



Draft Dzongkhag Disaster Management and Contingency Plan



Dzongkhag Administration

SARPANG

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 Sarpang Dzongkhag Disaster Management Plan presents hazard, vulnerability and capacity profile for the 12 Gewogs. The plan also outlines priority disaster risk reduction, awareness raising and capacity building activities for Sarpang 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 Sarpang Dzongkhag Administration and relevant National Disaster Management institutions and agencies take ownership and fulfill their own roles and responsibilities to make Sarpang 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 |

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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) on 3rd November, 2017 and 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

The Dzongkhag is geographically located at the southern foothills adjoining Indian plains of Assam. The elevation above the sea level ranges from 200 to 3600 meters. Only about 20% of entire Dzongkhag falls in a plain with rest of the Dzongkhag falling in a hilly area. It borders Tsirang Dzongkhag in the north. It has a total area of 1655sq.km, comprising of mainly five languages spoken in the dzongkhag are Dzongkha, Lhotsamkha, Sharchopkha, Khengkha and Bumtangkha. The dzongkhag is divided into 12 Gewogs , 61 Chiwoogs with 172 villages.

The 12 Gewogs are:

- i) Chuzanggang
- ii) Chhudzom
- iii) Dekidling
- iv) Gakidling
- v) Gelegphu
- vi) Jigmechoeling
- vii) Seng-gey
- viii) Shompangkha
- ix) Samtenling
- x) Serzhong
- xi) Tareythang
- xii) Umling



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 Dzongkhag Administration work in close collaboration with the elected bodies, the Dzongkhag Tshodue held its first session of the 2nd LG on 26th to 27th October, 2016 and the Gewog Tshodes held between 19th to 24th October, 2016 after receiving the Khadhar from His Majesty on 13th October, 2106

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

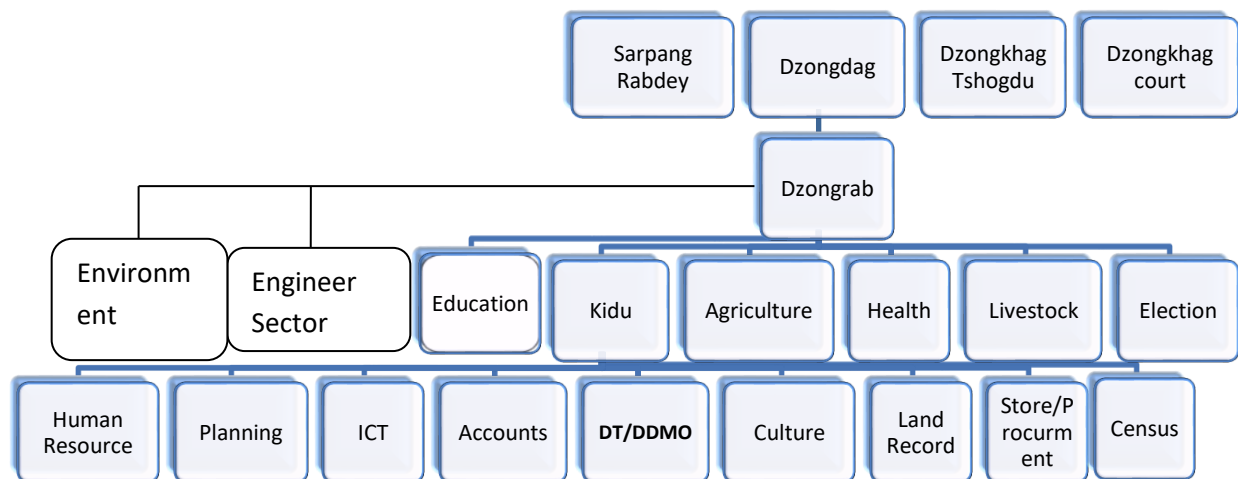


Figure 2: Organogram of Dzongkhag Administration

1.3 Demography

The population of Sarpang was 37101 in 2005 PHCB from 7346 household. With a crude birth rate of 19.5%, a death rate of 5.3% and a natural population growth rate of 1.4%, the population is projected to 43,915 in 2013.

Table 1: Key Demographics

| | Gewog | Area (Sq. Km.) | No. of Hou seho lds | Population | | Health Facilities | | | Schools | | | | |
|----|-------------------|----------------------|---------------------------------|------------|--------|-------------------|---------|---------|----------------|---------|---------|----------------|--------------------------|
| | | | | Male | Female | Hospit al | BH U | OR C | HS S/C S | MS S | LS S | PS/ CP S | ECR/ ECC D/NF E |
| 1 | Chuzangang | 57.6 | 587 | 1227 | 1199 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 5 |
| 2 | Chhudzom | 222 | 623 | 1276 | 1174 | 0 | 2 | 2 | 0 | 0 | 1 | 1 | 5 |
| 3 | Dekidling | 113 | 1004 | 2881 | 3008 | 0 | 2 | 2 | 0 | 0 | 2 | 1 | 8 |
| 4 | Gakidling | 785 | 541 | 1802 | 1852 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 8 |
| 5 | Gelegphu | 54.0 | 423 | 3088 | 3108 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 8 |
| 6 | Jigmechoeli ng | 492 | 686 | 2838 | 2701 | 0 | 2 | 2 | 0 | 0 | 1 | 2 | 2 |
| 7 | Seng-gey | 232 | 286 | 580 | 554 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6 |
| 8 | Shompangk ha | 21 | 404 | 1449 | 1398 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 4 |
| 9 | Samtenling | 55.4 | 568 | 1218 | 1035 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 4 |
| 10 | Serzhong | 78.0 | 483 | 1029 | 1016 | 0 | 1 | 3 | 1 | 0 | 0 | 1 | 7 |
| 11 | Tareythang | 399 | 84 | 152 | 153 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 2 |
| 12 | Umling | 122 | 408 | 707 | 834 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 4 |

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

1.4 Weather and Climate

The Dzongkhag has two major climatic conditions. Summer is usually very hot and wet while winter months are dry and cool. Heavy rain falls are expected in the month of June-August which leads to abundant water flow causing floods in the plain area. Cool winter starts from October till February. The temperature ranges from 20-37 degrees.

1.5 Economy

The main source of income of the Dzongkhag is Agriculture and livestock farming. The low altitudes and plains and with more than 65% of the Dzongkhag falling under the tropical zones, all the major cash crops are cultivated. The RNR statistics shows that the Dzongkhag is one of the highest producers of Rice, Oranges and Cardamom.

The Dzongkhag is also largest producer of egg and dairy product. There are about 75000 poultry birds besides dairy and piggery farming. The Dzongkhag also have one domestic airport at Gelephu.

Chapter 2: Dzongkhag Disaster Management System

2.1 Dzongkhag Disaster Management Committee (DDMC)

Sarpang 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, Sarpang, member
- g) Drungchen, Sarpang 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 Dungkha, 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.

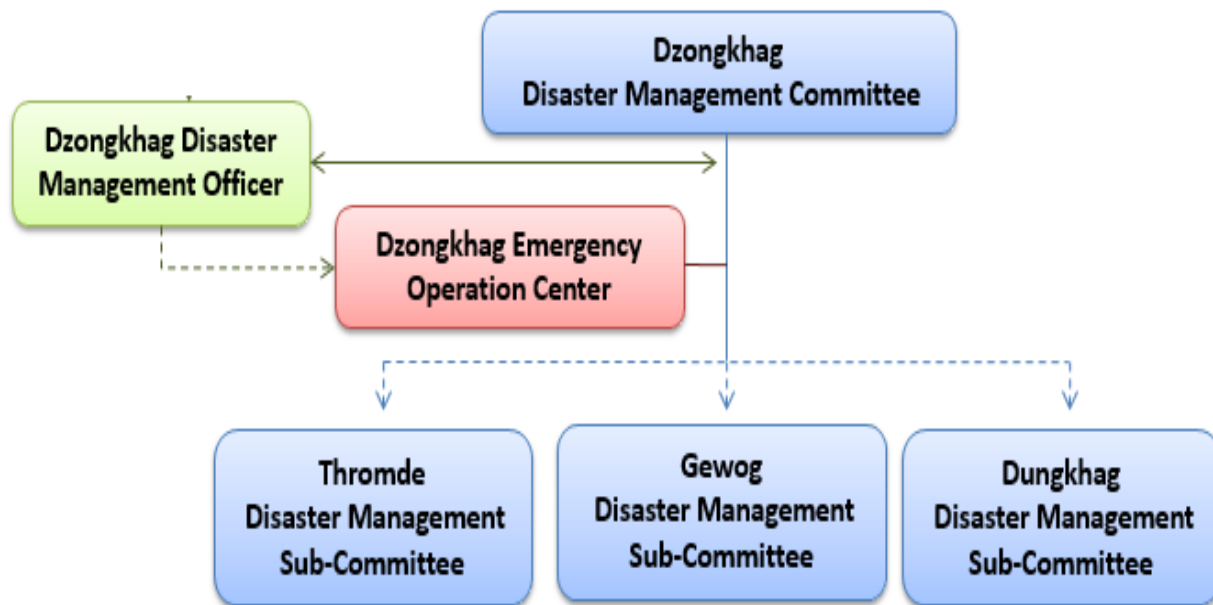


Figure 3: Dzongkhag Disaster Management System

Chapter 3: Disaster Risk Profile of Dzongkhag

3.1 Hazard Assessment

Sarpang 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. Chuzanggang Gewog

Table 2: Chuzanggang Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it could occur | Probability of occurrence | History of past Hazard | Impact |
|-------------------------------------|------------------|-------------------------------|---------------------------|------------------------------------|---|
| Flash Flood | Diseases | May – August | High | 2002- Taklai 2000-10 (Maukhola) | 70 Ac. Of land from Taklai side and 85 ac. Of land were damaged along Maukhola Bank |
| Wildlife Conflicts | | June-July October-November | High | 2008/09 | 3 Houses were damaged & about 700 Areca nut trees were damaged (by wild elephants) |
| Earthquake | Fire | Unpredictable | High | 2009, 2011 | In 2009, 5 Houses were impacted |
| Diseases outbreak (Malaria/ Dengue) | | May- August | Medium | | There are cases of malaria every year. Dengue case was reported this year. |

| | | | | | |
|----------------|-----------------|-------------|--------|------------------|---|
| Windstorm | Structure/Crops | March-April | Medium | | In 2008, Roof of one of the house was blown off, About 100 Areca nut trees are damaged |
| Forest fire | Structure fire | March-April | Medium | 2010, 2013 | Forest fire started from the Indian borders damaged about 700-800 Areca nut trees |
| Structure Fire | Forest fire | Feb-April | Medium | 2011, 2012, 2014 | 3 temporary shed were burnt down |

2. Chhudzom Gewog

Table 3: Chhudzom Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it could occur | Probability of Occurrence | History of Past Disaster | Impact |
|------------------|------------------------------|----------------------------|----------------------------------|---|--|
| Landslide /Flood | Electricity pole/fire | June/july/Aug /Sept | High | 1968, 2012, 2015, 2016, 2017 | 1968-2-3hhs 2012-5-6 Acres 2016-Blockage of GC road for 4 months |
| Structure Fire | Structure fire | Unpredictable /Dec/Jan/Feb | High/Medium | 2016-Str Fire 1987-88- Forest Fire | 2hhs 100 acres plus |
| Windstorm | Structure fire/Electric pole | March/ April/July | Medium | 2011/2012/2015 | 1 HHs 15 Acres Maize Field destroyed Blockage of road |

| | | | | | |
|-----------------|--------------------------|---------------|--------|----------------|---|
| | | | | | Electricity Black out |
| Earthquake | Structure fire/landslide | unpredictable | High | 2009/2011/2015 | 15-20hhs (minor cracks) |
| Hailstone/storm | | Apr/May/Nov | medium | 2012 | Cash/cereal crop damaged -hampered paddy harvest |

3. Dekidling Gewog

Table 4: Dekidling Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it could occur | Probability of occurrence | History of past Hazard | Impact |
|----------------|----------------------------|----------------------------|----------------------------------|-------------------------------|--|
| Flash Flood | landslide | May to September | High | 2 nd August 2010 | 400 household paddy cultivation affected |
| Earthquake | Structure fire | Unpredictable | High | 2011 | Minor affected |
| Windstorm | Structure fire/forest fire | December - May | Medium | - | - |
| Structure fire | Forest fire | Dry season | High | Jan 2001 | Loss of property |

4. Gakidling Gewog

Table 5: Gakidling Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it would occur | Probability of occurrence | History of the past disaster | Impact |
|----------------|-------------------|------------------------------|---------------------------|------------------------------|---|
| Earthquake | Flood & Landslide | Unpredictable | High | 2009/2011 | Damaged infrastructures/Network/Power-electricity |
| Flash Flood | landslide | Month of June, July & August | High | 1996/2016/2017 | Damaged agricultural land/house/electric fencing/road blockages |
| Landslide | flood | Month of June, July & August | High | 2015/2016/2017 | Damaged farm road/house |
| Lightening | Fire | April & May | High | 2017 | Injured man/Damaged house |
| Structure Fire | Landslide | Jan, Feb, March | Low | 2016 | Damaged house |

5. Gelegphu Gewog

Table 6: Gelegphu Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it could occur | Probability of occurrence | History of past disaster | Impact |
|---|-----------------------|------------------------------|---------------------------|--------------------------|---|
| Flood at Shetikari and Mouechhu | Flash flood/landslide | June, July, Aug, Sept | High | 2000,2016 | 15 HHs were damaged, highway was damaged |
| Wildlife conflict (elephant, wild boar, hare) | landslide | March, april, sept, oct, nov | High | Every year | Agricultural outputs were damaged. Some structures are also damaged |
| Landslide at I-slip and Raidara | | June, July, Aug, Sept | High | Every year | Farm roads and highway were damaged |

| | | | | | |
|------------------------------------|----------------------------|-----------------|--------|------------|--|
| Epidemics (Malaria) All chiwogs | | July, Aug, Sept | Medium | Every year | So far one was affected |
| Lightening | Wildlife conflict | unpredictable | High | Every year | Electronic damaged Electric fencing energizer damaged |
| Earthquake | Structure fire/forest fire | unpredictable | High | 2009, 2011 | Minor damages |

6. Jigmechoeling Gewog

Table 7: Jigmechoeling Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it could occurrence | Probability of occurrence | History of past disaster | Impact |
|-------------------------|--|---------------------------------|----------------------------------|------------------------------------|--|
| Earthquake | Land slide and road block | Unpredictable | high | 2009, 2015 | Minor affect to public house |
| Windstorm/ hailstorm | Structure fire, Road block. Land slide | March, April, May. | High | 2011, 2015 2007, 2011, 2015 | One lhakhang Four public houses Fruit and crops damaged |
| River flood | Farm road block, land slide | June, july August | high | 1998, 2002, 2006, 2016 | 1998 One suspension bridge washed Crop damaged and washed away the cattle |
| Thunder and | Structure fire. | February, March, April | High | Every months | 2006-Killed one cattle. Current |

| | | | | | |
|------------|--------------------------|-----------------|------|---|--|
| lightening | Forest fire | | | of February, March, April | shock to human and animals |
| Land slide | Structure. Road net work | Monsoon seasons | high | Box-cut. Regular. Ossey. 2015 Jantey kolcha.2 016 | Cut off road and electricity net work and disconnect Gelephu, Zhemgang and Trongsa highway |

