

CHAPTER I

INTRODUCTION

1.1 Background

Disasters are with us since the beginning of life on earth. But the frequency of disaster and impact by the disaster are increasing day by day. Earthquake has claimed 750,000 lives between 1994 and 2013 in the world. Tsunamis have also killed average of 79 deaths for every 1,000 people affected. Likewise drought affected more than one billion people between 1994 and 2013. Flooding is also a majority cause of disaster. It has claimed more than 244,000 lives (The Human Cost of Natural Disasters, 2015).

South Asia is prone to many natural disasters. South Asian countries are exposed to many disasters and many events. More than one fifth of the world population lives in South Asia and South Asian countries are typically known by large population, poverty, poor literacy and lower human development indicator (Memon, 2012). In 2014, 84% of those killed and 86 % those affected globally were from Asia and from Asia only 48% percent disaster events were recorded (The Human Cost of Natural Disasters, 2015). Drought, earthquake, epidemic, extreme temperature, flood, avalanche, landslide and storm are the recurring disasters of South Asia. More than 900 events of such disasters have been reported after 1970 (Memon, 2012). Such disasters leave a great impact to human lives, society and economy.

Nepal is ranked as the 11th most vulnerable country in the world to earthquakes, and 30th to flood risks. Almost 80 percent of its geographic area is at risk from multiple natural hazards (Natural Disaster Hotspots, A Global Risk Analysis, 2005). Nepal is prone to many disasters i.e. earthquake, flood, landslide, fire, extreme weather events (Guidance Note Disaster Preparedness and Response Planning, 2011). The guidance note further says that due to the proneness to many disasters Nepal should be prepared in case of disasters to protect its people from loss of lives, personal injury and protect property. Due to the active tectonic and seismic process, steep slopes, monsoon and topography; Nepal has been more vulnerable to natural hazards. The common disasters of Nepal are earthquake, epidemics, flood, landslide and other meteorological disasters (Global

Assessment of Risk, Nepal Country Report, 2009). The earthquakes of 1934 and 1988, floods of 1993, 2008 and 2012 are noticed as major disaster in Nepal's history. These disasters have caused harm of people's lives and property (Nepal Disaster Report, 2013).

Table 1.1. Disaster type and their impacts from 1971 to 2012 (Nepal Disaster Report, 2013)

S N	Disaster Types	Number of Events/records	Number of Deaths	Number of injuries	Affected Family	Destroye d Houses	Damage d Houses
1	Epidemic	3446	16,563	43,076	512,969	0	0
2	Landslide	2942	4511	1566	555,705	18,414	13,773
3	Fire	6999	1416	1347	255,172	75,581	2282
4	Flood	3685	4079	488	3,665,608	94,700	87,261
5	Thunderbolt	1403	1200	2257	6729	379	427
6	Accident	1000	969	359	2137	5	415
7	Earthquake	105	880	6840	4539	33,708	55,318
8	Cold Wave	390	515	83	2393	0	0
9	Structural Collapse	389	404	596	2016	1170	623
10	Boat Capsize	140	279	140	0	0	
11	Others	2892	1092	1458	928,492	5210	9998
	Grand Total	23,391	31,908	58,210	5,936,170	229,167	170,097

A total of 31,908 people have lost their lives in different types of disasters since 1971. This table shows that Nepal is losing number of lives and too much property in disaster.

We can see from the table number 1.1 that there are 4,446 events of epidemic within Nepal from 1971 to 2012. From the epidemic disaster number of dead people are 16,563. When we see the number of injuries we can see the 43,076 have been injured due to epidemic disasters. The number of affected family is more than injuries. Total 512,969 families are affected due to epidemic. The epidemic is the most destructive type of disaster in Nepal.

In a rainy season have to face landslides disaster. Nepal is a country which has high mountains, hilly region, chure (shivalik) region and terai region. People who lives in mountains they are directly affected by the landslides. Sometimes it gives pain to the people of Terai region. Because rivers of Nepal are flowing to southern part. The main source of river is mountains and comes through the mountains. If rivers are blocked by landslide in hillside it directly affects the people of terai. From the above table we can find that 2942 numbers of landslides has been recorded since 1971 to 2012.

Fire events also being seen as emerging disaster in Nepal, 6999 fire events have been recorded during these years. Where 1416 people have been died and 1347 people have been injured. Likewise 255,172 families have been affected and 75,581 houses are destroyed. Flood is also a major disaster in Nepal. From above table we can see that 3685 flood's event has been recorded, 4079 people are died, and 488 people are injured. 3,665,608 families have been affected by the flood during this time likewise 94,700 houses are destroyed and 87,261 houses are damaged.

Thunderbolt is also being a great cause of death in Nepal. Thunderbolt has been recorded 1403 times within these years. Out of 1403 events 1200 are died, 2257 people have been injured, and 6729 families have been affected. Due to thunderbolt 379 houses are destroyed and thunderbolt has damaged 427 houses. 1000 accidents have been recorded, 969 people are died due to accidents. Likewise 359 people are injured, 2137 families have been affected. Accident has destroyed 5 houses and has damaged 415 houses.

From table no 1.1, we can see that earthquake has also been recorded 105 times. 880 people are died due to earthquake. It has injured 6840 people and has affected 4539 families. Total 33,708 houses are destroyed where as 55,318 houses are damaged. Cold wave also been recorded for 390 times. Cold wave also has caused death of 515 people and injury of 83 people and it has affected 2393 families.

Structural Collapse is also been significant disaster in Nepal. We can see that there are 389 numbers of structural collapses are there from 1971 to 2012. Likewise 140 boat capsize events has been recorded which events have been the cause of 279 people's death and injury of 140 people.

Other different types of disasters are recorded 2892 times, which has been the cause of 1092 people's death, 1458 people's injury. Due to these various types of disaster have affected 928,492 families, destroyed 5210 houses and damaged 9998 houses.

It can be concluded from the table number 1.1 that Nepal is highly vulnerable to many disasters.

Since, every country is facing disaster problems. They establish the institutions which can respond to disaster swiftly and save the lives. Nepal government has also established Armed Police Force (APF) by giving one of the major role disaster management. Prior to the establishment of APF, there were two security agencies working in Nepal, they were Nepal Police (NP) and Nepal Army (NA). Armed Police Force was established in 2001 as a paramilitary force (Armed Police Day Special Publication, 2002). Though there are debates word "paramilitary" (Hills, 1995) (Jefferson, 1993) (Waddington, 1993), agencies, authors have defined paramilitay on their own. However (Hills, 1995) clarifies that paramilitary 'results from combining military and police discretion within one institution is the proper meaning of the phrase 'paramilitary'. It seems quite logical with reference of Nepal's Armed Police Force too, as it was established; personnel were transferred from NA and NP (Armed Police Day Special Publication, 2002). It also indicates that paramilitary force of Nepal also has dual characteristics. Paramilitary forces are established for the particular purpose but the reason might be different. Gordan (1993) argues on the reason of establishing paramilitary force by the state is that neither

the military nor the government want the army closely identified with domestic, internal security operations, Hills (1995) also supports and says, so the government tries to blur the issue by building up both the paramilitary and police forces.

The main reason of establishing of Armed Police Force was internal security threat of that particular time where internal conflict was rife around the country. To combat with such situation Armed Police Force was formed (Security Sector Reform High Level Task Force, 2009). On the preamble of Armed Police Force Act (2001) it is said that it was expedient to establish and operate the Armed Police Force for the protection of life, property and liberty of the people by maintaining peace and order in Nepal.

By this act's section six APF has got the responsibilities of controlling an armed struggle, rebellion or separatist activities, terrorist activities, public order management. This act further has defined to be involved in rescue activities like in natural calamities, epidemics (disaster management). This act has also mandated to provide security to border, vital installation, and key person of the state. Along with these mandates, it also has been said that Nepal Government can mobilize APF as per the requirement of the state. Since it is a paramilitary force it also has to provide assistance in case of external intervention being under the Nepalese Army.

1.2 Statement of the problem

Nepal is considered as a young mountain system in the world. Himalaya range of Nepal was formed by the collision of Indian Plate with Tibetan Plate also called Eurasian Plate (Dahal, 2006). The Himalaya which was formed by the collision of Indian Plate and Eurasian Plate which extends in 2400 km east-west direction. Nepal's Himalaya occupies the central 800 km out of 2400 km (Geology of Nepal, n.d.). So that Nepal lies in a very high seismic region and getting devastating earthquakes frequently in history (Dixit, Yatabe, Dahal, & Bhandary, 2013).

Rana (1935) has explored about the earthquake of Nepal in his book 'The great earthquake of 1990 Bikram Sambat (BS). Rana has written that the first earthquake found in record was 1310 BS. Dixit, Yatabe, Dahal, & Bhandary (2013), also supports the statement of Rana, they mention that 1255 AD's (1310 BS) earthquake is the ever recorded oldest event of earthquake in Nepal's history. One third of the Kathmandu population was killed because of earthquake in 1255. Rana (1935) writes that many people were killed including King Avaya Malla because of the earthquake of that year. It also had destructed many temples and houses. Tremor was noticed till fifteen days. Second earthquake was felt in 1316 BS which caused the epidemic and famine. Another earthquake has been recorded in 1464 BS. It destroyed temples including the Matsyandranath and many houses but it is not found that how many people were killed at that time. The great earthquake of 1738 BS has been reported to destroy many houses. People felt another earthquake in 1866 BS. People felt earthquake for 21 times. No record has been found how many people were killed at that time too but it has been reported that many people and animals were killed due to that earthquake.

Another great earthquake was felt in 1890 BS. 1890 BS's earthquake was quite significant which was felt for 40 seconds. It had destroyed the 100 ft tall Jagannath Temple nearby Tudikhel. It also destroyed the Dharahara made by Bhimsen Thapa one completely collapsed and another partially. Many durbar squares were destroyed. It destroyed about 18,000 houses within Nepal. King Rajendra Bikram Shah was the ruler of that time. He distributed the clothes and food to the people. But no records have been found about the death of people.

Prior to BS 1990's earthquake there is no enough evidences and literature about the earthquake history. Writer Rana has tried to collect the evidences and literature about earthquake history. He has given quite detail and informative information about the BS 1990's earthquake. Author states that prior to this earthquake people didn't have enough idea about earthquake. So people had various myths about earthquake. Some used to think that it happens because of gods will or something almighty power. Till that time many people even didn't know about the word earthquake.

The magnitude of this earthquake is also varies according to writer, Rana (1935) says in his book 'The Great Earthquake of 1990 BS' that there were no machines in Nepal to measure the magnitude of that earthquake but Lomnitz & Wisner (2012) have described the magnitude was 8.4 likewise Dixit, Yatabe, Dahal, & Bhandary (2013) claim 8.1 and Galetzka, et al., (2015) say the magnitude was 8.1-8.4. Epicenter of that earthquake was in Bihar, India. Though Kathmandu was far from epicenter it had more destruction than in Bihar. 8,519 people were killed in Nepal and 7,188 people were killed in Bihar. However the number of casualties varies with the writer Rana (1935) has claimed that there 8,519 people were killed and Lomnitz & Wisner (2012) have claimed the number of killed people in earthquake of 1934 was 10653 in total. The figure of killed people in Nepal (Rana, 1935) is presented below:

Table 1.2 Number of people killed due to the earthquake of 1934 (Rana, 1935)

Name of Place	Number of dead people		
	Male	Female	Total
Kathmandu Valley	1,952	2,344	4,296
Outside of KTM valley	1,898	2,325	4,223
Total	3,850	4,669	8,519

Rana (1935) has been able to give quite comprehensive literature about the earthquake of 1934. He has presented the amount of funds which was established for the purpose of providing aid to the victims, name list of donors, volunteer organizations and their

activities. But he has presented only positive aspects of disaster response and relief distribution but hasn't analyzed critically. If he had analyzed critically that would be beneficial for later disaster events to manage the shortcomings of previous disaster event.

There was another earthquake in 1989 having magnitude of 5.6 Richter scale. 721 people were killed due to this earthquake. The epicenter of this earthquake was in the vicinity of the Terai and Siwalik Hills, 165 km southeast of Kathmandu. Since the epicenter was in eastern region, the impact was also in eastern region (Yadav, Singh, Dixit, & Sharpe, 1994). It didn't severely affect Kathmandu since the epicenter was far from Kathmandu (Chamlagain & Gautam, 2015).

Nepal is experiencing earthquakes frequently. Nepal has experienced major earthquakes in 1255, 1408, 1681, 1833, 1897, 1905, 1934, and 1988 (Historical Earthquakes, n.d.). Many earthquake events are found very brief in history because of poor records however many studies show that Nepal lies in earthquake prone area (Bilham, Bodin, & Jackson, 1995, Historical Earthquakes, n.d., Bilham, Earthquake in India and the Himalaya: tectonics, geodesy and history, 2004).

The latest earthquake experienced in Nepal was of Magnitude 7.6 on April 25 at 11:56 local time with epicenter in Barpak, Gorkha (Past Earthquakes, n.d.) which created the loss of thousands of lives. Due to the earthquake several villages were collapsed in rural areas, collapsed and damaged many houses in Kathmandu valley (Nepal Earthquake 2072, 2015). The main quake was followed by numerous aftershocks causing further damage and losses. The earthquake has impacted on tourism, cultural heritages, health, and education and obviously on economy (Gorkha Earthquake Disaster Risk Reduction Situation Report, 2015).

1.3 Research Questions

How Armed Police Force is prepared itself to respond in disasters?

How Armed Police Force responded in earthquake disaster of 2015?

What were the shortcomings during response to earthquake 2015?

1.4 Research Objectives of the study

- To examine the overall status of preparation aspect of Armed Police Force for disaster
- To analyze the role of Armed Police Force during earthquake disaster of 2015
- To identify the difficulties faced by Armed Police Force during earthquake response of 2015

1.5 Rationale of study

Nepal experienced an earthquake on 12 Baisakh 2072 (25th April 2015) and many people not only lost their property but also have to lost their near and dear ones. Since Nepal lies on seismic zone earthquake is occurring event for Nepal. So that preparedness is essential to minimize the impact of disaster. But it has been seen that government is neglecting the part of disaster management. Many reports were claiming that there would be great earthquake in Nepal in near future. But the preparation of government wasn't quite serious. We can see an example of government's negligence is the Disaster Management Act is still in process from many years.

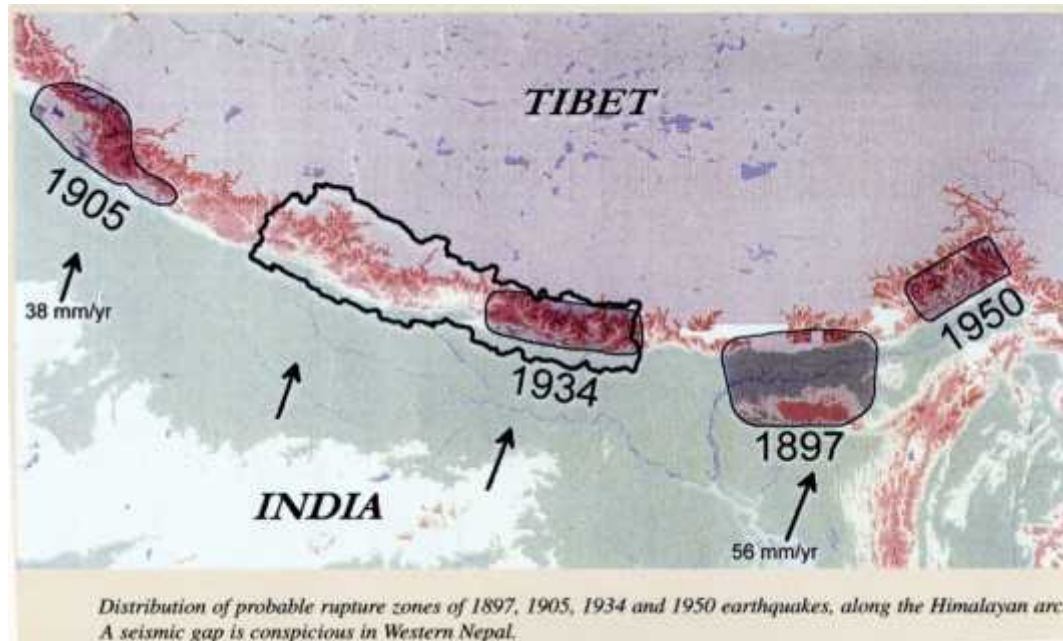
Whenever disaster occurs governments resources have to be mobilized swiftly. The important task after disaster is response (search and rescue, relief and rehabilitation). The swiftness of response depends upon the preparedness.

