper construction -Mainstreaming for earthquake resilient -Monitoring of construction -Change of architecture	100 hhs	Gewog Administration	DDM, Dzongkhag, JDNP,	2018-2023	0.100

	Enhanced preparedness, response and recovery levels	<ul style="list-style-type: none"> -Procurement of equipments -Procurement of survival kits -Reservation of stock -formation of rescue team(Chiwog level) -Identify open area for evacuation- -Identify for routes 	For all the Chiwogs	Gewog Administration	DDM, Dzongkhag, JDNP, BCS, BHU, UNICEF, Sonam Tshongkhag, WHO,	2018-2023	2.000
	Awareness and education	-Awareness for public on fire management	100 hhs	Gewog Administration	DDM, JDNP, Dzongkhag, BHU, RBP, Dessungs,	2018-2023	0.100

Fire	Enhanced risk reduction and mitigation	<ul style="list-style-type: none"> -Construction of fire hydrant for gewog office and Clustered village -Construction of separate shed for fodder, firewood 	100 hhs	Gewog Administration	DDM, JDNP, Dzongkhag,	2018-2023	1.000
	Enhanced preparedness, response and recovery levels	<ul style="list-style-type: none"> -Formation of rescue team for all chiwogs - Procurement of firefighting equipment -Training of rescue team -Identified open area for evacuation -Identified of Exit and Entrance of the structure 	For all Chiwogs	Gewog Administration	DDM, JDNP, Dzongkhag, BHU, RBP, Dessungs,	2018-20123	0.500

		-Identified alternative routes					
--	--	--------------------------------	--	--	--	--	--

Table 18: Laya Gewog Action Plan

Hazard	Priority Areas	Key activities	Target	Responsible Agency	Supporting Agency	Time-Line (FY)	Budget
Earthquake	Awareness and Training	Awareness on dos and donts during the Earthquake, First AIDs Training	all GT members	DDMO	DDM	2017-2018	0.3m
			Public	GT members	DDMO	2017-2018	
	Enhance risk reduction and mitigation	Using Appropriate Construction Materials, Formation of Communities Evacuation team,	Public	Gewog Administration	Engineering section and Desuups, RBA	2017-2018	
	Enhanced preparedness, response and recovery level	Mock Drills, Resue work, installation of GEOC, Marking of Evacuation Point	Public, School Students	Gewog Administration	School, DDMO, RBA	2017-2018	

Heavy Rainfall	Enhance risk reduction and mitigation	Using Appropriate Construction Materials for bridges, demarcation of Prone zone.	Public, School Students	BHU and Gewog Administration	School, DDMO, RBA		
	Awareness	Awareness on dos and donts and also the impact of excessive rainfall, climate change, Global Warming, First AIDs Training	General Public, Tourist	Gewog Administration	DDMO,RBP, DOR		
	Enhanced preparedness, response and recovery level	construction of accessible road, afforestation, installation of GEOC, Marking of Evacuation Point	General Public, civil servant, students	Gewog Range Office/DoR	Park Office, Dzongkhag		
Heavy Snowfall	Enhance risk reduction and mitigation	Awareness on impact of heavy snowfall, First AIDs if incidences occur	Public, School Students	BHU & Gewog Administration	School, DDMO, RBA		
	Awareness	Awareness on dos and donts and also the impact of excessive snowfall, climate change, First AIDs Training	General Public, Tourist	Gewog Administration	DDMO,RBP		
	Enhanced preparedness, response and recovery level	to have Ration and firewood stock	General Public, civil servant,	Gewog Administration	Dzongkhag, DDM		

			students				
windstorm	Enhanced preparedness, response and recovery level	Mock Drills, rescue work, instut of GEOC, Marking of Evacuation Point	Public, School Students	BHU & Gewog Administration	School, DDMO, RBA		
	Awareness	Awareness on dos and donts during the windstorm, First AIDs Training, to observe wind direction	Public and school going children	BHU & Gewog Administration	School, DDMO, RBA		
	Enhance risk reduction and mitigation	to use appropriate materials, having better wind ventilation	pvt/Govt. Structure	Gewog Administration	Engineering section and Desuups, RBA		
Human wildlife conflict	Awareness program	to create awareness on dos and donts with wild animals	Public, Tourist	Gewog Administration and Range office	Park Office		
	Enhance risk reduction and mitigation	Awareness on dos and donts during the occurrence of an event, First AIDs Training	Public and school going children	Park Officials, BHU and Gewog Administration	Park Officials, School, DDMO, RBA		