7. Seng-gey Gewog

Table 8: Seng-gey Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it could occur | Probability of occurrence | History of past disaster | Impact |
|-----------------------|------------------|---------------------|---------------------------|--------------------------|--|
| Flood | landslide | Monsoon season | High | 2000, 2010 | 15 HH damaged/ suspension bridge |
| Wild life intrusion | | unpredictable | high | Every year | House/crops/Life |
| Land slide | | June & July | Medium | 2011 & 2017 | Irrigation channel & RWSS which affected almost 13hh |
| Wind & thunder storm | Fire | unpredictable | Medium | 2011 | Life/house/ crops |
| Hail Stone | | unpredictable | Low | 1999, 2013 | crops damage |
| Forest fire/structure | Landslide/soil | January & | High | 2007 & 2012 | 40 HH affected |

| | | | | | |
|---|---------------------------------|---------------|------|-------------|--------------------------|
| fire | erosion/shooting boulder | February | | | |
| Earthquake | Landslide/flood | unpredictable | High | 2009 & 2015 | 5 HH |
| Epidemic outbreak (Malaria/ pest disease) | Rural economic losses (poverty) | unpredictable | High | 1973 & 1991 | All HH & 30 people death |

8. Shompangkha Gewog

Table 9: Shompangkha Gewog Hazard Assessment Table

| Hazard | Secondary hazard | When it could occur? | Probability of occurrence | History of past disaster | Impact |
|-----------------------------|---|-------------------------------|----------------------------------|---------------------------------|---|
| Flash Flood | Landslide, soil erosion | June, July, August | High | 1996/2003/2016 | Agriculture land damage, structural damage, Farm road block |
| Landslide | Soil erosion, falling boulders | June, July, August | High | 2003/2016 | Agriculture land damage, structural damage, Farm road block |
| Forest/Structural fire | | December, Jan | High | 2015 | Structural damage |
| Earthquake | Landslide, soil erosion, flood, fire | Unpredictable | Medium | 2009/2011/2015 | Threat to life, Structural damage, property damage |
| Windstorm | structure fire, falling of Trees and Boulders | March, April | Medium | 2014 | Threat to life, Structural damage, property damage |
| Epidemic (Malaria & Dengue) | | June, July, August | Medium | Every Year | Life lost |
| Thunder and Lightning | Fire | June, July, August, September | Medium | Every Year | Damages of Electronic devices/ life Lost |

| | | | | | |
|---|--|---|------|------------|---|
| Wildlife (Elephant & Wildboar) | | May, June, July, August, September | High | Every Year | Property Damages/Structural Damages |
|---|--|---|------|------------|---|

9. Samtenling Gewog

Table 10: Samtenling Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it would occur | Probability of occurrence | History of the past disaster | Impact |
|----------------|----------------------------|------------------------------|---------------------------|------------------------------|--|
| Earthquake | Landslide, Flood and Fire | Unpredictable | High | | Structure damage, Road block and land damaged |
| Flash Flood | Landslide | May, June, July August, Sept | High | 2000 | 10HH affected, 15 acres arable land damaged |
| Landslide | Forest fire/structure fire | May, June, July August, Sept | High | 2016 | 2hh effected, 20 acres land damaged, 3FR washed away partially, Structure damaged, Cultivation land damaged, FR damaged, 2 tower and 1 electric pole damaged, threat to Human life |
| Structure fire | Shooting boulders | Unpredictable | Medium | 2011 | 1 HH destroyed, Threat to life, structure destruction, Financial loss |

10. Serzhong Gewog

Table 11: Serzhong Gewog Hazard Assessment Table

| Hazard | Secondary Hazard | When it Could Occur | Probability Of Occurrence | History of Past Disaster | Impact |
|------------|------------------|---------------------|---------------------------|--------------------------|--|
| Earthquake | landslide | unpredictable | low | 2011, 2013 | nil |
| Landslide | | June-August | medium | Every year | Road block, whole gewog and 3 other adjoining gewogs |

| | | | | | |
|-------------|--------------|-------------------|--------|------------|--|
| Flash flood | Soil erosion | June-August | high | 2006,2010 | 10 household lost land (20Ac) at Serzhong, Barshong, Tashiphu chiwog |
| Hail storm | | February | medium | 2014 | Orange production affected |
| Wind storm | | December-February | medium | Every year | nil |

11. Tareythang Gewog

Table 12: Tareythang Gewog Hazard Assessment Table

| Hazard | Secondary hazard | When it could occur | Probability of occurrence | History of past disaster | Impact |
|-------------------|-----------------------------|----------------------------|----------------------------------|---------------------------------|--|
| Earthquake | Landslide Structure fire | Unpredictable | High | 2013 | 2 no.s ; RNR Hall and Gewog Office. |
| Lighting | Structure fire/forest fire | Jun, July and Aug | High | 2015 and 2017 | 1 house and Electric poles. |
| Windstorm | Structure fire/forest fire | Sept, Oct and Nov. | Medium | 2015 | 39 households yields ; maize, millet and arecanut trees(around 65-70 acres of fields). |
| Flood | Landslide | May, June, July, august | High | 2012, 2016, 2017 | About 20hhs wet land were affected |
| Forest Fire | Landslide | Jan, November, December | High | 2009, 2012 | Damages forest |
| Wildlife conflict | | | High | Ever year | Killed 4 cows in July 2017, damaged are canut trees, damaged paddy, ginger |

12. Umling Gewog

Table 13: Umling Gewog Hazard Assessment Table

| Hazard | Secondary hazard | When it could occur | Probability of occurrence | History of past disaster | Impact |
|-------------------|-------------------|----------------------------|---------------------------|--------------------------|--|
| Earthquake | Landslide Fire | Unpredictable | High | 2009, 2013, 2016 | Roadblock |
| Flood | Landslide | May, June, July, august | High | 2012, 2016, 2017 | About 20hhs wet land were affected |
| Forest fire | Landslide | Jan, nov, dec | High | 2009, 2012 | Damages forest |
| Wildlife conflict | | | High | Ever year | Killed 4 cows in July 2017, damaged areca nut trees, damaged paddy, ginger |

Table 14: Hazard ranking by Gewogs

| Sl # | Gewog | Earth-quake | Wind-storm | Forest Fire | Pest & Diseases | Structure Fire | Flash Flood | Hail-storm | Thunder/Lightning | Land-slide | Human Wildlife Conflict |
|------|----------------|-------------|------------|-------------|-----------------|----------------|-------------|------------|-------------------|------------|-------------------------|
| 1 | Chuze rgang | 8 | 6 | 4 | 7 | 5 | 10 | 3 | 2 | 1 | 9 |
| 2 | Chhud zom | 8 | 6 | 3 | 6 | 8 | 9 | 5 | 2 | 9 | 4 |
| 3 | Dekid ling | 6 | 5 | 2 | 2 | 4 | 9 | 1 | 7 | 9 | 7 |
| 4 | Gakid ling | 7 | 6 | 4 | 4 | 4 | 9 | 4 | 5 | 10 | 8 |
| 5 | Geleg phu | 7 | 6 | 6 | 6 | 6 | 10 | 5 | 8 | 9 | 9 |
| 6 | Jigme choeling | 8 | 10 | 6 | 5 | 6 | 5 | 7 | 10 | 10 | 5 |
| 7 | Seng- | 8 | 6 | 6 | 3 | 6 | 10 | 4 | 6 | 7 | 9 |

| | | | | | | | | | | | | |
|----|---------------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|--|
| | gey | | | | | | | | | | | |
| 8 | Shom pangkha | 6 | 4 | 7 | 2 | 7 | 10 | 4 | 5 | 9 | 8 | |
| 9 | Samtenling | 7 | 7 | 4 | 5 | 3 | 10 | 4 | 5 | 8 | 7 | |
| 10 | Serzhong | 4 | 4 | 3 | 5 | 2 | 10 | 6 | 8 | 7 | 5 | |
| 11 | Tareyhang | 7 | 5 | 7 | 3 | 5 | 6 | 2 | 7 | 3 | 9 | |
| 12 | Umling | 7 | 5 | 6 | 3 | 6 | 9 | 2 | 6 | 8 | 10 | |
| | Total | 83 | 70 | 58 | 51 | 62 | 107 | 47 | 71 | 90 | 90 | |
| | Overall Rank | 3 | 5 | 7 | 8 | 6 | 1 | 9 | 4 | 2 | 2 | |

(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. Flash flood occurs mainly during the rainy season in the months of June – August. Similarly, landslide and wildlife conflict was ranked second in Dzongkhag. 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 12 Gewogs under Sarpang 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 15: Seasonal Calendar of 12 Gewogs

| Months and Activities | | | | | | | | | | | | | |
|-----------------------|--------------|-----|--------|-----|-----|-----|-------|-------|-----|-----|-----|-----|-----|
| Sl # | Gewogs | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 1 | Chuzang-gang | H/F | P/H /F | P/H | P | M | P/H/M | P/H/M | M/P | P/M | | H | H/F |

| | | | | | | | | | | | | | |
|---|--------------|---------|-------|-------|-----|---------|---------|---------|-------|-------|-----|-------|-------|
| 2 | Chudzom | O | P/O | W/P/O | W | | M/P/O | M/P/H/O | M/H/O | | H/F | H/F | |
| 3 | Dekidling | W/D | W/P/D | W/P | W | M/T | M/H/P/T | M/H/P/T | M/T | M/T | H | H | W/D |
| 4 | Gakiling | P/D | P/D | W/T | W/T | | M/P/T/O | M/P/O | M | | | | |
| 5 | Gelephu | D/F | D/F | D/F | | M/P | M/P/Y | M/P/O/Y | M/O/Y | M/O | M | H/F | H/D/F |
| 6 | Jigmecholing | P/D | P/T/D | W/T | W/T | M/W/P | M/P | M/P | M/T | M/H/T | H | H/D | H/D |
| 7 | Senggye | | | | | | | | | | | | |
| 8 | Shompan gkha | P/H/D/F | P/D/F | W/H/F | W/H | M/P/H/T | M/P/T | P/T | M/P/T | M/T | | H/F | H/F |
| 9 | Samtenling | P/D | P/D | | H | M/H/O | M/P/O | M/O | M/O | M | H/F | H/D | H/D |
| 10 | Serzhong | D/W | D/W | P | P | W/M | W/M/H | P/W/M | P/M | M | F | D/W/H | D/W |
| 11 | Taraythang | W/D | D | H/D | H/P | M/P | M/T | M/T | M/T | P | | H/D | W/H/D |
| 12 | Umling | W | | H | H/P | M/P | M/T | M/T | M/T | P | | H | W/H |
| D= Dry season, P=Plantation/Sowing, F= Festival, M=Monsoon, W: Windstorm, H=Harvesting. O: Disease Outbreak, T- Thunder/lighting, Y- Flood, S-Hailstorm | | | | | | | | | | | | | |

a. Vulnerability Assessment

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

1. Chuzergang Gewog

Table 16: Chuzergang Gewog Vulnerability Assessment Table

| Sl. No | Hazard | Elements at Risk | Why they are at risk | |
|--------|---------------------|--------------------------------------|---|------------------------|
| | | | Physical /materials | Social/ Organizational |
| 1 | Flash Floods | Paddy fields, crops, drinking water, | Gewog bordered by two main rivers comprising of | |

| | | | | |
|---|---|--|---|--|
| | | irrigation water, people & livestock | numerous smaller streams. Geographically, its banks are very fragile which are eroded easily. | |
| 2 | Wildlife Conflict | People, Houses, livestock, Crops & Cash crops | Situated close to RMNP and also due to poaching by Indian at the border. Inability of Electric fencing to prevent them. | Imposing restriction on harming wildlife |
| 3 | Earthquake | Lives, structures, properties, cash crops, power supply, telecommunications infrastructure | Located on the seismically active belt. Poor quality of construction without proper building code. | Lack of monitoring of construction, though construction is approval from Dungkhag/Dzongkhag. |
| 4 | Windstorm | Food/cash Crops, Houses, lives, power supply | <ul style="list-style-type: none"> - Electricity transmission through rugged & Forest areas, - Structures surrounded by trees (Doma & other trees) - Transmission line running nearby the settlements. | - Poor knowledge on securing the roof to withstand against the storm |
| 5 | Vector borne Diseases (Malaria/Dengue) | Life of people in the Gewog | Plain area easily gets water logged during heavy downpour – very congenial for mosquito breeding. not feasible to drain the water which are logged | Unhygienic surrounding; people not able understand the importance of clean surrounding. |
| 6 | House Fire | House, properties, lives | Materials for construction, unattended butter lamps/fire | Lack of community awareness on fire safety. |
| 7 | Forest fire | Cash crops, livestock, people, structures | Unattended cigarette & Bedi buds of hunters in bordering area. | Lack of monitoring & control of cross border hunting |

2. Chudzom Gewog

Table 17: Chudzom Gewog Vulnerability Assessment Table

| Hazard | Elements at risk | Why they are at risk | |
|-------------|--|--|---|
| | | Physical/Materials | Social/Organizational |
| Landslide | a) Structures/Pvt HHs b) Cultivable Land/- c) Electricity pole/ d) Roads/Bridges etc | a) Use of Poor quality material for Construction/ b/c) site selection d) geographically unstable areas /Poor water management(Rain/water tail management) | Lack of technological know- how/ -lack of community vitality/ -lack of proper policy |
| Flash Flood | a) Houses near river banks (GalleythangVillage) b) Agricultural land c) Electric ST pole/ d) Jangchubling-Moukhola farm road/ Galleythang village | a) Poor material in use b) Wrong selection of cultivable land c/d) poor site selection | Wrong decision/ -alignment/ -unequal participation in community affairs |
| Fire | a) Houses at Pangkhey Bazaar and /lives(children's)/forest fire | a) Very old str/use of poor quality materials/poor electrification/burning of grassland for next season | Clustered settlement/ -absence fire line between houses/ -old age designs/lack of leadership/ |
| Windsto | a) Houses , b) electricity | a) Felling of trees/old design roofing | Lack of technical know- how |

| | | | |
|-----------------|---|---|--|
| rm | pole, | system(A- Shaped)/absence of wind ties b) Site selection/alignment | /poor alignment |
| Earthquake | a) Structures(Pangkhey Bazaar) /lives-90) | a) Old structure(constructe d in early 70s) /poor quality materials in use/ | Clustered settlement/ -absence of safe place between houses/ -old age designs/lack of leadership |
| Hailstone/storm | Cereal/cash Crops(Oranges/Pa ddy) | Absence of (green net) | -Lack of climate resilient high yielding variety / -absence of awareness on crop planting seasonal calendar |

