A REPORT on

Post Disaster Needs Assessment and Recovery Plan of Health and Population Sector

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Table of Contents

Executive Summary 3

Recovery and reconstruction needs and costs: 4

1. Pre Disaster Situation including Context Analysis 7

1.1 Pre Disaster Situation 7

1.2 Disaster Preparedness 8

2 Post Disaster Situation 8

2.1 Immediate Response 9

2.2 Infrastructure and Assets 9

2.3 Health Service Delivery and Access 10

2.4 Governance 13

2.5 Risk and Vulnerability 13

3 Estimates of Damage and Loss 14

4 Impact Analysis on Development Goals of the Sector 16

5 Recovery and Reconstruction Strategy 17

6 Recovery and Reconstruction Initiatives and Costs 19

7 Implementation Strategy for Recovery 21

8 Assessment Methodology 21

8.1 Scope of Assessment Defined 21

8.2 Field Visit in Fourteen Districts 21

8.3 Data Compilation, Cleaning and Analysis 22

8.5 Costing Approach and Assumptions 22

8.4 Drafting of Report, Consultation and Finalization 22

Annexes 23

References 34

Executive Summary

Background: In line with the broad framework of the Post Disaster Needs Assessment (PDNA) undertaken by the overall leadership of the National Planning Commission, the Ministry of Health and Population (MoHP) conducted a comprehensive assessment for health and population sector, which aimed at collecting and collating information on damage, losses, and post-disaster needs for reconstructing and rebuilding the country with the broader concept of building back better. The work accomplished by the assessment team has provided (i) analysis of the situation before the earthquake, (ii) a thorough assessment of damage and losses incurred following the earthquake and an estimation of the effect of the earthquake on health and population related services; and (iii) identification of needs for recovery and reconstruction in immediate, intermediate and medium terms.

The following section presents the summary of the findings.

The situation before the earthquake: Nepal was making significant progress in the overall health situation, with a maternal mortality ratio of 190 per 100,000 live births in 2013[1] and infant mortality rate of 46 per 1,000 live births in 2011[2]. In 2011, life expectancy at birth was estimated to be 65.5 years for male and 67.9 years for female[3]. Total Fertility has declined significantly to 2.6 births per woman in 2011 from about 5 births per woman in 1990. Per capita government expenditure on health is 827 in 2013/14 while the per capita total health expenditure is estimated to be US$ 38 in 2012. MOHP, as the national health authority for fulfilment of its organisation, regulation and service provision role, has a network of 4,118 health facilities which range from the central level specialized hospital to Health Posts at the VDCs and Urban Health Centers in the Municipalities for the delivery of health care services. Besides this, more than 350 health facilities nationwide in private sector cater the health care demands of the population. Out of the total public health facilities, 19% and 23% of total health facilities are located respectively in highly and moderately affected districts.

Effect of the earthquake: Health and population has been severely affected as evident from damages and losses to health infrastructure and disruption in essential health care services delivery along with the death of 8,702 persons (45% male and 55% female) and 22,303 injured. A total of 446 public health facilities including administrative building (consisting 5 hospitals, 12 Primary Health Care Centers and 417 Health Posts, 12 others) and 16 private facilities are completely destroyed while a total of 765 health facility or administrative (701 public and 64 private) structures are partially damaged. Nearly 84% (375 out of 446) of the completely damaged health facilities are from the 14 most affected districts. As a result,, the ability of the health facilities to respond to the healthcare needs has been affected by the destruction and service delivery is disorganized. Consequently, vulnerable populations, including disaster victims, have been further disadvantaged in accessing health services in remote areas. A total of 18 health workers and volunteers have lost their lives and 75 got injured adding further challenges in health resumption of services delivery.

Similarly, existing capacity of the Ministry of Health and Population in general and that of concerned District Health Offices have been stretched to ensure the resumption of disrupted services delivery, coordination with concerned agencies and stakeholders and management of increased case load for treatment including trauma cases.

[1] Source: (WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division, 2014)
[2] Source: (Ministry of Health and Population , 2012).
[3] Source: (Central Bureau of Statistics, 2014)

Estimates of Damage and Loss: Total damage and loss due to the earthquake is estimated to be NPR 6.33 billion of which the public shares 84% rest being that in the private sector including NGO and Community owned service providers. While the value of damages is estimated to be 5.2 billion NPR, the estimate of losses is 1.1 billion NPR. Severely affected 14 districts account for around 88% (including 29% of central hospitals and health infrastructures) of the total value of damage and losses while other districts account for 11.4%. Gorkha, Sidhupalchowk and Dolakha are the hardest hit districts in terms effects of the earthquake sharing 22.4% of damages and losses, after the central level health infrastructure which alone account for 29% of damage and losses.