	Enhanced preparedness, response and recovery level	Electric fencing, installing of GEOC, Marking of Evacuation Point	Public and school going children	Park Officials, BHU and Gewog Administration	Park Officials, School, DDMO, RBA		
Fire	Awareness	Awareness on dos and donts during the dry season, how to be careful with fire causes, First AIDs Training if occur	School and Public	Park Officials, BHU and Gewog Administration	Park Officials, School, DDMO, RBA		
	Enhance risk reduction and mitigation	to have separate fire vulnerable shed, to have water reservation tank nearby. Encourage to buy fire safety gears	General Public/ Govt/com munity structures	Gewog Administration	DDMO/DDM/ RBP		
	Enhanced preparedness, response and recovery level	Mock Drill, construction of accessible road, to keep reserved extension kits, proper insurance, installing of GEOC, Marking of Evacuation Point	General Public/ Govt/com munity structures	Gewog Administration	DDMO/DDM/ RBP/RICBL		
Avalanche	Awareness Program	Awareness on Climate change & Safety measures during its occur	herders, general public	Gewog Administration	DDMO/DDM		

	Enhance risk reduction and mitigation	construction of gabion Wall, early warning system, afforestation, Landscaping	Public	Park & gewog officials	Engineering section and DDM		
	Enhanced preparedness, response and recovery level	proper channel of ICS, installing of GEOC, Marking of Evacuation Point	Public & Students	Gewog Administration and Range office	Dzongkhag		
Encroachment	Awareness Program	Awareness on Boundary demarcation.	public	Dzongkhag Land section & Gewog Administration	Dzongkhag Land Section, NLC, RBA head quarter		
	Enhance risk reduction and mitigation	deploy more numbers of Security personals,	Public	Gewog Administration, Park Officials & RBA	MoAF, Dzongkhag & RBA head quarter		
	Enhanced preparedness, response and recovery level	installation of communication system, making availability of Chopper services, installing of GEOC, Marking of Evacuation Point	Public, Forest Officials	Gewog Administration, & Park Office	Dzongkhag, MoAF		

Table 19: Lunana Gewog Action Plan

Severity	Priority Areas	Key activities	Target	Responsible Agency	Supporting Agency	Time-line (FINANCIAL YEAR)	Budget (Nu.M)
Wind storm	Awareness and Education	<ul style="list-style-type: none"> - Create awareness on building wind resilient structures - Awareness on importance of insurance with good premium -Advocacy on do's and don'ts during windstorm 	180 HH	Gewog and DDMO	DDMC	September-October 2018	0.10
	Enhanced risk reduction and mitigation	<ul style="list-style-type: none"> -Encourage people to build wind resilient roofing(modern technology) - Encourage anchorage of roofs in the gewog - Advise construction of houses on less risk areas 	All chiwogs	Engineering section & Gewog	DDMC	December-March	
	Enhance preparedness and response	<ul style="list-style-type: none"> -Ensured to proper insurance - stockpiling of relief items - Proper damage assessment and reporting system through ICS -Mock drill once a year 	All chiwogs	Gewog and DDMO	DDMC and DDM	July-October 2018	0.5

	Awareness and education	Advocacy on do's and Don'ts during earthquake Importance of investing in resilient homes	All chiwogs	Gewog and DDMO	DDMC	2018	0.1
	Enhanced risk reduction and	-Retrofitting of poor structures/reconstruction of weak structures -Ensure to use quality building materials	Whole Gewog	Dzongkhag and Gewog	DDMC	2018-2022	

Earthquake	mitigation						
	Enhanced preparedness, response and recovery levels	<ul style="list-style-type: none"> - Formation of Incident Management Teams - Setting proper line of communication with higher authority - Conduct Mock drills once a year (21st Sept.) -Expediting insurance claims - Stockpiling of important relief materials -Supply with adequate numbers of VHF handsets 	Whole Gewog	Gewog and Dzongkhag	DDMC	2018-2019	0.30
GLOF	Awareness and Education	-Awareness on evacuation process to the safe place	4 Chiwogs	Gewog and DDMO	DDMC and DDM	2019-2020	0.10
	Enhanced risk reduction and mitigation	-Timely monitoring of the glacial lakes with FWS officials		Gewog	DDMC	2018-2022	
	Enhanced preparedness, response and recovery levels	<ul style="list-style-type: none"> -Additional installation and timely monitoring of early warning machines -Timely updating ICS 		Gewog, Dzongkhag and DDM	DDM	2018-2020	0.30