3. Dekidling Gewog

Table 18: Dekidling Gewog Vulnerability Assessment Table

| Hazard | Element at Risk | Why they are at Risk | |
|--------------------------|--------------------------------|---------------------------------------|--|
| | | Physical/Material | Social/Organizational |
| Flash Flood/Landslide | - Farm Roads and GC Road | Poor Drainage, | |
| | | | Inadequate budget, |
| | - Ratay Bridge, | location and topography, | |
| | | | Do not provide land by land owners, |
| | - Irrigation Channel, | no other alternative water source, | Deforestation |
| | | | Developmental activities |
| | - Drinking water source, | Houses near rivers, | |

| | | | |
|--------------------|---------------------------------------|--|--|
| | Orange orchard (10 acres), | | |
| | | loose soil | |
| | Houses | | |
| Earthquake | Structures, live, power supply | located at seismically active zone, | inadequate knowledge in construction, |
| | | Poor quality construction | inadequate budget |
| wind storm | Houses, lives, Crops and power supply | Geographical location | Poor planning |
| | | Use of low quality materials | Lack of awareness |
| structure fire | Houses, | Poor electrification, improper installation of LPG | carelessness, |
| | schools, | | inadequate skills and knowledge, |
| | property, | | clustered settlement |
| | live | | |
| Wild life conflict | Crops, | improper fencing, | Biological corridors |
| | Houses | land covered by forest | Hunting practices by neighboring country |

4. Gakiling Gewog

Table 19: Gakiling Gewog Vulnerability Assessment Table

| Hazard | Element at risk | Why are they at risk | |
|-------------|--|---|--|
| | | Physical/Material | Socially/organizational |
| Earthquake | People/Domestic animals/infrastructures/Farm roads/Irrigation channel/RWSS/Electric Pole/Transmission Line | Old design/Geographical location/Scattered settlement | Lack of awarness/Weak connectivity |
| Flash Flood | People/Potential agricultural land /Farm road/Domestic animals/Electric Pole | Geographic location/poor structure | Poor Management/Weak Implementation & coordination/Lack of awareness |
| Landslide | People/farm roads/River/irrigation channel/RWSS/Electric Pole/ Transmission Line | Unstable land/Geographic location/poor structure | Poor Management/Poor cooperation within the society |

| | | | |
|-----------------------|--|--|------------------------------------|
| Lightening | People/Domestic animal/Electronic items/Structures | Poor wiring/usage of cheap quality electric items/Poor earthing | Lack of awarness |
| Structure Fire | People/Domestic animal/Structures | Poor electrification/Old traditional structure/Usage of firewood | Lack of awareness |
| Hail-storm | Crops(Paddy, | Poor method of farm mechanism(Green house) | Lack of awareness |
| Wildlife | People/Crops/Domestic animals | Encroachment/Poor method of protection | Poor cooperation among communities |
| Vector borne Diseases | People | Poor waste management/poor sanitation/Porous border | Poor community participation |

5. Gelephu Gewog

Table 20: Gelephu Gewog Vulnerability Assessment Table

| Hazard | Element at risk | Why they are at risk | |
|---|--|---|--|
| | | Physical/material | Social/organizational |
| Flood at shetikari and Mouechhu | Lives, structure, livestock, forest, road & bridges, farm road, irrigation channel, RWSS, pvt land and agricultural land | Improper location, unpredictable incessant rainfall, poor drainage system, poor structure | Improper planning in mitigating/preventing the flood over shetikari upstream Poor management |
| Wildlife conflict (elephant, wild boar, hare) | Lives, structure, livestock, agricultural outputs | Wildlife prone area, most private lands are forest cover, poor method of protection | - Least availability of experts in mitigating such issues -improper management of electric fencing gadgets -Budget constraints to procure energizer Poor cooperation in the communities |
| Landslide at I-slip and | Lives, livestock, forest, road , farm road, irrigation channel, RWSS, pvt land and agricultural land, | Loose soil, land slide prone area, poor drainage system, seasonal obstruction of | Lack of technical expertise in planning and mitigating works |

| | | | |
|------------------------------------|---|---|--|
| Raidara | electric pole | the traffic/communication, unstable land | Poor management |
| Epidemics (Malaria) All chiwogs | Lives | Malaria prone area, habit of stocking of water, poor waste management | Ignorance of public |
| Lightening | Lives, electronic gadgets, structures, livestock | Improper installation of earthing and low quality wire Geographical location of the gewog area | Ignorance of public |
| Earthquake | Lives, structures, road and bridges/livestock/irrigation channel/RWSS | Poor methods of construction, not knowing do's and don'ts/old design/geographical location/scattered settlement | Ignorance of public/ weak connectivity |

6. Jigmechoeling Gewog

Table 21: Jigmechoeling Gewog Vulnerability Assessment Table

| Hazard | Element at Risk | Why they are at Risk | |
|-------------|---|---|---|
| | | Physical / Materials | Social Organizational |
| Earth Quake | Structure, defaulting of land, road block | Proper foundation layout of structure. Lack of awareness | Absence of weak community organization |
| Wind Strom | House,crops Lhakhangs , road | Structure constructed on prone location. | Lack of training. Poor participation |

| | | | |
|------------|------------------------------------|---|--|
| | block | Lack of proper planning | |
| Land slide | Structure road, Land and forest | Disaster prone location. Poor construction of wall. Lack of plantation and land management | Lack of technical skills and awareness |
| Lightening | Structure, lives, forest fire | Installation of electricity, earthing and low quality of wire or materials | Ignorance and negligence Of public |

7. Senggye Gewog

Table 22: Senggye Gewog Vulnerability Assessment Table

| Hazard | Element Risk | Why they are at risk | |
|-------------|---|---|---|
| | | Physical/material | Social/Organisational |
| Flash Flood | Suspension bridge, buildings, irrigation canal, Causeway, human, livestock and land | Due to Heavy Rainfall Rugged terrain | Deforestation More development activities Burning of more CO2 |

| | | | |
|-------------------------|---|--|---|
| Wild life intrusion | Building structure, human, cash crops (orchard) | Areas being located nearer to wild life corridor Thorough accessibility for wild life. Less voltage being use in electric fencing Redundant to electric fencing | Hunting practice in neighbor areas Forest fire |
| Land slide | Irrigation canal, RWSS, Farm Roads, land, commuters, vegetation, | Fragile area Heavy rainfall in the region | Deforestation Developmental activities Unsustainable harvest of wood and NWFP. |
| Wind & thunder storm | House, electricity poles, crops, electric fencing, life, electric gadgets | Geographical location of the gewog Use of low quality materials. Improper earthing | Climate change Lack of property insurance scheme Lack of knowledge on wind tie. |
| Hail Stone | Crops , vehicle | Geographical location of the gewog Lack of garage for cars | Climate change Lack of crop insurance |
| Forest /Structural fire | Trees, house, land, life, | Electricity transmission being located through the rugged terrain & | Practice of forest burning in India for fodder |

| | | | |
|---|--|---|--|
| | | forest. Not knowing do's & don't's | |
| Earthquake | Civil infrastructure, human & animal life, | Location falls in seismologic zone IV & V Lack of disaster resilient structures | Not knowing do's & don't's |
| Epidemic outbreak (Malaria/ pest disease) | Human life, crops | Heavy rainfall makes favorable condition to breed mosquitoes. Fishery ponds to breed mosquitoes. | Reluctant in following the health instruction about the malaria's do's and don'ts Highly mobile population More fishery farm practice in the gewog |

8. Shompangkha Gewog

Table 23: Shompangkha Gewog Vulnerability Assessment Table

| Hazard | Element at risk | Why are they at risk | |
|-------------|--|--|--|
| | | Physical/Material | Socially/organizational |
| Flash Flood | People/Land/Crops/Farm roads/House/Bridge/RWSS | Settlement at low valley or river side/ Deforestation/Losen of soil/Poor construction compromising the quality | Lack of proper planning during settlement/Construction of River bank protection wall/Lack of communication/ Lack of Preparedness |
| Landslide | People/House/Land/Crops/Farm roads/Bridge/ | Settlement at hilly area/Construction at unstable land/Deforestation/Losen of soil/Poor FR | Lack of Land Management/Awareness/Lack of Proper Planning/ Lack of Preparedness |

| | | | |
|-----------------------------------|--|--|--|
| | | drainage system | |
| Wildlife (Elephant and Wild Boar) | People/ House at Dargaythang, Norbugang, Phurpaling, Koencholing / Crops | Encroachment /Lack of proper Mgt of Solar fencing/ Poor Construction | Threat to life/Lack of Community participation/Lack of Communication |
| Forest/Structural Fire | People/animals/ Structure/property/ forest | Poor electrification/lack of awareness/ Storing of fuel/Lack of poor utilization of Gas cylinder/Firewood/Bu tter lamp | Threat to life/Lack of Community participation/ Lack of Preparedness |
| Epidemic (Malaria & Dangué) | People | Lack of Awareness/ Not using safety measures | Life lost, Lack of Participation/ Hygienic |
| Earthquake | Soil Erosion/People/Land/ House/ Property/ | Settlement at hilly area/Construction at unstable land/ | Threat to Life/Lack of Preparedness/Lack of Public Participant |
| Thunder&Lightening | People/Domestic animals/Electronics/ Structure | Lack of proper earthing & electrification | Careless/Threat to life |
| Windstrom | People/Crops/ House | Geographical Locations/ Old structure | Threat to life, Lack of Participant |

9. Samtenling Gewog

Table 24: Samtenling Gewog Vulnerability Assessment Table

| Hazard | Element at risk | Why are they at risk | |
|------------|--|--|--|
| | | Physical/Material | Socially/organizational |
| Earthquake | People/house/arable land/Domestic animals/ Physical Infrastructure(School, office, RWSS, Irrigation Channel, Lhakhang)/Roads,Bridges | Poor method of construction, unstable land,old design, Geographical location, scattered settlement | Lack of proper planning in construction of infrastructure, Lack of skills,Poor method of construction, compromising with the quality, lack of awareness, lack of preparedness. |

| | | | |
|----------------------|---|--|--|
| Flood | People/house/areable land/Domestic animals/ Physical Infrastructure(School, office, RWSS, Irrigation Channel, Lhakhang)/crops/Roads/Bridges | Poor method of construction, unstable land, loose soil, settlement by riverside. | Lack of proper planning in construction of infrastructure, Lack of skills, Poor method of construction, compromising with the quality. |
| Landslide | People/house/areable land/Domestic animals/ Physical Infrastructure(School, office, RWSS, Irrigation Channel, Lhakhang)/crops/Roads | Poor method of construction, unstable land, loose soil, Deforestation, Slash and burn | Lack of proper planning in construction of infrastructure, Lack of skills, Poor method of construction, compromising with the quality. |
| Lightening | People/house/Domestic animal/Electronic appliances | Poor method of electrification, poor method of earthing | Careless of people, compromising quality, Lack of skill, Lack of awareness. |
| Fire | People/house | Poor method of electrification, old traditional structure, more usage of wood in construction. | Carelessness of people during usage of Gas and burning of butter lamp, lack of awareness. |
| Hailstorm | People/house/Domestic /Car/Cashcrop | Lack of green house, Lack of physical infrastructure. | Lack of awareness and carelessness. |
| Wildlife | People/House | Encroachment, Unstable shelter, poor method of construction | Lack of community participation in clearing the bushes, Lack of awareness. |
| Vector borne dieases | People | poor waste management, poor sanitary, porous border. | poor community participation. |

10. Serzhong Gewog

Table 25: Serzhong Gewog Vulnerability Assessment Table

| Hazard | Element at risk | Why they are at risk? | |
|-------------|---|--|--|
| | | Physical/Material | Social/Organizational |
| Earthquake | Structures (Houses, Schools, BHU, Temples, Electricity, Telecommunication)- Whole gewog | Inferior construction materials, poor designing, unstable location | Budget constraint, lack of skills and knowledge, tower and power lines are constructed without consulting the local people |
| Landslide | Land(Tashiphu, Serzhong), GC Road, Irrigation channel(Serzhong, Tashiphu), Water supply line, | Poor designing, unstable location, | Reluctance to provide farm land, poor cooperation |
| Flash flood | Land (Serzhong, Tashiphu, Barshong), protection wall | Land being located near MaoKhola river | People do not have land in other area |
| Hail storm | Food and Cash crop(Whole gewog) | Natural calamities, variable climatic conditions | No proper cropping season |
| Wind Storm | Structures, Crops | Weak roofing system, season change, no wind ties | Lack of knowledge on wind resistant roof, Wrong cropping season |

11. Taraythang Gewog

Table 26: Taraythang Gewog Vulnerability Assessment Table

| Hazard | Element at risk | Why they are at risk | |
|-------------------------|---|--|--|
| | | Physical/Material | Social/organizational |
| Earthquake | Houses, schools, BHU, Offices, roads, electricity poles, telecom towers, lives of people and animals, irrigation channels, | Poor construction of houses, Location | Old people are living in the Gewog. Lack of awareness. Lack of reconstruction Budget |
| Flood | Wet land, roads, Singye chu bridges, irrigation channel and Paddy fields of two chiwogs, RWSS, lives of people and Langkhar chu river bank. | Poor method of construction, can't predict the river course. Location. | Lack of knowledge's and skills. No land in safer or other areas. |
| Forest Fire | Houses and properties, schools, BHU, Offices, lives of people and animals, forest, | Poor internal wiring of houses. | Lack of awareness |
| Lighting and Thundering | Electric Poles and transformers, Fire of houses and forests, Human Lives | Climatic condition, Poor house construction) | Lack of Awareness and skills, Economical(poor) |
| Windstorm | Human Lives, Agriculture Products, Houses(destruction) | Density of Forest, Geographical location. Poor structure. | Poor Economic, |
| Wild animals | Lives of people and animals, paddy, bananas, arecanut, forest, ginger | Dense forest across the border. | Lack of cooperation among the communities. |

