

**DZONGKHAG DISASTER
MANAGEMENT & CONTINGENCY PLAN**
2018

Dzongkhag Administration, Paro
Royal Government of Bhutan

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. Paro Dzongkhag is a pilot Dzongkhag for development of Dzongkhag Disaster Management Plan using the community based disaster risk management (CBDRM) approach. Department of Disaster Management has been working in close collaboration with Paro Dzongkhag and the process has been supported through two consecutive ECHO-Save the Children actions - School Based Disaster Preparedness in Bhutan Project (2013 – 2014) and the Comprehensive Disaster Management Project for the Education Sector (2015 – 2016).

The plan development process over a period of 10 months included - comprehensive training of Paro Dzongkhag Planning team; Hazard, Vulnerability and Capacity Assessment (HVCA) in all Gewogs; discussion with Dzongkhag Education Officers and Principals to strengthen school and Dzongkhag DM plan linkages; data collation and analysis; and finally a simulation on standard procedures for response followed by endorsement from the Dzongkhag Disaster Management Committee (DDMC).

The Paro Dzongkhag Disaster Management Plan presents hazard, vulnerability and capacity profile for the 10 Gewogs. The plan also outlines priority disaster risk reduction, awareness raising and capacity building activities for Paro 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 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 Paro Dzongkhag Administration and relevant National Disaster Management institutions and agencies take ownership and fulfill their own roles and responsibilities to make Paro a disaster resilient and safe Dzongkhag.

ACKNOWLEDGEMENT

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The Dzongkhag also would like to extend our appreciation to the Department of Disaster Management for their technical and facilitation support throughout the process.

Paro Dzongkhag would also like to acknowledge the dedicated and continuous effort put in by the Paro Dzongkhag Planning Team (mentioned below) and the Gewog Administrative Officer to undertake community based disaster risk management training in each Gewog, conducting the HVCA process with the communities, raising awareness on key messages for disaster risk reduction and preparedness and for undertaking the tedious task of collating and analyzing the community based data and information.

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	GewogTshogdey
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

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DISASTER TERMINOLOGY

Capacity

The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.

Capacity development

The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Coping capacity

The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

Disaster

A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disaster risk

The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.

Disaster risk management

The systematic process of using administrative, directives, organizations, and operational skills and capacities to implement strategies, policies and

improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Disaster risk reduction

The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Disaster risk reduction plan

A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.

Early warning system

The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Mitigation

The lessening or limitation of the adverse impacts of hazards and related disasters is called mitigation.

Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Prevention

The outright avoidance of adverse impacts of hazards and related disasters.

Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Retrofitting

Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.

SCOPE & OBJECTIVES

The Disaster Management Plan for the Dzongkhag is prepared, as mandated by Disaster Management Act 2013. The plan was endorsed by the Dzongkhag Disaster Management Committee (DDMC) on 23rd May 2016 and has been revised in 2017-2018. The plan 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. This plan will support and guide the Dzongkhag to formulate contingency plans for any response and relief operations.

The objectives of the Dzongkhag Disaster Management 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.

The Dzongkhag DM plan will be updated on a yearly basis.

CHAPTER 1. OVERVIEW OF THE DZONGKHAG

Geography

Paro is situated in the north-western part of the country. It borders China to the north, Haa in the west and Thimphu in the east. It is located at approximately 2200m above the sea level and between the parallels 27°09'00" & 27°052.5'00" north latitudes and 89°07.5'00" & 89°034.5'00" east longitudes. It has a total area of 1285.5 sq. km. of which 65.2% of the total area is under forest cover.

The landscape is flat in and around valleys, sloppy towards hills and quite steep in the mountains towards the north. Arable land is fertile and suitable for agriculture. The Pa chu flows through the valley.

Social and Administrative Profile

The Dzongkhag is administratively divided into 10 Gewogs and 50 Chiwogs (5 Chiwogs per Gewog). The 10 Gewogs are – Dogar, Dopshari, Doteng, Hungrel, Lamgong, Lungnyi, Naja, Shaba, Tsento and Wangchang. A total of 34,236 individuals reside in 6865 households under the Dzongkhag with a male: female ratio of 1:1.6 (PHCB 2005). Wangchang is the largest Gewog with a total of 1,907 households, including Bondey and Tshongdue towns. There are 43 households residing in Nubri and Yaksa villages of Tsento gewog who are nomads.

Figure 1 – Paro Dzongkhag Map



Table I. Key Demographics

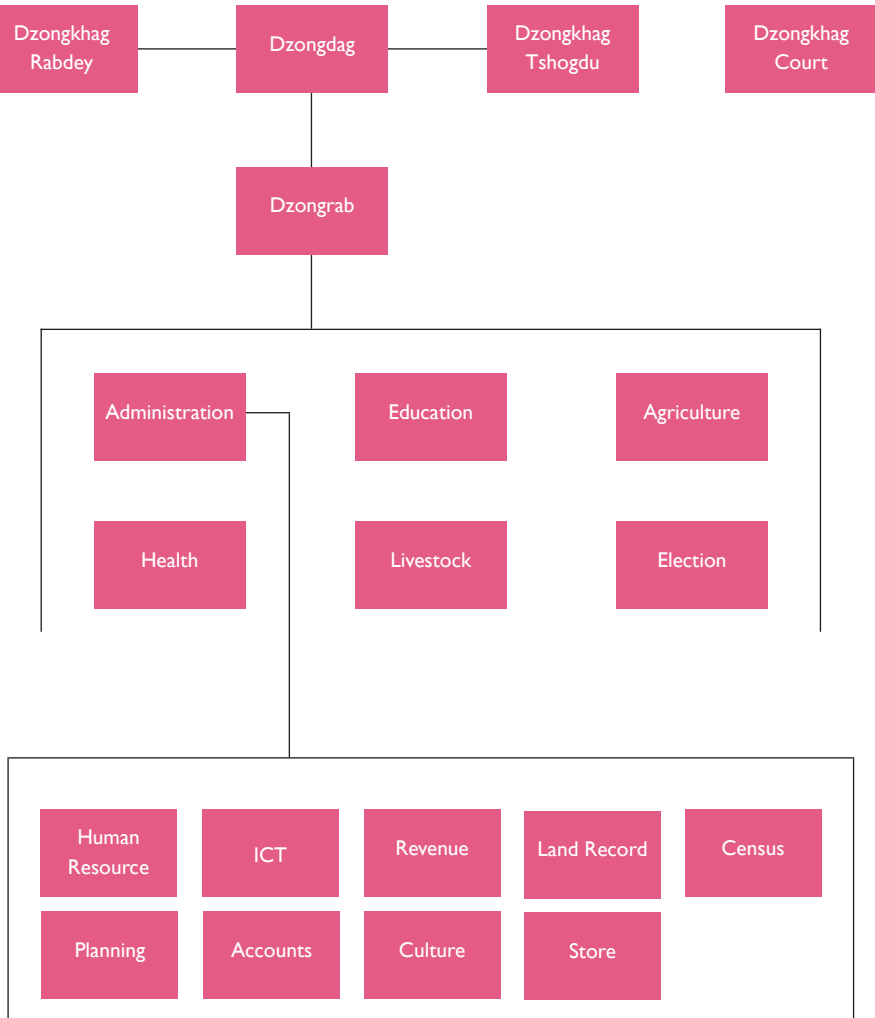
	Gewog	Area (Sq. Km.)	No. of HHs	Population		Health Facilities			Schools				
				Male	Female	Hospital	BHU	ORC	HSS	MSS	LSS	PS	ECR
1	Dogar	106.1	424	1099	1174		1	3			1	1	1
2	Dopshari	36.7	619	1590	1590			1	1				
3	Doteng	193.1	190	602	547			1	1		1		
4	Hungrel	3.6	344	1141	875			1			1		
5	Lamgong	48.8	706	1710	1626			1	2	1			
6	Lungnyi	59.7	567	1263	567			1			1		1
7	Naja	151.8	611	1632	1622		1	5		1	1	1	
8	Shaba	76.4	845	2050	2022		1	2		1		1	
9	Tsento	575.1	905	3171	2082			3	1		1	2	
10	Wangchang	34.2	1341	3363	3062	1				1	1		1