Landslide /Iceslide	Awareness and Education	-Advice the public to refrain from unnecessary travelling during monsoon -Identify the risk prone area and alert the travellers	Whole gewog	Gewog and DDMO	DDMC	2019-2020	0.1
	Enhanced risk reduction and mitigation	-Identify landslide risk area -Construction of safe alternative routes	Whole Gewog	Gewog	DDMC	2018-2022	0.30
	Enhanced preparedness , response and recovery levels	-Encourage all the gewog civil servants and LG members to attend Dessung training - Formation of search and rescue team	Gewog civil servants and LG members	Gewog and DDMC	DDMC and NaSART	2018-2019	0.30
Snowfall	Awareness and Education	-Education on ration and firewood stockpiling -Discourage public from travelling during peak season - Pasture development for livestock -	4 Chiwogs	Gewog and DDMO	DDMC	2018-2019	1.00

Structural fire	Enhanced risk reduction and mitigation	-Ensure public to have proper roofing facilities	Whole Gewog	Gewog	DDMC	2018-2019	
	Enhanced preparedness , response and recovery levels	- Temporary shelter for livestock and Fodder storage -Ensure to have Bukhari for home heating -Encourage the public to build insulated structure	Whole Gewog	Gewog	DDMC	2018-2019	
	Awareness and Education	-Awareness programs on dos and don'ts in regards to LPG cylinders. -Proper installation and usage of Bukhari	Whole Gewog	Gewog and DDMO	DDMC	2018-2020	0.20
	Enhanced risk reduction and mitigation	-Separate shelter for fodder storage -Proper and safe location for firewood stacking	Whole Gewog	Gewog	DDMO	2018-2020	0.20
	Enhanced preparedness , response and recovery levels	- Mock drills - Stocking of sands in each HH to be used as fire extinguisher - Health officials to be ready to deal with trauma and first aid kits. - Setting proper line of communication	Vulnerable Chiwogs	Gewog, Health officials and DDMO	DDMC	2018- 2019	0.50

		with higher authority					
Altitude Sickness	Awareness and Education	-Awareness by Health officials on sign and symptoms of altitude sickness -Education on do's and don'ts during sickness - education indigenous methods of medication	Whole Gewog	Gewog and Health officials	DDMC	2018- 2022	0.50
	Enhanced risk reduction and mitigation	-Encourage the travelers to get checkup before they leave to high risk area.	Whole Gewog and the foreign visitors	Gewog and Health officials	DDMC	2018-2019	
	Enhanced preparedness , response and recovery levels	Encourage people to carry first aid kits at all the time	Whole Gewog and visitors	Gewog and Health officials	DDMC	2018-2019	
Avalanch e	Awareness and Education	Advice people to refrain from travelling Explain associated risk	Gewog	Gewog	DDMC	2018-2019	
	Enhance preparedness and response						

Chapter 4: Contingency Plan

As per the Contingency Planning Guidelines for Bhutan 2014, a contingency plan “aims to prepare an organization to respond well to an emergency and its potential humanitarian impact. The Developing a contingency plan involves making decisions in advance about the management of human and financial resources, coordination and communication procedures, and being aware of range of technical and logical response”

The contingency procedures and arrangement will cover the response and early recovery phases:

- Immediately before a disaster when/if early warning of an impending situation or an event is received;
- During a disaster when immediate response and relief measures need to be implemented; and
- After a disaster for measures to be taken in terms of relief and setting the recovery process in motion.

4.1 Standard Procedures for Response at Dzongkhag level

a. Isolated local incidents

Isolated Local Incident - An isolated local incident is an incident which does not have a widespread effect on people and property and can be managed within the normal operations of the agencies concerned, and such incident shall not require emergency procurement and funding

For isolated local incidents, such as fire affecting single house or windstorm blowing off roof of one structure in a locality, and cases which do not qualify under Disaster Types I - III of the Disaster Management Act of Bhutan 2013, the following standard procedure shall be followed.