12. Umling Gewog

Table 27: Umling Gewog Vulnerability Assessment Table

| Hazard | Element at risk | Why they are at risk | |
|------------|--|--|--|
| | | Physical/Material | Social/organizational |
| Earthquake | Houses, schools, BHU, Offices, roads, electricity poles, telecom towers, lives of people and animals, irrigation channels, | Poor construction of houses, located at prone zone | Old people are living in the Gewog. Lack of awareness, monitoring from officials during construction |

| | | | |
|--------------|--|---|--|
| Flood | Wet land, roads, suspension bridges, irrigation channel, RWSS, lives of people and animals | Poor construction, can't predict the river course. Past history, soil is not stable, gewog bordered by two main rivers, deforestation | Lack of awareness |
| Fire | Houses and properties, schools, BHU, Offices, lives of people and animals, forest, | Poor internal wiring of houses, unattended butter lamp, cigarette buds | Lack of awareness, procurement of cheap electrical materials |
| Wild animals | Lives of people and animals, paddy, bananas, areca nut, forest, ginger | Dense forest across the border. Located near RMNP | Lack of cooperation among the communities. |

b. Capacity Assessment

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. Chuzanggang Gewog

Table 28: Chuzanggang Gewog Capacity Assessment Table

| Hazard | Physical Capacity | Economic Capacity | Social/Institutional |
|--------------|---|---|--|
| Flash Floods | <ul style="list-style-type: none"> - Access to motorable road to assist the affected - Gewog Bolero & Private vehicles to assist the affected - Access to both T-cell & B-mobile network - Farm Shop - Fiber optic network connectivity - Rice mill | <ul style="list-style-type: none"> - GDG funds for immediate reliefs - Shops - Rural life insurance - Rural House Insurance | <ul style="list-style-type: none"> - Village volunteers - Army camp - BHU Gr. I - Dzongkhag Disaster Management Office - Dzongkhag Kidu Office/HM's Semso - Clustered settlement (easy Coordination & Communication), - Water source protection in flood Chaskhar areas |
| Wildlife | | | <ul style="list-style-type: none"> - Village level Volunteer to chase the wild elephants |

| | | | |
|--|---|---|--|
| Conflict | - Electric fencing | | - Forestry personnel of Divisional Forest Office |
| Earthquake | - Earthquake resilient structures in (RNR/BHU/School) - Access to motorable road - Access to both T-cell & B-mobile network - Farm Shop - Secure Gewog centre for evacuation, (School football ground, Meeting Hall), secure and open Gewog Office area/plain areas | -GDG funds for immediate reliefs -Farm Shop - Rural life insurance - Rural House Insurance | - Army camp - BHU Gr. I for relief works -Dzongkhag Disaster monitoring Office - Dzongkhag Kidu Office/HM's Semso |
| Windstorm | - Access to both T-cell & B-mobile network - Farm Shop | - GDG funds for immediate reliefs - Rural life insurance - Rural House Insurance | - Army camp - BHU Gr. I for relief works - Village level Volunteer |
| Vector borne Diseases (Malaria/Dengue) | -BHU Gr.1 -Adequate Health staffs -Proximity to Gelephu CRR | GDG funds for immediate reliefs | - BHU Gr.I - CAG to assist Health sector - Trained village Health workers - Vector Borne Control Office |
| House Fire | - House located in the proximity to motor able road - Gelephu Police Station | - GDG funds for immediate reliefs - Farm Shop - Rural life insurance - Rural House Insurance | -Closeness of villagers to assist the affected -Dzongkhag Disaster monitoring Office -Kidu Office/HM's Semso |
| Forest fire | - Easy access to motor able road - Physically plain area | | - Army camp - Village volunteer - Proximity to Gelephu Divisional Forest Office & RMNP |

2. Chhudzom Gewog

Table 29: Chhudzom Gewog Capacity Assessment Table

| Hazards | Physical Capacity | Economic capacity | Social/Institutional capacity |
|-------------|---|---|---|
| Landslide | <p>Presence of R&B wall/Hume pipes at prone location/Gabon wall / /presence of Adler tree(Gamma Shing/Utis)</p> <p>-Availability of bamboo/cane/ wild seasonal fruits / ferns, mushrooms/</p> <p>-DoR's Excavators, JCB</p> <p>-mobile towers/every HHs with Mobile phone and Villages with network coverage</p> <p>-availability of Napier Grass</p> | <p>Improved living standard(Cardamom/Cash Crop)</p> <p>-Rural house and life insurance</p> <p>-HM's Semso</p> | <p>RNR/Gewog/higher level Play grounds/BHUs/Schools/</p> <p>-50 Civil servants/ SLMP/</p> <p>-Sanam Tshongkhag/ BDBL/Community Center</p> <p>-Dzongkhag Kidu Office</p> <p>-DDMO office</p> |
| Flash Flood | <p>-Bridges/ River bank protection walls at Moukhola under Jangchubling chiwog/</p> <p>-Mobile tower every HHs with Mobile phone and Villages with network coverage</p> | <p>Improved living standard(Cardamom)</p> <p>-Rural house and life insurance</p> <p>- HM's Semso</p> | <p>RNR/Gewog/higher level Play grounds/BHU/School/</p> <p>-50 Civil servants</p> <p>Sanam Tshongkhag/ Hard ware shops-Dzongkhag Kidu Office</p> <p>-DDMO office</p> |
| Fire | <p>-30 boleros/ rivers/ streams/ Farm roads/ Population/ Village volunteers</p> | <p>Improved living standard(Cardamom)</p> <p>-Rural house and life insurance</p> | <p>RNR/Gewog/higher level Play grounds/BHU/School/50 Civil servants /People aware of Str/forest fire-</p> |

| | | | |
|------------|---|--|---|
| | - every HHs with Mobile phone and Villages with network coverage | | Dzongkhag Kidu Office -DDMO office |
| windstorm | -Availability of bamboo/cane/ wild seasonal fruits / ferns, mushrooms/ -maximum 1 storied houses /every HHs with Mobile phone and Villages with network coverage | -Improved living standard Cardamom as cash crop -Rural house and life insurance | RNR/Gewog/higher level Play grounds/BHU/School/50 Civil servants /People aware of dos and dont's during windstorm |
| Earthquake | Play grounds/Ekra houses/30 boleros 2 mobile towers/ every HHs with Mobile phone and Villages with network coverage | -Improved living standard -Rural house and life insurance | RNR/Gewog/higher level Play grounds/BHU/School/50 Civil servants /People aware of Structure/forest fire -Dzongkhag Kidu Office -DDMO office |

3. Dekiling Gewog

Table 30: Dekiling Gewog Capacity Assessment Table

| Hazard | Physical Capacity | Economic Capacity | Social/Institutional Capacity |
|-----------------|--|--------------------------|--|
| Flood/Landslide | Excavator, Utility vehicle | Insurance/loan | TTI/ Army camp, Police Training Center, Schools, BHU,BHSL, |
| Earthquake | Football ground, Marketshed, Electricity, | Insurance/loan | Army Camp, DeSuup, School, Police Training Center, BHU, BHSL |
| | Ex-health Officer and VHW | | |

| | | | |
|-------------------|------------------------------|--------------------|--|
| Windstorm | Proper roofing and Designing | Insurance/ loan | Awareness, |
| | | | Army Camp, DeSuup, School, Police Training Center, BHU, BHSL |
| Structure Fire | Fire fighter truck, | Insurance/ loan | Police Training Center, TTI, Army camp and BHU |
| | Dol River, | | |
| | Bhur River and Kafley river | | |
| Wildlife conflict | Electric fencing | Insurance | Village volunteers to chase |
| | | | Forest beat Office |

4. Gakiling

Table 31: Gakiling Gewog Capacity Assessment Table

| Hazard | Physical capacity | Economic capacity | Socially/institutional capacity |
|---------------|---|--|---|
| Earthquake | Getemka CPS ground/Meanchulam ECR ground/Gewog office ground/Rilangthang Turkey Farm Ground/Sangkha ORC ground/Vehicle / Gewog/Public/FOP-Volunteers Staffs/Teachers/Students/NPDCL | Self sufficient community/Available of Insurance Scheme/farm road connectivity/Mobile connectivity/Electricity/Poultry/fishery | Gewog Administration/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle /Volunteers |
| Flood | Gakidling view point area/Upper Kamidara area/river bank protection at upper Gakidling area/Turkey breeding Office area(Safe evacuation)/NPDCL Office | Self sufficient community/Available of Insurance Scheme/farm road connectivity/Mobile connectivity/poultry/fishery | Gewog Office/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle/ Volunteers |
| Landslide | Sangkha Leaching ground/Vegetable shed/BHU/ORC//Vehicle / Gewog/Public/Voulenters/Farm road | Self sufficient community/farm road connectivity/Mobile connectivity/poultry/fishery | Gewog Office/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle/ Volunteers |
| Lightening | BHU II/ Farm Road/Vehicles | Self sufficient community/farm road connectivity/Mobile | Gewog Office/School/Turkey breeding office/BHU |

| | | | |
|-----------------------|---|---|---|
| | | connectivity/poultry/fishery | II/ORC/FCB/Vehicle /Volunteers |
| Fire | FCB/BHU II | Available of Insurance Scheme | Gewog Office/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle /Volunteers |
| Hailstorm | Gewog Office | Self sufficient community/farm road connectivity/Mobile connectivity/ | Gewog Office/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle /Volunteers/Lack of insurance |
| Wildlife | BHU II/ Farm Road/Vehicles/Electric fencing | Gewog Office/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle /Volunteers/available of Insurance Scheme | Gewog Office/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle /Volunteers |
| Vector borne Diseases | ORC/BHU II/Vehicles/Farm Road | Self sufficient community/farm road connectivity/Mobile connectivity | Gewog Office/School/Turkey breeding office/BHU II/ORC/FCB/Vehicle /Volunteers |

5. Gelephu Gewog

Table 32: Gelephu Gewog Capacity Assessment Table

| Hazard | Physical capacity | Economic capacity | Social/intuitional capacity |
|--|---|--|--|
| Flood at shetikari and Mouechhu | -Excavators within the gewog, open space at WING IX and PMSS -Availability of bamboo, -River bank protection downstream (gabion wall) -FCB & Grocery shops | Rural life/house insurance scheme FCB | RBA SCHOOL MI room DoR camp Gewog Administration Ex-civil servants trained on |

| | | | |
|---|--|--|--|
| | <p>within gewog</p> <p>-Chiwog and gewog meeting hall</p> | | <p>disaster</p> <p>Contractors within Gewog</p> <p>Awareness on flood</p> |
| <p>Wildlife conflict (elephant, wild boar, hare)</p> | <p>-Electric fencing</p> <p>-Bamboo or barbed wire fencing</p> <p>-clearing of bushes and forest on pvt land</p> | <p>Kidu/HM Semsu/ crop insurance</p> | <p>Awareness on management of electric fencing to public by Gewog Extension</p> <p>Gewog RNR</p> <p>Gewog Administration</p> |
| <p>Landslide at I-slip and Raidara</p> | <p>Excavators within the gewog</p> <p>Construction of retaining wall, plantation on affected area</p> | <p>Life insurance, vehicle insurance</p> | <p>DoR camp</p> <p>Contractors within gewog</p> <p>Gewog Administration</p> |
| <p>Epidemics (Malaria)</p> <p>All chiwogs</p> | <p>Supply of Mosquito net</p> <p>Timely Indoor Residual Spray (IRS)</p> | <p>Life insurance</p> | <p>MI room</p> <p>Gelephu Hospital</p> <p>Awareness by health and gewog officials</p> <p>Budget allocation from GDG</p> <p>Trained VHW in 5 chiwogs</p> <p>Gewog Administration</p> <p>Veter borne disease control programme</p> |
| <p>Lightening</p> | <p>Proper earthing, proper wiring of the house</p> | <p>House/life Insurance, kidu</p> | <p>BPC</p> <p>Awareness on electricity and usage of Electronic gadgets by BPC</p> |

| | | | |
|-------------------|---|---|--|
| | | | Gewog Administration |
| Earthquake | <p>Open space at WING IX and PMSS</p> <p>Good road and mobile connection</p> <p>Proper house construction as per the guidelines</p> <p>Gewog utility vehicle</p> <p>Grocery shops within gewog</p> <p>Chiwog and gewog meeting hall</p> | <p>Rural life/house insurance scheme</p> <p>FCB</p> | <p>RBA</p> <p>SCHOOL</p> <p>MI room</p> <p>DoR camp</p> <p>Chiwog and gewog meeting hall</p> <p>Ex-civil servants trained on disaster</p> <p>Awareness on earthquake</p> <p>Gewog Administration</p> |

6. Jigmechoeling Gewog

Table 33: Jigmechoeling Gewog Capacity Assessment Table

| Hazard | Physical Capacity. | Economic Capacity | Social / Institutional Capacity |
|---------------|--|---------------------------------|---|
| Land Slide | Excavator. De-Suups, Ex. Arm personals, | Rural house and life insurance. | DOR/ Gewog Officials / public/ |
| Windstorm | <p>-Gewog hall/ School ground</p> <p>BHU.</p> <p>-Proper anchored roofs</p> <p>-De-Suups, FOP.</p> | Rural house and life insurance. | <p>-Gewog,officials/ civil servant and public.</p> <p>-Taking shelter in lower floor.</p> |

| | | | |
|------|---|--------------------------------|---|
| | | | |
| Fire | Stream, Forest, De-Suups, FOP. Local people | Rural house and life insurance | Public, Civil servant, De-Suups FOP , friends |

7. Senggye Gewog

Table 34: Senggye Gewog Capacity Assessment Table

| Hazard | Physical capacity | Economic capacity | Social/institutional capacity |
|-------------------------|--|--|---|
| Flood | -Play ground -concrete bridges -Army outpost -meeting hall -utility car -more vehicle owners in the gewog -B-mobile coverage -protection walls -motor able bridge over sisty | -rural insurance scheme (house & life) -Shares -saving accounts - FCB & shops available | -Community vitality -army -SSB -Park officials |
| Wild life intrusion | -Electric fencing -Park office - road accessibility -electrification | -elephant conservation committee seed money -GDG | -community elephant quick response team - Park officials |
| Land slide | -road accessibility to all chiwogs - | rural insurance scheme (house & life) | -Community forest group |
| Wind & thunder storm | -Mass production of bamboos | Rural house & life insurance scheme | Disaster committee in gewog |
| Hail Stone | | | Disaster committee in gewog |
| Forest /structural fire | -Approach roads -perennial river flow at Sisty khola -fishery ponds | -FCB & shops available -insurance schemes | -Disaster committee in gewog -trained farmers on fire line management. |
| Earthquake | -BHU in the gewog - evacuation sites like play ground, plain area | -Rural house & life scheme | -disaster committee in gewog -community vitality |

| | | | |
|---|---|---------------------------|---|
| | <ul style="list-style-type: none"> -meeting hall - available govt. and private vehicles -earthquake resilient structures -non wood products available (eg. Fern and other eatable products) -single storied buildings | | |
| Epidemic outbreak (Malaria/ pest disease) | <ul style="list-style-type: none"> -BHU in the gewog -trained staffs | Rural house & life scheme | <ul style="list-style-type: none"> -CAG member -Trained Malaria technician -farmers trained on local pest control methods. |