Table S1: Estimates of damages and losses

Amount in million

Estimates of damages	**Public (NPR)**	**Private (NPR)**	**Total (NPR)**	**Total (US$)**
Facilities completely destroyed	3,577	608	4,185	41.8
Facilities partially destroyed	479	243	722	7.2
Equipment and logistics	291	0	291	2.9
Total damages	**4,346**	**851**	**5,197**	**5.2**
Estimates of losses				
Demolition and removal of debris	63	16	79	0.8
Treatment services for injured	393	147	540	5.4
Provision service delivery for affected population	472	0	472	4.7
Governance and risk management	48	0	48	0.5
Total losses	**977**	**163**	**1,139**	**11.4**
Grand total (effects of earthquake)	**5,323**	**1,014**	**6,337**	**63.4**

Recovery and reconstruction strategy: Ministry of Health and Population has adopted three pillar strategies for the recovery and reconstruction which are basically adopting the immediate (until mid July 2015), intermediate term (over the FY 205/16) and medium term (2015/16 – 2019/20) implementation framework.

- First strategy is to furnish the districts with necessary logistics and human resources by mid July 2015 to ensure follow up treatment of those injured, resumption of health services and support the districts offices and facilities to deal with foreseen immediate risk and vulnerabilities by providing necessary logistics such as drugs and supplies and budget for preparedness ad rapid response.
- Second strategy is to replace the temporary arrangements (e.g. tents) by short term arrangements to ensure the continuity of service delivery, cater the changing pattern of health care needs, and provide routine services in an uninterrupted manner. This would include demolition of damaged buildings, accomplish repair works and reinstitute peripheral health facilities by setting up pre-fabricated structures. Similarly, work will be initiated for setting up set up hospitals and rehab centres and strengthening of institutional capacity for disaster preparedness.
- Third strategy is much concerned on the reconstruction of the sector from the longer term perspective following the concept of build back better which would entail setting up of new health infrastructures and equipment with concrete structure. This will be done after carrying out a more rigorous assessment of the existing networks of health facilities and their capacities with due consideration of geography and population size and distribution.

Recovery and reconstruction needs and costs: The total recovery and reconstruction need in the health and population sector is estimated to be 11.27 billion NPR for recovery and reconstruction related initiatives. Out of the total needs, 153 million is needed immediately mainly for the resumption of the services in the

affected areas particularly for temporary structure, renting, drugs and supplies. Costs for intermediate (over the FY of 2015/16) and medium term (2015/16- 2019/20) needs are estimated to be 1.36 billion and 9.75 billion respectively. A comprehensive plan of activities have been developed for the continuation of treatment of injured, regularisation of service delivery, making the health sector better prepared for disaster, and repair and reconstruction of health facilities that were damaged and destroyed by the earthquake. When split the overall needs, district level need is 7.26 while central level needs is 4.99 billion NPR.

Table S2: Estimates of Cost for Recovery and Reconstruction Amount in million NPR

	District level (NPR)	Central level (NPR)	Total (NPR)	Total (US$)
Immediate term	86	67	153	1.5
Intermediate term	1,191	173	1,364	13.6
Medium term	4,994	4,759	9,752	17.5
Total needs	6,270	4,999	11,269	11.3

Implementation strategy: Recovery and reconstruction of the health and population sector will be guided by a Central Coordination Committee for Recovery and Reconstruction led by MoHP and includes members of development partners. Based on the finalized implementation plans, budgets will be allocated to districts considering the identified needs and resource availability. While major infrastructure and equipment and routine drugs and supplies and major human resources will be provided from the center, the remaining activities will be accomplished by the Districts based on a guideline to be developed by the MoHP. Recovery and reconstruction initiatives will be implemented over next years requiring approximately 1.4%, 18.1% and 21.9% of the estimated budget respectively in 2014/15, 2015/16 and 2016/17. Rest of the years will require equal proportion of the budget i.e. 19.5% of estimates total budget for each year until 2019/20.

List of Acronyms and Abbreviation

CBS	Central Bureau of Statistics
D(P)HO	District (Public) Health Office
DDRC	District Disaster Response Committee
DoHS	Department of Health Services
FMT	Foreign Medical Team
HEOC	Health Emergency Operation Centre
HMIS	Health Management Information System
HP	Health Post
MISP	Minimum Initial Service Package
MoF	Ministry of Finance
MoHA	Ministry of Home Affairs
MoHP	Ministry of Health and Population
NLSS	Nepal Living Standard Survey
NPC	National Planning Commission
PDNA	Post Disaster Needs Assessment
PHCC	Primary Health Care Centers
TUTH	Tribhuvan University Teaching Hospital
VDC	Village Development Committee Minis

1. Pre Disaster Situation including Context Analysis

1.1 Pre Disaster Situation

Ministry of Health and Population (MoHP) has a network of 4,118 health facilities ranging from the central level specialized hospitals to Health Posts and Urban Health Centers at the Village Development Committee (VDC) and Municipality levels respectively. Fourteen Districts were severely affected by the earthquake of April 25, 2015 causing 8,699 deaths until 2nd June and over 21,000 injured resulting into increased health care needs (Ministry of Home Affairs, 2015) at the time when health facilities in 61 districts were directly affected. Out of the total public health facilities of the country, 19% and 23% of total health facilities are located respectively in highly and moderately affected districts as summarized in Table 1 (Department of Health Services, 2014).