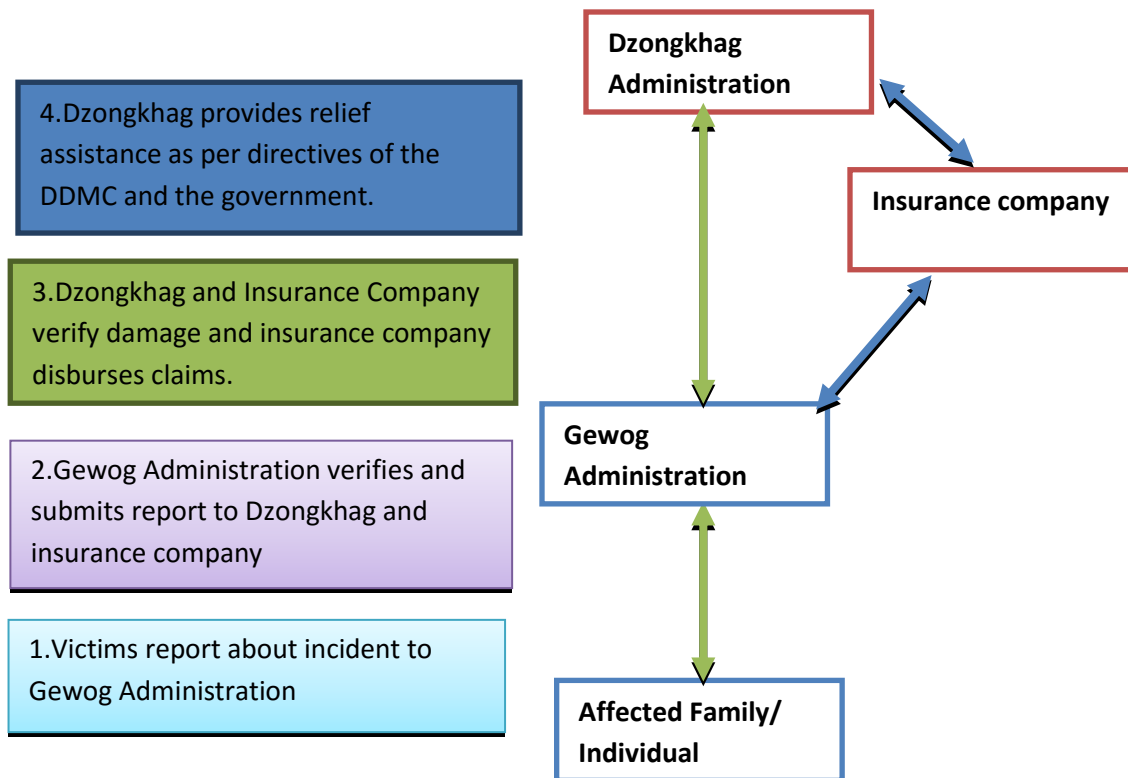


Figure 4: Standard procedure for isolated local incidents

b. Disaster Types

As per the DM Act of Bhutan 2013 and the DM rules and regulations standard procedures for response at the Dzongkhag level for different Disaster Types will be as follows:

1. In case of Type I

Disaster Type I - A disaster shall be classified as Type I if it can be managed with available resources and is within the coping capacity of the Gewog/Thromde concerned

- a. In case of an impending disaster situation, Gewog/ Thromde administration will be responsible for establishing immediate contact with likely affected areas as soon as there is early warning information and provide orders for evacuation and immediate response.
- b. In case of an incident/disaster situation:
 - a. Gewog/Thromde shall immediately submit “First Information Report” (FIR) to the DDMC/ Dzongkhag Disaster Management Officer (DDMO) along with request for declaration (Form I) of Type I Disaster. The DDMC chairperson shall declare Type I Disaster using Form II.
 - b. Gewog/Thromde shall provide immediate response and relief within their capacity and submit for SAR and other response needs to the DDMC, if required.
 - c. The DDMO shall submit the FIR to the DDM within 24 hours of the incident.
 - d. Gewog/Thromde shall conduct rapid needs assessment as per Bhutan Disaster Assessment (BDA) tool within 72 hours.
 - e. Gewog/Thromde shall conduct detailed damage assessment along with insurance companies for relief and early recovery and submit report to DDMC.
 - f. Gewog/Thromde shall provide relief and early recovery support as per damage assessment using available funds at Gewog/Thromde level and submit expenditure report and bills to DDMC for further submission to Ministry of Finance, with a copy to DDM, for reimbursement.
 - g. Gewog/Thromde shall seek for extension of Type I Disaster as per Form III.
- c. In case the incident is beyond the coping capacity of the Gewog/Thromde, request for up-gradation of disaster from Type I to Type II shall be submitted to DDMC.