8. Shompangkha Gewog

Table 35: Shompangkha Gewog Capacity Assessment Table

| Hazard | Physical capacity | Economic capacity | Social/Institutional capacity |
|------------------------|--|--|--|
| Landslide | Gewog vehicle, FOP, Volunteers, Machineries, temporary shed, Retired (civil servant, Arm force, Health) | Insurance Scheme, Compensation, Volunteer Contribution | Sarpang CS, Sarpang LSS, Kencholing ECR, GT Hall, Gewog Administration, RBP, Arm Force |
| Flashflood | Gewog vehicle, FOP, RBP, volunteers, Machineries, temporary shed, Retired (civil servant, Arm force, Health official) | Insurance Scheme, Compensation, Volunteer contribution, Kidu or HM Semso | Sarpang CS, Sarpang LSS, Kencholing ECR, GT Hall, Gewog Administration, RBP, Arm Force |
| Wildlife | Foresters, Volunteers, Electric/Solar Fencing | Insurance Scheme, Compensation, | Community Participation, Gewog Administration |
| Forest/Structural Fire | Fire Brigade, Sarpang Khola, Khami Khola, Machineries, Open ground, Volunteers, Temporary Shed, Retired (civil servant, Arm force, Health) | Insurance Scheme, Compensation, Volunteer Contribution/ Kidu or HM Semso | Sarpang LSS & Sarpang CS/ Kencholing ECR/, Gewog Administration, RBP, Arm Force |

| | | | |
|-----------------------------|---|--|---|
| Thunder&Lightening | Volunteers, vehicles | Insurance Scheme, Compensation, volunteer contribution | Local community participation, Gewog Administration |
| Earthquake | Gewog Bolero, FOP, volunteers, Machineries, Temporary Shed, Retired (civil servant, Arm force, Health),Gewog Football ground at Dargaythang, School Grounds | Insurance Scheme, Compensation, Volunteer Contribution/ Kidu or HM Semso | Sarpang LSS & Sarpang CS/ Kencholing ECR/, Gewog Administration, RBP, Arm Force |
| Windstorm | Gewog Bolero, FOP, volunteers, Machineries | Insurance Scheme, Compensation, Volunteer Contribution | Community Participation, Gewog Administration, RBP |
| Epidemic (Malaria & Dengue) | Private Vehicle, Ambulance, Retired Health Civil Servant | Rural Life Insurance Scheme | Volunteers, Sarpang Hospital/Awareness from Health |

9. Samtenling Gewog

Table 36: Samtenling Gewog Capacity Assessment Table

| Hazard | Physical/Material Capacity | Economic Capacity | Social/Institutional Capacity |
|---------------|---|---|---|
| Earthquake | Class room and School ground, RNR Hall & office, Gewog Office, Farm shop, meeting Hall, Public ground of Samtenling, Lhakhangs and Neykhangs at Dechenpelri, Gewog ECR, Edi ECR, Teachers, students, Staff of gewog, BCD, RNR, druk seed, ORC, FOP, Airport, VHW, LG members. | Insurance scheme, Farm shop, Stone crushing unit, 3 Nursery, BPC, Telecom and Tashi cell, Pvt shops, Community Contractors, Poultry and piggery farms, Private shops. | BCD, Druk seed, Research center, Phulari Neykhang, Edi community Lhakhang, Shiva hindu mandir |

| | | | |
|----------------|--|---|---|
| Flash Flood | Class room and School ground, RNR Hall & office, Gewog Office, Farm shop, meeting Hall, Public ground of Samtenling, Lhakhangs and Neykhangs at Dechenpelri, ORC, Gewog Bolero, Staff of BCD, RNR, druk seed, FOP, Airport, VHW, LG members, River bank protection, gabion wall. | Insurance money, Farm shop, Stone crushing unit, 3 Nursery, BPC, Telecom and Tashi cell, Pvt shops, Community contractors, Poultry and Piggery farms, Private shops | BCD, Druk seed, Research center, Phulari Neykhang, Edi community Lhakhang, Shiva Hindu Mandir |
| Landslides | Class room, RNR Hall & office, Gewog Office staff, Farm shop, meeting Hall, Lhakhangs and Neykhangs at Dechenpelri, ORC, ORC, Gewog Bolero, Staff of BCD, RNR, druk seed, FOP, Airport, VHW, LG members. | Insurance money, Farm shop, Stone crushing unit, 3 Nursery, BPC, Telecom and Tashi cell, private shops, community contractors, Poultry and Piggery farms, private shops | BCD, Druk seed, Research center, Phulari Neykhang, Edi community Lhakhang, Shiva hindu mandir, Gewog Administration office. |
| Lightening | FOP, Gewog Administration staff, Gewog Vehicle. | Insurance scheme, Community volunteers, Kidu compensation | Reciting of prayers at Mandir and Lhakhang. |
| Structure Fire | FOP, Gewog Administration staff, Gewog Vehicle, RNR hall, Farmshop, ORC. | Insurance scheme, Community volunteers, Kidu compensation | Reciting of prayers at Mandir and Lhakhang. |
| Hailstorm | FOP, Gewog Administration staff, Gewog Vehicle, RNR hall, Farmshop, ORC. | Insurance scheme, Community volunteers, Kidu compensation | Reciting of prayers at Mandir and Lhakhang, Gewog Administration office |
| Wildlife | Gewog administration, RNR staff, Gewog Vehicle | Insurance scheme, kidu compensation, RNR seeds and seedling distribution, Wildlife conservation fund, | Nursery, Druk seed, Research center. |

| | | | |
|--|--|---------------|--|
| | | Private shops | |
|--|--|---------------|--|

10. Serzhong Gewog

Table 37: Serzhong Gewog Capacity Assessment Table

| HAZARD | Physical Capacity | Social/Institutional capacity | Economical Capacity |
|---------------|---|---|--|
| Earthquake | Vehicle, Norbuling CS ground, BHU, Mobile tower, | Norbuling CS, BHU, Lakhang(Pemaling and Serzhong) | Shops, Sonam Tshongkhang, Rich people, Insurance |
| Landslide | People, Vehicle, Private JCB, Saplings, stones | Norbuling CS, Serzhong PS, Forest Office | GDG, |
| Flash flood | Rope, vehicle, private JCB, River Bank Protection, stones | RNR Office, Gewog Administration, School, BHU | Shops, Sonam Tshongkhang, Rich people, insurance |
| Hail storm | | RNR Office, | Shops, Sonam Tshongkhang, Rich people |
| Wind Storm | Nails, ropes, ladders, | Norbuling CS, BHU | Shops, Sonam Tshongkhang, Rich people, house insurance |

11. Taraythang Gewog

Table 38: Taraythang Gewog Capacity Assessment Table

| Hazard | Physical capacity | Economic capacity | Social/ institutional capacity |
|---------------|---|---|---|
| Earthquake | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims |
| Flood | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims |
| Lighting | FOP, Gewog Administration, Gewog vechile | Insurance Scheme, community volunteers, compensation. | BPC Service nearby, Disaster Management |
| Fire | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims |
| Wild animals | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims |

12. Umling Gewog

Table 39: Umling Gewog Capacity Assessment Table

| Hazard | Physical capacity | Economic capacity | Social/ institutional capacity |
|---------------|---|--|---|
| Earthquake | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured, GDG, Kidu and semso | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims, Park officials |

| | | | |
|--------------|---|--|---|
| Flood | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured, GDG, Kidu and semso | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims, park officials |
| Fire | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured, GDG, Kidu and semso | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims, park officials |
| Wild animals | School ground, BHU, RNR center, Gewog office, ORC, vehicles | FCB agent, shops, insured, GDG, Kidu and semso | Army outpost, School teachers, retired civil servant, retired arm force personals, friend of police, lhakhang to carry out kurims, park officials |

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 Sarpang 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).

c. Disaster Management Action Plan (2018– 2022)

Table 40: Dzongkhag Level Action Plan

| Priority Area | Key Activities | Target | Nodal Agency | Supporting agencies | Timeline | Budget estimate (Nu. in M) | Remarks |
|---|--|--|--------------------------------------|--|--|----------------------------|---------|
| 1.DDMC Meetings as per the DM Act of Bhutan 2013 | Conduct DDMC meetings bi-annually as per the DM act of Bhutan 2013 | DDMC | Dzongkhag/ DDMO | DDMC | to be clubbed with DT Meetings or as and when require urgently | 2.50 | |
| Awareness and Education | 1.1 Public education and advocacy program on HVCA(Hazard, Vulnerability, Capacity Assessment) | 12 Gewogs | Dzongkhag/ DDMC | Gewog Administration /Regional offices/ DDM/ RBP | Bi annually starting 2018 | 5.00 | |
| | 1.2 Conduct meetings with Principals and disaster focal teachers to strengthen linkages with school DM plans | Schools | DEO, DDMC | Dzongkhag Administration | 2018 | 1.50 | |
| | 1.3 Dzongkhag observes International Disaster Reduction Day (13 th October every year) | Dzongkhag Administration, Schools, communities, Rabdey, Business | DDMO, DDMC, Dzongkhag Administration | DDM | Annually from 2018 | 0.50 | |

| | | | | | | | |
|--|--|--|--------------------------------------|--|--------------------|------|--|
| | | community, Regional offices | | | | | |
| | 1.4 Raise awareness on insurance benefits and encourage families to insure their property against various hazards | All Gewog and Thromde Communities | Gewog Administration, Thromde Thuemi | Insurance companies, DDM, Dzongkhag Administration | Annually from 2018 | 0 | The regional offices to ask to conduct awareness |
| | 1.5 Raise awareness on fire safety gadgets (fire alarm, extinguishers in govt., and community lhakhangs) | Govt offices, private building owners, Caretakers of Lhakhangs | RBP/ Dzongkhag Administration | Gewog Administration and community | 2018-2019 | 0.20 | |
| | 2.1 Conduct training on Bhutan Building Codes and Guidelines for construction of Traditional houses (including for earthquakes and windstorms) | Engineers, carpenters, Masons, Gewog administration staff | Dzongkhag Adm./DES | DDMC, DDM, DES (MoHWS), DoC (MoHCA) | 2019 | 0.80 | |

| | | | | | | | |
|--|---|--|-------------------------------------|--|-------------|-------|---|
| 2.Enhance risk reduction and mitigation | 2.2 Carry out vulnerability assessment of old/ existing buildings/ houses (earthquake) with DES | Cultural buildings, office buildings, private buildings | Dzongkhag Adm, DES | DDMC, DDM, DES, MoHWS, MoE, DoC (MoHCA) | 2020 | 0 | (DE/ DDMO to discuss with MoWHS/ MoHCA) |
| | 2.3 Implement structural and non-structural mitigation measures | Mitigation for priority structures (Government structures) | DE/ DDMO | DDM, DES (MoHWS), MoE, Gewog Adm. Dratshang | 2021 | 0 | Based on assessment |
| | 2.4 Strengthen construction quality control and monitoring mechanism for materials and adherence to standards and designs | Gewog Administration and Dzongkhag Administration | Gup/ Mangmi, DE | DES, MoWHS/ BSB, DDM Other relevant sectors | 2018 – 2022 | 0 | (as per existing rural construction rules 2013 framed by MoWHS) |
| | 2.5 Flood and landslide hazard zonation | Dzongkhag | DGM, NCHM, MoWHS | DDMC, Dzongkhag Administration Land Commission | 2018-2022 | 0 | (discuss with technical sectors) |
| | 2.6 Study of windstorm pattern and impact in the dzongkhag/ gewog | Dzongkhag | DDMO | DDM, NCHM | | 0 | (discuss with DES (MoWHS)/ NCHM and MOAF |
| | 2.7 Implement mitigation measures on Flood mitigation in | Flood prone and landslide area | Dzongkhag/ Respective Sectors, DDMO | DDM, GNHC, MoF, MoWHS, MoEA, | 2018 – 2022 | 350.0 | Based on identified priority mitigation |

| | | | | | | | |
|---|--|--|------|------------------------------------|--------------------|------|-----------------------------------|
| | Shitekhari/Sarpang khola/Maukhola/Taklai - Landslide mitigation | | | concerned technical sectors | | | activity |
| 3. Enhance preparedness, response and recovery | 3.1 Refresher course for the Dzongkhag SAR Team (including De-Suups) | SAR team, RBP | DDMC | DDM, RBP | Annually from 2018 | 1.00 | |
| | 3.2 Training of Dzongkhag Disaster Assessment Teams on Bhutan Disaster Assessment Tools | Engineers, Sector heads and Gewog Administration staff, Tshogpas, regional offices | DDM | Dzongkhag and Gewog Administration | 2018 | 0.30 | |
| | 3.4 Establish Dzongkhag Emergency Operation Center (including Standard Operating Procedures) | Dzongkhag Administration | DDMO | DDMC, DDM Relevant sectors | 2020 | | (equipment supported through DDM) |
| | 3.5 Sensitize, conduct mock drill/ simulation on Dzongkhag DM and Contingency plan | Dzongkhag, Dungkhang Administration, Gewog Administration Dratshang, RBP, RBA, Judiciary, Regional Offices, De-Suung, Business and | DDMC | DDM | 2018-2021 | 0.50 | |

| | | | | | | | |
|--------------|--|-------------|---|----------------------------|-----------|--------------|--|
| | | Communities | | | | | |
| | 3.6 Stockpile essential items required for emergency response and immediate recovery at strategic locations | Dzongkhag | FCB (Essential food items) Farm shops (in Gewogs) ORC (first aid kits) Dzongkhag and Gewog Adm (for other items) | DDM, MoF, relevant sectors | 2018-2022 | | |
| | 3.8 Capacity building activities for DM and response (Trainings, study visits etc) for dzongkhag and gewog officials | DDMC/DDMO | DDM | Dzongkhag DDMO | 2018-2023 | 0.3 | |
| Total | | | | | | 362.6 | |

GEWOG ACTION PLAN

Table 41: i. Chuzanggang Gewog Action Plan

| Severity | Priority Areas | Key Activities | Target | Responsible Agency | Supporting Agency | Timeline | Budget (M) |
|--------------------------------------|---|---|------------------------------------|----------------------|--|---------------|------------|
| Flash Floods | Mitigation & Flood Control programs in the Flood prone areas | Initiate community Plantation in the highly risk areas | Jangkhu ng, Taklai, Maukhola | Gewog Administration | Divisional Forest Office | 2018-19 | 0.100 |
| | | Construct retaining wall at the identified/prioritized sites | Jangkhu ng, Taklai, Maukhola | Gewog Administration | Dzongkhag/ Dungkhag Engineering Sector(DES) | 2019-20 | 10.000 |
| | Sensitization/ Awareness on the flash Flood Hazards | Sensitize the settlers along the river/flood affected areas on flash floods | 250 HHs | Gewog Administration | Gewog Administration | 2018-19 | 0.020 |
| Vector borne disease outbreak | Strengthening the role & capacity of CAG in the preventive programs | Ensure conduct of regular cleaning Campaigns | 587 HHs | Gewog Administration | Gewog Health Sector | 2018-19 | 0.010 |
| | | Initiate regular Monitoring of uses of distributed | All HHs | Gewog Health Sector | Community Action Group(CAG) | Regular Basis | 0.000 |

| | | | | | | | |
|---------------------------|--|--|-------------------|----------------------|--|---------|-------|
| | | mosquito nets | | | Members | | |
| Wildlife conflicts | Improve Electric Fencing | Construct & Maintain electric fencing using GI Angle post | Selected location | Gewog Administration | Gewog RNR/Dzongkhag Agriculture sector | 2020-21 | 2.000 |
| | Encourage utilization of registered private land | Clearing of registered land turned into bushes of in the south of Gewog | 100 HHs | Gewog Administration | Gewog (Agri./Forestry) | 2019-20 | 0.000 |
| Earthquake | Ensure construction of Disaster resilient rural houses | Sensitize community on construction of disaster resilient dwelling | All Households | Gewog Administration | DES | 2018-19 | 0.010 |
| | | Monitor approval & construction of rural houses | New constructions | Gewog Administration | DES | Timely | 0.000 |
| | Strengthen community capacity/awareness on earthquake related Hazards and preparedness | Conduct community awareness on safety of life & properties during, pre and post earthquake | All HHs | Gewog Administration | DDMO | 2018-19 | 0.010 |
| | | Establish Gewog/Chiwog | No. | Gewog | DDMO | 2018-19 | 0.030 |

| | | | | | | | |
|-------------------|---|---|---------|----------------------|------------|---------|-------|
| | | Level Disaster response Committee | | Administration | | | |
| Windstorm | Advocate and sensitize public on Windstorms | Sensitize on safety measures during windstorm | All HHs | Gewog Administration | DDMO | 2018-19 | 0.010 |
| House Fire | Sensitize people on Fire safety measures | Initiate awareness program to the public on fire safety | All HHs | Gewog Administration | DDMO/ RICB | 2020-21 | 0.010 |
| total | | | | | | | 12.19 |