Table 1: Number of Public Health Facilities

District category	Hospitals	PHCCs	HPs	Total
Highly affected (14)	26	44	723	793
Moderately affected (17)	20	44	882	946
Others (44)	58	120	2,201	2,379
Total	104	208	3,806	4,118

Source: Annual Report 2070/71, DoHS

Bedsides above-mentioned facilities, Ayurveda health services are being delivered through two hospitals 14 Zonal Aushadhalayas, 61 District Ayurveda Health centers and 214 Aushadhalayas in the country. Moreover, more than 350 health facilities in private sector cater the health care demands of the population in Nepal majority of them being in Kathmandu Valley and other urban areas. Further to this, Department of Drug Administration also has four regional offices in addition to its central office for the regulation and quality control of drugs and equipment.

Population profile shows that highly and moderately affected districts respectively consist of 20% and 17% of the total population in the country. Highly and moderately affected districts respectively consist of 19.0 and 16.6 percent of expected pregnancies in the year 2014/15. Distribution of the population by age group including expected pregnancies is presented in the Table 2 below and district wise details are in annex 2. (Department of Health Services, 2014/15).

Table 2: Population Profile in Affected Districts figures in thousand

District category	Total Population	Population of 0-11 months	Population of 0-4 years	Female population of 15-44 years	Women of Reproductive of 15-49 years	Married Women of Reproductive age 15-49	Expected Pregnancies of 15-49 years	Adolescent Population of 10-19 years
Highly affected (14)	5,633	116	535	1,449	1,584	1,201	138	1,285
Moderately affected (17)	4,651	100	460	1,259	1,380	1,046	120	1,077
Others (44)	17,439	392	1,825	4,435	4,849	3,675	467	4,005
Total	27,723	609	2,820	7,144	7,813	5,922	725	6,366

Source: Health Management Information System, 2014/15, DoHS,.

The target set for MDG 4 was to reduce the under-5 mortality rate by two-thirds between 1990 and 2015 and Nepal stands at 40 per thousand live births in 2013. Similarly, another MDG goal is maternal mortality which has declined by 76% from 790 per 100,000 live births in 1996 to 190 in 2013 being well

on track. (WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division, 2014). However these goals may get affected due to the earthquake. Total Fertility is 2.6 births per women in 2011 is also a significant decline from 5 births per women in 1990.

The 2011 Population Census showed the percentage of disability among male and female was respectively 2.2% and 1.7% (Central Bureau of Statistics, 2014). Percentage of households within the reach of 30 minutes to HP, PHCC/public hospital and private clinic/hospital is respectively 61.8% 33.6% and 53.4% (Central Bureau of Statistics, 2011). Percentage of visits to public facilities, private facilities and others including pharmacies for health services are respectively 37%, 33% and 30% (Central Bureau of Statistics, 2011). Per capita government expenditure on health is NPR 827 in 2013/14 (Ministry of Finance, 2013/14) while the per capita total health expenditure is estimated to be US$ 38 in 2012 (Global database, WHO).

1.2 Disaster Preparedness

Ministry of Health and Population (MoHP) with support of WHO and other development partners had conducted different activities as a part of preparedness for disaster. Health Emergency Operation Centre (HEOC) was established within the premises of MoHP in 2013 which was very helpful in managing the health sector response in the aftermath of earthquake. Similarly, hub-hospitals and satellite centres were identifed for the emergency management of health care needs including preparation of roster and early deployment training was given to the hospital staff in Kathmandu valley. GIS mapping of health facilities was also carried out which was also helpful to quickly locate the health facilities and their status after the earthquake. Pre-positioning of medical logistics (especially Medical tent, interagency emergency health kit, diarrhoeal kit, surgical kit, reproductive health kit) was also done in strategic locations such as DOHS complex, Tribhuvan University Teaching Hospital (TUTH), Patan Hospital, UN building, Biratnagar and Nepalgunj. Capacity building of staff on Mass Casualty Management (MCM), Hospital Preparedness for Emergencies (HOPE) and specific service package such as reproductive health including simulation exercise was also carried out by the MoHP.

In the similar manner, structural and non-structural assessment of health facilities was initiated to minimize the risk of potential disaster. Assessment of all fast track/priority hospitals, 9 health facilities (one PHC, One Health Post and one sub health post selected from Kathmandu, Lalitpur and Bhaktapur districts) was also carried out before the earthquake. Non-Structural mitigation including retrofitting was conducted in TUTH, Patan Hospital and Bhaktapur Hospital and Civil Service Hospital. Besides aforementioned initiatives of the MoHP, standards for public health emergency management like mass causality management strategy, protocols, referral and early deployment guidelines, and Rapid Response Team guidelines were developed. These activities became instrumental for overall effectiveness of the health response in the aftermath of the earthquake. The trauma protocols facilitated the international and national medical teams to proceed for the treatment of the seriously injured people. Further, the HEOC remained the command centre of the Ministry of Health and Population to manage the health response during the first few weeks of the earthquake. At the district level, District Health Office represented health sector as a member of the District Disaster Response Committee.

2 Post Disaster Situation

The assessment shows that existing infrastructure of 5 hospitals, 12 Primary Health Care Centres (PHCCs), 417 Health Posts (HPs) and 12 other facilities are completely damaged in the public sector by the earthquake while a total of 701 public health facility structures are partially damaged. Similarly,

reporting from the private sector shows that 16 health facilities are completely damaged while 64 are partially damaged in the private sector including NGO and community institutions. A total of 8,792 deaths have been reported along with 22,220 injuries requiring immediate response from the health sector for the treatment of those injured and resumption of regular health services.