2. In case of Type II

Disaster Type II - A disaster shall be classified as Type II if it can be managed with available resources and is within the coping capacity of the Dzongkhag concerned.

- a. In case of receiving early warning of an impending disaster situation, the DDMC Chairperson shall immediately activate the Dzongkhag Emergency Operation Centre and relay the early warning to all the Gewog/Thromde offices along with orders for evacuation, deployment of Search and Rescue Teams or any other response as required.
- b. In case of an incident/disaster situation:
 - a. The DDMC Chairperson shall activate the DEOC and be in contact with the National Emergency Operation Centre. NEOC shall supervise the functioning of the Dzongkhag Emergency Operation Centre as per clause 107 of the DM Act of Bhutan 2013.

- b. DDMC shall establish contact and line of communication with disaster site and provide immediate response and relief within their capacity and submit for SAR and other response needs to NEOC, if required.
 - c. The DDMO shall submit the FIR to the DDM within 24 hours of the incident.
 - d. DDMC shall direct evacuation of disaster-affected communities to safe areas and temporary shelters.
 - e. DDMC shall manage national and international assistance and human resources in the field for response, relief and early recovery.
 - f. DDMC shall immediately submit “First Information Report” (FIR) to the DDM along with request for declaration of Type II Disaster (Form I). The DDMC chairperson shall declare Type I Disaster using Form II.
 - g. DDMC shall conduct rapid needs assessment as per Bhutan Disaster Assessment (BDA) tool within 72 hours.
 - h. DDMC shall conduct detailed damage assessment along with insurance companies for relief and early recovery and submit report to DDMC.
 - i. DDMC shall provide relief and early recovery support as per damage assessment using available funds at Dzongkhag level and submit expenditure report and bills to DDM for further submission to Ministry of Finance for reimbursement.
 - j. Dzongkhag shall seek for extension of Type I Disaster as per Form III.
- c. In case the incident is beyond the coping capacity of the Dzongkhag, request for up-gradation of disaster from Type II to Type III shall be submitted to the NDMA.

3. In case of Type III

Disaster Type III - A disaster shall be classified as Type I if severity and magnitude is so great that it is beyond available resources and coping capacity of the Dzongkhag concerned.

A disaster Type III is at national scale and will be managed by the NDMA and the DDMC shall follow the directives of the NDMA.