Table 42: ii. Chhudzom Gewog Action Plan

| Severity | Priority Areas | Key activities | Target | Responsible Agency | Supporting Agency | Time-line (FY) | Budget (Nu.M) |
|------------|--|---|--------------------|----------------------|------------------------------|----------------|---------------|
| Flashflood | Awareness and Education | -Awareness programs on dos and don'ts with regard to flash floods - plantation of trees -SLMP -Advocacy on safe construction | all Chiwog | Gewog Administration | DDMO and Engineer | 2017-2018 | 0.025 |
| | Enhanced risk reduction and mitigation | -Construction Of Gabion Wall at Jangchubling and Galleythang chiwog | Vulnerable chiwogs | Gewog Administration | DDMO DMO, Engineering sector | 2018-19 | 0.500 |

| | | | | | | | |
|-----------|---|--|-------------|----------------------------------|------|------------|-------|
| landslide | Enhanced preparedness, response and recovery levels | <ul style="list-style-type: none"> - Mock drills - Health officials to be ready to deal with trauma and first aid kits. - Setting proper line of communication with higher authority - Identification safe evacuation place on higher grounds - | All Chiwogs | Gewog, Health officials and DDMO | DDMC | 2018- 2019 | 0.000 |
| | Awareness program | <p>Give training on building houses as per government approved design</p> <p>-technique on planting trees to protect houses from landslide (Bio-Engineering)</p> | All chiwogs | Gewog Administration | DDMC | 2018-19 | 0.010 |
| | total | | | | | | 0.535 |

Table 43: iii. Dekidling Gewog Action Plan

| Severity | Priority Areas | Key activities | Target | Responsible Agency | Supporting agency | Time line (FY) | Budget (M) |
|----------|----------------|----------------|--------|--------------------|-------------------|----------------|------------|
|----------|----------------|----------------|--------|--------------------|-------------------|----------------|------------|

| | | | | | | | |
|---------------------|--|---|--------------------------------|----------------------|--------------------------|-----------|-----|
| landslide/ Flood | Awareness program | Awareness program | all chiwog | Gewog Administration | DDM/Forestry | 2017-18 | |
| | Land Management | Afforestation program Training | Prone areas | Gewog Administration | DDM/Forestry | 2017-2018 | |
| | Enhanced risk reduction and mitigation | Construction of Gabion wall | Leokhola | Gewog Administration | DES/Forestry | 2018-2019 | 0.9 |
| | | construction of drain | Darbithang and Nobgang village | Gewog Administration | DES/forestry/agriculture | 2018-2019 | 0.5 |
| | | River Diversion and dredging | Kafley khola and Leo khola | Gewog Administration | DES/forestry/agriculture | 2019-2020 | 0.3 |
| Windstorm | Awareness and Education | awareness on wind resilience house construction | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2018-2019 | |
| | | Plantation of bamboo and trees | Prone areas | Gewog Administration | DES/forestry/agriculture | 2017-2018 | |
| Wild life conflict | Enhanced risk reduction and mitigation | Electric fencing | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2018-2019 | 0.3 |
| | Awareness program | use traditional ideas | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2017-2018 | |

| | | | | | | | |
|------------|---|---|-------------|----------------------|--------------------------|-----------|-------|
| | | awareness program | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2018-2019 | 0.010 |
| | | Clearing of Bushes | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2017-2018 | |
| Fire | Awareness and Education | Awareness program on electrification and use of fuels | all Chiwogs | Gewog Administration | | 2018-2019 | |
| | Enhanced Risk reduction and mitigation | Awareness program on quality construction | all Chiwogs | Gewog Administration | | 2017-2018 | |
| | Enhanced preparedness and response | Setting up proper chain of command stock piling relief items proper damage assessment and reporting | all Chiwogs | Gewog and Dzongkhag | DDMC | | |
| Earthquake | Awareness and education | Do's and don'ts Gewog DDMC | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2018-2019 | |
| | Enhance risk reduction and mitigation | Conduct Trainings for masons and carpenters | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2018-2019 | |
| | Enhance preparedness, response and recovery | institute rapid response team and command center | all Chiwogs | Gewog Administration | DES/forestry/agriculture | 2018-2019 | |

| | | | | | | | |
|-------|--------|--|--|--|--|--|-------|
| | levels | | | | | | |
| total | | | | | | | 0.201 |

Table 44: iv. Gakidling Gewog Action Plan

| Severity | Priority Areas | Key activities | Target | Responsible Agency | Supporting Agency | Time-line (FINANCIAL YEAR) | Budget (Nu.M) |
|-----------------|--|--|---------------|---------------------------|--------------------------|-----------------------------------|----------------------|
| Flash Flood | Awareness/Sensitization | <ul style="list-style-type: none"> • Awareness programs on dos and don'ts in regards to Flash Flood • Advocacy on Safe Construction • Tree Plantation | All Chiwogs | Gewog Administration | DDM/Department Of Forest | 2018-2022 | .050 |
| | Enhanced risk reduction and mitigation | <ul style="list-style-type: none"> • Construction of Gabon Wall where ever in need • Formation of communities' evacuation teams. | All Chiwogs | Gewog Administration | Engineering Sector | 2018-2022 | 20.0 |

| | | | | | | | |
|-------|---|---|-------------|----------------------------------|------|-----------|-------|
| | Enhanced preparedness, response and recovery levels | <ul style="list-style-type: none"> • Mock drills • Health officials to be ready to deal with trauma and first aid kits. • Setting proper line of communication with higher authority | All Chiwogs | Gewog, Health officials and DDMO | DDMC | 2018-2022 | 0.050 |
| total | | | | | | | 20.55 |

Table 45: v. Gelephu Gewog Action Plan

| Severity | Priority area | Key activities | Target | Responsibility Agency | Supporting Agencies | Timeline (FY) | Budget (M) |
|-----------------|----------------------|----------------------------------|---------------|------------------------------|----------------------------|----------------------|-------------------|
| | 1.Enhance house | 1.Record no of house constructed | | Gewog | Dzo/Dungkhag | | |

| | | | | | | | |
|--------------------------------|--|---|---------------------------|----------------------|---|------------|---------|
| | construction as per the guidelines | 2. Monitoring of house construction as per the guidelines | HHs with new construction | Administration | Land Record | 2018-22 | |
| | 2. Ensure all houses in gewog are insured | 1. Monitoring of RICBL insurance payment receipt | 423 HHs | Gewog Administration | RICBL | 2018-22 | |
| Flood at shetikari and Mouchhu | 3. Initiation of preventive and mitigation measure | 1. Plantation at source | All chiwogs | Gewog Administration | DoR, Dzongkhag and Dungkhag Administration, DDMO, RNR | 1. 2018-19 | a.0.20 |
| | | 2. Construction of Gabion wall upstream | | | | 2. 2018-19 | b.50.0 |
| | | 3. Dredging of debris by hiring excavators | | | | 3. 2018-22 | c. 1.10 |
| | | 4. Procurement of disaster emergency kits such as tents, water storage tanks, toilet etc... | All Chiwogs | Gewog Administration | Dzongkhag Administration | 2018-19 | d. 20.0 |
| Wildlife conflict (elephant, | 1. Ensure active participation in electric fencing | 1. Awareness to public on advantage of electric fencing | | | | 1. 2018-22 | a.0.10 |

| | | | | | | | |
|---------------------------------|--|--|--|----------------------|--|-------------------------|--------|
| wild boar, hare) | and bush clearing | | All chiwogs | Gewog Administration | Gewog RNR | | |
| | | 2.Monsoon bush clearing twice a year | | | | 2.2018-22 (April & Aug) | |
| | | 3. Construct & maintain electric fencing | | | | 3.2018-22 | b.0.50 |
| Landslide at I-slip and Raidara | 1. Initiation of preventive and mitigation measure | 1.Construction of retaining wall | Pelrithang khatoe chiwogs and Road users | Gewog Administration | DoR, Dungkhag Administration, Engineer | 1.2018-19 | a.1.00 |
| | | 2.Plantation at site | | | | 2.2019-20 | b.0.2 |
| | | 3. Erecting of danger/warning sign board at I-slip | | | | 3.2018-19 | c.0.05 |
| | | 4. Proper drainage system in all farm roads | | | | 4.2018-19 | d.4.0 |
| | | 5. Dredging of debris by hiring | | | | 5. 2018-22 | e.0.5 |

| | | | | | | | |
|--|---|--|-------------|-------------------------|--------------------------|------------|--------|
| | | excavators | | | | | |
| Epidemics (Malaria) All chiwogs | 1.Initiation of awareness and cleaning campaign program | 1.Awareness on malaria and usage of net to the public | All chiwogs | Gewog Administration | Gelephu Hospital, DHO | 1.2018-22 | a.0.10 |
| | | 2. Monthly cleaning campaign | | | | 2.2018-22 | b.0.50 |
| Lightening | 1.Initiation of awareness program | 1.Awareness on Electricity to the public | All chiwogs | Gewog Administration | BPC | 1.2018-22 | a.0.10 |
| | 2. Ensure all the HHs with good quality wire | 2. Monitoring of new constructed HHs | | | | 2. 2018-22 | |
| Earthquake | 1.Initiation of awareness program | 1.Awareness on Earthquake to the public | All chiwogs | Gewog Administration | DDMO | 1.2018-22 | a.0.10 |
| | 2. Ensure earthquake resilience structure | 1. monitoring of structures constructed as per the guidelines | | | | 1.2018-22 | |
| Total | | | | | | | 78.875 |

Table 46: vi. Jigmechoeling Gewog Action Plan

| Severity | Priority Areas | Key activities | Target | Responsible Agency | Supporting Agency | Time-line (FY) | Budget (Nu.M) |
|-----------------|--|--|---------------|---------------------------|---------------------------------|-----------------------|----------------------|
| Land Slide | Enhance awareness and Education | Conduct meeting and identify the prone areas | All Chiwogs | Gewog | RNR. | 2017-2018 | 0.150 |
| | Enhanced risk reduction and mitigation | Plantation program. Construction of retaining and gabion wall | All Chiwogs | Gewog | .Forest Division. Dzongkhag, | 2017-2018 | 0.100 |
| Earthquake | Awareness and education | Dos and Don'ts Importance of investing in resilient homes | All chiwogs | Gewog | DDMO | 2017-2018 | 0.060 |
| | Enhanced risk reduction and mitigation | Retrofitting of weak structures | All chewogs | Gewog | DDMO | 2017-2018 | 0.200 |

| | | | | | | | |
|------------|---|--|-------------|---------------------|------------------------------|------------|-------|
| | 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 -Expediting insurance claims - institute the concept of build back better - Stockpiling of important relief materials | All chiwogs | Gewog and Dzongkhag | DDMO | 2017-2018 | 0.100 |
| Wind Strom | Awareness of safety measures against the houses | Construction of safe and resilient houses | All chiwogs | Gewog | DDMO | 2017-2018 | 0.06 |
| | Enhanced risk reduction and mitigation | <ul style="list-style-type: none"> -Retrofitting of weak structures -proper construction system | All Chiwogs | Gewog | Dzongkhag Forest Division | 2017-2018 | 0.200 |
| | Crop damages | Improve logging resistant varieties | All chiwogs | Gewog | Research Centers. Bhur | 2017-2018 | 0.100 |
| | Awareness on forest management | Plantation of saplings | All Chiwogs | Gewog | RNR | 2017-12018 | 0.150 |

| | | | | | | | |
|-------------------|---|---|--------------------|--------------------------|--------------|-----------|-------|
| Structure Fire | Enhance advocacy on safe house and relevant awareness | Installation of fire extinguisher. Usage of high quality electrical materials Form community response group | All chiwogs | Gewog | DDMO and BPC | 2017-2018 | 0.100 |
| | Awareness and Education | -Awareness programs on dos and don'ts in regards to LGP cylinders and Electrical equipment. | All Chiwogs | Gewog | DDMO and BPC | 2017-2018 | 0.150 |
| | Enhanced risk reduction and mitigation | - Construction of water reservoir tank. - Install automatic fire alarm and extinguisher | Vulnerable chiwogs | DMO, Engineering sector. | DDMO | 2017-18 | 0.100 |
| total | | | | | | | 1.70 |

Table 47: vii. Seng-gey Gewog Action Plan

| Severity | Priority Areas | Key activities | Target | Responsible Agency | Supporting Agency | Time-line (FY) | Budget Nu.M |
|----------|----------------|----------------|--------|--------------------|-------------------|----------------|-------------|
|----------|----------------|----------------|--------|--------------------|-------------------|----------------|-------------|

| | | | | | | | |
|--------------------|--|---|-------------|----------------------|--|-----------|-----|
| Flash Flood | Awareness and Education | Awareness programs | all Chiwog | Gewog Administration | Dzongkhag administration/department of Road. | 2018-22 | 2.0 |
| | Enhanced risk reduction and mitigation works | Discourage and disapprove construction of Rural house nearer to flood prone areas | | | | | |
| | | River diversion works & construction of Gabion walls over the river bed. | | | | | |
| Wildlife intrusion | Improve electric fencing | Emphasize on permanent post and good quality wire for electric fencing. | all Chiwogs | Gewog Administration | Phibsoo park office/Dzongkhag Forest Office | 2018-2022 | 1.0 |
| | | Awareness on importance of clearing the bush around electric fencing. | | | | | |
| | | Construction of new & maintenance of existing electric fencing | | | | | |

| | | | | | | | |
|---------------------------|----------------------------|---|--|-------------------------------------|---------------------------------------|-----------|------|
| Landslide | Awariness and education | Awariness programs on importance of forest and management of water body | Three chiwog (Yarpheling, Nyenyul and Rishong) | Gewog administration | Dzongkhag Administration | 2019-20 | 0.30 |
| | Landslide mitigation works | Plantations/ Land management programs | | | | | |
| Forest or structural fire | Awariness and education | Training on basic fire fighting | All chiwogs | Gewog administration | Dzongkhag Forest Office & Park Office | 2018-2022 | 0.10 |
| | | Awareness on safe electrification and construction. | | | | | |
| Earth quake | Awariness and education | Awariness program on structural and non-structural hazards/Mockdrill | All chiwogs | Gewog administration / seng-gey CPS | Gewog administration/DDMO | 2020-2021 | 0.10 |
| Epidemic malaria | Awariness and education | Conduct health education program on malaria prevention. | All chiwogs | Gewog administration | BHU | 2018-2022 | 0.10 |
| | Prevention activities | Training for CAG and monthly cleaning program | | | | | |

| | | | | | | | |
|-------|--|--|--|--|--|--|------|
| total | | | | | | | 3.60 |
|-------|--|--|--|--|--|--|------|