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

The Dzongkhag Administration, similar to the administrative setup in other Dzongkhags, is headed by the Dzongdag with various sectors representing line Ministries working under the Dzongkhag’s administrative jurisdiction. The Dzongdag and the Dzongkhag Administration work in close collaboration with the elected local bodies – the Dzongkhag Tshogdu and the Gewog Tshogde.

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

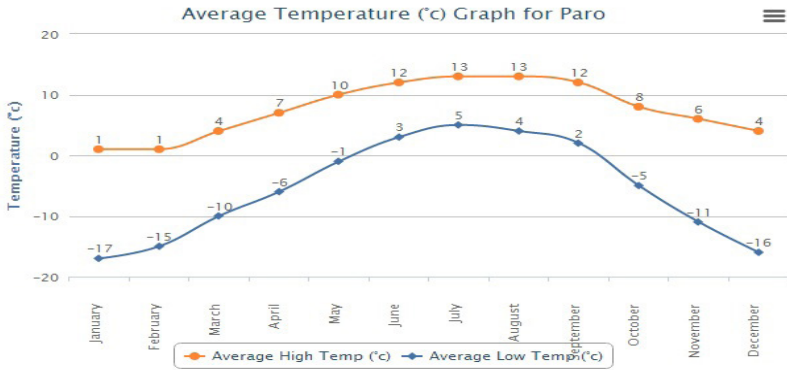


Weather and Climate

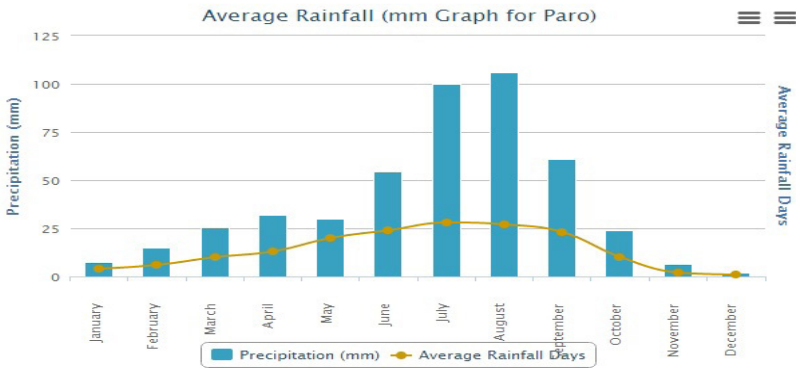
The Dzongkhag experiences wet summer from May to July with the onset of south-west monsoon in mid of June, and cold winter from November to January, often accompanied by snowfall.

Figure 3 – Average Temperatures and Rainfall for Paro

Average High/Low Temperature for Paro, Bhutan



Average Rainfall for Paro, Bhutan



Economy

The Dzongkhag is endowed with fertile agricultural land and the main source of livelihood is farming. Due to the presence of international airport and several culturally important sites, the valley is also a hub for tourism industry with 84 hotels and 22 resorts.

All the Gewogs are connected by road and telecommunication networks, and electricity except for few far flung villages like Tsundugang under Naja Gewog and Nubri and Yaksa villages under Tsentog Gewogs.

Table 2. Employment Details of the Dzongkhag

Type of employment	Percentage
Agriculture sector	60.5%
Industries	20.5%
Services	18%
Unemployed	2.9%

(Source: BMIS 2010)

CHAPTER 2. DZONGKHAG DISASTER MANAGEMENT SYSTEM

2.1. Dzongkhag Disaster Management Committee (DDMC)

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

1. Dasho Dzongdag, Chairperson (ex-officio)
2. Dzongkhag Welfare Officer, member
3. Chairperson of Dzongkhag Tshogdu (DT), member
4. Gups of all Gewogs, member
5. ThromdeThuemi, member
6. Superintendent of Police/Officer-in-Charge, RBP, Paro, member
7. Drungchen, Paro Rabdey, member
8. Dzongkhag Disaster Management Officer, Member Secretary
9. 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/ThromdeyThuemi 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. Contact details of the DDMC and other important contacts are given in Annex I.

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).

According to clause 31 of DM Act 2013, the DDMC shall:

1. Prepare, review, update and implement the Dzongkhag Disaster Management plan
2. Monitor and evaluate measure taken for prevention, mitigation, preparedness, response and capacity building by each sector in the Dzongkhag
3. Ensure establishment and functioning of the Dzongkhag Emergency Operation Center
4. Ensure mainstreaming of disaster risk reduction into the development plan, policy, program and project
5. Ensure compliance of the approved hazard zone and vulnerability map
6. Ensure the enforcement of structural and non-structural measures
7. Ensure that information about an event or a disaster is promptly communicated to the NDMA, DDM and all concerned.
8. Ensure that the damage assessments in the field are carried out professionally and efficiently without fear of favor
9. Coordinate and support disaster response and relief operation including recovery and reconstruction
10. Ensure that detailed reports and regular updates on disaster event is provided to the DDM upon completion of field assessment of the situation
11. With the support of the DDM promote education, awareness, capacity building and community training on hazard, risk, vulnerability and measures to be taken by the community to prevent, mitigate and respond to disaster
12. Conduct regular mock drill
13. Report on a quarterly basis to the NDMA on the progress of implementation of its DM plan
14. Direct Dungkhag, Thromde and Gewog Disaster Management subcommittee, if any, on such matters as may be necessary for the effective implementation of the Act
15. Perform such other function as may be prescribed under the Act or

any law in force or as directed by the NDMA

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

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

2.3. Functions of Chairperson

1. The Chairperson of the DDMC shall exercise and discharge such functions of the DDMC as the committee may delegate
2. Without prejudice to the generality of the provision contained in section 37 of this Act, the Chairperson of the DDMC shall:
 - a. Regularly review and assess the effectiveness of DM Plan
 - b. Ensure decision and policy formulated by the DDMC is implemented
 - c. Ensure that disaster risk reduction and disaster management activities are consistent with Disaster Management Strategic Policy Framework.
 - d. Provide prompt information on a disaster or an impending disaster situation to the DDM
 - e. Provide regular updates and detailed reports on a disaster event to the DDM upon completion of filed assessment of the situation
 - f. Coordinate delivery of services and resources to disaster affected communities

CHAPTER 3. DISASTER RISK PROFILE OF DZONGKHAG

3.1. Hazard Assessment

Paro Dzongkhag has experienced several disasters over the last 20 years, the most devastating being the September 18, 2011 Sikkim earthquake of M 6.7, which caused widespread damages to rural homes and government infrastructure. The other major and recurrent hazard has been windstorms, resulting in extensive damages to roofs of 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 in the individual Gewog DM Plans (Annexure II). As per the Gewog hazard assessment findings – Earthquake has been ranked the top priority hazard, followed by Windstorms, Forest Fire, Flood and Structural Fire. The other perceived hazards were Pest & Diseases, Hail storm, Thunder storm, Landslide and Avalanche.