A new research suggests that 7.8 magnitude of April 2015 is failed to release the seismic energy (Jenkins, 2015). Researchers have believed that some of the energy of this earthquake has shifted towards the west of Pokhara of Nepal to the north of Delhi of India. In this geography a major earthquake is overdue already. There was last earthquake event was happened in 1505 and future event is estimated to have exceeded M8.5 (Morelle, 2015).

Though Nepal had to experience a powerful earthquake this time, geologists are warning that there could be another powerful earthquake shocks within Nepal's territory in near future. Since Nepal lies on seismic active zone, geologists are forecasting that there

would be earthquake events frequently. So that we should be prepared for such unfavorable situation and be prepared to respond such disaster in future.

Figure No. 1.1 Seismic gap in Nepal (Pandey, Tandukar, Avouac, Vergne, & Herritier, 1999)



Every day we hear on radio, watch on television, read on newspapers and sometimes we become victim/witness of disasters such as road accidents, air accidents, fire, landslides, flood, Glacier Lake Outburst Flood (GLOF), avalanche, epidemic etc. This research paper would be useful to the policymakers, to the students of public policy, stakeholders of disaster management, security forces and to civil society. This research also would be useful to those persons who keep interest in disaster management. This research also might be relevant to analyze plan in future to the leaders of Armed Police Force and personnel. This research will be relevant to general people who want to have knowledge about the response of Armed Police Force particularly in the time of earthquake 2015. While undertaking research, the researcher found very little literature about the earthquake events of past and almost none about the disaster response. So that this paper might be useful to study, analyze and plan the response of security force in future.

1.6 Limitations of Study

The research has only explored the response of Armed Police Force. It is mainly concentrated on the Kathmandu valley's (Kathmandu, Bhaktapur and Lalitpur districts) response. The research has analyzed the response of Armed Police Force of Earthquake 2015 (2072 BS). Since the research is focused on an event of earthquake it hasn't incorporated the other response involvement in other disaster.

Along with this, various limitations are there while undertaking the research. Since the researcher is a student there could be limitation of resources, time. Availability of literature is also seen as major constraints during research. Literatures related to disaster management, response of past activities, policy related to disaster are rarely found on Kathmandu's library.

CHAPTER II

LITERATURE REVIEW

2.1 Concept of Disaster

United Nations International Strategy for Disaster Reduction (UNISDR) United Nations, (2009) defines disaster as "A Serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources". Carter, (1991) defines disaster as disruption which is usually severe and sudden, unexpected and widespread. It affects to human life, injury and adverse impact as well as destructs the social structure. If we see the Nepal's legal provision (Natural Calamity Relief Act, 1982) has included earthquake, fire, storm, flood, landslide, heavy rain, drought, famine, epidemic as "Natural Calamity" and also has incorporated industrial accident, explosions and any other similar activities in disaster.

There is no single definition of disaster which applies universal. Many scholars, organizations have defined disaster in their own way. Disaster has complex social events/processes, nested within a wider social context (Buckle , 2005). Due to unexpected and uncertainty nature of disaster it damages to life, property, organizations and social networks. Perry (2005) argues that there is basic agreement that disasters are disruptive, understood in social time as social events, and that is intertwined with change. So we can conclude that any event which could be natural or human made which cause the negative impact in society can be defined as disaster.

Disaster Management concept is focused to reduce harm of life, environment and life which is almost universal but the capacity of carrying out disaster management is unequal due to cultural, economic, political, and other reasons (Coppola, 2011). Reducing the impacts of disaster is Disaster Management (Practical Action, 2010). Mitigation, Preparedness, Response and Recovery phases are included in Disaster Management (Coppola, 2011). Effective disaster management depends upon the governments all agencies and departments from central level to local level from the police to civilian

authority (Simonovic, 2011). The writer further focuses on the 'Integrated Disaster Management' where every agency has to be equally responsible to manage the disasters.

2.2 Type and Classification of disaster

Natural Disaster: Disasters are with us within the earth system. Human beings are facing different types of disaster from the beginning of human civilization. When human intervened the natural resources it has caused enormous devastation to the life and property of nation (Tyagi, 2007).

Earthquake, cyclones, volcanic eruptions, tsunamis, wildfires, landslides, floods and droughts can be included as natural disasters (Carter, 1991). Natural disasters are that kind of disasters which are occurred due to the natural cause, we can divide disaster in to five subtypes which are as follows (Jha, Abhas K.; Barenstein, Jennifer Duyne; Phelps, Priscilla M.; Pittet, Daniel; Sena, Stephen;, 2010):

Table 2.1 Types of natural disasters (Jha, Abhas K.; Barenstein, Jennifer Duyne; Phelps, Priscilla M.; Pittet, Daniel; Sena, Stephen;, 2010)

Biological	Geophysical	Hydro meteorological	
		Hydrological	Meteorological
Epidemic <ul style="list-style-type: none"> ▪ Viral infectious disease ▪ Bacterial infectious disease ▪ Parasitic infectious disease ▪ Fungal infectious disease Insect infestation Animal stampede	Earthquake Volcano Mass movement (dry) <ul style="list-style-type: none"> ▪ Rock fall ▪ Landslide ▪ Avalanche ▪ Subsidence 	Flood <ul style="list-style-type: none"> ▪ General flood ▪ Storm surge/coastal flood 	Storm <ul style="list-style-type: none"> ▪ Tropical cyclone ▪ Extra-tropical cyclone ▪ Local storm
		Mass movement (wet) <ul style="list-style-type: none"> ▪ Rockfall ▪ Landslide ▪ Avalanche ▪ Subsidence 	Climatological <ul style="list-style-type: none"> ▪ Heat wave ▪ Cold wave ▪ Extreme winter condition Drought/wildfire <ul style="list-style-type: none"> ▪ Forest fire ▪ Land fire

2.3 Earthquake

People somewhere on earth can feel about one million earthquakes per year. Eight or above magnitude is called 'The Great Earthquake' which can cause widespread catastrophic damage. Eight magnitude event could occur somewhere in the world in any given year. Likewise seven magnitude event is called 'Major Earthquake' which is capable of widespread and serious damage. Magnitude six is called 'Moderate Earthquake' that can cause considerable damage but it depends on location and surface material (Keller, 1999). Earthquake can cause many human casualties, structural damage and economic losses (Lomnitz & Wisner, 2012).

2.4 Theories of Disaster Management

) **Civil Defense Theory: The Birth of Modern Disaster Management**

Though, there is no theorist of civil defense, it has been gradually developed. Civil defense theory is the root of modern disaster management. 19th Century was the civil defense era. In this time Great Britain had made civil defense act in 1948 likewise Canada made Canadian Civil Defense Organization in the same year, United States Federal Emergency Management Agency (FEMA) grew out of the Civil Defense Act 1950, France made a ordinance of civil defense in 1965 (Coppola, 2011). However it can be considered that global disaster management policy was introduced by United Nations which made the Disaster Management phenomenon global. UN General Assembly declared the 1990s as the "International Decade for Natural Disaster Reduction"(IDNDR) on December 11, 1987. Through UN Resolution 44/236 on December 22, 1989, the General Assembly set forth the goals as they had wished from IDNDR (ibid). Concept of social protection is also being emerged day by day. People have rights to be protected by the government. Government shouldn't be funder to people however government should be there when people go through uninsurable risks (Munro, 2002). However (Alexander, 2005) argues that civil defense refers to activities which protect civil people against natural and technological disasters by government.

) **Chaos Theory:**

Chaos theory is the study of complex, nonlinear dynamic systems and this theory was developed by Lorenz. This theory was originally developed in the context of the physical sciences however it is equally applicable to the social, ecological, and economic systems. These systems also tend to be characterized by nonlinear tendencies (Levy, 1994). Tendency of instability is highly seen during the times of disasters. When services reach highest levels of activity it is essential to recognize that stability can only be regained by developing strategies that are themselves unstable. As the scenario aftermath on any disaster is unpredictable because of unavailability of information, unreliable and problematic information, limited and not easily available resources, and sometimes problem of authority because everything turn into new situation to everyone.. The situation after disaster depends upon manythings i.e. environmental, physical impacts of disaster, human losses due to disasters, frequency of disaster event etc. So that decision making in any organization and any level becomes very chaotic. In such situation there are three ways to control chaos (Koehler, Cress, & Miller, 2001), and they are:

- a) Alter organizational parameters so that the range of fluctuations is limited.
- b) Apply small perturbations to the chaotic system to try and cause it to organize.
- c) Change the relationship between the organization and the environment.

2.5 Historical Development of Disaster Management

2.5.1 Yokohama Strategy

A conference of Natural Disaster Risk Reduction was held at Yokohama, Japan from 23 May to 27 May 1994. These conferences adopted the Yokohama Strategy. This strategy was the guidelines for Natural Disaster Prevention, Preparedness and Mitigation, containing the Principles, the Strategy and the Plan of action (World Conference on Natural Disaster Reduction, 1994). Yokohama Strategy adopted disaster preparedness, prevention, and risk assessment as the key

variable to reduce the disaster impacts. It has also invited to all countries to protect individuals and their property from the impact of disasters, cyclones and floods. This strategy has adopted some principles about disaster where it has been said that disaster prevention, preparedness are the key issues which directly reduces the need for relief so these issues should be considered integral aspects of development policy and planning at national and international level. It has also emphasized about the vulnerability of least developed country, land locked country as well as the responsibility of developed country and neighboring country.

As UN had declared the decade of 1990 as 'International Decade for Natural Disaster Reduction' it also assessed the improvements of disaster reduction activities of countries and set the strategy beyond for the year 2000 and beyond.

2.5.2 Hyogo Framework

World Conference on Disaster Reduction which was held on 18-22 January 2005, Kobe, Hyogo, Japan made Hyogo Framework for Action 2005-2015. It has set following five priorities for action (Hyogo Framework for Action 2005-2015, 2005):

- a. Ensuring of disaster risk reduction is a national and local priority with a strong institutional basis for implementation.
- b. Identify, assess and monitor disaster risks and enhance early warning.
- c. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
- d. Reduce underlying risk factors.
- e. Strengthen disaster preparedness for effective response at all levels.

Nepal government has also adopted the Hyogo Framework of Action and made following five flagship programmes:

Flagship 1- School and Hospital Safety

Flagship 2- Emergency Preparedness to Response

Flagship 3- Flood Management

Flagship 4- Community Based Disaster Management

Flagship 5- Policy and Institutional Support

2.5.3 Sendai Framework

The Sendai Framework has been built on elements which ensure continuity with the work done by states and other stakeholders under the HFA. This framework was adopted at the United Nations World Conference on Disaster Risk Reduction Sendai, Japan. Hyogo Framework for Action's duration was for ten years from 2005 to 2015. Reports have said that progress has been achieved in reducing disaster risk since the adoption of the Hyogo Framework for Action (Sendai Framework for Disaster Risk Reduction, 2015). So that it is more important to anticipate and plan to reduce disaster risk in order to more effectively protect persons, communities and states and properties related to them. Sendai Framework for Disaster Risk Reduction has been prepared to prevent new and reduce existing disaster risk through the implementation of integrated and inclusive policies and vulnerability to disaster, increase preparedness for response by learning from the outcome of Hyogo Framework for Action. This framework has taken seven agreed global targets:

- (i) Substantially reduce global disaster mortality by 2030,
- (ii) Substantially reduce the number of affected people globally by 2030,
- (iii) Reduce direct disaster economic loss,
- (iv) Increase the number of countries with national and local disaster risk reduction strategies by 2020,
- (v) Reduce disaster damage to critical infrastructure and disruption of basic Services,
- (vi) Enhance international cooperation to developing countries,

(vii) Increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

To gain the expected outcome and goal, a focused action is needed within and across sectors by States at local, national, regional and global level. This framework has prioritized four areas as priorities for action which are as follows:

- (i) Understanding disaster risk,
- (ii) Strengthening disaster risk governance to manage disaster risk,
- (iii) Investing in disaster risk reduction for resilience,
- (iv) Enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction.

2.5.4 Disaster Management Cycle

Disaster management is commonly characterized by its four stages: mitigation, preparedness, response and recovery. Mitigation actions are done before a disaster to reduce the vulnerability. Mitigations measured are applied by policies, acts, regulations i.e. building code, land use policy, settlement policy.

Coppola (2011) explains the phases of disaster in such a way that disaster are managed in four phase approach which includes

Mitigation- In mitigation phase likelihood or the consequences of hazard are tried to reduce. Mitigation tries to reduce the impact of disaster to a lesser degree.

Preparedness -This phase tries to focus on the preparing so people can combat to disasters. Physical and mental capacity building tools are used in preparedness phase so that people would be enhanced and be capable to work in disaster.

Response- Immediate actions are taken in response phase. In this phase actions are oriented to reduce the live threats, set up temporary shelter and provide the emergency services to the people.

Recovery- It tries to bring back the situation in normal situation. It is done after the response phase but the demarcation of response and recovery is quite unclear many recovery works are done with response.

Simonovic (2011) has defined disaster management as integrated disaster management approach. Since there are many agencies have to work in disaster management, it has to be developed in integrated way. The author has made a Venn diagram of disaster management:-

Figure 2. 1, Integrated disaster management.



We can understand from above Venn diagram that the four phases can't be separated from each other rather these issues are overlapped with each other.

2.6 Disaster Risk Reduction/ Disaster Risk Management

Disaster Risk Reduction (DRR) is the conceptual framework of elements which is considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society. It helps to prevent and limit the adverse impacts of disasters whereas Disaster Risk Management goes beyond the DRR and adds management perspective that includes prevention, mitigation, preparedness and response. DRM is focused to legal, institutional and policy framework and tasks related to the managing the risk (ex ante) and disaster (ex post) and DRR is focused on limiting the adverse impacts of hazards (Bass, Stephan; Ramasamy, Selvaraju; Pryck, Jennie Dey De; Battista, Federica;, 2008).

2.7 Disaster Management Policies in Nepal

It is essential to have disaster management policy in any country to establish and maintain adequate arrangements to deal with all aspects of disaster threat. Policy should address the national structure and organization up to the local level's structure and organization. If a country doesn't have such policies to address any disaster there would be huge loss of material and human resources as a result whole country may have to suffer (Carter, 1991). Such disaster management policy should be able to identify and address the prevention, mitigation, preparedness, response, recovery and development components of disaster management cycle (ibid). Nepal's interim constitution has ensured the right to life under Article 12 (Nepal's Interim Constitution, 2006).

Nepal government has been working in sector of disaster since the early 1980's. If we go back to see the history of law we can find that Natural Calamity Relief Act was made in 1982. After Natural Calamity Relief Act come into effect Nepal government has integrated disaster management approach on five years plan and three years plan. Disaster management approach was included from ninth plan however very limited works were included. Later, disaster management activities were included more widely in tenth plan in comparison to previous plan. Tenth year plan had included the policy of conducting Disaster Impact Assessment (DIA) before development activities. Disaster Management Plan had been drafted to prevent/mitigate, disaster risk mainstreaming, to develop policy and institution, to reduce risk via preparedness and effective response

(Three Years Plan, 2011). This plan had aimed to reduce human, economic, social and natural losses from the disaster. The following programs were the priority programs of this plan:

- i) School and hospital safety
- ii) Emergency preparedness and response capacity
- iii) Flood management of Koshi river bank
- iv) Integrated Community Based disaster management
- v) Policy/ Institutional support

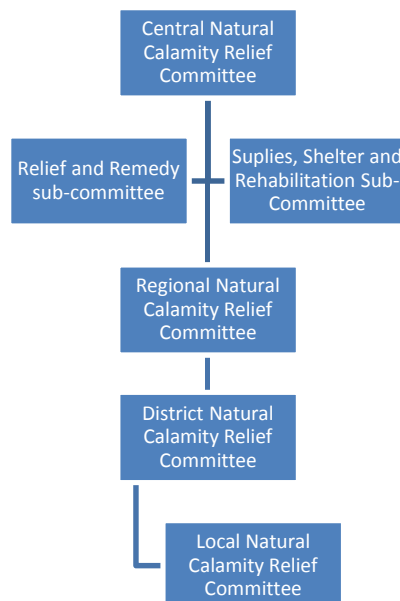
Likewise thirteenth plan has also given emphasis on disaster management. This plan has aimed to pass the disaster management bill and to form a government disaster management authority. It has also aimed to develop Medium Search and Rescue (MSAR) and Light Search and Rescue (LSAR) team within the security forces of Nepal (Thirteen Plan, 2013).