Ministry of Health and Population together with international and national partners, voluntary and social organizations have been actively engaged in health sector's response after the earthquake. MoHP organized a meeting to manage the health sector response on 25th April just after the earthquake when Health Emergency Operation Centre (HEOC) was also activated. At the same time, the high level committee chaired by Secretary of the MoHP was formed to oversee and guide the overall health sector response in the aftermath of the mega earthquake.

2.1 Immediate Response

Health emergency and operation centre started to coordinate with the affected districts and updated the situation for the necessary decision and action such as deployment of medical teams and supply of drugs and other logistics. Pre identified six emergency hubs within Kathmandu valley were activated for medical services to the injured including those referred from other districts. High level committee mobilized teams at the central hubs as well as sent officials to the highly affected districts to ensure proper coordination and support districts in responding immediate needs.

A central Information Management Unit was set up under the HEOC for the compilation of the health services delivery related information and hospital based surveillance system was also initiated. A toll free number (1660 01 33 444) was also set up at the HEOC to help people access general information regarding treatment services and handle grievances. Similarly, Medicine and Equipment Custom Release Desk at Tribhuvan International Airport was established on 01 May 2015 to support speedy release of drugs and medical equipment at the custom office and channel other health related international support measures. Since May 1st HEOC produed daily situation update reports until 22 May 2015.

2.2 Infrastructure and Assets

Damage status of the public health facilities was reported by the respective District (Public) Health Offices which were validated during the field visit by consulting focal persons of districts and health facilities. In addition to complete damage to 446 district and sub district level public health facilities, major blocks of central and regional hospitals (Maternity Hosptial, Bir Hosptial and Pokhara Regional Hospital) are also severely damaged causing interruption of health services delivery in those hospitals. Damage status of the health facilities is presented in Table 3. Sindhupalchowk, Nuwakot and Gorkha are the districts where largest number of health facilities has been completely damaged.

Table 3: Damage Status of Health Facilities

	Hospital		PHC		HP		Others		Private sector facilities	
Districts	Completely Damaged	Partially damaged	Completely Damaged	Partially damaged	Completely Damaged	Partially damaged	Completely Damaged	Partially damaged	Completely Damaged	Partially damaged

Bhaktapur	0	1	1	1	6	9	0	0	0	6
Dhading	0	1	1	1	33	12	1	1	3	5
Dolakha	1	1	0	1	33	16	1	0	3	2
Gorkha	0	1	1	2	35	24	6	6	5	3
Kathmandu	0	0	1	7	7	33	0	0	0	24
Kavre	0	1	1	2	32	50	0	1	0	2
Lalitpur	0	0	0	2	9	20	1	0	0	12
Makwanpur	0	0	1	2	14	13	0	0	3	6
Nuwakot	1	0	1	1	43	19	1	1	0	0
Okhaldhunga	0	0	0	0	17	17	0	0	0	0
Ramechhap	1	0	1	1	20	28	0	1	0	0
Rasuwa	1	0	0	1	14	3	1	0	1	2
Sindhuli	0	1	1	3	23	7	0	0	1	2
Sindhupalchok	1	0	1	2	62	17	1	0	0	0
Total (14 districts)	5	6	10	26	348	268	12	10	16	64
Other districts	0	13	2	28	69	330	0	0	0	0
Central and Regional level hospital/ administrative buildings		20	0	0	0	0	0	0	0	0
Total	5	39	12	54	417	598	12	10	16	64

Source: Field assessment for 14 districts and D(P)HO reporting for others.

In addition to public facilities, a total of 16 private health facilities have reported complete damage and 64 have reported partial damage.

2.3 Health Service Delivery and Access

Assessment of situation and medical needs: Damage of infrastructure and assets disrupted the delivery of services while the demand for the services increased as many people got injured. A total of 18 health workers and volunteers lost their lives and 75 got injured due to the earthquake adding further challenges in health services delivery. Considering the immediate needs of the districts, public health and medical officials of the MoHP were sent to highly affected districts to support the district teams for the resumption of health services delivery.

Concurrently regular public health services were also resumed from the non-damaged health facilities, at tent and by national and foreign medical teams. In the most affected districts, D(P)HO with support from partners conducted mobile health camps particularly focusing on a priority set of life-saving services. Apart from interruption of some services in severely affected Health Posts and Primary Health Centre the routine package of health services were being delivered. Besides the emphasis on delivery of routine health services, dignity kit, hygiene kit, and reproductive health kit were provided in the severely affected districts. Now, there is demand for additional services such as psychosocial counselling which need to be provided on top of ensuring regular services with effective referral linkage.

Provision of free treatment service: Government made a decision to bear the cost of treatment of major surgeries to support injured persons in getting timely treatment and avoid additional financial burden to the affected households. Hospitals were instructed to provide free treatment to all the

injured including for minor surgeries and outpatient services. However, there were some complaints at the HEOC that some of the private hospitals were charging fee from that injured. MoHP is still collecting the data of treatment and consequently reimbursing to them for the delivery of free services.