Table 3. Hazard ranking by Gewogs

	Gewog	Hazard Ranks									
		EQ	Wind-storm	Forest Fire	Pest & Dis.	Str. Fire	Flood	Hail-storm	Thunder-storm	Ava-lanche	Land-slide
1	Dogar	1	2	3	7	5					
2	Doteng	1	3	2	7	5					
3	Naja	1	2	5		4	3				
4	Dopshari	1	2	3		4	5				
5	Hungrel	1	2	5		3	6	4	6	7	
6	Tsento	1	2	5	8		3	4			6
7	Shaba	1	4	2	5		3				
8	Lamgong	1	2	5	6		3		7		
9	Lungnyi	1	3	5		4	2				
10	Wangchang	1	2	5	7	3	4	6			
	Total Score	100	86	70	32	49	60	14	9	4	5
	Overall Rank	1	2	3	6	5	4	7	8	10	9

(Rank = Score; 1 = 10; 2 = 9; 3 = 8; 4 = 7; 5 = 6; 6 = 5; 7 = 4; 8 = 3; 9 = 2; 10 = 1)

Most hazards are seasonal and can be expected at the particular time of the year. Fires and windstorm are expected during the dry season from November-April. Similarly, floods occur mainly during the rainy season in the months of June - August. Therefore, fire awareness and flood 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 10 Gewogs under Paro 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 AG in the table.

Table 4. Seasonal calendar of Paro dzongkhag

Gewogs		Months and Activities											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Naja	D	D	AG	F	M	M	M	AG	AG	AG	D	D
2	Dogar	D	D	AG	F	M	M	M	AG	AG	AG	D	D
3	Lunyi	D	D	AG	F	M	M	M	AG	AG	AG	D	D
4	Shaba	D	D	AG	F	M	M	M	AG	AG	AG	D	D
5	Dopshari	D	D	AG	F	M	M	M	AG	AG	AG	D	D
6	Doteng	D	D	AG	F	M	M	M	AG	AG	AG	D	D
7	Hungrel	D	D	AG	F	M	M	M	AG	AG	AG	D	D
8	Lamgong	D	D	AG	F	M	M	M	AG	AG	AG	D	D
9	Tsento	D	D	AG	F	M	M	M	AG	AG	AG	D	D
10	Wangchang	D	D	AG	F	M	M	M	AG	AG	AG	D	D
D= Dry season, AG=Agriculture, F= Festival, M=Monsoon													

3.2. Vulnerability Assessment

Vulnerabilities can be physical/ environmental, economical and social/ institutional. Vulnerabilities as per the top-five priority hazards in Paro Dzongkhag are summarized as follows:

I. Earthquake

Some of the underlying vulnerabilities identified during the HVCA process in the communities in terms of the earthquake hazard were:

- Traditional Bhutanese homes are without disaster (especially earthquake) resilient features and have witnessed significant damages even in past moderate earthquake events;
- Important structures such as schools and health facilities in old and community built structures are unsafe due to lack of proper building codes and techniques and the use of poor construction materials;
- Cultural structures were highly vulnerable to earthquake damage and presented unique challenges in terms of - their age-old cultural heritage requiring strengthening and conservation; being built with traditional building materials (mud rammed, high use of timber, etc.); being built in remote inaccessible locations; and being used as monastic schools, institutions and places of worship and congregation.
- In case of earthquakes, roads and bridges (especially in the rural areas) are highly vulnerable to landslides and other damages making accessibility more difficult to remote communities. It is therefore important for communities to be able to respond and be prepared on their own during disasters. Also, in such cases vulnerabilities and disaster risk increases when there are no immediate response and relief capabilities such as – emergency stockpiles, standard emergency procedures, safety of critical facilities including skilled responders (SAR, first aid/medical responders, counselors etc.).
- Another significant factor increasing the earthquake hazard risk is in terms of vulnerable structures built owing to many factors - lack of knowledge on resilient construction, inability to factor in disaster resilience during construction designing and planning, lack of resources (skilled workers, financial, technical expertise, etc.), and a lack of monitoring to ensure adherence to standards and codes during construction.
- Lack of awareness on earthquakes (and other hazards) and on safety

measures and measures to reduce risk is also an important underlying factor.

2. Windstorm

Windstorms have been recurring over the last decade and have caused damages to hundreds of rural homes and to schools, lhakhangs and other structures, especially to roofs, on an annual basis. Some of the factors contributing to structures being vulnerable to windstorms are:

- Traditional roof types not being secured/ anchored in correct and safe manner;
- Use of inappropriate roofing materials and roofing techniques;
- Homes, schools, lhakhangs and other structures being constructed on high cliffs/mountains and in storm prone areas;
- Lack of insurance for windstorm damages(public structures); and
- Lack of awareness and knowledge on how to mitigate windstorm risks.

3. Forest Fire

Forest fires are largely man-made and every year during dry, windy winter months, hundreds of acres of forest are lost to forest fires leading to deforestation and also drying up of water sources. Similarly in Paro, forest fires are a recurrent hazard and following are some of the causes for increasing vulnerability:

- Unsafe farming practices such as burning agricultural debris;
- Close proximity of settlements, especially lhakhangs, to forest area making them vulnerable to fire hazard;
- People's carelessness with fire and general lack of awareness on how to reduce and be prepared for forest fires;

4. Flood

Another priority hazard for Paro is Flood and there have been several flooding (including flash flood) events in the past that have caused widespread damage

and also loss of lives. Following are the underlying causes for vulnerability to floods:

- Having settlements in low-lying and flood prone areas near river banks, in storm water/ natural drainage pathways, etc.;
- Absence of stormwater drainage system, unplanned development;
- Illegal dumping in storm water drains, streams and rivers;
- Land degradation and deforestation activities;
- Improper management and/or development in wetland;
- Lack of insurance in case of flood damages (public and commercial);
- Lack of/ or inability to access weather forecasts in case of extreme weather conditions and early warning information/advisory for flood; and
- Lack of awareness and education on flood risks, safety and mitigation measures.