2.7.1 Natural Calamity Relief Act

Natural Calamity Relief Act was made in 1982. This act has defined the government agency's role and responsibility to engage in disaster activities and it has provided administrative structure. This was the first act in Nepal to work in disasters. Where we can find the provision of declaring the disaster area can be done by publishing a notification in the Nepal Gazette. Nepal government can use any property of people for disaster management purpose. The apex body defined under this act is Central Disaster Relief Committee (CDRC) which is presided over by the Minister of Home Affairs (MoHA) and there are 22 members comprising Minister of Housing and physical planning, Minister of Health and secretaries from other ministries. This is central level's committee. It has assumed that Ministry of Home Affairs (MoHA) is the lead agency to work during disaster

(Natural Calamity Relief Act, 1982). This act has made provision of different committees in different level to work in the time of disaster.

Figure 2. 2, Different level's committees



There would be Central Natural Calamity Relief Committee (CNDRC) on central level and Regional Natural Calamity Relief Committee (RNCRC) would be for regional level. Likewise for district and local level there will be District Natural Calamity Relief Committee (DNCRC) and Local Natural Calamity Relief Committee (LNCRC) respectively. Central Committee can declare disaster affected area as 'Emergency Area' and work on managing required activities. Likewise rescue and treatment Sub-Committee will be there where Health Minister will be coordinator and other six members will be there. The Functions and duties of the Relief and Remedy Sub-Committee shall be as specified by the Central Committee. Supply, Shelter and Rehabilitation Sub-Committee also can be formed under this act. In this committee Minister of Housing and Physical Planning will be coordinator with other seven members.

Central Committee is responsible for formulating the national policy regarding the Relief work and reconstruction, implementing the policy and the programme, and associating the social organization in Natural Calamity Relief Work.

On the foundation of this act, disaster victim rehabilitation procedure, 2071 BS has been made to rehabilitate the disaster victims. It has made the committees and explained the procedures to rehabilitate the citizens.

2.7.2 National Strategy for Disaster Risk Management (NSDRM)

National Strategy for Disaster Risk Management (NSDRM) is a Nepal Government's integrated disaster management plan. This plan has assessed the frequently occurring disasters viz flood, landslide, fire, earthquake, drought, epidemic etc which are caused by natural or human beings. This plan has prioritized cross-sectoral and sectoral strategies for disaster risk reduction (DRR). Prioritized cross-sectoral strategies for DRR are as follows:

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
2. Identify, assess and monitor disaster risks and enhance early warning.
3. Better knowledge management for building a culture of safety.
4. Reducing risks in key sectors and establishment of mechanisms for DRR.
5. Enhance preparedness for effective response.

These strategies have been made and analyzed with the issues and gaps, strategic activity, indicators and responsible authority too. Likewise sectoral strategies also have been made which are follows:

1. Agriculture and food security
2. Health and nutrition
3. Education
4. Shelter, infrastructural and physical planning
5. Livelihood protection
6. Water and sanitation

7. Information communication, coordination and logistics
8. Search and Rescue and Damage Assessment and Need Assessment

This plan was made in 2009 where it had imagined that there would be National Authority for Disaster Risk Management (NADRM) as a higher authority to look after the disaster management aspects. But it hasn't been established yet.

2.7.3 Local Self Governance Act

Local Self Governance Act has adopted the decentralization approach for the local development. It has given emphasis on direct or indirect relation of disaster and development (National Strategy for Disaster Risk Management, 2009). This act has also given the tasks related to physical development; soil erosion and river control. It has also mandated to carry out or cause to be carried out necessary works, in respect of controlling natural calamities (Local Self Governance Act, 1999). This act has given authority of local development works to the local bodies i.e. Village Development Committee, Municipality and District Development Committee.

2.7.4 Nepal National Building Code

National Building Code was felt necessary as there was wide practice of building houses by reinforced concrete frame in urban and semi urban areas of Nepal. This code's aim was to make secure and safe from seismic perspective. The building code has described the technical requirements of building houses.

2.7.5 National Disaster Response Framework (NDRF)

The main purpose of developing NDRF is to direct national level's response activities by developing 'national disaster response framework' which could help effectively to response in case of a large scale disaster. NSDRM has provided a strategic direction to manage the all aspects of disaster management. Likewise NDRF has been prepared for effective coordination between the Nepal Government and NGO/INGO/international aid which activities could help to increase the effectiveness of preparedness and response. In national system for

disaster response title it has listed the current laws, strategies and guidelines about the disaster response. However it has made framework how the international assistance would come and work during disaster. It has also made plan of activities to be done during disaster from zero hour to one month. It has adopted cluster approach and divided government agencies into different area according to their work nature which is presented as below:

Table 2. 2 Division of clusters and concerned government and non government agencies (National Strategy for Disaster Risk Management, 2009)

Name of Clusters	Health	WASH	Shelter	Food Security	Logistics	CCCM	Education	Protection	Telecom munication	Nutrition	Early Recovery Network
Cluster Leads	MoPH	MoUD	MoUD	MoAD	MoHA	MoUD	MoE	MoWCW /NHRC	MoIC	MoHP	MoFALD
Co-Leads	WHO	UNICEF	IFRC/ UNHA BITAT	WFP/FAO	WFP	IOM	UNICEF/ SC	UNHRC/UNICEF/UNFP	WFP	UNICEF	UNDP

2.7.6 Other Policies

Disaster Victim Rescue and Relief Standard 2064 BS: Nepal government has made this standard to make rescue and relief effective. It has also said that Central Natural Disaster Rescue Committee (CNDRC) will make the storage of search and rescue equipments. This committee will do risk assessment and hazard mapping to reduce the impact of disasters. It also has made provision of fund of minimum Rs 700,000/ in regional and Rs. 3,000,000/ district level. It also has made provision of emergency distribution of relief to the people.

Guidelines for Dead Body Management after disaster: Nepal government has approved this guidelines to manage the dead bodies so the deceased's relative could get the dead bodies after long time too. There would be a committee where

in charge of District Police Office would be the coordinator of the committee. This guidelines had developed the procedures of searching, collecting, identifying, handover of the dead bodies and storing dead bodies if unidentified and unclaimed.

National Strategic Action Plan for Search and Rescue, 2014: This action plan was made aiming to develop international level's search and rescue team. This action plan has been made on the foundation of International Search and Rescue Advisory Group's (INSARAG) guidelines and methodology. This action plan has said, search and rescue team would be developed from Nepal Army, Nepal Police and Armed Police Force. But the plan of action has been implemented yet.

We can tabulate the development of disaster management policies adopted by Nepal Government in this way:

Table 2.3 Development of Disaster Management in Nepal

Year	Policy Adopted
1982	Natural Relief Calamity Act adopted, focused on immediate response to disaster
1999	Local Self Governance Act, responsibility decentralized to District Development Committee and Village Development Committee level
2005	HFA adopted by Nepal and serves as a guide for DRM
2007	Year plan started to integrate disaster management approach
2009	NSDRM outlines Nepal's priorities in DRM
2014	National Disaster Response Framework (NDRF)

2.8 Risk Governance

Citizens throughout the world look to their governments-elected or not, nationally, regionally, or locally based-to provide safety and security. In general, the evolution of emergency management capacity in any country begins with the most pressing need-response. Response, at least in the short term, is distinguished among the four emergency

management functions as having the greatest immediate potential for saving lives and for being the most time-sensitive. Even in the smallest village, spontaneous response mechanisms will arise as a result of the people's survival instinct and collective community concern (Coppola, 2011).

It is essential to analyze the underlying factors of disaster while starting development activities. If not development failures can contribute to the loss of life and destruction. There is always relationship between development and disaster. Sometimes development contributes to disaster and sometimes disaster contributes to development. Disaster mainstreaming approach should be included in development sector. So that government has to focus on risk governance while working on development. Risk governance denotes both the institutional structure and the policy process that guide and restrain collective activities of a group, society or international community to regulate, reduce or control risk problems. Risk governance provides a conceptual as well as normative basis for how to cope with uncertain, complex and ambiguous risks (Renn, Klinke, & Asselt van, 2011). So that development institution also has started to pay more attention to address the underlying causes of disasters while working on development. These days World Bank and the Inter-American Development Bank began efforts to assess the disaster activities (Arnold, 2012). Frodham (2007) has given some generic examples which shows the disaster and development linkages.

Figure 2.3 Disaster and Development linkages by UNDP/DHA, 1994 (as cited from Arnold, 2012)

		Development			
Negative	(a) Development increases vulnerability to disaster	(b) Development reduces vulnerability to disaster			
	(c) Disaster impede development	(d) Disaster provide development opportunities			
	Disasters				
					Positive

From above figure we can understand the positive and negative aspects of disaster and development. (a) and (b) statement is related to development and (c) and (d) is related to disasters. We can understand that (a) and (c) relates to negative impact of disaster and development whereas (b) and (d) relates to positive aspects of disaster and development.

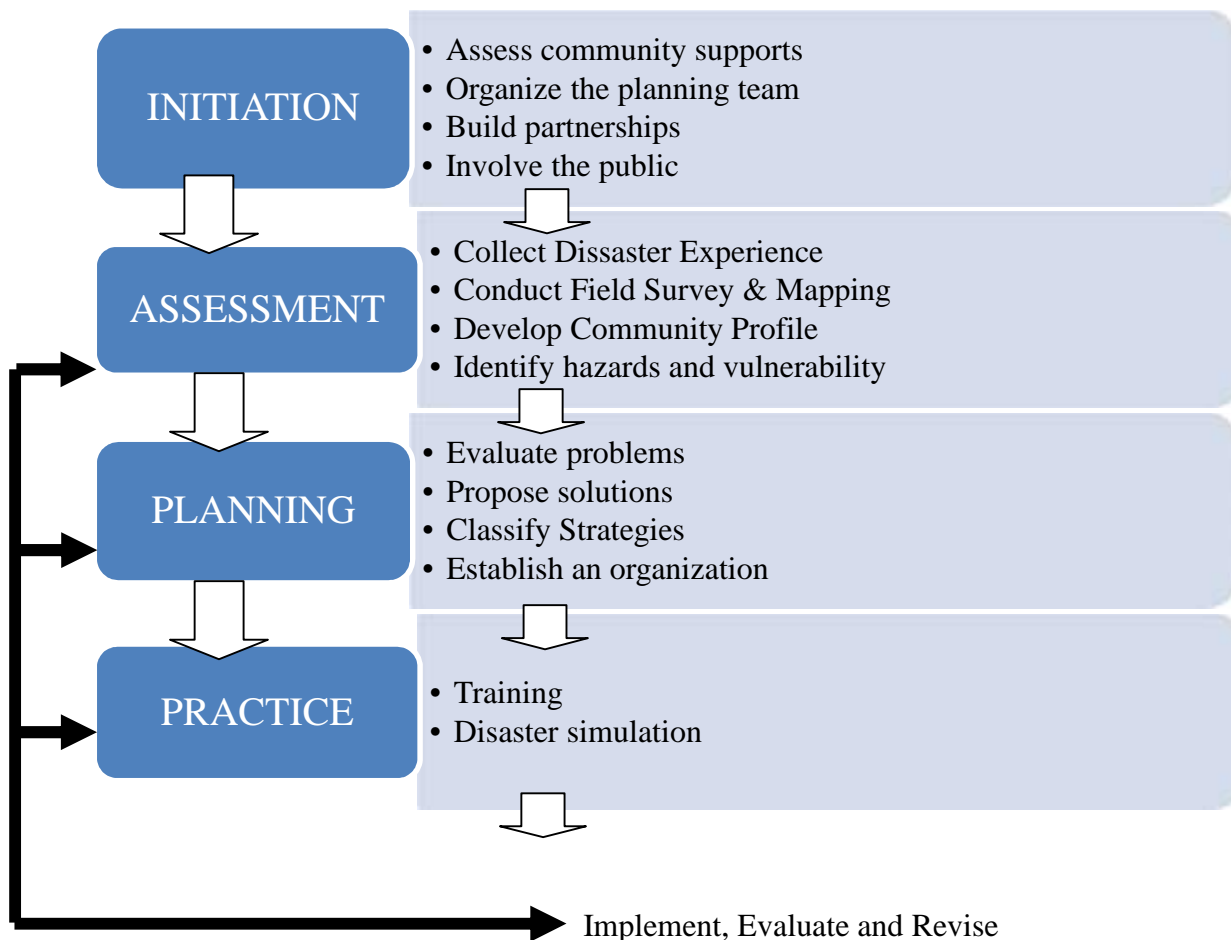
2.9 Role of Government in Disaster

Since disasters has great impact to human lives and this extraordinary burden are unbearable to individual human beings. So that, individual or community expect naturally to government for assistance (Schneider, 1992). State should have primary responsibility of providing humanitarian assistance during disaster (Oslo Guidelines, 2007). Government should provide the facilities to the disaster victims as other normal citizen. Victims shouldn't be biased while providing humanitarian assistance, rescue and relief, rehabilitation and social works (National Strategy for Disaster Risk Management, 2009). HFA says that signatory states have to protect their citizens by developing a holistic approach to DRR policies, structures and programs (Thompson, 2012).

2.10 Role of citizen in disaster

To learn about what could happen is the first thing citizens should know. Citizens should know that what kind of disaster is most likely to happen in their place. Second thing is preparing them against financial loss. Citizens can do insurance to be protected from financial losses. Another, third thing is citizens should make plan to evacuate in the home. In planning they can practice moving to safe area, high grounds, safe place inside of home, and outside of the home (Pampel, 2008). Whenever disaster occurs human beings become panic, trampling each other and losing all sense of concern for their fellow human beings (Fritz & Williams, 1957). Patterson, Weil, & Patel (2010) have argued that deciding in normal situation differs than deciding in disaster situation. But the quality of decision-making can be improved by frequent interact about the right task at the right time with the right information.

Figure 2.4 Phased approach of ICBDM by Chen et al. 2006, p.220 (as cited by Patterson, Weil, & Patel, 2010)



As it can be seen from figure 3.4, model for integrating community-based disaster management (ICBDM) shows a model of a community's role in disaster preparedness. This model has incorporated the steps from initiation to practice. In the first phase 'initiation' community assess the supports they have and plan in their own way. In 'assessment' phase they collect past experience, their place's strong and weak points and analyze those things. In 'planning' phase community evaluates the problems, make strategies and establish organizations as per their need. Last in 'Practice' phase they provide training to their members to combat with their problems, do regular simulations.

At last when the disaster occurs people implement their planning, use their experience and revise the planning if it needs (Patterson, Weil, & Patel, 2010).

Delica-Wilson and Wilson, Quarantelli and Dynes say (as cited in Delica-Wilson & Gaillard, 2012) if disaster occurs at anywhere first and foremost it affects to local communities and they become the first responder at household/community level. In a Quarantelli's study an example has been provided from the 1985 Mexico earthquake where eighty-five percent of the survivors were rescued by their friends, kin or neighbours. Later, over hours or days after rescued with large media coverage by international rescue teams were a very small portion of survivors. As community itself has to be affected from the disaster nobody is more interested in reducing the risk of disasters (Delica-Wilson & Gaillard, 2012).

Like individual from community, individuals can work as a form of civil society in disaster. Such societies can play a crucial role in the implementation of DRR. In the last two decades, that there has been growing divergence of opinion about the role of civil society. Civil society can make social movements, students' and women's group, farmer's organizations, trade unions and human rights organization exerting change through mass mobilization (Thompson, 2012). Authors further writes that civil society can work as Non Governmental Organizations, Community Based Organizations, advocacy and campaign organizations, rights organizations and research and educational organizations.

Buckle (2012) has given the emphasis on the significance of society. Writer says that preparedness and response are social process. They don't exist out of society so if the plans are made in participatory manner they can be implemented effectively.

2.11 Preparedness and Response

2.11.1 Disaster preparedness

UNISDR has defined preparedness as "The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts

of likely, imminent or current hazard events or conditions” (United Nations, 2009, pp 21). Preparedness is included in DRM approach. Preparedness is based on disaster risk analysis and it is good linkages with response phase (ibid). Those activities are included in preparedness which are taken before hazard events occur to forecast and warn against them (Buckle P. , 2012). Buckle says that disaster preparedness activities aren't separate activities but are what community, local government, central government, agencies should do, to ensure that they have done their responsibilities and people are safe.

2.11.2 Disaster Response and Components

Disaster response can't be conducted by any single agencies. Lomnitz & Wisner (2012) has identified various stakeholders work together during disaster response which are:

- i) Emergency services e.g. Fire department, health department
- ii) Public administration authorities
- iii) Non Governmental organizations (NGOs)
- iv) The Community
- v) Armed Forces

If any disaster occurs, first responders' i.e. local police, fire, emergency medical personnel have to rescue and attend to the people who are in disaster area. If there is federal system, local governments work in initial phase. If the local government can't respond by their resources the task is shifted to central government (Haddow, Bullock, & Coppola, 2011).