Deployment of Medical Teams and setting up field hospitals: In addition to public health facilities and designated private hospitals, delivery of free services was extended from temporarily established field hospitals and national as well as foreign medical teams. A total of 20 temporary field hospitals, 47 national medical team and 133 foreign medical teams were deployed for the delivery of health services in the affected districts by June 02. Even the existing public and private facilities were delivering services in the tents. Different organizations also provided logistics in terms of tents, medicines and supplies and health kits such as dignity kit, reproductive health kit, hygiene kit. Details of the support received from different organization are in annex 2.

As shown in the Table 4, a total of 2,385 persons including 1,068 doctors were deployed for health service delivery through FMTs. Many of them also went to hard to reach areas with necessary logistics through helicopters and those who needed higher level of treatment were uplifted to Kathmandu. As of 02 June 2015, a total of 25 FMTs are still providing health care services in the earthquake-affected districts and district wise disaggregation is in annex 1.

Table 4: Deployment of Foreign Medical Teams by District

Districts	Number of FMTs	Number of doctors	Number of nurses	Number of other team members	Total team members
Bhaktapur	11	41	52	120	213
Dhading	13	53	26	47	126
Dolakha	5	42	6	36	84
Gorkha	10	41	23	31	95
Kathmandu	26	452	62	258	772
Kavrepalanchowk	15	116	46	111	273
Lalitpur	10	78	10	110	198
Lamjung	1	5		0	5
Makawanpur	1	3	2	4	9
Nuwakot	9	43	32	70	145
Ramechhap	2	4	6	4	14
Rasuwa	4	24		6	30
Sindhupalchowk	26	166	100	155	421
Grand Total	**133**	**1068**	**365**	**952**	**2,385**

Source: HEOC, MoHP

Temporary field hospitals established by different foreign team played important role in delivering inpatient services in addition to outpatient services to those with minor injuries. Other medical teams mainly focused on the emergency and outpatient treatment services and referred the complicated cases to the nearby hospitals.

Thus, foreign as well as national medial team also played a quite important role to meet the immediate health care needs of the injured people though coordination with the district health offices remained a challenge particularly when the teams were in remote areas away from the district offices. Table 5

below shows the cumulative data of outpatient and inpatient services including surgeries and trauma cases collected from the health facilities under surveillance in 14 highly affected districts until June 02, 2015.

Table 5: Total Number of Services Provided in Most Affected 14 Districts

Category	Public	Private	Community/NGO	Temporary Hospital	Total
Outpatient	67,762	31,686	12,191	5,339	116,978
Inpatient	22,062	11,690	6,757	690	41,199
Major surgeries	1,739	916	485	81	3,221
Minor surgeries	2,630	802	361	310	4,103
Trauma	9,320	3,629	2,244	174	15,367

Note: data as of June 02, reported by health facilities under surveillance.
Source: Health facility based surveillance system, HEOC.

Trauma management: Casualty Triage Desk was also established at the Airport on 29 April, 2015 to triage the critical patients brought by the air route, perform basic initial symptomatic management, and refer them to the public hospitals or the temporary hospitals as appropriate. As of 2 June 2015, a total of 443 casualties have been triaged and referred from the desk and the detail is in annex. Six emergency medical hubs of the Kathmandu valley were mainly handling the trauma cases on top of delivery of other services.

Dead body management: There is a total of 8,702 death reported out of which 45% are male and 55% are female. This shows that female population are more affected by the quake than male. Summary of death and injuries by sex and districts are presented in the Table 6.

Table 6: Number of Death and Injured by District

District	Death				Injured
	Male	Female	Unknown	Total Death	
Sindhupalchowk	1497	1943	0	3440	2101
Kathmandu	621	600	1	1222	1218
Nuwakot	459	627	0	1086	662
Dhading	340	393	0	733	952
Rasuwa	287	310	0	597	7949
Gorkha	213	230	0	443	1179
Bhaktapur	118	215	0	333	3052
Kavrepalanchowk	129	189	0	318	229
Lalitpur	67	107	0	174	1051
Dolakha	84	85	1	170	61
Ramechhap	16	23	0	39	135
Makawanpur	16	17	0	33	771
Okhaldhunga	10	10	0	20	230
Sindhuli	5	10	0	15	1571
Total of 14 districts	3862	4759	2	8623	21161
Moderately affected 17 districts	25	19	0	44	1142
All other districts	12	23	0	35	

Total	3899	4801	2	8702	22303

Source: DRR Portal, MoHA

Timely identification of dead body and its hand over to the concerned families was important to minimize tensions to the affected family and help them to recover. As of 02 June, 8672 dead bodies have been handed over to next of kin.

2.4 Governance

District capacity and human resource situation: Existing capacity of the Ministry of Health and Population in general and that of concerned District Health Offices have been stretched to ensure the resumption of disrupted services care delivery, coordinate with concerned agencies and stakeholders and manage increased case load for treatment including trauma cases. Focal person were sent to each of the highly affected districts from the MoHP to coordinate and support the districts. Districts health offices were closely coordinating with the District Disaster Response Committee and Health, WASH, Nutrition and Protection clusters, and foreign and national medical teams. MoHP also sent money to the districts to purchase immediately required items such as medicines, power back up, renting of buildings etc.