5. Fire

Due to the heavy use of timber in Bhutanese constructions, fire hazard is ever-present in the communities in Paro. Some other factors contributing to fire hazard vulnerabilities are:

- Houses/settlements located near thick forests;
- Poor/unsafe electrification in homes and in public facilities and electric power transmission lines running overhead;
- Unsafe practices such as -incorrect use and storage of fuels for heating; unsafe use of butter lamps; placement of cooking utensils; in correct use of electrical appliances, etc.;
- Incorrect farming techniques such as slash and burn;
- No knowledge and awareness on fire safety and risk reduction measures and use of fire protection/ fighting equipment, etc.;
- Inaccessible and remote location of monasteries;
- Petrol pumps located in communities without proper safety measures and procedures in place;
- Lack of insurance

The table below shows the level of vulnerability of different elements to the top five priority hazards in the Dzongkhag.

Table 5. Vulnerability of different elements to various hazards

	Elements	Fire	Flood	Earthquake	Windstorm	Forest Fire
1	Population	H	M	H	M	L
2	Livestock	L	M	L	L	M
3	Crops	L	H	M	L	L
4	Rural Water Supply Schemes	L	H	M	L	L
5	Roads/Farm roads	L	M	H	L	L
7	Irrigation channels	L	H	M	L	L
8	Hospitals	M	L	H	M	L
9	Houses	H	M	H	H	L
10	Schools	H	M	H	H	M
11	Gewog Offices	H	M	H	H	L
12	RNR Centers	H	M	H	M	L
13	Monasteries	H	M	H	H	M
14	Dzong	H	L	H	H	L
		H= High, M=Medium, L=Low, 0= No Risk				

3.3. Capacity Assessment

Various kinds of capacities existing in each Gewog corresponding to different hazards and have been outlined in Annexure II in the GDMPs. Physical capacities (including environmental 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. The following table provides a summary of the main capacities identified during the Gewog-level discussions :

Table 6(a). Capacity Assessment

Hazard		Capacity		
		Physical	Economic	Social
1	Earthquake	Open ground for evacuation BHU/ ORCs located nearby Good road and mobile connection.	Rural house and life insurance, Agricultural activities	Traditional knowledge (taking cover under doorway of traditional houses) Cooperative communities
2	Windstorm	Proper anchored roofs	Rural house and life insurance	Traditional knowledge of taking shelter in lower floors
3	Forest Fire	Re-suups in some chiwogs Good road and mobile network		RBP fire services Community forest group in few chiwogs
4	Structural fire	Good RWSS coverage Water reservoir tanks in few chiwogs Good road and mobile network	Rural house and life insurance	RBP fire services, Cooperative community
5	Flood	Check-dams in certain chiwogs Evacuation areas available	Rural house and life insurance	Traditional knowledge of going to higher ground

Table 6(b). Capacity Assessment (Dzongkhag level)

	Hazard	Capacity		
		Physical	Economic	Social
1	Earthquake	<p>Dzongkhag Disaster Management Committee</p> <p>Dzongkhag Disaster Management & Contingency plan and Gewog Disaster Management Plans</p> <p>School Disaster Management Plan</p> <p>Dzongkhag Search & Rescue team with basic SAR equipments</p> <p>Arm forces to respond to disasters</p> <p>Open ground for evacuation</p> <p>Dzongkhag Hospital</p> <p>BHU/ ORCs located nearby</p> <p>Good road and mobile connection.</p>	<p>Rural house and life insurance,</p> <p>Agricultural activities</p>	<p>Traditional knowledge (taking cover under doorway of traditional houses)</p> <p>Cooperative communities</p> <p>Mock drills and awareness education in schools and community</p>
2	Windstorm	<p>Proper anchored roofs</p>	<p>Rural house and life insurance</p>	<p>Traditional knowledge of taking shelter in lower floors</p>
3	Forest Fire	<p>RBP fire services in two locations</p> <p>Re-suups in most chiwogs</p> <p>De-suup volunteers</p> <p>Good road and mobile network</p>		<p>Community forest group in few chiwogs</p>
4	Structural fire	<p>RBP Fire services in two locations</p> <p>De-suup volunteers</p> <p>Good water source</p> <p>Good road and mobile network</p>	<p>Rural house and life insurance</p>	<p>Cooperative community</p>
5	Flood	<p>River protection walls</p> <p>Evacuation areas available</p>	<p>Plans and budget for flood mitigation works</p>	<p>Traditional knowledge of going to higher ground</p>

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.

Windstorm is also a priority hazard for Paro and there is need to build capacities in the Dzongkhag to raise awareness in the community on ways of securing roofs and carrying out mitigation in structures such as schools, lhakhangs, etc. that suffer from recurrent windstorm 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).

CHAPTER 4. DISASTER MANAGEMENT ACTION PLAN (2018 – 2023)

Priority Area	Key Activities	Target	Nodal Agency	Supporting agencies	Timeline	Budget estimate (Nu. in M)
Awareness and Education	1.1 Raise awareness on top ranking priority hazards – earthquake, windstorm and fire	All 10 Gewogs, Dratshang, Monasteries	DDMC	Gewog Administration	2019	0.300
		Schools Business Community		DDM RBP	2021	0.500
	1.2 Schools carry out priority awareness activities in Schools and communities	50% of all schools	DEO	Principals, DDMC, MoE, DDM	2018 -2020	0.500
		100% of all schools				0.100
1.3 Develop and distribute user friendly key messages on risk reduction and disaster preparedness	Both to urban and rural public	DDMO	DDMC DDM Gewog Adm. Relevant sectors	2018 -2019	0.600	
1.4 Schools conduct community outreach activities such as family preparedness plans and joint drills	Both rural and urban communities	DEO	MoE DDM Gewog Adm. DDMC	2018 2020	0.400	

Priority Area	Key Activities	Target	Nodal Agency	Supporting agencies	Timeline	Budget estimate (Nu. in M)
	1.5 Dzongkhag observes International disaster day and Annual school preparedness drill day	Schools communities, Rabdey, Business community	DDMO/ DEO	DDMC, DDM, Gewog Adm. MoE Dratshang	Every year	0.300
Enhance risk reduction and mitigation	2.1 Conduct training on good construction practices	Engineers, carpenters, Masons	DDMO/ DE	DDM, DES, MoHWS	2019 -2021	0.75
	2.2 Carry out inventory and vulnerability assessment, if possible, of old/ existing government buildings – schools, health facilities, cultural buildings, office buildings	Engineers	DDMO/ DE	DDM, DES, MoHWS, MoE, Gewog Adm. Dratshang	2017 -2020	2.00
	2.3 Schools carry out non-structural/falling hazard mitigation	All schools	DEO/ DDMO	DDM	2018 - 2019	0.500
	2.3 Institute construction quality control and monitoring mechanism for materials and adherence to standards and designs	Engineering Division	DE/ DDMO	DES, MoWHS, DDM Other relevant sectors	2019– 2023	0.200