Table 48: viii. Shompangkha Gewog Action Plan

| Severity | Priority Area | Key Activities | Target | Responsible Agency | Supporting Agency | Time Line (FY) | Budgets (M) |
|-----------------|---|---|---------------|---------------------------|--------------------------|-----------------------|--------------------|
| Flash Flood | a) Awareness and Education Programme | Awareness/Training on Bio Engineering Awareness on different Insurance Schemes | All Chiwogs | Gewog administration | RNR/DDM | 2018 - 2019 | 0.300 |
| | b) Enhanced risk reduction and mitigation | Encourage for Tree plantation and Land Management Advice Construction at Fashflood resilient places Construction of permanent structure (Retaining and Gabion wall) | | | | | |
| | c) Enhance preparedness | Expedite insurance schemes to the | | | | | |

| | | | | | | | |
|-----------|--------------|---|-------------|----------------------|---------|-------------|--|
| | and response | victims setting up proper chain of command Prompt action on damages Assessment and reports | | | | | |
| Landslide | a) | Awareness and Education Programme Awareness on different Insurance Schemes | All Chiwogs | Gewog administration | RNR/DDM | 2018 - 2019 | |
| | b) | Enhanced risk reduction and mitigation Encourage for Tree plantation and Land Management Advice Construction at Landslide resilient places Construction of permanent structure (Retaining and Gabion wall) | | | | | |
| | c) | Enhance preparedness and response Expedite insurance schemes to the victims setting up proper chain of command Prompt action on damages Assessment and reports | | | | | |

| | | | | | | | | |
|--------------------------------------|----|--|--|-------------|----------------------|-------------------|-------------|-------|
| Wildlife (Elephant and Wild Boar) | a) | Awareness and Education Programme | Awareness/Training to Wildlife Conservation Community Awareness on different Insurance Schemes | All Chiwogs | Gewog administration | RNR/DDM/DoF | 2019 - 2020 | 0.200 |
| | b) | Enhanced risk reduction and mitigation | Maintenance of Solar/Electric Fencing Construction of additional Fencing | | | | | |
| | c) | Enhance preparedness and response | Expedite insurance schemes to the victims setting up proper chain of command Prompt action on damages Assessment and reports | | | | | |
| Forest/ Structural Fire | a) | Awareness and Education Programme | Awareness programs on storage & usage of LPG, Fuels and Standard Electrification. Awareness on different Insurance Schemes | All Chiwogs | Gewog administration | RNR/DDM/DoF/ BPCL | 2019 - 2020 | 0.050 |
| | b) | Enhanced risk reduction and | Encourage for Plantations creation of fire lines prone areas | | | | | |

| | | | | | | | |
|------------|---|--|-------------|----------------------|------|-------------|-------|
| | mitigation | Control Backfiring during incidences | | | | | |
| | c) Enhance preparedness and response | Expedite insurance schemes to the victims setting up proper chain of command Prompt action on damages Assessment and reports | | | | | |
| Earthquake | a) Awareness and Education Programme | Awareness on construction of earthquake resilience structure Awareness/training on safety measures and conduct Mock drill | All Chiwogs | Gewog administration | DDMO | 2018 - 2019 | 0.030 |
| | b) Enhanced risk reduction and mitigation | Advice to renovate old structures | | | | | |
| | c) Enhance preparedness and response | Expedite insurance schemes to the victims setting up proper chain of command Stockpiling of important relief materials | | | | | |

| | | | | | | | |
|-----------------------------|----|---|--|-------------|----------------------|--------------|-------------|
| | | Prompt action on damages Assessment and reports | | | | | |
| Epidemic (Malaria & Dangué) | a) | Awareness and Education Programme | Awareness on Diseases | All Chiwogs | Gewog administration | DHO/Hospital | 2019 - 2020 |
| | b) | Enhanced risk reduction and mitigation | Encourage to use mosquito net, Hygienic | | | | |
| | c) | Enhance preparedness and response | Prompt action on infected Assessment and reports | | | | |
| | | | | | | | 0.020 |
| Thunder & Lightning | a) | Awareness and Education Programme | Awareness programs on proper usages and installation of Standard Electrification & Earthing. | All Chiwogs | Gewog administration | BPCL | 2019 - 2020 |
| | b) | Enhanced risk reduction and mitigation | | | | | |
| | c) | Enhance preparedness and response | Prompt action on Assessment and reports submission | | | | |
| Windstorm | a) | Awareness and Education | Awareness/training on building wind resilient house | All Chiwogs | Gewog administration | RNR/DDM | 2018 - 2019 |

| | | | | | | | |
|-------|-----------|--|--|--|--|--|-------|
| | Programme | Awareness on different Insurance Schemes | | | | | |
| | b) | Enhanced risk reduction and mitigation | Advise construction of houses on less risk areas | | | | |
| | c) | Enhance preparedness and response | Expedite insurance schemes to the victims setting up proper chain of command Prompt action on damages Assessment and reports | | | | |
| total | | | | | | | 0.600 |

Table 49: ix. Samtenling Gewog Action Plan

| Severity | Priority Area | Key activities | Target | Responsible Agency | Supporting Agency | Timeline(FY) | Budget |
|----------|----------------------------|--|-------------|----------------------|-------------------|--------------|--------|
| | 1. Awareness on Flashflood | 1. Sensitize the public not to construct house near river. | All Chiwogs | Gewog Administration | RNR,DDMO | 2018-2022 | 0.025 |
| | | 1.2.Awareness for preparedness | All Chiwogs | Gewog Administration | RNR,DDMO | 2018-2022 | 0.025 |

| | | | | | | | |
|----------------|----------------------------|--|-----------------------|----------------------|----------|-----------|-------|
| 1. Flash Flood | 2. Land management Program | 2.1 Plantation of seedlings | All Chiwogs | Gewog Administration | RNR | 2018-2022 | 0.15 |
| | | 2.2. Bio engineering | All Chiwogs | Gewog Administration | RNR,DOR | 2018-2022 | 0.15 |
| | 3. Mitigation measures | 3.1 Procure emergency kits. | All Chiwogs | Gewog Administration | RNR,DDMO | 2018-2022 | 0.10 |
| | | 3.2 Construction of Gabion wall | All Chiwogs | Gewog Administration | RNR,DOR | 2018-2022 | 0.50 |
| | | 3.3. Formation of response committee | All Chiwogs | Gewog Administration | RNR | 2018-2022 | |
| | | 3.4. River Dredging | Ipoli and Phaitakhola | Gewog Administration | NRDCL | 2018-2022 | |
| | 4. Ritual measures | 4.1. Carry out rituals offering | All Chiwogs | Gewog Administration | Neykhang | 2018-2022 | 0.10 |
| 2. Landslides | 1. Awareness on Landslides | 1. Sensitize the public not to construct in unstable land and below the tower. | All Chiwogs | Gewog Administration | RNR,DDMO | 2018-2022 | 0.025 |
| | | 2. Awareness for preparedness | All Chiwogs | Gewog Administration | RNR,DDMO | 2018-2022 | |
| | 2. Mitigation Measures | 1. Afforestation | All Chiwogs | Gewog Administration | DOF | 2018-2022 | 0.3 |
| | | 2. Establishment of CF and PF | All Chiwogs | Gewog Administration | DOF | 2018-2022 | 0.15 |
| | | 3. Formation of response committee | All Chiwogs | Gewog Administration | RNR | 2018-2022 | |
| | 3. Ritual measures | 1. Carry out rituals offering | All Chiwogs | Gewog Administration | Neykhang | 2018-2022 | 0.1 |

| | | | | | | | |
|-------------------|--------------------------|---|-----------------------------|----------------------|----------------|-----------|-------|
| 3. Wildlife | 1. Awareness on wildlife | 1. Sensitize public on taking up measures for prevention. | All Chiwogs | Gewog Administration | RNR,DOF | 2018-2022 | 0.025 |
| | | 2. Construction and Maintenance of electric fencing | All Chiwogs | Gewog Administration | RNR,DOF | 2018-2022 | 0.5 |
| | 2. Mitigation Measures | 1. Formation chasing Committee | All Chiwogs | Gewog Administration | DOF | 2018-2022 | |
| 4. Earthquake | 1. Advocacy to public | 1. Sensitize for preparedness | All Chiwogs | Gewog Administration | DDMO | 2018-2022 | 0.025 |
| | 2. Mitigation Measure | 1. Earthquake resilient construction | All Chiwogs | Gewog Administration | DE | 2018-2022 | |
| | | 2. Formation of response committee | All Chiwogs | Gewog Administration | RNR | 2018-2022 | |
| | | 3. Locate Evacuation center | All Chiwogs | Gewog Administration | Chiwog Tshogpa | 2018-2022 | |
| | | 4. Conduct mock drill | All Chiwogs | Gewog Administration | DDMO | 2018-2022 | 0.03 |
| 5. Structure fire | 1. Awareness to public | 1. Sensitization on prevention of fire and usage of LPG | All Chiwogs | Gewog Administration | DDMO | 2018-2022 | 0.025 |
| | 2. Mitigation Measures | 1. Standard electrification | All Chiwogs | Gewog Administration | BPC | 2018-2022 | |
| | | 2. Installation of fire extinguisher | Gewog office, RNR office,CC | Gewog Administration | | 2018-2022 | 0.2 |

| | | | | | | | | |
|-------|--|--|--|--|--|--|--|------|
| Total | | | | | | | | 2.43 |
|-------|--|--|--|--|--|--|--|------|

| Severity | Priority area | Key Activities | Target | Responsible Agency | Supporting agency | Time line | Budget (m) |
|-----------------|--|--|---|---------------------------|---|---------------------------|-------------------|
| 1. Land slide | 1. control/mitigate landslide. | Construct gabion walls -Create awareness on benefits of gabion walls. -Trees and bamboo plantation -Sa-chu bumter | All chiwogs | Gewog Administration | Dz. Engineering Sector, DDM Forest/park division. DOR | 2017-2028 Feb | 10.63 |
| 2. Flash flood | 1. control/mitigate Flash flood. 2. land management | 1.dregding 2.clearing of debris 3.construct drainage 4.training on land management | All chiwogs 80 | Gewog Administration | Dzongkhag/ DOR | 2017-2018 November | 10.00 |

| | | | | | | | |
|---------------|--|--|-----------------------------|----------------------|--|--|-------|
| 3.Hail storm | 1. Prevent hailstorm severity | 1. Local ritual | All chiwogs | Gewog administration | dratshang/Gomde/Dubde | Twice a year (as and when occur) | 0.050 |
| 4. Wind storm | 1.reduce damages to properties, crops, lives | 1.Roof tie 2.lodge resistant variety . 3. advocacy and awareness 4. Plantation trees near houses. | All chiwogs | Gewog administration | Dzongkhag Adm. Forest/park division Agriculture research centre. | Twice a year Relay on weather focus (BBS) | 0.050 |
| 5.Earth quake | 1. Enhanced knowledge on earthquake | 1. Create sensitization on earthquake impact | All chiwogs and School | Gewog Administration | Dzongkhag/DDM | Jan | 0.10 |
| | 2. Mainstream earthquake resilient infrastructure construction | 1. Train on disaster resilient construction activities | Gewog Masons and Carpenters | Gewog Administration | Dz. Engineering Sector, DDM | Jan | |
| total | 3. | 2. | | | | | 20.83 |

Table 50: xi. Tareythang Gewog Action Plan

| Severity | Priority Area | Key Activities | Target | Responsible Agencies | Supporting Agencies | Timeline | Budget |
|---------------------------|--|--|---------------|---|----------------------------|----------------------------|--------------------|
| 1.Flood | a)Enhance Awareness b)Programme. River Protection wall(Gabion Wall) | i) Community sensitization. ii)Construction of Gabion wall. | Four Chiwogs | Gewog Administration. Dungkhag Administration. | DDM | 2017-18 (April) | 0.035 0.500 |
| 2.Earthquake | Enhance Awareness Programme(Disaster Management). | i)Form Disaster Committee ii) Promote and construct safe and disaster resilient houses. | All Chiwogs | Gewog Administration | DDM | 2017-18 (Dec, Jan.) | 0.035 |
| 3.Lighting and Thundering | Enhance Awareness Programme. | Community sensitization | All Chiwogs | Gewog Administration. | BPC. DDM | 2017-18 | 0.035 |
| 4.Windstorm | a)Enhance advocacy on importance of safe house. b) Promote the formation of | i)Construction of disaster resilient house. ii) Form Disaster management | All | Gewog Administration. | | 2017-18 | |

| | | | | | | | |
|----------------------------|--|---|-------------|---|---------|-----------|----------------|
| | community emergency response and relief group. | committee | Chiwogs | | DDM. | | 0.035 |
| 5.Forest Fire | a)Enhance Awareness Programme. | i)Form Disaster Management Committee. ii)Creating forest fire lines. | All Chiwogs | Gewog Administration. Dungkhag Administration. | DDM | 2017-2018 | 0.045 |
| 6.Human Wildlife Conflicts | a)Awareness on preventing forest Ecosystem and wild life habitats. | i) Crop Insurance scheme. ii)maintenance and promote electric fencing. | All Chiwogs | Gewog Administration. Dungkhag Administration. | DoA/DoF | 20117-18 | 0.500 0.100 |
| total | | | | | | | 1.285 |

Table 51: xii. Umling Gewog Action Plan

| Severity | Priority Area | Key Activities | Target | Responsibility Agency | Supporting Agency | Time line | Budget |
|-----------------|---|--|---------------|------------------------------|--|------------------|---------------|
| 1. Flash flood | Enhanced advocacy and awareness | Awareness and training | All Chiwogs | Gewog Administration | DDM, DDMC, Flood Warning Unit | 2018-19 | 0.100 |
| | Enhanced formation of management plan | Formation of Chiwog disaster management plan | All chiwogs | Gewog Administration | DDM, DDMC | 2018-19 | 0.100 |
| | Enhanced construction of river bank protection wall | Construction of river bank protection wall along Taklai river (Gaden Village) | Gaden Chiwog | Gewog administration | DDM, DDMC, DES | 2018-19 | 3.0 |
| | | Construction of river bank protection wall along Langer river (Rijoog Village) | Rijoog Chiwog | Gewog administration | DDM, DDMC, DES | 2018-19 | 3.0 |
| | Conduct Rituals | Rituals offering during season | All Chiwogs | Gewog Administration | Dzongkhag | Every year | |
| 2. Wild Animals | Enhanced advocacy and awareness | Awareness and training | All Chiwogs | Gewog Administration | DDM, DDMC, Park Office | 2018-19 | 0.100 |
| | Enhanced formation of management plan | Formation of Chiwog disaster management plan | All chiwogs | Gewog Administration | DDM, DDMC, Park Office | 2018-19 | 0.100 |
| | Enhanced construction of fencing | Electric fencing | All chiwogs | Gewog Administration | RNR, Dzongkhag Agriculture Sector, RMNP Office | 2018-19 | 0.500 |
| 3. Earthquake | Enhanced advocacy and | Awareness and training | All | Gewog | DDM, | 2018- | 0.100 |

| | | | | | | | |
|---------------------------|---------------------------------------|--|-------------|----------------------|---------------------|------------|----------------|
| | awareness | | Chiwogs | Administration | DDMC | 19 | |
| | Enhanced formation of management plan | Formation of Chiwog disaster management plan | All chiwogs | Gewog Administration | DDM, DDMC | 2018-19 | 0.100 |
| | Enhanced safe construction practice | Encourage people to construct one storey house with resilient features | All chiwogs | Gewog Administration | Dzongkhag, DES | Every year | |
| 4. Fire | Enhanced advocacy and awareness | Awareness and training | All Chiwogs | Gewog Administration | DDM, DDMC | 2018-19 | 0.100 |
| | Enhanced formation of management plan | Formation of Chiwog disaster management plan | All chiwogs | Gewog Administration | DDM, DDMC | 2018-19 | 0.100 |
| | Enhanced safe construction practice | Encourage people to use proper wire with resilient features | All chiwogs | Gewog Administration | Dzongkhag, DES, BPC | Every year | |
| total | | | | | | | 7.3 |
| Total of 12 gewogs | | | | | | | 132.806 |
| Total of dzongkhag | | | | | | | 362.6 |
| Over all total | | | | | | | 495.406 |

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.

a. 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.