Preparedness and response covers early warning, emergency management, and damage and need assessment (Wisner, Gaillard, & Kelman, 2012). Works which are conducted immediately prior to and following is disaster response (Carter, 1991). It includes emergency search and rescue, fire fighting, sheltering and damage assessment (Coppola, 2011). In addition of these activities, systems

developed to coordinate and supporting activities are also included in disaster response (Maloney & Coppola, 2009). National Response Framework (2013) of Homeland Security, USA, has defined ‘response’ as ‘actions to save lives, protect property and in environment, stabilize communities’. It also includes the execution of emergency plans and actions to support short-term recovery. The principles of response are to save lives, protect property and provide basic human needs. The response activities are linked with the preparedness. Response would be effective if planning and preparedness are done before the event of disaster. If evacuation centers, medical and health services, food, water, bedding, clothes, hygiene services, and security and safety procedures are already fixed the response would be quick and effective (Buckle P. , 2012). Preparedness is the only way to save lives but lack of preparation is common not only in poor countries but also in rich countries (Bermejo, 2006).

2.11.1.1 Response Components:

I) Planning:

Disaster Response Plan can be included in disaster preparedness however it is the part of disaster response too and it makes any institution, individual prepared to respond during disaster. Disaster response and contingency planning guide (2007) says “time spent in disaster response planning equals time saved when a disaster occurs”. Disaster response planning includes identifying, strengthening and organizing capacity and resources to meet a standard which could be an effective response to a potential disaster (ibid). This guide book has differentiated the disaster response plan and contingency plan. According to this guide disaster response plan does not address specific disaster scenarios where as contingency plan is based on specific events and it establishes operational procedures for response, based on anticipated resources requirements and capacity. Response planning should include communication plan, resources (physical and human power), relief materials resources (food, water & medication), law enforcement, electricity and fuel, transportation, mortuary services, temporary shelter management (Valcik & Tracy, 2013). Whenever disaster occurs rapid assessment

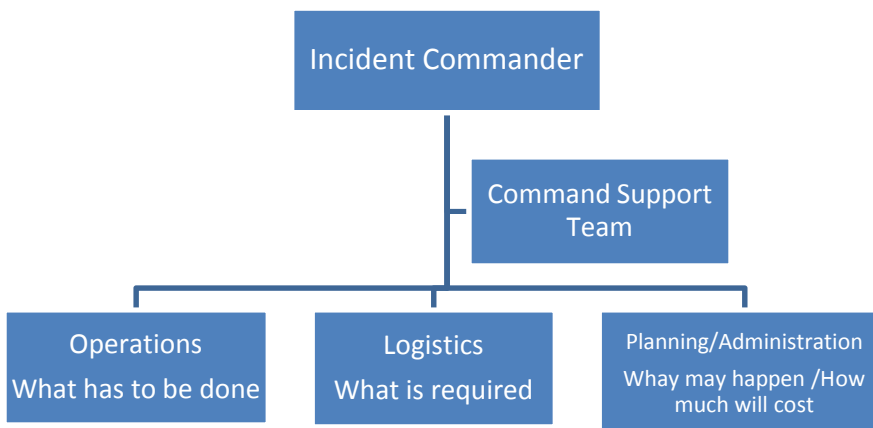
is essential to conduct various operations. Rapid assessment brings the picture of disaster impact scale and it helps to make emergency response operation i.e. how to operate search and rescue, evacuate people and to collect the funds (Fagel, 2011).

II) Operation:

i) Incident Command System (ICS):

Approach of Incident Command System (ICS) was started in 1970 to manage faulty and chaotic response to a series of forest fires in California, USA (Lopez-Carresi, 2012). Initial efforts of ICS are to create a systematic approach to manage emergency response operations (Jackson, Baker, Ridgely, Bartis, & Linn, 2004). It was developed to prepare and response to any incident, regardless of the size, duration, nature, complexity and place (NYS DHSES OEM Training IES, n.d.). ICS includes an incident commander and different sections divider as per the responsibility namely Operation, Logistics and Planning & administration. Figure of ICS is presented below:

Figure 2.5: The basic structure of an incident command system (Lopez-Carresi, 2012)



ICS is different in various agencies. Some has divided the sections in to four operation planning, logistics, administration/finance. Coppola (2011) presents the ICS with the four sections and says Federal Emergency Management Agency (FEMA), USA uses the ICS with the four section. The above figure no 3.4 is taken from Lopez-Carresi (2012) where the author has divided incident command system into three sections. Incident commander is responsible for overall operations, logistics and planning/administration. His/her main objective is to direct and assign primary functions. Incident commander can be single incident command or unified command. It depends on the type of disaster and the agencies involved in (Incident Command System Operational Description, n.d). Operation implements the planning. It is responsible for the on-the-ground tasks related to emergency i.e. search and rescue, evacuate and dealing with hazardous material. Logistics deal with the resources which is needy during operations. This section fulfills the human and physical resources demanded by the operations section. The planning/administration is responsible for collecting information and planning (Lopez-Carresi, 2012). It can be said that ICS is established to manage emergency situations more effectively.

ii) Emergency Operation Center (EOC)

EOC is an essential element while working in emergencies. Multi agency decision makers gather and work together at EOC. Such operations centers are established to make hub of communication and decision making (Lopez-Carresi, 2012). Core of decision makers stay at EOC during the time of disaster and make the decisions. Incident Command Systems are established in field level and commanders are assigned at field level. Higher level's personnel are assigned at EOCs and give directions to incident commanders (ibid). EOC makes the strategic overview and leaves the lower commands to take tactical decisions. Generally EOC collects and analysis data to make the decisions as per the requirement.

iii) Search and Rescue

Many disasters make victims trapped under collapsed structures, debris or under water. Floods, hurricanes, earthquakes, technological disasters all these incidents may result in the need of search and rescue operations (Coppola, 2011). Search and Rescue is conducted immediately after the disaster occurs. Success of search and rescue depends upon the scale of disaster, time, geography and reaction time. More importantly it depends on the readiness of government. International assistance's search and rescue operation wouldn't that much effective since it has to be done immediately aftermath of disaster. International Search and Rescue Advisory Group (INSARAG) also indicate that local responders rescue more people than other rescue groups. Majority of the people trapped by structural collapse are rescued by the community (INSARAG Guidelines and Methodology, 2011). By the Resolution of 57/150 of United Nations General Assembly has identified that each country is responsible first and foremost to protect their citizen at the time of disaster and other emergency (INSARAG Guidelines, Volume II: Preparedness and Response, 2015). International Search and Rescue Advisory Group (INSARAG) have made operation guidelines so that search and rescue operation would be globally accepted standards on each nation. The concept of Urban Search and Rescue teams was begun in the 1980. It involves the task of finding the victim's location, rescue and initial medical stabilization of victims trapped in structures, confined spaces, transportation etc (Bullock, Haddow, Coppola, Ergin, Westerman, & Yeletaysi, 2006). The INSARAG guidelines have made organizational and operational guidelines for national Urban Search and Rescue (USAR) teams. It has suggested forming four levels search and rescue group (INSARAG Guidelines and Methodology, 2011).

Urban Search and Rescue (USAR) First Responders:

Many studies show that average citizens, family and neighbors do the majority of search and rescue in the initial duration of a disaster (Coppola, 2011). INSARAG guidelines have also claimed that 35 percent of the victims are rescued by the local people and local resources. USAR first responders are comprised of existing local

emergency services and community responders. These responders' roles are assessing the nature and scale of the incident, rescue and basic casualty care, providing initial care to higher authority and requesting required appropriate resources.

Light Urban Search and Rescue Teams:

These teams are made from local emergency services and voluntary organizations. These team can do reconnaissance and survey of the affected area, identifying hazards, light search and rescue, first aid to victims and can assist higher level search and rescue team. The team is able of conducting rescue from wood and light metal structures. The team can do surface search. This team's logistic component is capable of establishing a base of operation. 18 persons are included in this team including 1 team leader, 2 operation and planning, 3 logistics and equipments, 10 rescue team and 2 medical and safety.

Medium Urban Search and Rescue Team:

Five components Management, Logistics, Search, Rescue and Medical are mandatory to be in Medium Urban Search and Rescue Team by the INSARAG guidelines. Medium USAR team can conduct search and rescue operations in collapsed structures of heavy wood, masonry construction and reinforced structures. The Medium USAR team should have 38 members in a team. It should be able to carry out 24 hour operation at one site for up to seven days.

Heavy Urban Search and Rescue Team:

As in Medium USAR team there are five components in Heavy USAR team. Heavy USAR team should be capable for complex technical search and rescue operation in collapsed structures. The team should have the proper equipments and skilled manpower to work. This team also should have technical equipment used to detect and locate live victims including specialized cameras, thermal devices and trained search dogs. This team has 55 members and should be able to run 24 hours operations at two independent sites for up to 10 days.

iv) Emergency Medical Service and Emergency Shelter:

Wounded people are commonly found in disasters. There could be many victims in numbers which could overwhelm the capacity of local health institutions to care for victims. Health service should be managed quickly to the injured victims. Injured victims should be provided the first aid to stabilize the condition of victims and should be transported victims to advanced health centers where they can receive the medical assistance (Coppola, 2011). Peoples' habitat could be destroyed by earthquake, hurricane, tornado, flood, landslides, fire only mention a few. So that people should be evacuated to the safe place and shelters should be made to keep the people safe (Carter, 1991).

v) Needs and Damage Assessment

Needs and damage assessment is to estimate the severity of the impact by disaster so the policy makers and decision makers can mobilize the resources as per the requirement. Damage assessment assesses the loss of human lives, people property, government property etc. Needs assessment determines what is required or missing to assist the different groups of affected population. (Ville de Goyet, 2012). Recovery policy and plans are made on the basis of needs and damage assessment.

III) Other Factors influencing disaster response:

Preparedness and response actions are mentioned above. There various factors which influence the disaster response. It is obvious that the 'Preparedness' affects the 'Response'. One of the most important things is that affects response is physical resources. Physical resources are bought and kept in preparedness phase. But plans never get implemented if the physical resources are lacked. Another important thing which affects the response is skilled human resources. If the deployed human resources are not available they can't execute the task effectively. Rescuers and other persons who work closely during disaster should be provided adequate trainings. They should be provided simulation exercise and

they should be used to with the scenario of disaster by regular practices (Manley, 2009). Since the disaster response situation is adverse and the persons working at this crucial time have to take their lives at risk so that if the policy can address the risk factors by insurance, risk allowance then only the persons may work effectively (Settle, 1985). Another important factor which influences the effectiveness of response is coordination since many institutions have to involve at a time during disaster. While responding disaster institution and official also has to keep in mind about the scope of their authority over a disaster response situation, including the limitation of power (Valcik & Tracy, 2013).

There would be chaos situation during disaster. Rescuers, health workers have to work in very difficult situations. They might be mentally disturbed while working with the injured people, dead bodies and in panic situations. A research has found that 11.1 % rescue and recovery workers had post-traumatic stress disorder in World Trade Center disaster (Potera, 2008). To address the mental problem of emergency workers psychological treatment should be done (Everly, Beaton, Pfefferbaum, & Parker, 2008). Another important thing which affects response is legal provision. Only passing laws and issuing directives doesn't ensured the changes but the proper and consistent implement of rules and regulations makes the response effective (Tierney, Lindell, & Perry, 2001).

2.12 Disaster Response in some other countries

2.12.1 United States of America

There is great economic losses caused by disaster in United States of America (USA) i.e. Hurricane Katrina caused \$125 billion in property damage which is the most expensive disaster in human history. The September 11 twin tower attacks cost nearly \$80 billion. Another expensive natural disaster is Hurricane Andrew which caused \$30 billion (Pampel, 2008). Federal Emergency Management

Agency (FEMA) is the major agency in USA to work on disaster. FEMA was established in 1979 and had four primary responsibilities (ibid):

- To establish federal disaster policies;
- To mobilize federal resources in response to a disaster;
- To coordinate federal activities with those of states and local governments; and
- To manage federal disaster response.

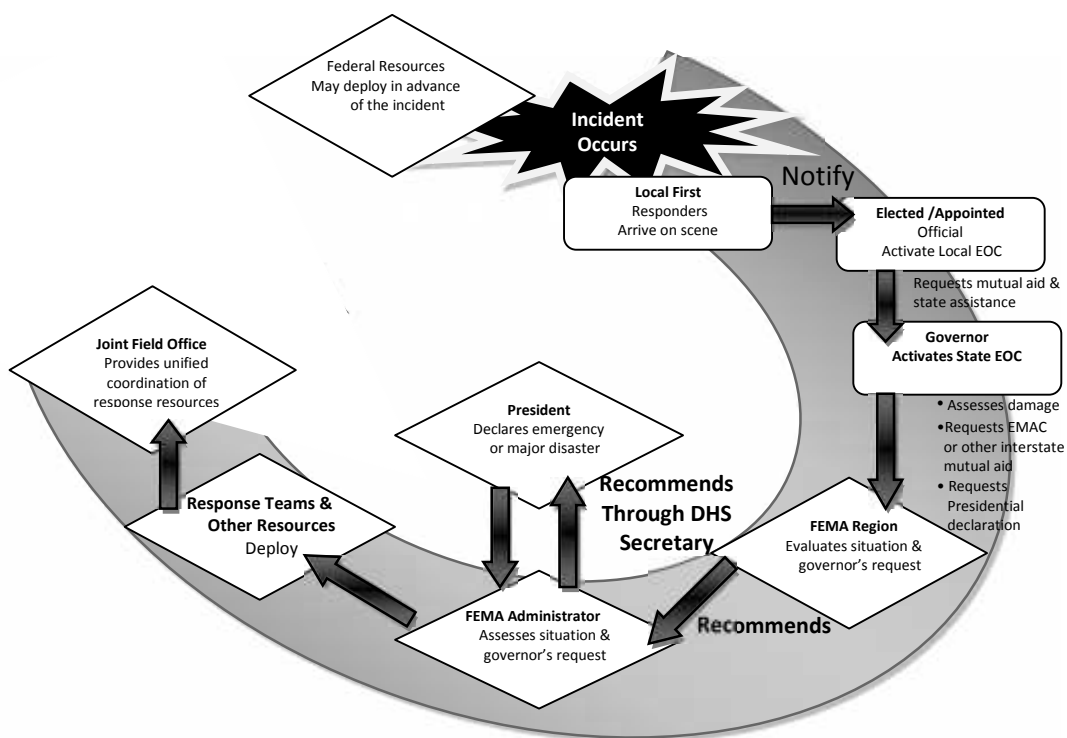
As the 1980s came, FEMA was in trouble since it suffered from morale, leadership, and conflicts with its partners of state and local level. In many disaster events FEMA couldn't respond effectively. Where there was terrorist attack in 2001 then President George W. Bush created Homeland Security by executive order within the White House. The purpose of establishing Homeland Security was to prevent, prepare for, respond to, and recover from terrorist attack and disasters. (Bullock, Haddow, Coppola, Ergin, Westerman, & Yeletaysi, 2006).

In a book Introduction to Emergency Management (Haddow, Bullock, & Coppola, 2011) states that response in USA is conducted in three local, state and federal levels. Minor disasters occur daily are responded by local fire, police and emergency medical personnel in a systematic and well planned course of action. In a state level there is state government office of emergency management in each of the fifty states. FEMA provides fund for state emergency management. Funds are also allocated from state budgets. National Guard is the principal resource to the governors. Resources of the National Guard are personnel, communications systems, equipments, air and road transport, heavy construction, earth-moving equipment, mass care and feeding equipment and emergency supplies e.g. beds, blankets and medical supplies.

The federal government is responsible if the disaster event has overwhelmed the capacity of local and state level. In a book 'Introduction to Homeland Security' (Bullock, Haddow, Coppola, Ergin, Westerman, & Yeletaysi, 2006) write the

process of federal response. The authors explain that if a disaster occurs at any place and starts to exceed the state's capacity to respond, the governor has to make a formal request to the president. When the governor sends the request, it is analyzed by the Homeland Security Operation Center (HSOC) at the federal level. HSOC provides information to the secretary of the Department of Homeland Security (DHS) and makes a recommendation to the president about whether or not a declaration is needed. After then the President will declare the emergency. Once the emergency is declared, the DHS secretary and senior staff start to work as per the National Response Plan (NRP).