Priority Area	Key Activities	Target	Nodal Agency	Supporting agencies	Timeline	Budget estimate (Nu. in M)
	2.4 Implement mitigation measures on a prioritized basis in the Gewogs as per HVCA and GDMP	Gewogs, Respective Sectors	Gewogs/ Sector heads/ DDMO	DDM, GNHC, MoF, concerned sectors	2019-2023	Based on identified priority mitigation activity
	2.6 Strengthen systems to disseminate weather forecast and advisories	Gewogs, communities	DDMO/ DAO	DDM, DHMS	2018 – 2023	0.100
	2.7 Training of Engineers, Sector heads and GAOs on Rapid Damage Assessment skills	Engineers, Sector heads and GAOs	DE/ DDMO	DES, MoWHS, DDM	2019 - 2023	0.500
	2.8 Strengthening of Dzongkhag/ Gewog SAR Lead/ Team	Dzongkhag SAR team, RBP	DDMO	DDM, RBP	2019 - 2023	0.500
	2.9 Hands on training on use of fire-fighting equipment	DDMC/ Lhakhang caretakers/Business Community and Communities	DDMO	RBP DDM Dratshang Relevant sectors	2019-2023	0.500
	2.10 Ensure fire-fighting preparedness is put in place in the town BOD	BOD	DDMO	DDMC RBP Thromde	2018	

Priority Area	Key Activities	Target	Nodal Agency	Supporting agencies	Timeline	Budget estimate (Nu. in M)
3. Enhance preparedness, response and recovery levels	3.1 Identify an interim Dzongkhag Emergency Operation Center	Dzongkhag	DDMO	DDMC, DDM, NDMA, Relevant sectors	2018	0.300 (for furnishing only)
	3.2 Raise awareness and sensitize on Paro DM plan and response measures	Dzongkhag, Gewog, Dratshang, RBP, RBA, Judiciary, Regional Offices, Desuups, Communities	DDMO	DDM	2018-2019	0.500
	3.3 Stockpile materials required for emergency response and immediate recovery at strategic locations	Dzongkhag	DDMC	DDM, MoF, relevant sectors	2017-2018	0.900
	3.4 Establish and institute pre-arrangements for emergency procurement and requirements	Dzongkhag	Procurement Officer, DDMO/ Finance Officer	DDMC, DDM, MoF	2017-2018	

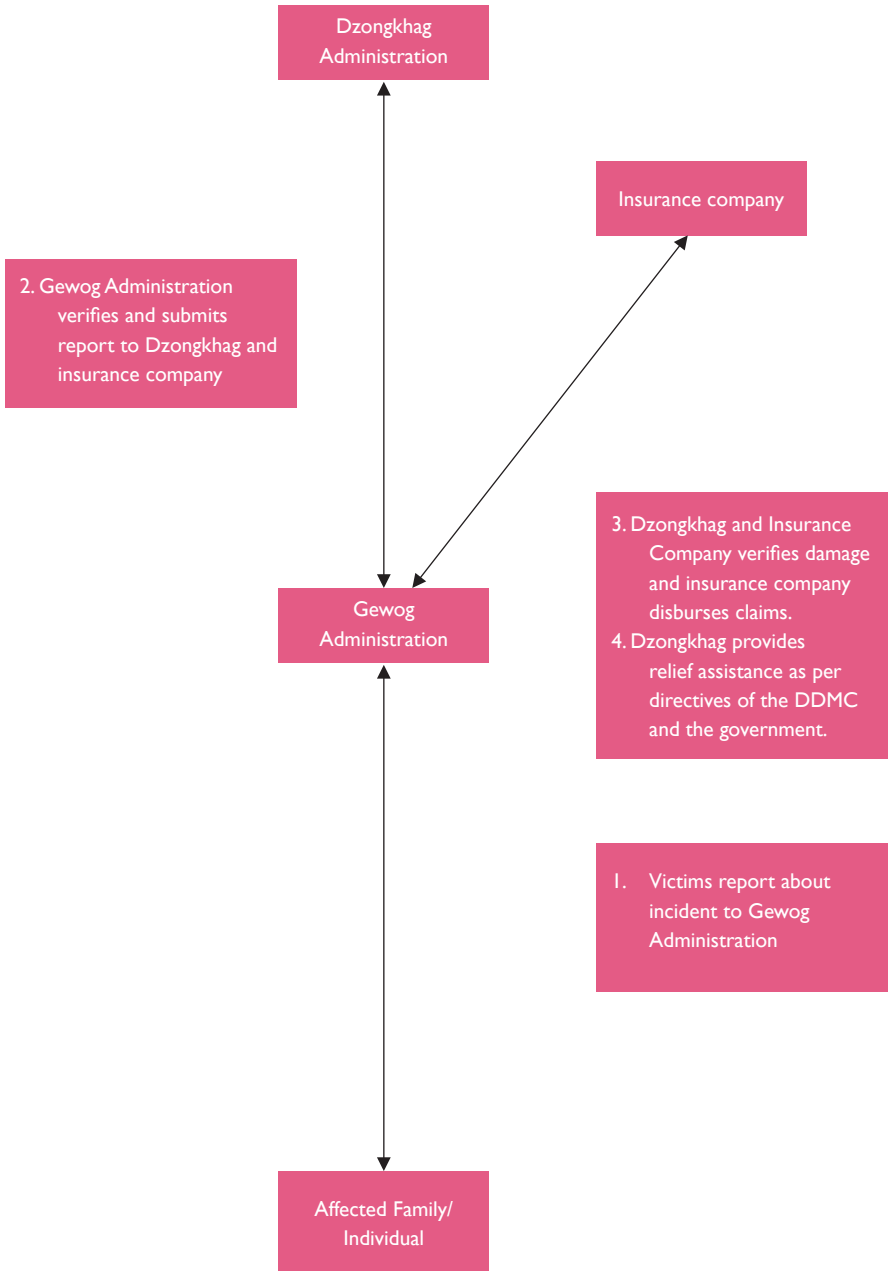
CHAPTER 5. DZONGKHAG RESPONSE SYSTEM

5.1. Standard Operating Procedures for 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.

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 procedures shall be followed