While to prevent absenteeism of staff in healthy has been instructed to continue working, the assessment team noted that a significant number of sanctioned posts of health workers (for instance, only 185 out of the total of 306 sanctioned posts for Health Posts in Sindhuli) are currently vacant. assessment team noted that a significant number of sanctioned posts of health workers (for instance, only 185 out of the total of 306 sanctioned posts for Health Posts in Sindhuli) are currently vacant. This meant that existing health workers had to work overtime to meet the immediate health care need while their own shelter was damaged and many had their family members directly affected by the earthquake. In such situation, existing staff are overstretched and may not sufficiently cater the surge in the case load that is evident in many health facilities and districts, as reported by the health workers themselves. Therefore, motivating the health workers on work possibly through financial and no-financial incentives and keeping their morale high is very crucial not only for now but also to better manage the disaster in future.

Information management system: Routine information system especially the health management information system (HMIS) has been affected in the aftermath of the earthquake as reporting forms and formats are not recoverable at many health facilities on the one hand and, on the other hand, health workers had to engage in the delivery of emergency services in their full capacity. Some of the facilities have lost their service register causing problem in follow up services particularly for those with communicable diseases. This will also add up the challenge in efficient management of services in the affected areas. The pattern of health care need will vary across affected areas due to movement of people and cases of injuries. Important health indicators, guiding health service delivery (e.g. expected number of pregnancies/deliveries) are expected to change because of population migration from one catchment area to others. These aspects will have to be taken into account while planning the implementation of activities at the district level.

2.5 Risk and Vulnerability

Hospital based post- earthquake surveillance system: Considering the risk of epidemic and disease outbreak, hospital based post- earthquake surveillance system was established by the HEOC covering public and private hospitals of 14 highly affected districts. Initially, this surveillance system covered 96 treatment sites including 66 hospitals and temporary camps within the Kathmandu valley and 30

hospitals and temporary camps outside the Kathmandu valley. Since 28th May, the number of sentinel hospital sites has been reduced to 38 in 14 affected districts.

This surveillance system is important to ensure that outbreaks are not missed. The number of syndromes crossing the threshold level (doubling of the average of the previous 7 days, with a minimum of 5 cases) gives us signals to be in alert position. Four outbreak prone conditions namely acute respiratory illness, watery diarrhoea, bloody diarrhoea and fever of unknown origin have been closely monitored by the MoHP. No outbreaks have been ascertained till 2 June 2015. Trend of outbreak prone conditions is in annex 3.

High risk population groups: based on heightened needs occurring in normal times, pregnant women, women in post-natal period and new born children are the single biggest vulnerable group. We estimate a total of 29,332 deliveries and corresponding new born children who will be directly affected in the 3 months following the earthquake. A caseload of patients suffering from chronic conditions (TB, HIV, leprosy, non communicable diseases) and whose continuous assistance cannot be guaranteed because either the disruption of the offer but also because of difficulties in access should be considered. Similarly severely injured persons, persons with disabilities children, elderly, and adolescents are also vulnerable to health risk in such a post disaster situation. With 1.95% of disability, total number of people with disability is estimated to be above 100,000 people in the 14 most affected districts.

Health facilities as risk: As there is the risk of landslide and other threats such as floods during the monsoon season, some of health facilities may also be exposed to this risk. Particularly, some of the health facilities which are located in the remote areas in high mountains are in the risk of being disconnected from district headquarter and even from Kathmandu Valley due to road blockade by landsides. Vulnerabilities are also invited at the facilities by power cuts (e.g. cold chain); relative lack of appropriate WASH facilities in communities (and consequent heightened risk for waterborne diseases) diseases associated with crowding (measles, ARI, if relevant) and, if relevant vector borne diseases. Districts offices and centre are to be prepared for rapid response to manage along with the maintenance of minimum stock of drugs and other supplies in strategic locations.

3 Estimates of Damage and Loss

Based on the data reported by district offices and information collected through field visits from most affected 14 districts, inventory of damages of buildings, equipment, instruments, furniture and drug and supplies were taken. In total, 462 health facilities were completely damaged while 745 facilities were partially damaged as presented in the Table 7. Unit cost was defined in consultation with respective technical experts based on which the cost of damages was estimated which is summarised in table 6 below.

Table 7: Cost of Damages and Losses by Category

Amount In million NPR

Estimation of Damages			
Facilities completely destroyed	**Public**	**Private**	**Total**
Public hospitals and buildings	1535	608	2,143
Primary Health Care Centres	120		120
Health Posts	1877		1,877
Others	45		45
Sub total	***3577***	***608***	***4,185***
Facilities partially destroyed			-