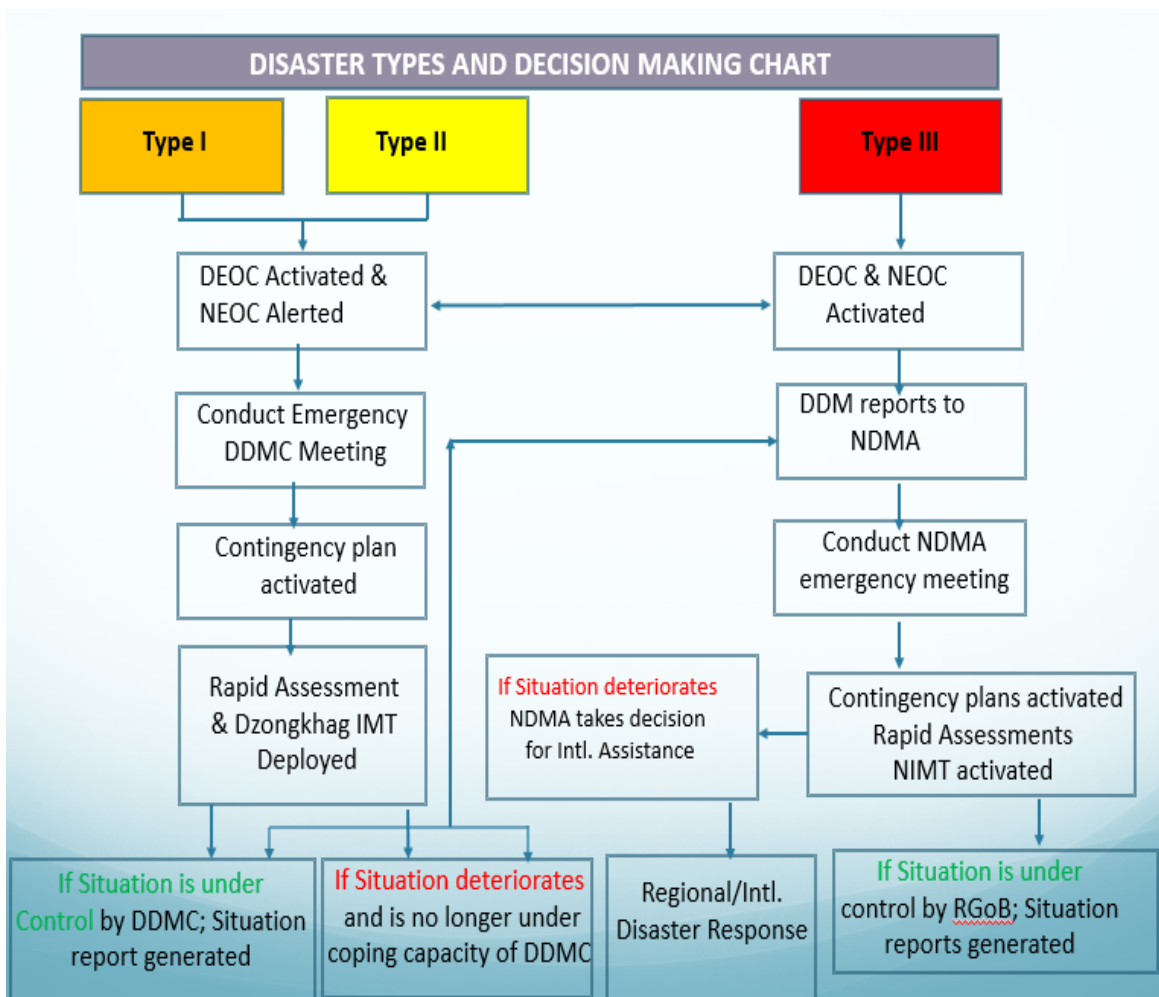


Figure 5: Coordination Mechanism for Response at Dzongkhag level

At the Dzongkhag level, under the DDMC, during a disaster, the following Incident Command System shall be instituted and activated during Type II and III disasters. The following teams shall be formed under the Incident Commander:

Onsite Incident Response Management Team at Dzongkhag Level

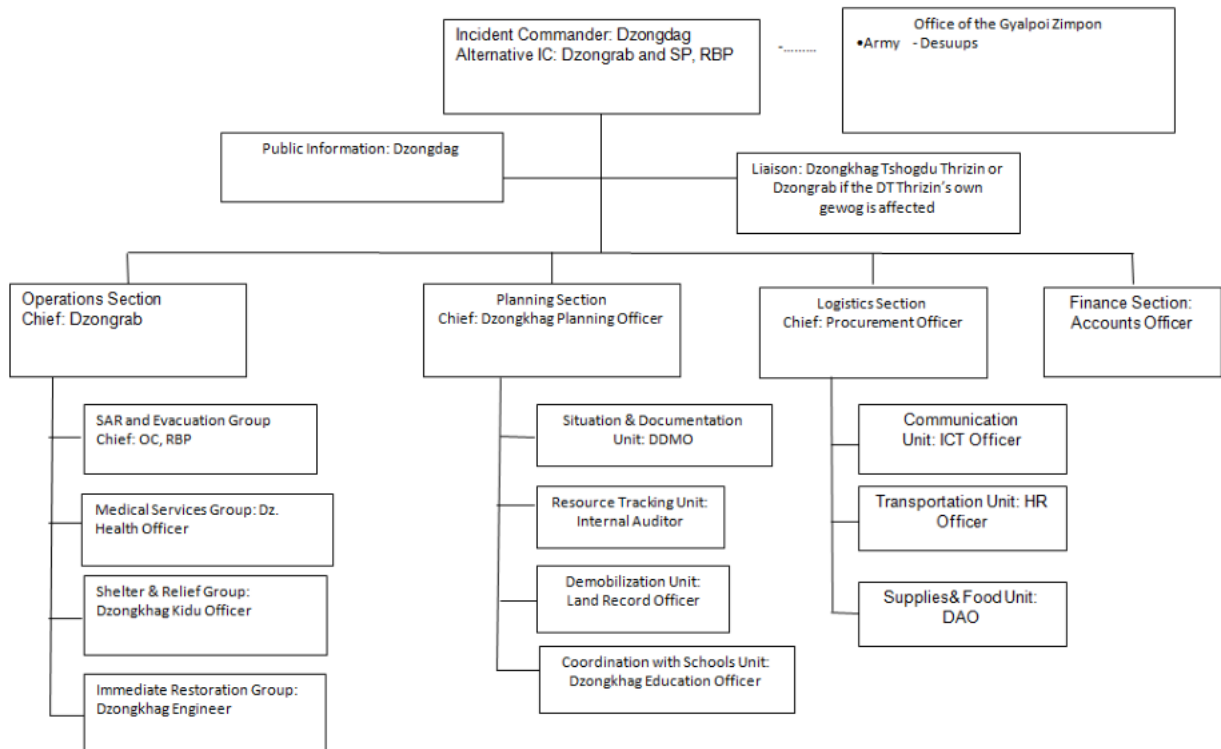


Figure 6: Response System at Dzongkhag Level

1. **Responsible Officer** – The Dzongdag, as the head of the Dzongkhag, shall be the overall Responsible Officer in the Dzongkhag during a disaster and will provide overall directives.
2. **Incident Commander** - Dzongrab shall be the IC and he/she shall oversee all the operation, logistics and planning sections.
3. **Operation Section**
 - a. Chief of the Operations Section - Depending on the nature of the disaster the Chief will be from the relevant sector. For example in case of a natural disaster it will be the DDMO; in case of forest fire it will be the Dzongkhag Forest Officer; in case of a livestock hazard it will be the Dzongkhag Livestock Officer.
 - b. The following teams shall be formed under the operations section:
 - i. **Search and Rescue (SAR) Team** - SAR shall be carried out by the RBP and RBA along with the Dzongkhag SAR Team. They shall perform search and rescue operations and assist in evacuation. They will also be

responsible for the provision of site security and maintenance of law and order.

- ii. **Medical Team** - The medical team shall be headed by the DHO and provide first aid, triage, trauma management and other emergency medical services.
- iii. **Rapid Assessment Team** – The DDMO shall lead the BDA while the DE shall head the damage assessment, by forming a committee.

4. Logistic Section

- a. The Chief of the Logistic section will be the Dzongkhag Procurement Officer.
 - i. **Relief Team** – The Relief team will be headed by the Dzongkhag Administrative Officer with support from RBA/RBP and Desuup volunteers. The relief team shall be responsible for providing temporary shelter, WASH and food supplies for both responders and affected families.
 - ii. **Procurement Team** – The procurement team shall assist the procurement officer in mobilizing resources and carrying out emergency procurement.
 - iii. **Transportation Team** – The MTO of the Dzongkhag in close collaboration with RSTA shall ensure transportation arrangements, including helicopter services, as required.

Chapter 5: Implementation Mechanism

As per the DM Act, the DDMC will be responsible for the formulation, endorsement, implementation, monitoring and updating of the Dzongkhag DM and Contingency plan. The DDMC shall meet at least twice a year to review and update the plan's implementation progress.

Dzongkhag and Gewog administrations will be responsible for implementation of the prioritized plan activities and ensure that the activities are mainstreamed into their annual and five year plans. The Dzongkhag Disaster Management Officer will facilitate mainstreaming of priority disaster risk reduction, preparedness, awareness and capacity building activities in annual and five year development plans of the Dzongkhag.

In the event of disaster, DDMC will activate the Dzongkhag Contingency Plan. DDMC will, as an emergency measure, meet the expenses for response and relief operation from the annual budget of the Dzongkhag in accordance with the financial guidelines.