Figure 4 – Standard procedure for isolated local incidents



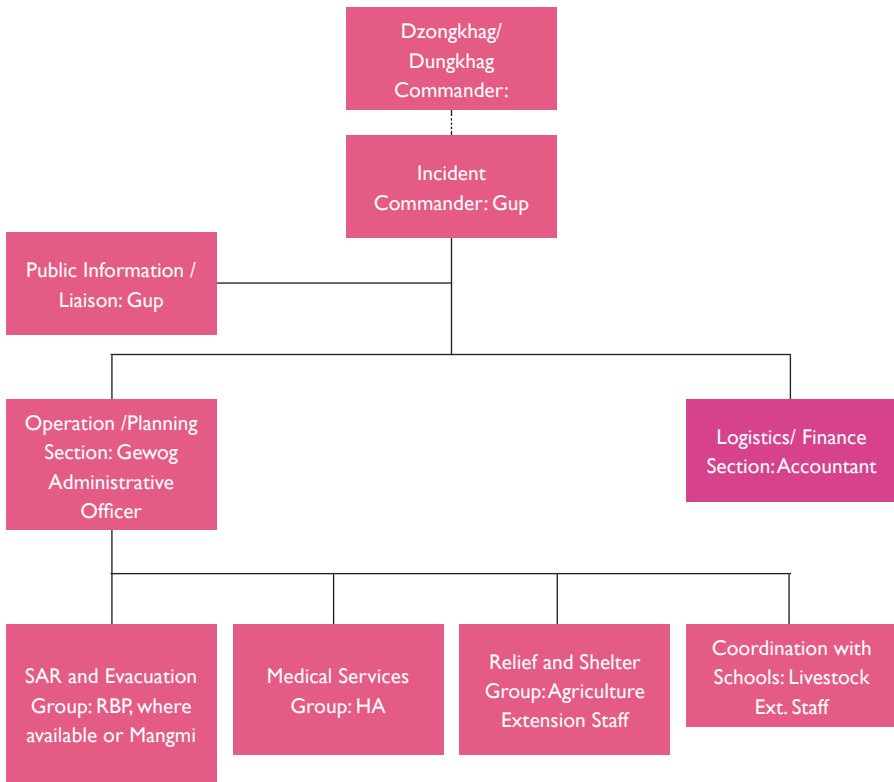
5.2. Standard Operating Procedures for Disaster Types

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

I. In case of 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 Geog/Thromde concerned.

Figure 5 – Gewog level ICS



- 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:
 - i. 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.
 - ii. Gewog/Thromde shall provide immediate response and relief within their capacity and submit for SAR and other response needs to the DDMC, if required.
 - iii. The DDMO shall submit the FIR to the DDM within 24 hours of the incident.
 - iv. Gewog/Thromde shall conduct rapid needs assessment as per Bhutan Disaster Assessment (BDA) tool within 72 hours.
 - v. Gewog/Thromde shall conduct detailed damage assessment along with insurance companies for relief and early recovery and submit report to DDMC.
 - vi. GDMC shall provide relief and early recovery/ immediate restoration support as per damage assessment using available funds at Gewog level and submit expenditure report and bills to DDMC for further compilation and submission to DDM for further submission to Ministry of Finance for reimbursement.
 - vii. 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

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 a Type II Disaster
 - i. 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.
 - ii. 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.
 - iii. DDMC shall direct evacuation of disaster-affected communities to safe areas and temporary shelters.
 - iv. DDMC shall manage all human and material resources in the field for response, relief and early recovery.

- v. 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.
 - vi. DDMC shall conduct rapid needs assessment as per Bhutan Disaster Assessment (BDA) tool within 72 hours.
 - vii. DDMC shall conduct detailed damage assessment along with insurance companies for relief and early recovery and submit report to DDMC.
 - viii. DDMC shall provide relief and early recovery/ immediate restoration 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.
 - ix. Dzongkhag shall seek for extension of Type II 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.