Hospitals (district hospitals plus individual blocks of central hospitals)	144	243	388
Primary Health Care Centres	54		54
Health Posts	269		269
Others	11		11
Sub total	***479***	***243***	***722***
Equipment and logistics			
Equipment	223		223
Office equipment and furniture	41		41
Medications and supplies destroyed	13		13
Other medical logistics and supplies(e.g. instruments, HMIS forms)	14		14
Sub total	***291***	***0***	***291***
Total damages	**4346**	**851**	**5,197**
Estimation of Losses			
Demolition and removal of debris			-
Hospitals	17	16	33
Primary Health Care Centres	2	0	2
Health Posts	42	0	42
Others	3	0	3
Sub total	***63***	***16***	***79***
Treatment services for injured			
Reimbursement for treatment of seriously injured	85	0	85
Transportation for the referral to higher level of facilities	13	0	13
Revenue lost due to waiver of users fees (outpatient treatment)	18	23	41
Payment for treatment services (users fee)	119	123	242
Rehabilitation services for those having disability	90	0	90
Budget allocation by MoHP for management of service delivery	67	0	67
Psychosocial counselling	1	0	1
Referral for those needing rehabilitation services	1	0	1
Sub total	***393***	***147***	***540***
Provision service delivery for affected population			-
MBBS doctor in the HFs of highly affected areas	21	0	21
Establish five step down hospital and rehabilitation centres	11	0	11
Subside contribution to affected population for enrolment in health insurance	400	0	400
Establish geriatric ward in highly affected hospitals	17	0	17
Temporary arrangement of health facility building & rent	10	0	10
Arrangement of utility services at damaged facilities	10	0	10
Mobile Services (Mobile Camps)	1	0	1
Reproductive health and geriatric care	2	0	2
Sub total	***472***	**0**	472
Governance and risk management			-
Public awareness through media and IEC and BCC activities	5	0	5
Water and sanitation campaign	7	0	7
Medicine for monsoons and pre-positioning for outbreaks	3	0	3
Outbreak investigation and response team at the central level	1	0	1
Public Health inspector - to monitor the situation and responses	24	0	24
Outbreak prevention and response district level	3	0	3
Monitoring and supervision	3	0	3
Information Management (HMIS/LMIS tools, data recovery)	0	0	0

Support and mobilise DRRT (in 14+21 districts)	1	0	1
Monitoring and management of information, disease surveillance (14 districts)	1	0	1
Sub total	***48***	***0***	***48***
Total losses	**977**	**163**	**1,139**
Grand total (effects of earthquake)	**5,323**	**1,014**	**6,337**

Total value of damage and loss is estimated to be 5.96 billion NPR out of which 80% share was of damage and rest 20% being losses. Similarly, value of damage and losses was heavily dominated by the public sector (having 92% of total) due to the existence of large number of public health facilities in the affected districts.

An attempt has been done to decompose the value of damages and losses by the affected districts and categories which are summarised in Table 8 below. Gorkha, Sindhupalchowk, and Dolakha are the top three districts in terms of estimated value of damage and loss, excluding the central level hospital and administrative buildings.

Table 8: Cost of damages of buildings, equipment, other logistics and losses

Districts	Infrastructure	Medical equipment	Office equipment	Medicines & supplies	Other logistics	Others losses	Total	Total (%)
Bhaktapur	71	3	0	-	1	16	90	1.4
Dhading	315	2	2	-	0	66	386	6.1
Dolakha	334	7	3	2	1	72	420	6.6
Gorkha	426	16	12	4	3	96	558	8.8
Kathmandu	155	2	5	-	0	34	197	3.1
Kavre	199	8	1	0	2	43	253	4.0
Lalitpur	103	0	1	-	0	21	125	2.0
Makwanpur	222	-	-	-	-	46	268	4.2
Nuwakot	264	2	3	0	0	56	324	5.1
Okhaldhunga	86	0	0	1	0	18	105	1.7
Ramechhap	159	8	1	0	2	35	204	3.2
Rasuwa	151	3	3	1	1	33	192	3.0
Sindhuli	174	0	1	0	0	36	212	3.3
Sindhupalchok	345	10	6	2	2	76	441	7.0
Total of 14 districts	3,004	62	38	12	12	648	3,776	59.6
Other districts	588	6	4	1	1	124	724	11.4
Central hospitals	1,393	155	-	-	-	288	1,836	29.0
Grand Total	**5,141**	**223**	**41**	**13**	**14**	**1,060**	**6,337**	**100**

Source: Estimates based on damage and losses.

4 Impact Analysis on Development Goals of the Sector

The human loos, injuries and damage to health infrastructure have resulted in major health impact and many years of life lost. Many of the seriously injured people who have undergone major surgeries like amputation and those having severe spinal injury by the earthquake are at risk of long term disability. Death and rise in disability will have detrimental effect on the people's health causing many years of

disability adjusted life years. Further, people are at risk of mental trauma and need immediate psychological counselling and mental health intervention to prevent and properly manage the situation. Due to the large number of death occurred at once, mortality rate will go up and life expectancy will go down for the current year but this will not have long term effects in mortality rates except by serious injuries and disabilities.

Similarly due to damage to the health facilities and health services, the basic health service like anti natal check-up, treatment care and support of HIV infected population, TB treatment continuity, child and neonatal health services and many other public health programs will have some to major effect even though the response activities will be focused to mitigate such needs. The access to care if affected and thus effect will be seen in programs for regular follow up for antenatal, post-natal care, neonatal care, DOTS and ART services which can result in high morbidity and mortality of the disease status. The negative affect on health is also expected due to effect on the nutritional status of the vulnerable population in these districts. However, estimates of life years lost and other social impacts of the earthquake in the health sector have not been estimated in money value due to the complicated methodologies involved.