For immediate restoration of critical disaster management facilities, DDMC will submit the fund request to DDM, secretariat to NDMA as per financial guidelines.

The budget requirement for the recovery and reconstruction works should follow the normal budgetary process. The DDMC and concerned sectors shall, for the purpose of recovery and reconstruction of public assets and infrastructure, undertake detailed damage assessment within

its area of responsibility as per the post disaster assessment framework endorsed by the NDMA. The detailed damage assessment along with the work program and cost estimate will be submitted to DDM who will review and forward to NDMA for further submission to MoF.

The DDM, as the national coordinating agency for disaster management and the executive arm of the NDMA, shall ensure support of the NDMA and of concerned sectors and agencies. The DDM will also provide technical and monitoring support and help in mobilizing resources for the plan.

As member secretary, the DDMO will keep record, maintain data, and assist the chairman of the DDMC in monitoring the Dzongkhag DM plan activities. The DDMO shall present the plan's progress during DDMC meetings and update DM plan activities and budget annually. DDMO will also ensure that reports are submitted to the DDM and the NDMA, as required.

Annexure

a. Contact details of DDMC members

Sl. No.	Members	Name	Contact No.
1	Chairperson - Dzongda	Dorji Dhradhul	16288100
2	Vice chair - Dzongrab	Sonam Wamngdi	16288127
3	Drangpon	Sonam Dorji	16288116
4	Dzongkhag Disaster FP	Jigme Rinzin	17555000
5	Lam Neten	Chimi Dorji	17118313
6	Dunchen	Kinley Dorji	17634073
7	Project Manager(Dzong)	Kinley Gyeltshen	17946083
8	PM, JDNP	Kinga Namgay	16288304
9	Ranger, Gasa, Park	Karma Jamtsho	17696832
10	BDBL	Jigme Norbu	16288121
11	RICB	Chimi Dem	17431609
12	BT	Penjor Gyeltshen	17113186
13	BPC	Kuenzang Jamtsho	17625074
14	DoR	Uguen Dorji	17661771
15	BoB	Tenzin Norbu	16288226
	BNB	Wangchuk	17131079
16	Tshachu Manager	Tandin Dorji	16288150
17	RBP Incharge	Karma	17659234
18	Desuung Coordinator	Pema Dorji	16288124
19	Gasa BHU Doctor	Sonam Wangchuk	17121217

20	Planning Officer	Leki Tshewang	17634037
21	Account Officer	Karma	16288106
22	Dzongkhag Engineer	Penjor Dukpa	16288119
22	HRO	Sangay Phurpa	17649080
23	Dzongkhag Education Officer	Sherab Gyeltshen	16288207
24	Town Thimey	Phub Dorji	17500249
25	All Gewog ADM		
	Khatoe	Jochu	17801790
	Khameoed	Yangka	17856485
	Laya	Pema Singay	17705409
	Lunana	Nil	Nil

b. Gasa Dzongkhag SAR Team

S/N	Participants	Designation/Office	Contact Number	Remarks
1	Karma		16288180	
2	Pema Dorji		16288124	
3	Kinley Dorji		17518700	
4	Kinley Gyeltshen (179460830	
5	All Gewogs (Gups& Mangmeey)			
6	Sangay Phurpa	HRO	16288222	
7				
8				
9				
10				

c. Firefighting (trucks, equipment, location, capacity)

Sl No	Facilities	Location	Capacity	Contact person	Phone
1	Fire Fighting Truck				

a. Medical

Sl No	Name of Hospital/BHU				
1	District Hospital				
2	BHU-1				
3	BHU-1				
4	BHU				
5	BHU				
6	BHU				
7	BHU				
8	BHU				
9	BHU				
10	BHU				

d. Contact Details of De-Suups

Sl No	Name	Designation/Current Address	Contact	Remarks
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

e. Contact details of 4 Gewog Administrative Officers

Sl. No.	Name/Gewog	Contact Number
1	Jochu, Khatoed	17801790
2	Yangka, Khamey	17856485
3	Pema Singye, Laya	17705409
4	Kinley Choki, Lunana	17358581

Emergency Numbers

Sl.No.	Agency	Number
1	DDM	233
2	Ambulance	112
3	Police	113

4	Fire	110
---	------	-----