Figure 6 – Dzongkhag level ICS

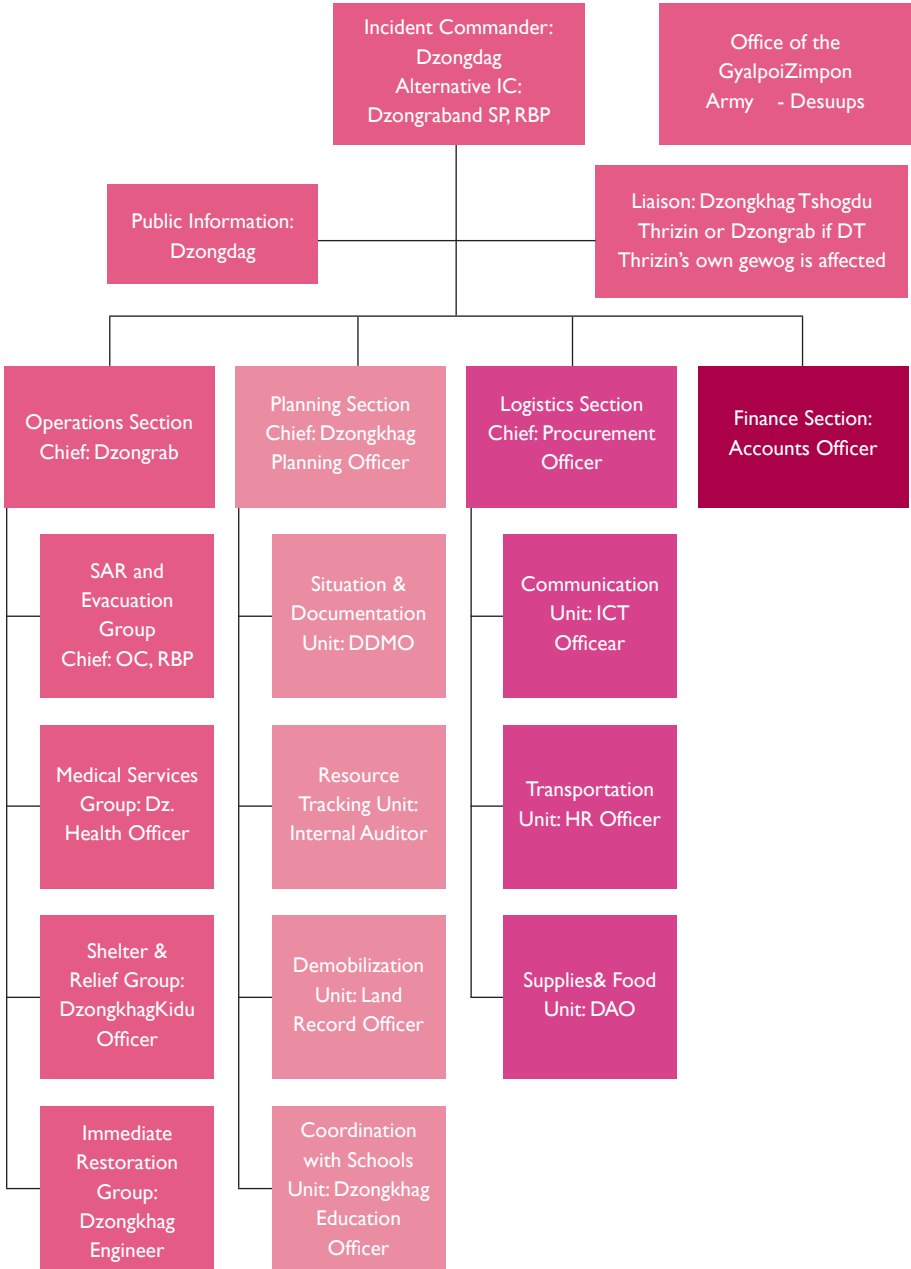
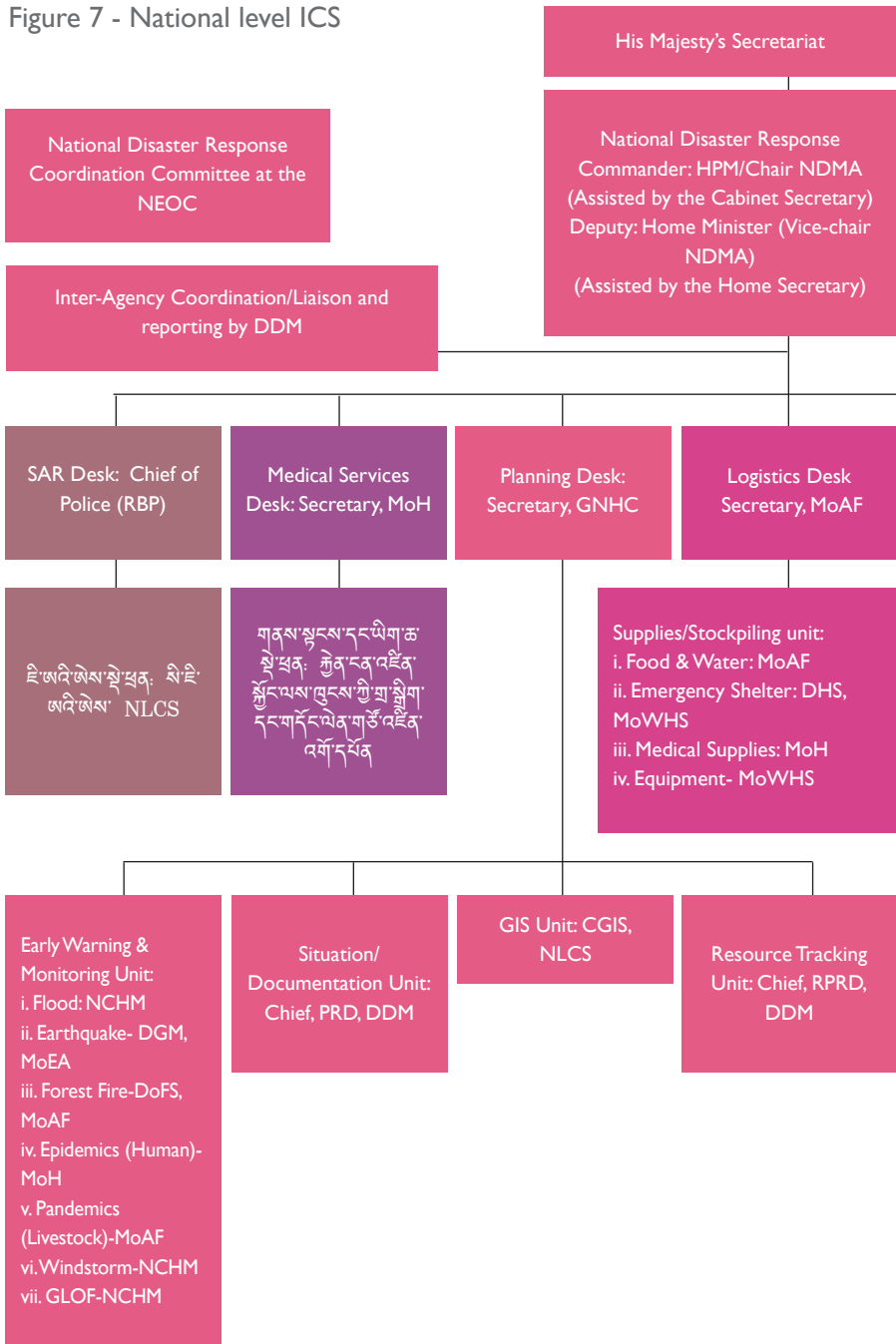
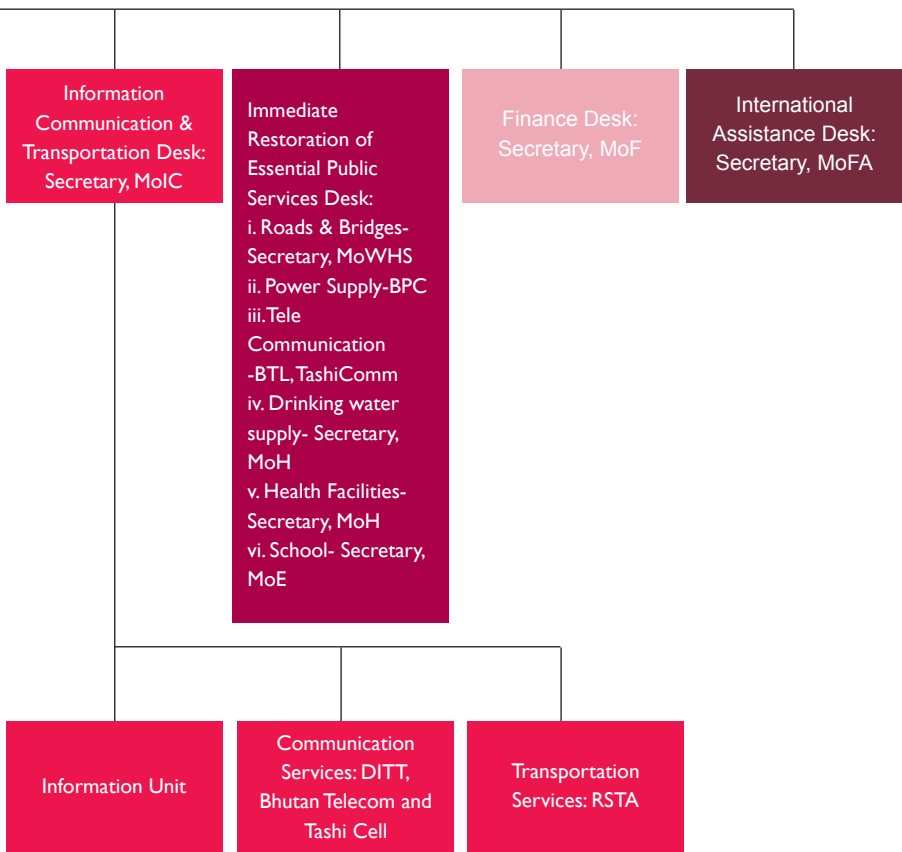


Figure 7 - National level ICS



Army and De-Suung



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.

CHAPTER 6. IMPLEMENTATION MECHANISM

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

Dzongkhag and Gewog administrations will be responsible for implementation of the prioritized plan activities and for ensuring that the activities are incorporated into their annual and five year plans.

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.

The Dzongkhag Disaster Management Officer will facilitate incorporation of priority disaster risk reduction, preparedness, awareness and capacity building activities in annual and five year development plans of the Dzongkhag. The DDMO shall facilitate implementation of the prioritized activities. 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.