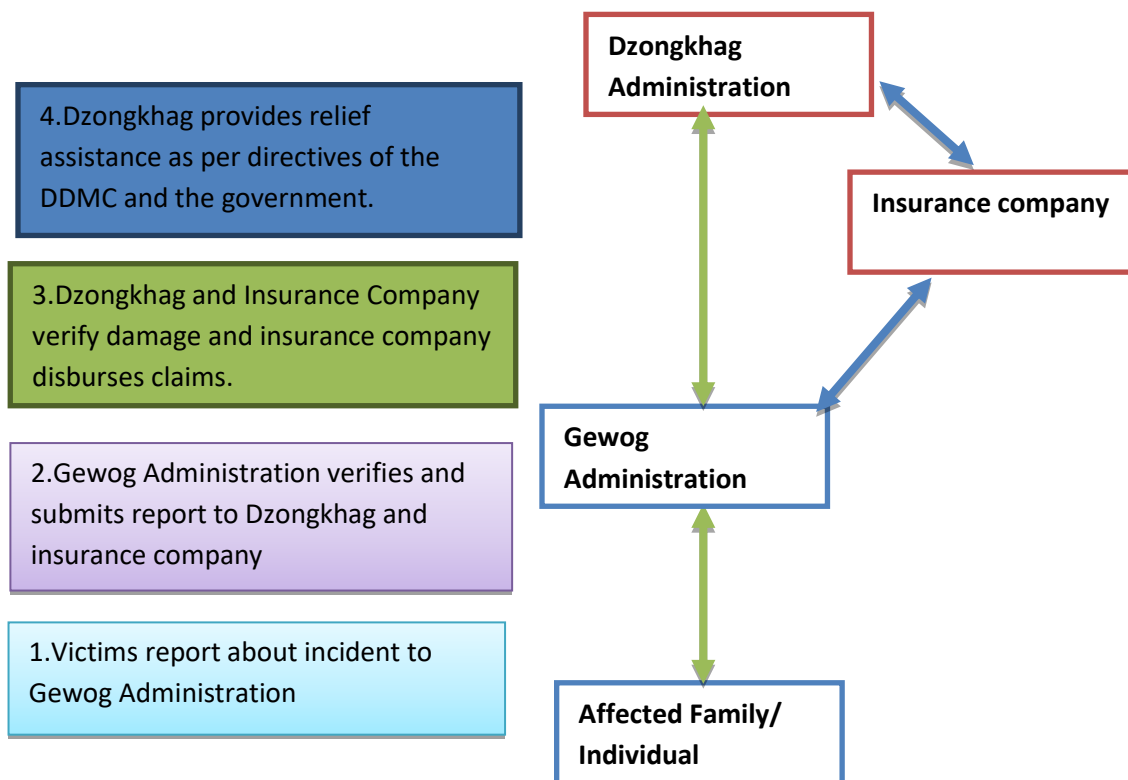


Figure 4: Standard procedure for isolated local incidents

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

- 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.
- In case of an incident/disaster situation:
 - 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 III 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.

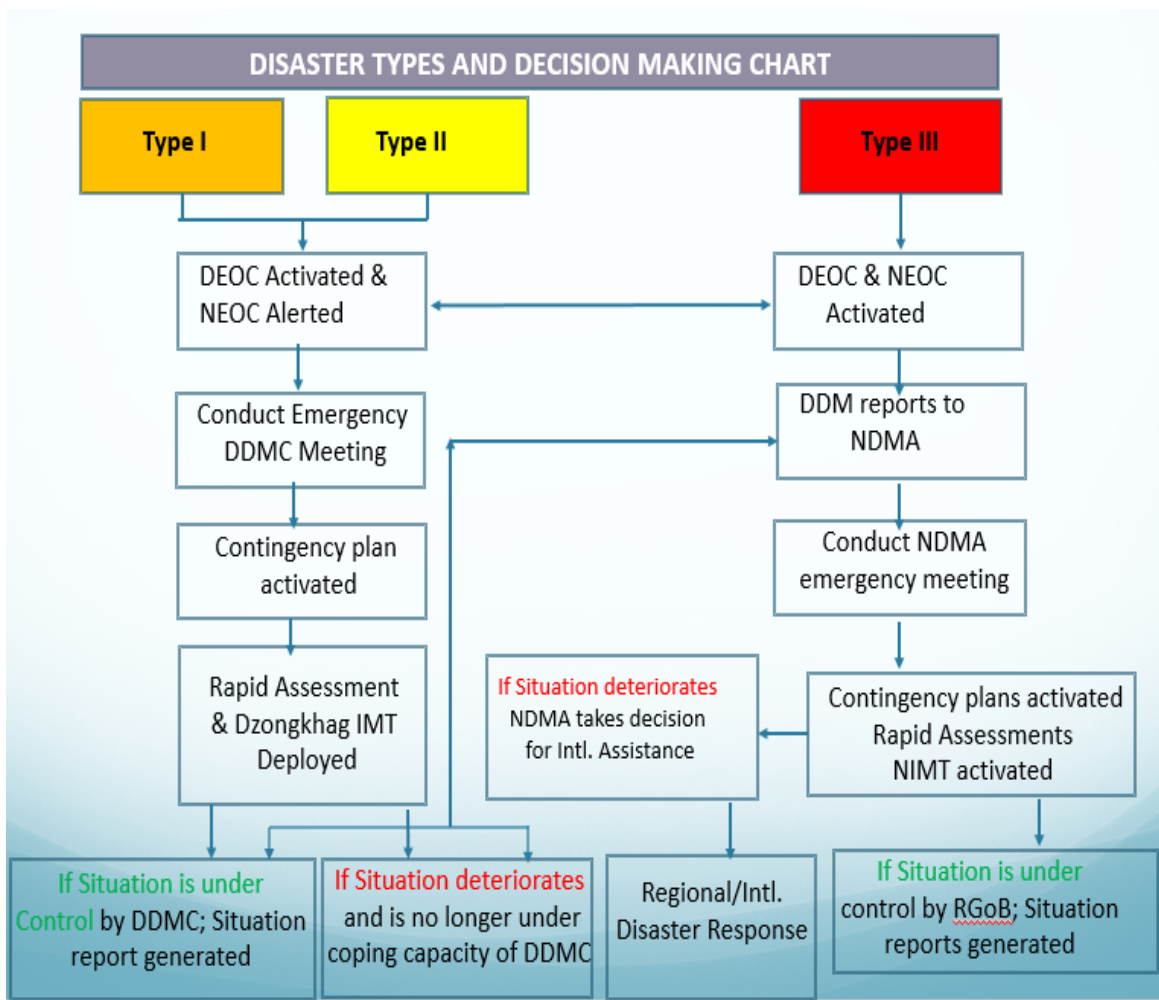


Figure 5: Coordination Mechanism for Response at Dzongkhag level

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

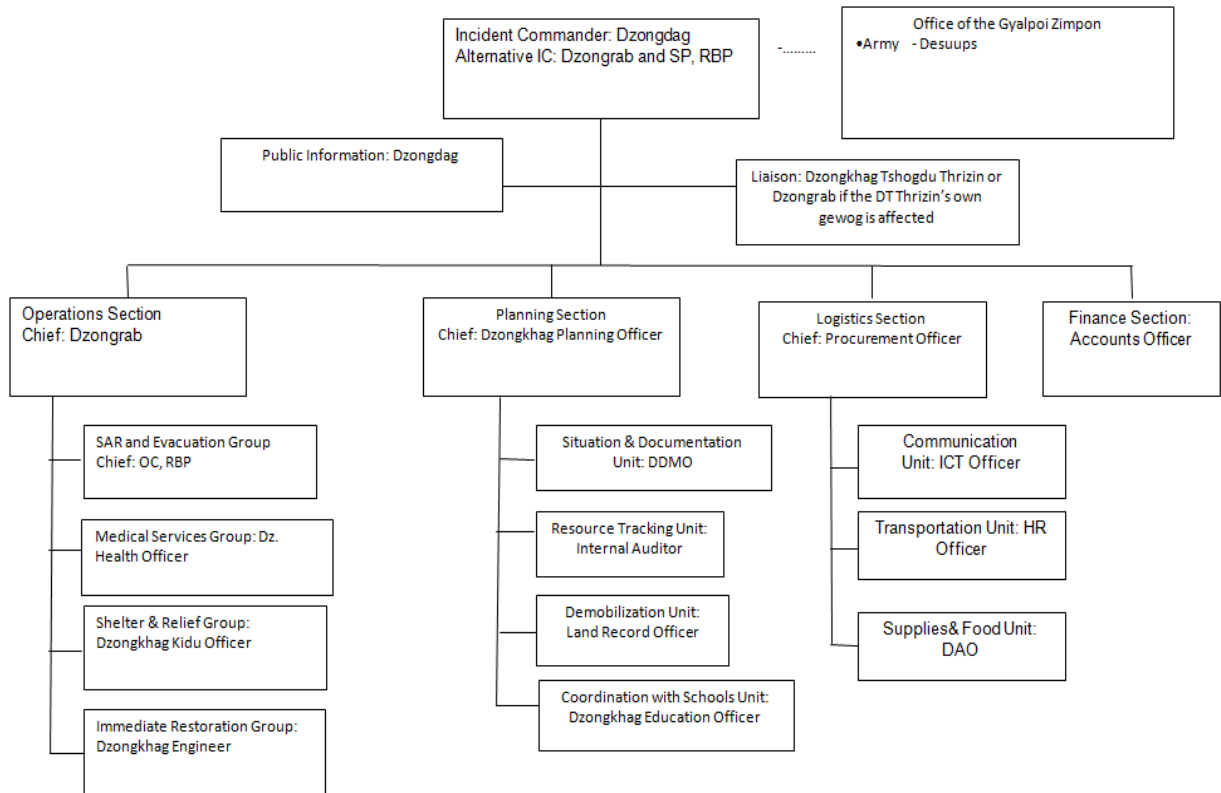


Figure 6: Response System at Dzongkhag Level

ICS Positions and Functions

- 1. Incident Commander** - Dasho Dzongdag shall be the IC and he/she shall oversee all incident activities, including the development of strategies and tactics and ordering and release of resource. The IC has overall authority and responsibility for conducting incident operations and management of all incident operations at the incident site. Dzongdag will also responsible for interfering with the public and media or with the agencies with incident related information requirements.
- 2. Liaison Officer**- Dasho Dzongrab will act as a Liaison officer who is responsible for coordination with representatives from cooperation and assisting agencies.

A. Operation Section

Chief of the Operations Section – Dasho Dzunggrab will also be the chief of the operation in times of disaster.

The following teams shall be formed under the operations section:

i. Search and Rescue (SAR) Services

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 Services

The medical team shall be headed by the DHO and provide first aid, trauma management and other emergency medical services.

iii. Shelter and Relief

The Relief team will be headed by the Dzongkhag Kidu 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.

iv. Immediate Restoration

Immediate restoration group will be headed by engineering sector under DE and his unit is responsible to provide immediate restoration of essential public services. BPC and Telecom will also restore their services that have been affected by the disaster.

B. Planning Section

Planning Officer is responsible to collect, evaluate, disseminate the information related to the incident and for the preparation and documentation of incident action plan.

The following unit will be function under planning section:

i. Situation and Documentation

Dzongkhag Disaster Management Officer (DDMO) is responsible for the collection, organization, and analysis of incident status information and analysis of the situation as it progress. DDMO will also collect, record and safeguard all documents relevant to the incidents.

ii. Resource Tracking

Culture Officer is responsible for maintaining the status of all assigned resources at the incident. He/She will keep update on the materials and equipments that have been issued for the victims.

iii. Demobilization

Land Record Officer is responsible for assuring orderly, safe, and efficient demobilization of incident resources.

C. Logistic Section

The Chief of the Logistic section will be the Dzongkhag Procurement Officer. He is responsible to provide facilities, services and materials for the incident. The following unit will be function under the Chief of Logistic Section.

i. **Communication Unit**- ICT officer is responsible to provide communication services at the incident and ensure there is immediate restoration of net in the gewog centre.

ii. **Transportation Unit** – The MTO/HRO of the Dzongkhag in close collaboration with RSTA shall ensure transportation arrangements, including helicopter services, as required. He is also responsible for the fuelling, maintaining and repairing of pool vehicles and other private vehicle if use during the disaster times.

iii. **Supplies and Food Unit**- Dzongkhag Agriculture Officer is responsible for providing meals for incident personnel and for providing food/supplies for the relief and shelter (for victim).

D. Finance Section

Finance section under the Accounts Officer, is responsible for all incident costs and financial considerations. Also responsible for tracking costs, analyzing cost data, making cost estimates, and recommending cost-saving measures, besides fiscal matters involving hiring, purchasing goods and services and establishing local sources for obtaining equipment and supplies.

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.