Figure 2.6 The National Response Process of USA (Haddow, Bullock, & Coppola, 2011)



Though there is adequate preparedness, fund and planning about disaster response in USA Hurricane Katrina's response is taken as a failure response on all levels.

Negligence, government official's insufficient action or poor decisions and effective leadership were the main factors which were responsible for the ineffective Hurricane Katrina. All of these factors added up to the confusion, violence, and suffering (Haddow, Bullock, & Coppola, 2011).

2.12.2 India

After the implementation of Disaster Management Act of 2005 there is paradigm shift in disaster management approach in India. The importance has been shifted to holistic and multi-disciplinary approach from post-disaster relief approach which incorporates preventive measures that involves NGO's and community participation. Indian disaster policy framework has included the Hyogo Framework for Action 2005-2015, the millennium development goal and the international strategy for disaster declaration (Vadivel & Rav, 2010). The paradigm of a response-centric approach has been replaced by prevention and mitigation based approach. Nowadays focuses are being given to pre-disaster activities i.e. risk assessment, mitigation and preparedness too (Bandyopadhyay & Philip, 2011). Government of India enacted the Disaster Management Act in December 2005. This act has made the provision of National Disaster Management Authority (NDMA) as the apex body of disaster management which is headed by the Prime Minister (Evolution of NDMA-Disaster Management Authority). NDMA formulates, coordinates to enforcement and implementation of the policy related to disaster management (ibid).

CHAPTER III

METHODOLOGY

3.1 Research Design

This research paper has tried to explore the role of Armed Police Force in earthquake disaster 2072 BS. So that research was focused on exploring the Armed Police Force's role and responsibilities during earthquake. It has also tried to explore the existing polices related to Disaster Management System. This research has sought how the responsibilities are given to Armed Police Force by Nepal Government and how Armed Police Force completed the responsibilities related to disaster management. So that researcher has used exploratory research design. This research has been focused on how Armed Police Force is prepared to response in disasters and how they responded during earthquake disaster of 2015. The research has also explored the shortcomings of Armed Police Force's activities.

3.2 Philosophical Orientation

Since the research has explored the tasks performed by Armed Police Force the research has been based on ontological philosophical perspective.

3.3 Types of Research

Mix methods research has been used to undertake the research. The research has inquired and combined both qualitative and quantitative forms. Qualitative and quantitative approaches have been used, and mixing of the both approaches are used.

3.3.1 Quantitative Data

Quantitative data used in research, was collected through various resources. The mobilization of APF was collected from Armed Police Force, Metropolitan Office. Many of the quantitative information are collected through unpublished reports however some data related to preparedness and activities are collected through published journals, reports of various agencies and websites of related

organizations. Response activities of APF have been taken from various unpublished reports of MoHA.

3.3.2 Qualitative Data

As research was focused to analyze the shortcoming of APF response activities, the qualitative data was taken from the personnel of APF and survivor victims of earthquake victims. The views from APF rescuer team leaders, team members, planner of APF and victims were included.

3.4 Sources of Data

The main data used in research are primary and secondary data sources.

3.4.1 Primary Data

Primary data was collected through the various ways. The main sources of data collection of this research are mailed –questionnaire, open ended interview and Focused Group Discussions (FGD). Email –questionnaire was conducted to those personnel who were out of Kathmandu (within Nepal and outside of Nepal), whom it was impossible to meet and conduct interview. Open ended interview was conducted to the personnel of Kathmandu valley. Focused Group Discussion was done among the savior’s team members and survivor victims of earthquake event.

3.4.2 Secondary Data

Secondary data was collected through various publications, journals, books and reports. Since Ministry of Home Affairs (MoHA) is major stakeholder of disaster management in Nepal, the reports of MoHA was used to collect the information. The data received from Armed Police Force and the data received from MoHA was analyzed and compared with each other to validate the information.

3.5 Population and Sample

Population of the research comprise of APF personnel who took participation during disaster response and the victims of earthquake disaster. Respondents were chosen by convenient sampling method. Team leaders of disaster response who worked in Kathmandu valley, team members of rescue team and those persons who took participation on planning, coordinating and implementing the disaster response plans, and victims rescued by APF rescue team were included as population. Since there was a lot team leaders were mobilized during the earthquake response, only those team leaders were chosen as respondents who were trained and developed to respond in such disaster. The questionnaires provided to respondents are included in Appendix 'B'.

Table 3.1 Details of respondents

Method	Planners of APF	Rescue Team leaders	Rescue Team Members	Earthquake Survivors	Total Respondents
Interview	10	13	16	9	48
Mailed Questionnaire	7	10	4	2	23
Focused Group Discussion		5	11	11	27
Total	17	28	31	22	98

3.6 Operational Definition, Data Collection Techniques and Data Sources

Components	Operational Definition	Data Collection Techniques	Data Sources
Role of Armed Police Force	Mandates provided by the related Acts, Rules, Regulations, Guidelines, etc	Secondary Data, Content Analysis	Nepal Government's Acts, Rules, Regulations and related other publications
Physical Resources	Tools, equipments, machines, apparatus, PPEs	Interview/ Content Analysis	Armed Police Force Publications/Reports of Armed Police Force, Interview from APF personnel
Human Resources	Skilled human power of Armed Police Force who are directly involve in Disaster Management	Content Analysis/Interview	Armed Police Force Publications/Reports
Organizational Policy	Policies made by Armed Police Force	Content Analysis	Armed Police Force
Government Policy	Nepal government's policies related to disasters	Content Analysis	Nepal government's various agencies
Shortcomings of Operations	Lacking points during the operation	Interview	Primary Data (Acquired by respondents)

3.7 Data Analysis

Data has been presented qualitatively and quantitatively. Quantitative data are presented in table, bar chart and pie chart. Descriptive analysis has been done for the statistical analysis likewise qualitative data are presented in descriptive and explanatory analysis form.

3.8 Ethical Consideration

While undertaking the research, various aspects of ethical consideration has been taken in account as much as possible. Name of respondents and opinions are kept confidential. Any views haven't been disclosed by his/her name. Interview and recording were done with permission and knowingly. No data has been recorded unknowingly.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

This chapter has been divided into three sub chapters, in 4.1 status relating to disaster preparedness by APF has been presented, likewise in 4.2 major activities of APF which was done during the earthquake has been presented and in 4.3, the way forward has been presented.

4.1 Status Relating to Disaster Preparedness by Armed Police Force

This subsection presents the data of APF related to human resources and physical resources. Establishment to develop skilled human resources related to disaster management, what kind of training are provided to develop the capacity of APF personnel and the deployment of disaster skilled human power has been included in this chapter.

4.1.1 Initiation of Human Resource Development

APF started working on disaster management aspects by making five years plan. So APF established Disaster Management section at headquarters and started to work in central level. To produce required human power, APF established Disaster Management Training Center (DMTC) at Kurintar, Chitwan in December 2011. The step of establishing DMTC is pioneer work in Nepal. After establishing of DMTC it has played important role in producing skilled human power who can work effectively during disaster (Introduction of APF DMTC, 2011).

Currently DMTC's main focus is to provide three months long intensive integrated disaster management training. In this integrated package, DMTC has incorporated the various types of disaster related courses which are as follows:

Table 4.1 Integrated courses within DMT

SN	Name of Course	Remarks
1	Medical First Responder (MFR)	These all courses are integrated within single package and known as Disaster Management Training (DMT)
2	Collapsed Structure Search and Rescue (CSSR)	
3	Rappelling & Climbing	
4	Swimming	
5	Dead Body Management (DBM)	
6	Fire Fighting	

4.1.2 Disaster Management related trainings:

Development of human resource is the key factor to get the targeted achievement in any organization, Sanat Kumar Basnet, former Inspector General of Armed Police Force, further emphasizes on the establishment of training center and production of human power and says, prior to the establishment of DMTC at Kurintar, APF was responding to disasters in traditional way but after the establishment of DMTC APF personnel would manage the disaster with latest technology, equipments and knowledge (Introduction of APF DMTC, 2011). APF has trained personnel by various trainings. Since disaster management has been introduced just few years ago, the trainings are being conducted by the help of various agencies, NGOs and INGOs.

Table No 4.2 Details of trainings

S.N.	Name of Training	Collaboration
1	Disaster Management Training	APF
2	TOT on Disaster Risk Reduction Awareness	APF
3	Medical First Responder (MFR)	NSET
4	Collapsed Structure Search and Rescue	NSET
5	Training of Trainers	NSET
6	Medical First Responder Instructor Workshop (MFRIW)	NSET
7	Collapsed Structure Search and Rescue (CSSRIW)	NSET
8	Instructor Workshop (IW)	NSET
9	Fire fighting Basic	UNDP/MoFALD
10	Fire fighting TOT	UNDP/MoFALD
11	Waterman ship Orientation	UNDP
12	Incident Command System (ICS)	APF
13	Kayaking	APF
14	Light Search and Rescue (LSAR)	APF
15	Earthquake Awareness	APF

As it can be seen from the table number 4.2 that there are various types of trainings are conducted and provided to the personnel of APF. Since the establishment of DMTC, it has started to conduct various trainings. One of the important trainings is Disaster Management Training (DMT). This training is an integrated course module where various rank's trainees are included and

conducted at the same time. Most of the time, DSP to Constable are included in this trainings.

The course has imparted the knowledge to the officers on thematic issues of disaster management, skills which is applied during responding the various disasters and technical knowledge on the equipments which are used while responding. In these training trainees get the information about the disaster management's aspects, how it occurs and why it is important to know to the forces like APF. Trainees are taught about the rescue techniques of various situations i.e. from water, from collapsed structure; from landslide only mention a few.

Armed Police Force is conducting various trainings with the collaboration of various agencies. National Society for Earthquake Technology (NSET) has provided various types of trainings which is related to disaster management. One of the officer of NSET said that NSET is providing trainings not only to Armed Police Force but also to the Nepal Police (NP), Nepal Army (NA) and other disaster related government and non government agencies under the 'Program for Emergency Enhancement Response' (PEER) program.

MFR gives the skills of assessing the situation of victim and knowledge of primary care to victim in a situation where equipped medication is not immediately available. CSSR training is useful to search, locate and extract the victims from collapsed structure. CSSR training's aim is to make capable the persons extract victims from damaged structures by using various equipments. CSSR is quite useful on urban area at the time of earthquakes where concrete buildings are made. MFR IW and CSSR IW aims to produce trainer who could be able to conduct MFR and CSSR trainings in future. Likewise, TOT is aimed to produce trainers who would be able to conduct further required trainings.

Firefighting training is related to fire disaster by the name itself. Though, APF DMTC has incorporated a fundamental knowledge about fire fighting, it has also produced human power on firefighting by the help of Ministry of Federal Affairs

and Local Development (MoFALD) and United Nations Development Programme (UNDP).

Likewise watermanship and Kayaking training have been conducted to produce the water rescuers. ICS's main theme is to make higher levels official known on the aspects of managing and operations of disaster event. LSAR is about the introductory information and techniques on search and rescue. Earthquake Awareness is to make personnel aware about the earthquake's geological concept and consequences after the event of disaster.

Table No. 4.3 Numbers of personnel received DMT from DMTC

SN	Rank	Number
1	Deputy Superintendent	10
2	Inspector	60
3	Sub Inspector	49
4	Assistant Sub Inspector	31
5	Senior Head Constable	46
6	Head Constable	66
7	Assistant Head Constable	104
8	Constable	357
Total		723

Table number 4.3 shows the number of trainees produced by Disaster Management Training Center (DMTC) Kurintar. Trainees on this training are included from constable to DSP. Total 723 personnel are trained on disaster management training. Out of 723 personnel, 10 are Deputy Superintendent, and

60 are Inspector from senior officer level. Likewise 80 Junior Officers have been graduated and rests are graduated from Non Commissioned Officers.

Along with DMT, APF has trained the personnel with other various disaster related trainings.

Table number 4.4 Details developed human power

SN	Name of Training	Number of Human Power
1	Medical First Responder	25
2	Collapsed Structure Search and Rescue	24
3	Medical First Responder (MFR IW)	21
4	Collapsed Structure Search and Rescue (CSSR IW)	22
5	Training of Trainers	25
6	Light Search and Rescue	54
7	Earthquake Awareness	60
8	Watermanship	26
9	Incident Command System	27
10	Kayaking	10
11	Training of Trainers on Disaster Risk Reduction	27
12	Fire fighting Basic	9
13	Fire Fighting, Training of Trainers	8
14	Instructor Workshop	2
Total		340

Figure 4.1 shows the places of deployed units which are dedicated for disaster management purpose. Armed Police Force has established Disaster Management Team (DMT) in every regional zone. Far Western's team is located at Attariya, Kailali. Responsible area of this unit is Far Western Region. Mid Western's team is located at Kohalpur Banke which is responsible for the Mid Western Region. Likewise Western region's team is located at Malepatan, Pokhara which is responsible for the western region's disasters.

Mid region's team is located at Pathlaiya, Bara. Though it is called mid region's team, it is responsible for the mid region's Terai belt only due to geographical difficulties. There are two units established in Kathmandu valley which are APF DMT Base Syuchatar and Disaster Rescue battalion, Sinamangal. Syuchatar base is responsible for Kathmandu valley and fringes districts of Kathmandu valley where as Disaster Rescue battalion is prepared for the central level management. Along with these two units, APF has deployed a section (13 personnel) to the Fire Brigade (Juddha Barun Yantra), Kathmandu. This section is working with the staff of Fire Brigade.

Eastern region's team is located at Pakali, Sunsari. Every region's team is dedicated to respective region in normal situation. But if disaster occurs in any part of Nepal the team can be transferred to required place. APF has established a disaster management battalion at Sinamangal, a base camp in Syuchatar to response in disasters of Kathmandu Valley.

As we discussed the places of the APF deployment of disaster management team. In the following table the number of deployed personnel has been presented.

Table Number: 4.5 Strength of Regional Deployment

SN	Region	Strength
1	East Region	47
2	Mid Region	40
3	Western Region	36
4	Mid Western Region	35
5	Far Western Region	44
Total		202

Table 4.5 indicates the number of deployed personnel which is especially dedicated for the disaster management purpose. One of the higher officer of the Human Resource Department claims that every person of every unit has got disaster's basic concept since the course has been incorporated in every basic courses. Disaster management orientation also has been conducted at every unit so that APF personnel would be benefitted. The above table explores the highest numbers deployed in regional disaster unit is East Region where 47 personnel are deployed and least number is 35 in mid western region. In total, 202 personnel are deployed in every region.

4.1.4 Mechanism of Deployment

In this section, it has been presented that the mechanism of deployment while working during the disasters. In a subsection, the central deployment mechanism has been presented, likewise in another subsection command and deployment of Kathmandu valley has been presented.

a) Central Deployment Mechanism

Figure No. 4.2 Central Deployment Mechanism

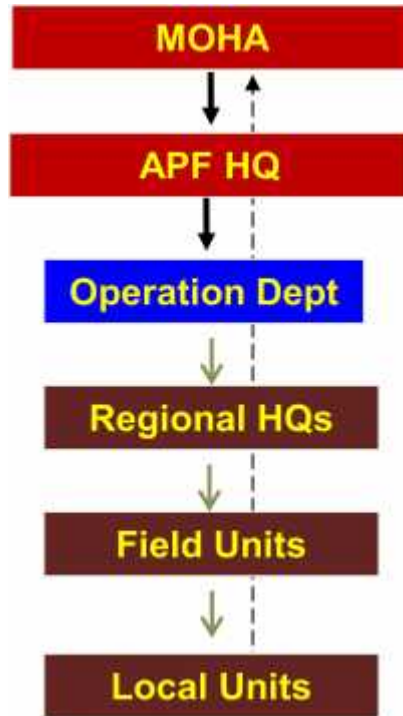
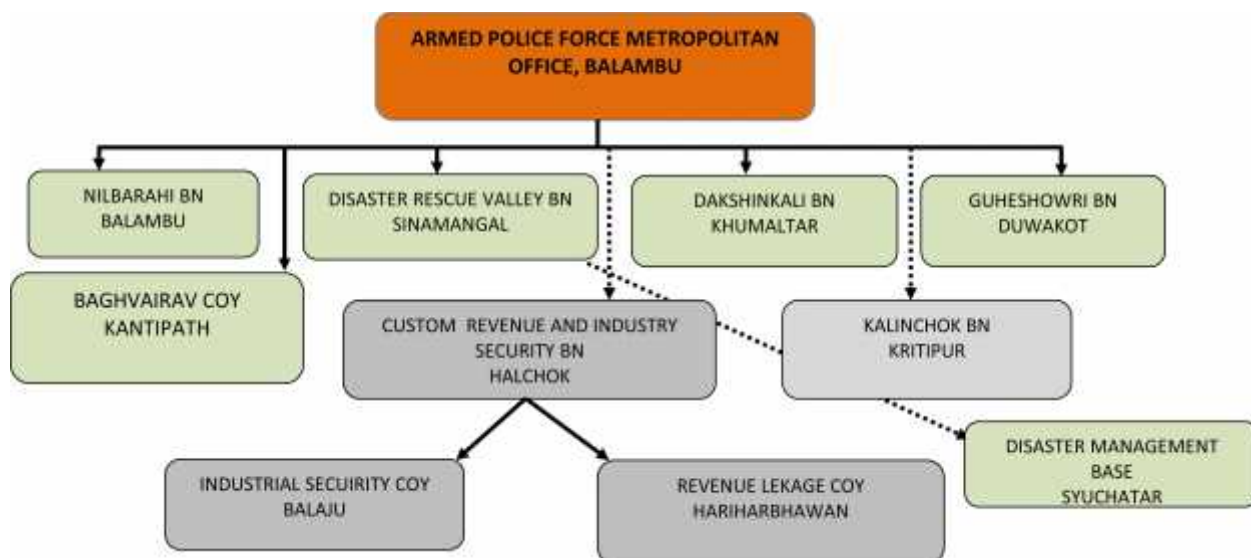


Figure 4.2 shows the central deployment mechanism. Ministry of Home Affairs (MOHA) directs and supervises the activities of APF in central level. Operation department is responsible do deploy and conduct the operations. Operation Department monitors, coordinates and supervises to the regional headquarters. Likewise regional headquarters monitors and commands to the field units and field units command local units. As command and monitoring systems come to downward likewise reporting goes upwards as shown by arrow in figure no 4.4.

b) Command and Deployment Structure of Kathmandu Valley

Deployment of Kathmandu valley and command system has been presented in this section.