ANNEX I – CONTACT DETAILS

I. Contact details of DDMC members

Sr.	Name	Designation	DDMC	Contact No
1	Tenzin Thinley	Dzongdag	Chairperson	17628814
2	Kinley Gyeltshen	Dzongrab	Member	17606821
3	Lt col. Ngawang Dorji	Superintendent of Police	Member	113
4	Dolay	Drungchen, Rabdey	Member	17610552
5	Tshering Dorji	DT Chairman	Member	77444121
6	Dolay	Tsento Gup	Member	17642654
7	Rinzin	WangchaGup	Member	17602725
8	Jamtsho	Luni Gup	Member	17703395
9	Chencho Gyeltshen	Shaba Gup	Member	17607281
10	Lhap Tshering	DogarGup	Member	17608309
11	Kinley Wangdi	Naja Gup	Member	77345157
12	Gem Thinley	Hungrel Gup	Member	17606711
13	Gem Tshering	Lamgong Gup	Member	17606654
14	Lethro	Doteng Gup	Member	17625504
15	Ugyen Tenzin	Kidu Officer	Member	17308574
16	Nagphel	Disaster Management Officer	Member Secretary	17623529

II. Emergency Contact details of responsible Officers from Dzongkhag

Sr.	Name	Designation	Contact No
1	Ngawang Dorji	Chief DEO	17578941
2	Chane Zangmo	District Engineer	17835790
3	Kaka Tshering	CFO	17636285
4	Sangay Dorji	Cultural Officer	17707815
5	Rinzin Wangchuk	DAO	77624500
6	Rinzin Wangchuk	AO	17608935
7	Kinley Rinchen	DLO	17601739
8	Leki Jungney	Procurement	17515200
9	SharaLhamo	HRO	17602095
10	Kencho Dorji	Municipal Engineer	17835790
11	Sonam Choden	Planning Officer	17887081
12	Nagphey	DDMO/DT Secretary	17623529
13	Yonten Jamtsho	DSO	17616275

III. Dzongkhag SAR team

Sr.	Name of Person	Designation	Phone	Skills in SAR
1.	Drupchu	Accountant	17892497	Basic SAR skills
2.	ChekiLengkong	Junior Engineer	17764566	Basic SAR skills
3.	Karpola	Juglop	77741121	Basic SAR skills
4.	Dorji	Quilopgom	17832645	Basic SAR skills
5.	Sangay Thinley	Denkul	17882377	Basic SAR skills
6.	Sangay Choden	Denkul	17810108	Basic SAR skills
7.	Tshering Yuden	Gopa	16937918	Basic SAR skills
8.	JigmeKhandu	Gagpa	17967402	Basic SAR skills
9.	Thinley Wangmo	Gagpa	17922341	Basic SAR skills
10.	KenchoDema	Gagpa	17530283	Basic SAR skills

IV. Fire fighting (trucks, equipment, location, capacity)

Sr.	Facilities/equipments/ personnel	Location	Capacity	Contact person	Phone
1.	Fire Fighting Truck	RBP, Paro	5500 l	Yangyel Tshering	110
2.	Fire Fighting Truck	RBP, Paro	1500 l	-Do-	17686334
3.	Nissan pump	RBP, Paro	-	-Do-	-do-

(Note: IPD= In-patient Department, OPD= Out-patient Department)

V. Medical Contacts

Sr.	Name of hospital/ BHU	Location	Capacity	Contact person	Phone
1.	District Hospital	Paro	20-30 IPD	District Health Officer	17720031
			250-300 OPD	Chief Medical Officer	17701525
				Ambulance	112
2.	BHU	Dawakha	5-10 IPD	In-charge	17170259
			100 OPD		
3.	BHU	Betikha	5-10 IPD	In-charge	17170128
			100 OPD		
4.	BHU	Drugyel	5-10 IPD	In-charge	271762
			100 OPD		

(Note: IPD= In-patient Department, OPD= Out-patient Department)

VI. Contact details of Des-sups

Sl.No	Name	Work Place	Mobile Number
1	Choki Dorji	Drukgyel LSS, Paro	17690622
2	Deki Tshomo	Gauphel LSS, Paro	17641126
3	Yeshey Lham	Taju PS, Paro	17626874
4	Gem Gyeltshen	Drukgyel HSS, Paro	17625858
5	Pema Dema	Woochu LSS, Paro	17757272
6	Tashi Phuntsho	Khangkhu MSS, Paro	17810081

Total Des-ups in Paro Dzongkhag as of June, 2016 = 78

VII. Contact details of Principals of Paro Dzongkhag,

Sl. No.	Name	Designation	Name of schools	Telephone No. (Office)	B-Mobile No.
1	Mr. Karma Tshering	Principal	Drugyel HSS	271388 / 271124	17984829
2	Mr. Bak Bir Rai	Principal	Shari HSS	271588 / 272588	17681283
3	Mr. Kezang Doti Drukpa	Principal	Lango MSS	271332	17601033
4	Mr. Ugyen Wangdi	Principal	Bitekha MSS	77106227	17701887
5	Mr. Gomchen Tenzin	Principal	Khangku MSS	272315	17647586
6	Ms. Wangmo	Principal	Shaba MSS	272919	17617505
7	Mr. Pema Gyeltshen	Principal	Dawakha LSS	17170184	17990616
8	Mr. Gyeltshen Dukpa	Principal	Doteng LSS	272171	17549290
9	Mr. Khandu	Principal	Drugyel LSS	271546	17609013 17601902 (VP)
10	Mr. Dechen Tshering	Principal	Deaf Unit, Drugyel	271548	17600913
11	Mr. Jambay	Principal	Gaupel LSS	271251	17645965
12	Mr. Phurpa Dorji	Principal	Gunitsawa PS	-	77327152
13	Mr. Sangay	Principal	Issuna CPS	240079	17170711
14	Mr. Taujay	Principal	Ramchetsekha CPS	240220	17671297/ 17111734

Sl. No.	Name	Designation	Name of schools	Telephone No. (Office)	B-Mobile No.
15	Mr. Lhabu	Principal	Shaba PS	271381	17657490
16	Mr.Thinley Wangchuk	Principal	Taju PS	272852	17633794
17	Mr.Yeshi Dorji	Principal	Wanakha LSS	-	77170700/ 77170701
18	Mr. Chenchonamgyel	Principal	Woochu LSS	271338	17606792
19	Mr. Jimba	Principal	Rashigang CPS		17620356
20	Mr.Sangay Dorji	Principal	Olathang PS	270275	17707164
21	Mrs. Jambay	Principal	K.Gangri PS	272311	77791187
22	Mr. Chogyal Tenzin	Principal	Tenzin HSS	240113	17646184
23	Mr. Tandin	President	Norbu Rigter College	272075 / 272971	
24.	Mr. Chenchon Tshering	Principal	Yoezerling HSS	272139 / 272626	17690205
25.	Mrs. Sangay Dema	Principal	Tshenden PS		17893599
26.	Mrs. Ter Tshering	Principal	Utpal Academy	271771 / 271111	

VIII. Contact details of Gewog Administrative Officers

Sl No	Name	Designation	Contact Number
1.	Dorji Tenzin	GAO, Dogar	17609381
2.	Trashhi Pelden	GAO, Dopshari	17552617
3.	Yeshi Zangpo	GAO, Doteng	17524746
4.	Tshering	GAO, Hungrel	17805243
5.	Tshering Chezom	GAO, Lamgong	17714573
6.	Namgay Wangmo	GAO, Luni	17771515
7.	Tshering Phuntsho	GAO, Naja	17802916
8.	Thinley Bidha	GAO, Shaba	17655749
9.	Yeshi Wangmo	GAO, Tsentso	17653337
10	Karma Tenzin	GAO, Wangchang	17551028