Figure 4.3 Command and Unit Deployment in Kathmandu Valley



Kathmandu Valley is more vulnerable to disaster than any other cities of Nepal not only being a capital of Nepal but also from the perspective of development i.e. over populated, unplanned urbanization, lack of adequate resources, development infrastructures, cultural heritages, central headquarters of political system and administrative institutions (Bhattarai & Conway, 2010, Yodmani, 2001). So that Armed Police Force has given special attention to Kathmandu Valley. A battalion level's unit has been established at Sinamangal where disaster management team would be there for twenty four hours. Another unit has been established at Syuchatar. APF Metropolitan office is responsible for Kathmandu valley. As it is shown on figure 4.2 by black arrow line, it has four battalions and a company in direct command likewise there are custom revenue and industry battalions and Kalinchok battalion which remains in Kathmandu valley but Metropolitan office

doesn't have direct command on these units however Metropolitan office can mobilize these units if any urgency happens.

Table 4.6 Disaster trained human power in Kathmandu

SN	Name of Unit	Trained	General	Total
1	Disaster Rescue Battalion	83	248	331
2	Syuchatar, Base Camp	30	5	35
3	KMC Fire Brigade	13	0	13
Total		126	253	379

As it can be seen from the table no 4.6 that APF has deployed 83 trained personnel in Battalion, 30 in base camp and 13 in Kathmandu Metropolitan City (KMC) Fire Brigade. Deployment of Fire Brigade is joint deployment with the firefighters of KMC. There are 126 trained personnel in Kathmandu valley and 253 general manpower are still working in disaster dedicated unit.

4.1.5 Operational Aspect and Coordination

In this section, operational aspects of APF has been presented and coordination system has also been presented and shown by figure. This section provides the information about how the overall chain of command works in APF and the deployment procedures during the emergency. Though such type of mechanism doesn't exist every time, such type of system and coordination was established and done accordingly during the Gorkha Earthquake disasters. This section also provides the problems faced by the APF while working with other cluster and agencies.

Emergency Plans and working procedures of APF in disaster response

Operation department is the key department to be active at the time of any operation. So, every response activities are also conducted under the supervision of operation department. Standing Operating Procedure (SOP) is made for disaster response. Any unit throughout of Nepal can be mobilized on their own if any disaster occurs. They don't have to wait any orders from the higher authority however they have to made report later about their deployment. SOP was made by considering the possible earthquake disaster of Kathmandu valley however one respondent replied that the SOP couldn't be functional since Nepal hadn't witnessed such great disaster recently so the paper plan and the real scenario was quite different. There is no any other procedures are made beside this SOP and one mandate mentioned in APF Act 2058 BS. This act has given mandate about the disaster management but there is no clear procedures have been mentioned. Rules and regulation hasn't been able to clarify how to respond, on which part (search and rescue, shelter management, relief distribution, medication) APF should be mobilized. So far, APF itself hasn't been able to document own task procedures in written. The following figure provides the information about the operational chart and coordination mechanism established during the disaster.

Figure 4.4 Central Level's operational chart

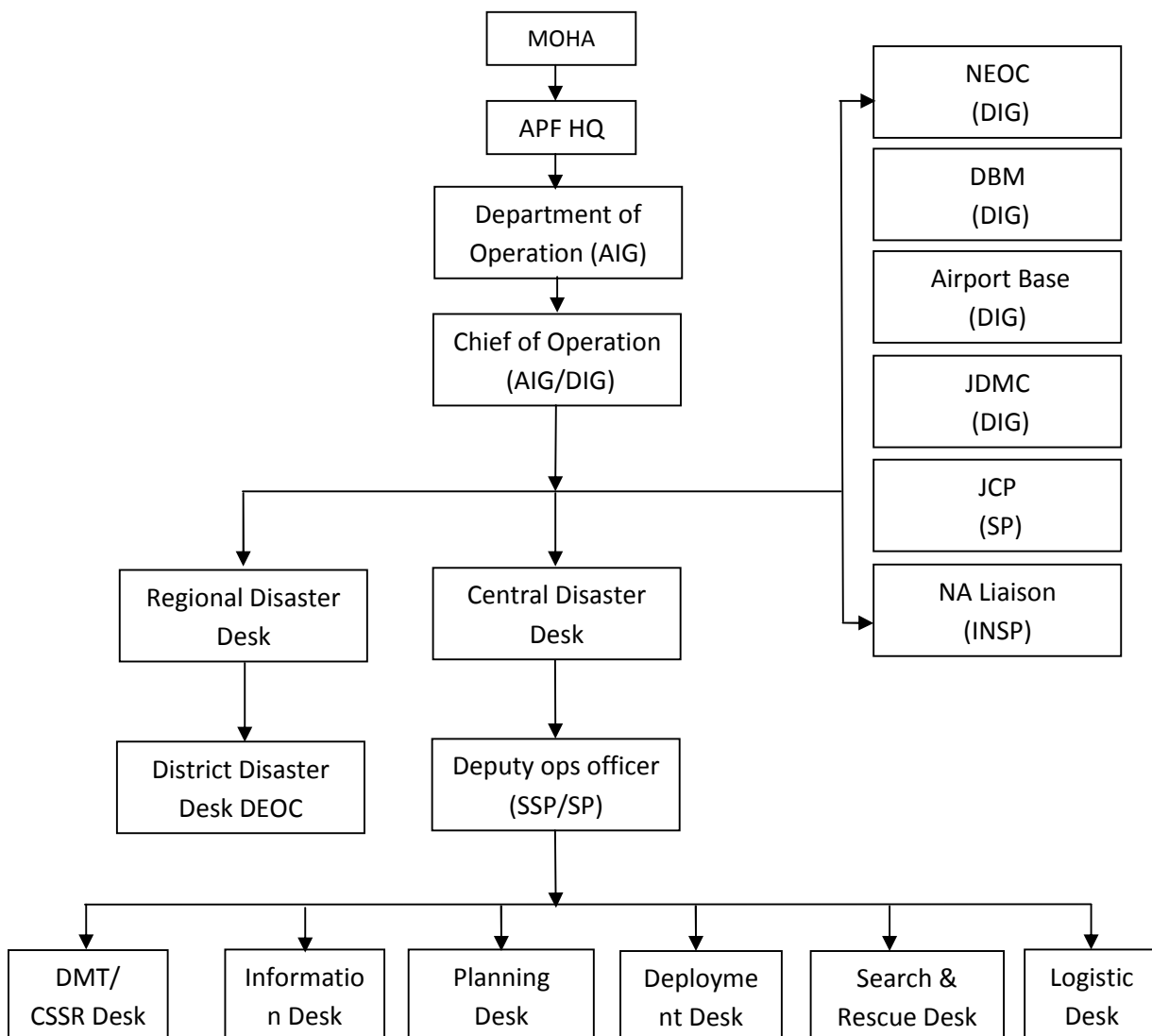


Figure no. 4.3 shows the central operational structure of Armed Police Force from central level to local level. It also shows the how the coordination mechanisms were established and executed the operations. As the Ministry of Home Affairs (MOHA) is the main responsible agency during disaster it is on the top of the above chart. Operation department of Armed Police Force Headquarters (APF HQ) is the main department to make planning, organizing and executing the plans. Regional disaster desk, central disaster desk was established to supervision,

monitor and to flow the various types of command to the subordinate units. Regional disaster desks were responsible to coordinate with the regional headquarters and plan as accordingly where as central disaster desk was responsible to make plans in center level.

Coordinating officers were also assigned to various agencies for mutual coordination. Deputy Inspector General (DIG) was assigned at National Emergency Operation Center (NEOC). Dead Bodies Management (DBM) committee was form to manage the dead bodies of victims where another DIG was assigned. Likewise another DIG was deployed at airport base to liaise and coordinate with the foreigners, military components and international organizations that were coming to Nepal for the assistance purpose. Joint Debris Management Committee (JDMC) was formed to dismantle the critical houses, to protect the archeological buildings, to manage the debris of world heritage sites with the chair of Nepal Army. DIG was assigned as member of JDMC from APF. Likewise Superintendent (SP) was assigned at Joint Command Post (JCP), Deputy Superintendent (DSP) was assigned at Logistic Base and an Inspector was assigned to Nepal Army Headquarters as liaison officer.

As it is discussed about department's activities and coordination mechanism during the disaster in foregoing figure. Response and command structure of the Kathmandu valley has been shown in figure 4.4.

Figure 4.5 Response Command Structure of Kathmandu Valley

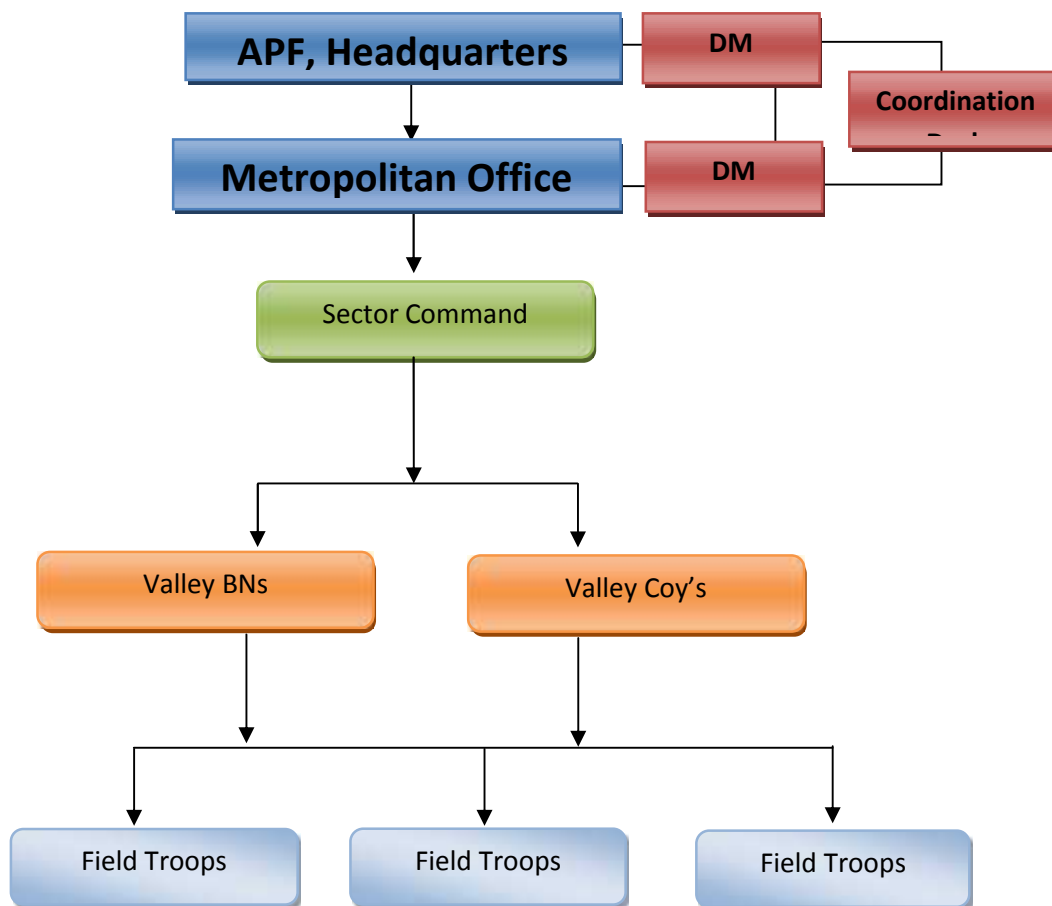


Figure 4.4 shows the command structure during earthquake response. This structure was made only for disaster response activities. Metropolitan office is under the direct supervision of headquarters. Disaster related activities were coordinated through the disaster management section of Headquarters and Metropolitan office respectively. The area of Kathmandu Valley was divided into different six sectors. SSPs were assigned as sector commander. There were battalions and companies under the sector commander. Field troops were under the command of battalions and companies.

4.1.6 Problems While Working With Other Clusters and Agencies

National Disaster Response Framework (NDRF) was made considering the coordination is the important task while responding to the disaster. It is crystal clear that one single agency can't deal the disaster response issues. So that

coordination with the related stakeholders is must. So, it was asked to the planning level's officials of APF and they replied that coordination couldn't be effective while responding to the disaster. Duplication of task was seen somewhere and worklessness was also seen somewhere. When the disaster occurred on Saturday noon, government agencies were closed on that day because of public holiday. So the security forces started rescue operation on their own way. Concerned ministries took longer time to be functional. Nepal Army, Armed Police Force and Nepal Police had started rescue operation on their own way but it took longer time to the ministries to supervision and coordinate the response activities.

One of the respondents replied that there was sheer lack of institutional cooperation and seamless duplication of job. There was absence of institutional link at all level of command it was like "right hand doesn't know what the left hand is doing". There were only coordinating agencies but not monitoring agencies. There is contradiction on act, regulation too. Disaster relief act 2039 has mandated to ministry of home affairs as a leading agency to work on disaster but there is no provision what would be if military component is mobilized. So that sometimes it was seen the disaster response activities are being leaded by ministry of home affairs, sometimes by chief secretary and sometimes by chief of army staff (COAS). There was no proper mechanism to evaluate daily activities, identify the area and making plans for another day. Lack of coordination was seen on operation field daily, many international rescuers were on field asking whether anyone is needed help or not. Some international rescue troops were just landed on bare hands, they didn't have any equipment, tools to conduct search and rescue operation. No agencies were there to supervise and deter such activities.

4.2 Major Activities Undertaken by APF in Earthquake 2015

This section provides the activities done by APF within the Kathmandu valley. It includes the first day response, rescue of the dead and live victims by APF and joint team. This section also covers the government's support during the disaster. Number of personnel deployed everyday also has been included in this section.

4.2.1 First Phase of Response in Central Level

When earthquake hits at 11:56 hours of the day, the emergency meeting was held at 12:30 at the Armed Police Headquarters premises. Prior to held the meetings the personnel were fall on the ground just to make sure where any casualties has been or not. Initial assessment and reporting from various parts of Nepal found that there only few people has got the minor injury and no critical injury was found on any units. Then after Emergency meeting ranked the security situation as "Critical" all over the Nepal. When the meeting ranked the situation as "critical" then the detail information about the disaster impact was collected from the Central Command Room (CCR) of the operation department. Emergency meeting also established "Disaster Operation and Information and communication operation desk" which desk started to mobilize emergency deployment on the basis of primary information. The desk started to make emergency plans, collecting the information and assessing and prioritizing them.

4.2.2 First day response of Armed Police Force Metropolitan Office

Since it was Saturday on the day of disaster no official program was running and staffs were on normal duty. Since it was public holiday personnel were engaged on their private work within the office premises. When the first tremor occurred, the supervision officer of the duty made an emergency fall in on the safe and open space. Immediately after the quake he tried to connect all the subordinate units via radio network and received initial information about the personnel injury, physical damage of all units. About after an hour of first quake emergency operation desk was established on the open ground and it started to conduct the emergency operation.

4.2.3 Rescue of Victims

The number of victims (Dead and Live) is provided in the table on the basis of district. The details are provided in two different tables. Table 4.7 includes the number of victims rescued by APF and table 4.8 includes the number of victims rescued by joint team (APF and Nepal Police, Nepal Army and other international rescue teams)

Table 4.7 Rescued Victims by APF (District Wise)

SN	District	Live	Dead	Total
1	Kathmandu	205	229	434
2	Lalitpur	43	24	67
3	Bhaktapur	10	14	24
Total		258	267	525

From the table no 4.7, we can see that Armed Police Force has been able to rescue 205 live victims from Kathmandu district, 43 from Lalitpur and 10 from Bhaktapur. Likewise 229 dead bodies were rescued from Kathmandu, 24 from Lalitpur and 14 from Bhaktapur.

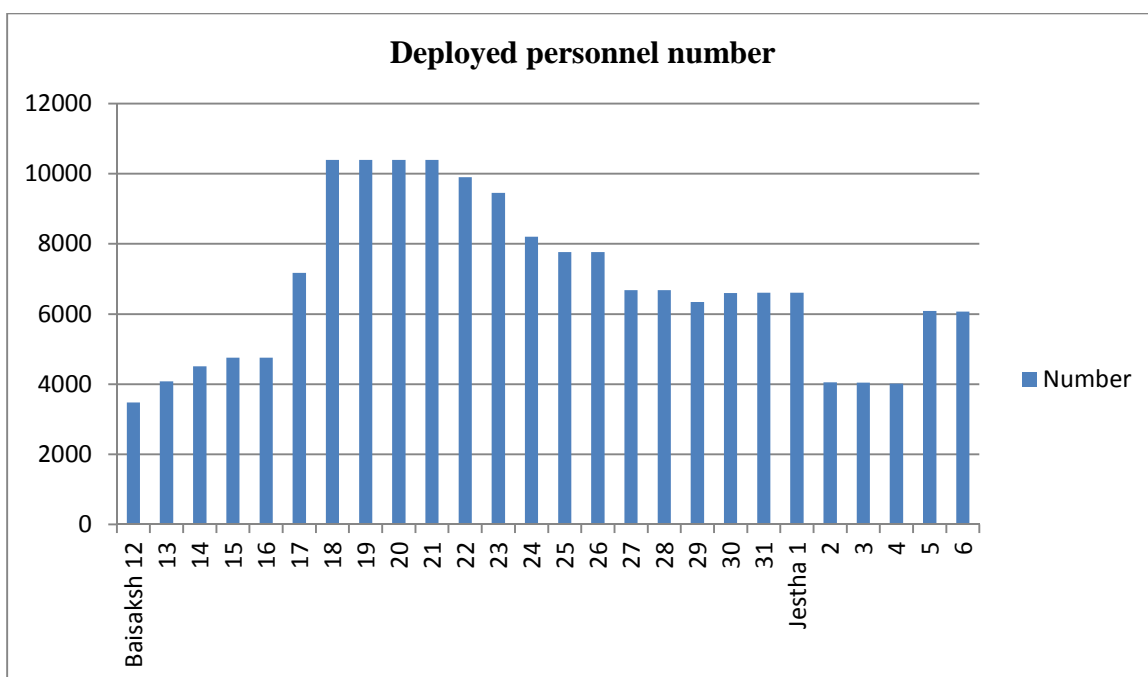
Table 4.8 Rescue Details by APF and Joint Team with APF

SN	Team	Live	Dead	Total
1	APF	258	267	525
2	Joint	388	436	824
Total		646	703	1349

As we can see from table no 4.8 that APF has been able to rescue 258 live victims and 388 live victims with joint rescue team (Nepal Army, Nepal Police and

International rescue teams). Likewise APF has rescued 267 dead victims by single effort whereas 436 with joint rescue teams. 646 live victims and 673 dead victims have been recovered in total by the single and joint effort.

Chart 4.1 Number of deployed personnel



From the Chart 4.2, we can see the number of daily duty deployment of the personnel from Baisakh 12 to Jestha 6. Within these days large numbers of people were deployed on 18, 19, 20 and 21, on these days 10,390 personnel were deployed daily. On the very first day of the disaster few people were deployed with the comparison of the rest days. On the day of disaster event 3480 people were deployed. On average 6814 people were deployed per day.

4.2.4 Shelter, Medication and relief transportation by Armed Police Force

In this section the number of persons whom APF provided the shelter in their own premises, medication given by APF Hospital and the detail of the relief transportations are given. Table 4.12 provides the number of persons taken shelter in APF premises, table 4.13 provides number of persons who took the medication

from APF hospital and table 4.14 provides the detail of relief materials escorted by APF.

Table 4.9 Number of persons taken shelter in APF premises.

SN	Month	APF HQ	APF STF BN	Dakshin kali BN	Kalincho k BN	Disaster Response BN	Nilbarahi BN	Baghvair abh COY
1	Baisakh	21050	1881	528	508	4218	13527	15715
2	Jestha	4119	0	320	0	1993	0	38193
3	Asadh					910		6107
4	Shrawan							1455
Total		25169	25169	848	508	7121	13527	61470

As we all know that Kathmandu has very limited open spaces. Because of rapidly increased unplanned urbanization, Kathmandu is being narrower day by day.

There are very limited open spaces remained in Kathmandu. People, nearby of the APF units were gathered inside unit compound and remained there for some days.

Though, shelter management wasn't the prime responsibility of APF however it provided shelter and food for the people for temporary. As we can see from table no 4.11 that the total 1, 33,812 people took the shelter at APF's unit premises.

Table 4.10 Medication provided by Armed Police Force, Hospital

SN	Details	Civilian	APF Staff	Total
1	Normal injury	488	53	541
2	Refer	2	0	2
3	Death	7	0	7
	Bed Admitted	1	0	1
Total		498	53	551

Armed Police Force, Hospital provided the emergency medical service to the victims of earthquake disaster. We can see from table no. 4.12 that total 551 persons came to the hospital for the treatment, among of them, 541 were normally

injured, 2 were referred to other hospital, 7 died at the hospital, and 1 was admitted at the hospital. Normal injured victims were discharged on the same day after the treatment and bed admitted victim had leg fracture injury and was discharged after some days. APF hospital had also provided psychological counseling to the disaster rescuers to address the Post Traumatic Stress Disorder (PTSD). In addition of these works, APF hospital conducted Health Camp with help of Myongij Hospital, South Korea, on various part of the Kathmandu valley.

Table 4.11 Escorting of Relief Transportation

SN	Months	Number of Transport	Deployed Number
1	Baisakh	286	211
2	Jestha	1119	3683
3	Asadh	296	1391
4	Shrawan	65	255
Total		1766	5540

As it can be seen from the table no 4.13, APF escorted total 1766 transport and deployed 5540 personnel. The transport vehicles were the relief material i.e. food, clothing, medicine, shelter material etc, from various countries' aid and help from the various parts of Nepal to the Kathmandu.

4.2.5 Government's Support

While undertaking the study the respondents were asked to provide their understanding about the government's support during the earthquake disaster response. Most of the respondents said that the government's support was appreciable and had given clear instruction to work. Nepal government had also provided logistic support of 100 million NRS to continue the rescue operation. Government had opened every possible door to make response effective. Few respondents replied that governments support was not as expected due to different causes i.e. seriousness, poor management, weak decision making, weak

leadership. Concerned ministries were involved in very tiny things and neglecting the great things. One of the higher official disclosed that some of the higher political leaders were asking logistics support with them to distribute the things to own political region for the sake of making voters happy. In spite of doing that they had to be engaged on making effective management for the whole disaster affected region.

In Kathmandu, many of the high rise buildings were collapsed and victims were entrapped in to the buildings. Some buildings had blocked the access of utility supplies. To manage such blocked buildings, heavy equipments were needed but the government agencies were failed to provide such equipments. Most of the search and rescue operations and debris clearance operations were carried with the support of private tools and also in assistance of personal support. Though it was seen that government was doing immense effort to make response effective however chain of command was loose and some agencies were not functioning well. The reason behind government's ineffectiveness was, government had lacking on experts and also in logistics. However, Central Natural Disaster Relief Committee (CNDRC) was coordinating to full fill the gaps. Government's support and effort would be more effective if there was better management of human and logistic resources.

4.2.6 Things, which make operation easier while responding to the disaster

This section provides response of the respondents about the elements which make search and rescue operation more effective. Respondents were asked to rank the essential elements in order. The result of the survey has been tabulated in table 4.9.

Table 4.12 Elements which make search and rescue effective

SN	Elements	Number	Percentage
1	Well trained human power	27	27.55
2	Rescue Equipments	23	23.47
3	Morale, motivation and dedication	21	21.43
4	Coordination	15	15.31
5	Citizen's involvement	12	12.34
Total		98	100

Source: Survey (2016)

From the table 4.9, it can be concluded that well trained human power is the key element which makes search and rescue more effective. Respondents were asked to rank the elements in ranking order. The 'Well trained human power' has got the first position with 27.55 percentages. Likewise, 'Rescue Equipments' has got the second position with 23.47 percentages. Likewise, morale motivation and dedication got 21.43 percentages in ranking order. Coordination and citizen's involvement got the 15.31 and 12.34 percentage simultaneously.

4.2.7 Difficulties faced by rescuers during disaster

This section provides the difficulties faced by the rescuer while working. The difficulties were divided in different seven parts and they were: Lack of equipments, lack of human power, Lack of PPE, Lack of coordination with other agencies, Lack of planning within organization, Fatigue and Crowd of people. The ranking order filled by the respondents are tabulated and presented below:

Table 4.13 Difficulties faced by rescuers during disasters

SN	Elements	Number	Percentage
1	Lack of equipment	20	20.41
2	Lack of human power	16	16.33
3	Lack of PPE	15	15.31
4	Lack of coordination with other agencies	14	14.29
5	Lack of planning within organization	12	12.24
6	Fatigue	11	11.22
7	Crowd of People	10	10.2
	Total	98	100

Source: Survey (2016)

As it can be seen on table 4.10 that lack of equipment was a major constraint faced by the rescuers. Total 20.41 percent respondents said that the rescuers had to face lack of equipments during rescue operation. Likewise, 'Lack of human power' is the second most difficulties faced by the rescuers Lack of Personal Protective Equipment (PPE) also got almost equal to the 'Lack of human power'. It has got 15.31 and ranked in third position. In rescue operation it is said that personal safety is the prime concern that rescuers have to think about. If the rescuers aren't safe themselves they can't save and protect the other. One of the

respondents shared his views that many personnel didn't have adequate helmet, mittens. Sometimes international rescuers would come and distribute mittens to the Nepalese rescuers. Sometimes they had to work with bare hands and sometimes with the latex gloves. Such examples are the optimum level of negligence. Fatigue and crowd of people are the least concern of the difficulties.

4.2.8 Gap between government policies, organization policies and field implementation

Respondents were asked to provide the information whether they found any gaps between government policies, APF's organization policies and field implementation as many policies are neglected to implement from the government agencies. One of the examples of government policy's gap is the failure of government to implement the building code properly. The effectiveness of building of code is directly related with the earthquake destruction. Implementation of building code in Kathmandu is hardly seen. Poor implementation is going to be repeated in future disaster too because government is almost failed to supervise and assess the ruined buildings and keep them in notice. Most of the buildings which were cracked due to earthquake have been repaired by the citizen without any legal permission and required standard. Though every citizen has to be treated equally and be responded swiftly, it couldn't be. Because there were unhealthy competition between government agencies. Response was conducted on the place where they used to get national and international exposure by media or by the big shots of the society. Remote but devastated places were unattended regarding response and rehabilitation. Though there were rules to curb the black market, emergency services government failed to run these services and people had to suffer from black market as well as from emergency services.

4.2.9 Suggestions to the Leaders/Policy-makers

Suggestions were asked to provide to the leaders and policymaker of the disaster management sector and respondents were told to prioritize the suggestions what should be done first or what is the important thing to be done to response such disaster in future.

Table 4.14 Suggestions to the leaders/Policy-makers

SN	Suggestions	Number	Ranking Percentage
1	Adequate rescue equipments should be provided	24	24.49
2	Implementation of existing policies	22	22.45
3	DM course should be designed from school level	20	20.41
4	Establishment of rescue force	17	17.34
5	Hazard allowance for rescue workers	15	15.31
Total		98	100

Table 4.11 provides the information of the suggestion to the leaders. 24.49 percent respondents suggested that adequate rescue equipments should be provided to the responders. Some of the responders have identified that implementation of existing policies also should be taken into consideration. While prioritizing the suggestions “Adequate rescue equipments should be provided” has got the first priority and “Hazard allowance for rescue worker” has got the least priority.

4.2.10 Problems of Rescuers

In this section particular problems of the rescuers are discussed. What kind of the problems they felt during the disaster period. Especially rescue team leaders were asked to provide their subordinate's problems and rescue team members were asked about their own problems. One of the major problems of the rescuers found during the study is that they themselves were victims of the disaster and many of them had to lose their properties and family members beside these unbearable incidents they had to work on rescue site for long hours. When they had to work with the victims, had to hear the pain of victims, rescuers used to be disturbed mentally. Many of them had to leave their families as homeless, they had to be engaged in hard fatigue, and in addition they had to deal the panic and havoc situation. These things had caused psychological problems to the rescuers. Another neglected aspect of the rescuers is that organization had levied huge amount (one third of monthly salary in average) for the government fund without their consent. Rescuers didn't have time to be with their family in hard time in addition they couldn't be able to provide adequate money to manage their family for temporary shelter. Rescue team members said that they were supposed to be provided some kind instant monetary relief instead of doing these they were compelled to pay their own wages.

As the rescuers had gone through hard work for long time during crisis, they were supposed to be provided enough psychological counseling but this aspect also seen neglected. Though Rescue personnel were counseled, it wasn't sufficient treatment. Psychological counseling was done on mass not individually and by any doctors but not by the psychologists.

4.2.11 Involvement of APF:

In this section, respondents' view has included about the involvement of APF. They were asked where APF should be involved during the disaster.

Table 4.15 Involvement of APF

SN	Involvement	Number	Ranking Percentage
1	Search and Rescue	40	40.82
2	Shelter Management	6	6.12
3	Relief Distribution	17	17.35
4	Medication	0	0
5	All of the above	35	35.71
Total		98	100

Table 4.12 presents the respondents' view about the involvement of APF. It is found that involvement of APF should be search and rescue operation. Likewise 35.71 percent respondents chose that APF should be mobilized on all aspects of response operation.

4.3 Additional Concerns Relating to Management of Disasters

This section provides the information about the experiences of the personnel of APF and other general people who experienced the earthquake. This section has been divided into eight different headings and discussed. This section includes the challenges faced at higher level, lesson learnt by the earthquake disaster, what changes brought the earthquake to the personal behavior, amendment of mandates of APF, policy changes of Nepal Government and about the citizen's role during the disaster.

4.3.1 Experience of Disaster

Both respondents of Armed Police Force planners and rescuers shared the event of earthquake as expected in Nepal but wasn't that much devastating how it was expected while talking, preparing and planning. Earthquake in Kathmandu was the hot topic on disaster management seminars, workshops and on trainings. They felt very chaos while earthquake was hitting Nepal. Most of the respondents have felt this time's earthquake for the first time in their life so they had heard and talked about the earthquake but were experiencing for the first time. A rescuer respondent who is an instructor of Disaster Management Training Center, expressed that he had given many classes within the APF and to the communities, schools and used to tell about what to do and what not to do during the earthquake but when he faced the earthquake it was beyond the imagination and couldn't think properly and follow the things whatever he had taught. He further said that we were known about the before shock, main shock and aftershock but we didn't have idea about the continuous aftershocks.

Many of the personnel were out of contact with their families, some had to leave their people on the open space and had to rush to the office and deployed on the field for search and rescue operation. Though most of the personnel had sense of pride while working on search and rescue operation and could save the lives of people, however they had some kind of psychological burden because of their family responsibilities. The last great earthquake that occurred in Nepal was 2045 BS. At that time the impact was limited mainly on the eastern region. Literatures about the earthquake experiences are also unavailable so that though people had heard about the earthquake they didn't have expectations of continuous tremor after the main shock. Rescuers said that the operation became terrible and horrific because of continuous tremor. Earthquake victims shared their experience that the quake was out of their imagination and beyond of their thought. They couldn't imagine what to do or what not to do. Earlier they had heard about the earthquake but hadn't taken seriously. Most of the respondents didn't know what to do, whom to call and where to go. Since they had only heard about the earthquake

disaster but weren't prepared for the earthquake, they didn't have emergency food, shelter and medicines.

4.3.2 Challenges Faced at Planning Level

There were many challenges APF had to face during response. One of the respondents satire on Nepalese culture by stating that we are very good to run paper horse but it never runs on ground or on reality. This statement resembles the management system of our government and bureaucracy. The urgency of disaster management and its components were largely felt in last few years and it was the hot cake among the policy makers in workshops and seminars. But the talks merely appear on reality. One of the examples is; there was National Strategic Action Plan was made in 2014 for Search and Rescue. It had made plans about the capacity development of Search and Rescue (SAR) team. There was plan to make Light Search and Rescue (LSAR) and Medium Search and Rescue team but the plan hasn't been implemented yet. Such teams' necessity was largely felt during search and rescue operation.

One of the higher official who was actively participated on search and rescue operation in Kathmandu valley said, "this earthquake has opened our eyes on many ways, it showed our limitations, dysfunctional plans, resources, management and our preparedness level." Most of the respondents said that lack of skilled and sufficient manpower, modern gadget, sophisticated equipments, search and rescue tools were the main challenges during the earthquake response. These were the challenges faced at lower level or at operational level.

After few days of disaster, international search and rescue teams were arrived in Kathmandu. But many of the rescue teams were jobless and wandering on the streets in search of rescue operations. Some of the teams would request the Nepalese search and rescue team on field level. It showed that Nepal governments lack not only field rescuers but also higher level's disaster management expert who can make quick, firm and strong decision and can implement the needy plans. As many of the bureaucrats were facing such disaster for the first time they

were unable to make quick decisions and work on chaos environment. Sometimes it wasn't clear that who was leading the response either it was Cabinet, CNDRC, Chief Secretary or Home Ministry.

4.3.3 Essential Elements Which Should be Done to Make the Response more Effective

This section provides the information about the elements which are essential to make response more effective in policy sector. Respondents were asked to prioritize the elements.

Table 4 .16 Essential elements which should be done to make the response more effective

SN	Elements	Number	Ranking percentage
1	Development of sound and clear policy	21	21.43
2	Establishment of rescue force	12	12.24
3	Adequate physical resources	11	11.22
4	Activation of different level's DM committee	9	9.19
5	Citizen's participation in DM activities	9	9.18
6	Activation of cluster approach	8	8.17
7	Establishment of ware houses	8	8.16
8	Implementation of existing acts/laws	7	7.14
9	Mainstreaming of DM in development sector	7	7.14
10	Modernized lab in NEOC	6	6.13
Total		90	100

Table 4.14 shows the percentage of respondents' views on essential elements to make disaster response more effective. It can be seen from the chart 4.14 that 'Development of sound and clear policy' has got the first priority which makes response more effective, it has got 21.43 % priority in overall ranking. Likewise, 'Establishment of rescue force' and 'Adequate physical resources' has got the second and third priority simultaneously. Other elements have got almost equal percentage in ranking. Likewise 'Modernized lab in NEOC' has got least priority in ranking and got 6.13 percentages. However one of the respondents didn't rank the elements in priority but said these all aspects should be carried out together not separately.

4.3.4 Provisions/Mandates to be added to APF to make response more effective

Most of the respondents are agreed that the mandate provided and mentioned in APF Act is enough, no other provisions should be added but it should be make clear about the roles and responsibility of APF in disaster. As there is only a mandate about disaster management has been mentioned in APF Act but nowhere about the legal procedures to execute mandated task. So that it is necessary to have legal rules and regulation about the APF's roles and responsibility. It also should be mentioned whether APF has to work on every aspect of Disaster Management Cycle (Mitigation, Preparedness, Response and Recovery) or not. Since there is no clear legal provision about the roles and responsibilities of APF it should be added immediately. If we analyze the existing Act, rules, regulations, guidelines, polices we don't find APF's role beside in Dead Body Management (DBM) guidelines.

Respondents have also suggested that APF should develop itself by equipping and well trained human power. APF should create a separate dedicated force with a separate disaster management department or directorate.

4.3.5 Lessons learnt by this disaster to manage probable future disasters

In Nepal, every year, many peoples' lives are lost due to preventable disasters so all efforts and preparations of government should be focused to a simple term: saving communities and protecting properties from vulnerabilities. As coordination was lacking during the operation it is needed to develop a system approach to manage the disaster where all the government agencies could work together.

One of the most important lessons learnt by this disaster is it showed the reality ground of our preparation and response efficiency. The earthquake has made us to rethink about our system, policies, rules and regulation. Many of the things have to be formulated and make it adequate with the time.

A dedicated higher institution is largely felt at time of disaster which should have authority and full of resources. In the absence of such institution there was chaos situation to monitor, supervision, coordinate and direct to the disaster first responder institution. Another important aspects of lesson learned is, we didn't have experiences working with international agencies. It compelled us to think there should be strong mechanism to supervise and coordinate the international agencies, if not many of the international workers and institutions may work according to their interests not on our necessity which may weaken national security and sovereignty.

Disaster expert is another largely felt thing during the disaster. Disaster expert are required at political level, higher managerial level, coordinating level and operation level. Due to the absence of disaster management expert many situation were beyond the control and messed up. We didn't have large rescue equipments which can ease the rescue operations. Procurement of modern search and rescue equipments, tool and gadgets is another lesson learned by this disaster. Relief backup, relief distribution procedure, relief acceptance standard and procedure have to be developed. We had very poor shelter and camp management, so another important thing to be improved, is management of temporary displaced

people and permanently homeless people. Proper plan should be made to run the critical structures.

To maintain these gaps and make plans implementable, there should be national level simulation exercise regularly.

4.3.6 Changes in personal and professional behavior aftermath of disaster

Most of the respondents replied that disaster has changed their perspective of thinking, way of executing the tasks. Disaster has taught to be prepared anywhere and anytime. Personally, disaster compelled to realize about the shortness of life. When rescuers worked in disaster and could save the lives of people now they think that life has become more worthy, they have sense of pride. It made them to feel as if there is no religion greater than humanity.

While talking about the professional behavior, many things have been changed as the aftermath of this disaster. One of the important things is that it has make more experienced. Though it was a tragic situation, it has given lessons about rescue operation, shortness of the physical and human resources.

4.3.7 Is any policy changed after the earthquake?

Most of the Participants expressed that the policy had to be changed after the earthquake but somehow its not. Almost all participants are agreed that the disaster management act is very old and has not been amended as per the requirement of time. Disaster management bill has been proposed but not been endorsed yet. It shows how poor decision making, seriousness and leadership with the political leadership have. It shows how the government is neglecting the disaster management aspects. After the devastating earthquake too disaster management policy hasn't been able to be in mainstream of government's policy. As disaster sector has become insignificant to the government, management also being poor. However there is little impact of organization's departmental policy. Prior to the earthquake APF didn't have any specific disaster response plan now

APF has started making response plan of various disasters i.e. flood, fire, landslides, earthquake etc.

4.3.8 Citizen's Role in disaster response

Respondents were asked whether citizens do have role in disaster management or not. Respondents expressed that citizen's role is important in disaster response. As citizens are the first responder and rescuer of any disaster, they have great role in disaster response. Since, communities witness the disaster so they know the information better than lately arrived search and rescue team. They can provide the information to the search and rescue team. People played unforgettable role while responding. They provided medication, food and shelter to the victims. Mostly, government's resources are limited in a country like Nepal, so that citizens help is required. In earthquake 2015 citizen helped by managing crowd, traffic, water supply and removing rubbles but sometimes created problems by making crowd and not letting rescuers to work smoothly. Respondents also suggested providing awareness and essential search and rescue, medication knowledge to the citizens.

Respondents from the victims also realized that, every individual has equal responsibility to manage the disaster. If the people were prepared themselves the respond would be easier.

CHAPTER V

CONCLUSION

5.1 Context

Disasters do exist globally, since the beginning of human civilization in different forms, i.e. earthquake, tsunami, fire, avalanche, landslides, flood, road accidents, air accidents, epidemics etc. But the impact is differing from place to place.

Nepal is disaster prone country, it is prone to many disasters i.e. earthquake, floods, landslides, fires etc. Though, disasters and its impacts are reoccurring every year, many people have to suffer from the disasters. Many of the disaster victims are being homeless and have to face many hardships for the living. Nepal had to face a great earthquake event last year. Many people were killed, thousands of people became homeless. The loss of disaster depends on the level of preparedness and response of state.

Armed Police Force is one of the security agencies of Nepal and its one major mandate is to be involved in disaster management. The research aimed to explore the overall preparation status of Armed Police Force regarding to disaster management. Research problems of the research were:

How Armed Police Force is prepared itself to respond in disasters?

How Armed Police Force responded in earthquake disaster of 2015?

What were the shortcomings during response to earthquake 2015?

Likewise the objectives of the research were:

- To examine the overall status of preparation aspect of Armed Police Force for disaster
- To analyze the role of Armed Police Force during earthquake disaster of 2015
- To identify the difficulties faced by Armed Police Force during earthquake

response of 2015

This research paper is based on explorative research design. It has explored the preparation aspects of Armed Police Force regarding the disaster management perspective. The research has used mixed (qualitative and quantitative) method to undertake the research. Primary and secondary data sources have been used to complete the research. Preparation aspects of Armed Police Force have been collected from the secondary resources likewise the activities of Armed Police Force during the earthquake also collected from the secondary sources.

To collect the primary data, questionnaire were administered and distributed to the respondents. Respondents were selected by judgmental sampling. Two types of questionnaire were administered and distributed. One set of questionnaire was made for the leader/planners of APF where as another set was for the team leaders of the rescue group. Focused Group Discussions (FGD) was conducted among the rescue members. FGD was conducted among the survivor victims of the earthquake event.

The research has explored the preparedness and readiness status of Armed Police Force. Production of human power and the efforts making the teams well equipped seen very slow. Very few numbers of trained human power are deployed at Kathmandu.

5.2 Findings:

- APF has initiated disaster management approach and tried mainstreaming it.
- Development of human power, deployment and procurement of physical resources is going on.
- Though, disaster management approach was adopted five years ago, the pace seems quite slow on the production of human power and making well equipped to the produced human power.

- Deployment policy is also ambiguous, trained human power aren't deployed on disaster management units. Trained human power are working on other field and general personnel are working on disaster dedicated units.
- Though, APF had very few personnel and limited resources, activities of APF during earthquake are praiseworthy.
- Many plans and policies related to APF are not implemented i.e. development of search and rescue (Light, Medium and Urban) has been formed but plan does not exist.
- Higher level authority of disaster management is largely felt during disaster response.
- Monitoring, coordinating and implementing elements of plans were weak during earthquake operation.
- Though, there is citizen's greater role in disaster response, it hasn't been able to incorporate the citizens in disaster response with the disaster response agencies.
- Unplanned urbanization, rapidly increased population, poor data record keeping of the people, dependency on food, water and energy made the response difficult.
- Still, there is grey area on the involvement of APF, whether it should be limited only on search and rescue or should be in public safety and security, relief distribution, medication or not. There is no legal provision of doing such things however APF Act has covered the broader aspect of disaster management.

5.3 Suggestions:

- There is no research agency which studies about; probable disaster, assess the risk and suggest planning to reduce the impact of disaster so that a 'Disaster Study and Research Institute' has to be established.
- Unavailability of disaster records, objective review and analysis of the past disaster operation. So that fair, transparent and accessible disaster record centre has to be established. Such data centre would share the available data to various agencies and cross check the data.

- No research is found about the impact of effective disaster response and weak disaster response so that further research is required in such issues.
- This study covers only single agency and limited area as a study area so that every first responders' activities are necessary to be further studied.

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Equipment related to disaster

S.N.	Particulars	Sets	Remarks
1.	Collapsed Structure Search and Rescue Equipments	56	
2.	MFR/CSSR Equipments	4	
3.	Water Search and Rescue Equipments	16	Rescue Boat-9, Motor Boat-7 and other
4.	Collapsed Structure Search and Rescue Equipment's Accessories	-	for 38 Sets CSSR equipment
5.	Deep Water Diving Suit Equipments	25	
6.	Deep Water Diving Suit Equipments Accessories	25	
7.	Rappelling & Climbing Equipment	16	
8.	Fire Fighting Equipment	24	
9.	Life Jacket	50	
10.	Shelter Box	498	
11.	Aqua Box	400	
12.	Tent	100	
13.	Drill Machine	2	
14.	Rescue Raft	4	
15.	Excavator (22 Ton)	1	
16.	Excavator (3.2 Ton)	1	
17.	Wheel Loader (21 Ton)	1	
18.	Wheel Loader (2.2 Ton)	1	

Appendix 'B'**Questionnaire to the Leader/Planners of APF**

Q.No. 1. How did your organization/office made response in the mobilization of personnel, materials and other resources during disaster response?

Q.No.2. Have your organization made any emergency plans/SOPs related to earthquake or other type of disasters? If you have made, how it works?

Q.No. 3. How your organization worked with other agencies (Clusters) to respond to the disaster? Do you find some problems/misunderstanding or policy grey area which caused the operation difficult?

Q.No.4. How did you find the government's support during disaster?

Q.No.5. Is there any policy changed significantly after the earthquake disaster in your organization?

Q.No.6. What kind of challenges did you face during the earthquake and after the earthquake disaster?

Q.No. 7. Would you mind sharing your experiences while responding the disaster?

Q.No.8. Please prioritize the following essential elements which should be done to makes the response more effective.

Development of sound and clear policy	
Activation of different level's DM committee	
Modernized lab in NEOC	
Activation of cluster approach	
Establishment of Rescue Force	
Adequate physical resources	
Establishment of ware houses	
Citizen's participation in DM activities	

Implementation of existing acts/laws	
Mainstreaming of DM in development sector	

Q.No. 9. What kind of provision/mandate should be added to APF to make response more effective?

Q.No.10. What are the lessons learnt by this disaster to manage probable future disasters?

Q.No.11. Any Other?

Questionnaire to the Rescuers

Q.No. 1. Would you mind sharing your experience during earthquake response?

Q.No.2. What makes your operation easier while responding to the disaster? Rank in priority.

Well trained human power	
Rescue equipments	
Citizen's involvement	
Coordination	
Morale, Motivation & Dedication	
Any other (Please mention)	

Q.No.3. What kind of difficulties you faced during the disaster? Rank in priority.

Lack of equipments	
Lack of Human power	
Fatigue	
Crowd of People	
Lack of PPEs	
Lack of Coordination with other agencies	
Lack of planning within your organization	
Any other (Please specify)	

Q.No.4. Do you find any gap between government policies, your organization policies and field implementation?

Q.No.5. Do you have any suggestion to your leaders or Nepal government's policy makers which makes the response activities more effective? Rank in priority.

Implementation of existing policies	
DM course should be designed from school level	
Establishment of rescue force	
Hazard allowance for rescue workers	
Adequate rescue equipments should be provided	
Any other (please specify)	

Q.No.6. Do you find citizen/individual/community's role while responding to the disasters?

Q.No.7. Did this earthquake disaster bring any significant change in your personal and professional behavior?

Q.No.8. What are the lessons learnt by this disaster to manage probable future disasters?

Q.No.9. What kind of problems you faced of your subordinate rescuers?

Q.No. 10. On which aspect APF should be involved in disaster response?

- (a) Search and Rescue
- (b) Shelter Management
- (c) Relief Distribution
- (d) Medication
- (e) Above all

Q.No. 11. Any other

Questionnaire to the Victims

Q.No. 1 Had you heard about earthquake before?

Q.No.2. Did you have any emergency plan in your family/neighbours and in your society?

If Yes, What kind of plan did you have?

Q.No.3. Could you share your feeling of disaster?

Q.No. 4. How would you judge the rescue conducted by the Armed Police Force?

Q.No. 5. Is there any difference in your thoughts after the earthquake disaster?

Q.No. 6. Do suggest any suggestions to Nepal Government or first responder organization like APF so the response activities would be more effective that this disaster?

Q.No.7. What have you learnt in your individual life from this disaster?

Q.No.8. Do you think there is individual/citizen/community's role during disaster?

Q.No.9. Do you find any government agencies which are very crucial in disaster and should be in community for 24 hours?

Q.No.10. How do you analyze the importance of disaster management?

Q.No.11. How effective was APF's role during response?

Q.No.12. Do you think there should be other agency's participation while conducting operation?

Q.No.13. What kinds of aspects should be added for effective disaster management?

Q.No. 14. Any other thing