5 Recovery and Reconstruction Strategy

Ministry of Health and Population formed a coordination committee for the assessment of needs and planning for recovery and reconstruction of the health sector under the chair of Chief of Policy, Planning and International Cooperation Division. Based on the information available from the districts an initial set of necessary activities was defined, cost was estimated and submitted to the NPC. However, detail planning for the recovery was carried out together with concerned District (Public) Health Offices followed by the situation assessment.

While the proper reconstruction of the sector may take some years while the prime concern at present is resuming services to cater immediate health care needs of the population. Considering this scenario, Ministry of Health and Population has adopted **three pillar strategies for the recovery and reconstruction** which are basically adopting the immediate until mid July 2015), intermediate term (during FY 2015/16) and medium term (FY 2015/16 to 2019/20) implementation framework.

First strategy (until mid July 2015) is to furnish the districts with necessary logistics and human resources within current fiscal year (by mid July 2015) to resume essentials health services, organizing health camps and enable districts offices and facilities to deal with foreseen immediate risk and vulnerabilities such as those resulting from monsoon rain, landslides and disease outbreaks. Technical assessment of buildings, demolition of completely damaged structures and quick repairs are also considered under this strategy in order to resume services. This strategy also include managing exit of medical teams and temporary field hospitals that were established in different locations to address the urgent needs of the population. Priority will be to available local resources and generous support of partner agencies to address the immediate needs.

More specifically, demolition of damaged buildings, temporary arrangement for building in terms of shed or renting, purchase of medical instruments and office materials, resumption of utility services such as electricity, water, communication, and internet are to be done by mid-July 2015. Similarly, providing medical doctors to needy districts, prepositioning of medicines in strategic location for the monsoon and preparedness for disease outbreak and disaster are being planned. Besides the existing

structure and temporary set up for building, health services will also be delivered through mobile camps with special focus on reproductive health, psychosocial counselling and rehabilitation. At the central level, mapping of injured persons, strengthening of surveillance and response system and awareness campaigns will be carried out.

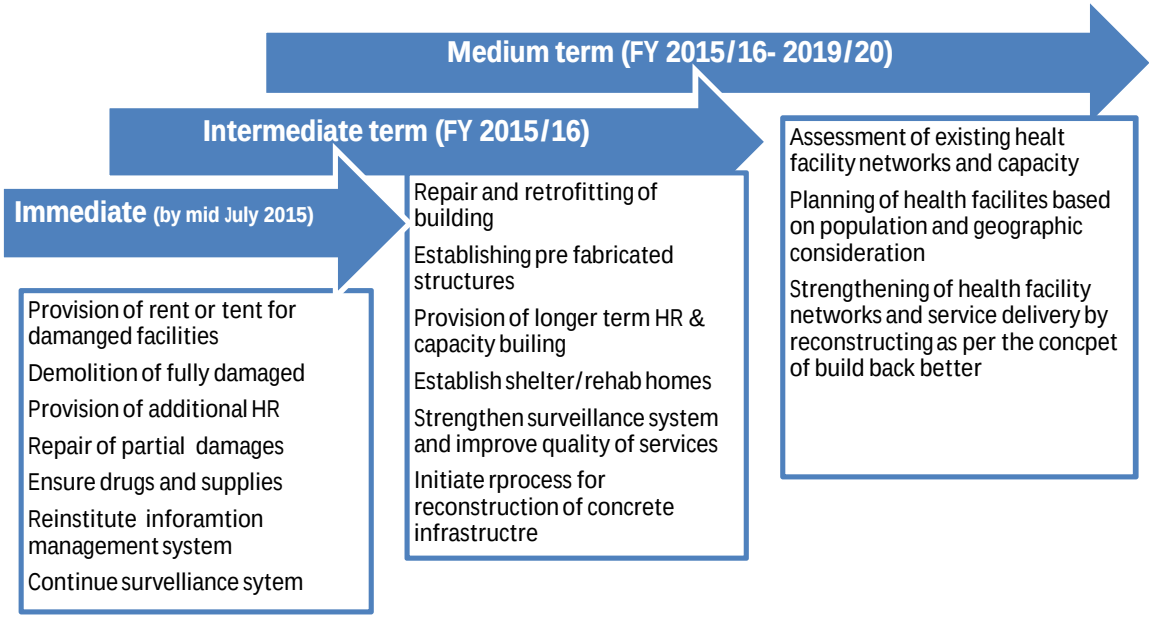
Second strategy (FY 2014/2015) is to replace the temporary provisions by short term arrangements to ensure the continuity of service delivery, cater the changing pattern of health care needs and make necessary provisions of human resources in the intermediate term i.e. fiscal year 2015/16. Continuing the demolition of remaining damaged buildings, doing major repair works and reinstituting health facilities by setting up pre-fabricated structure are the key functions to be carried out under this strategy during a period of one year. Specifically, 40% of the damaged Health Posts and limited structure for damaged PHCCs and hospitals with be reconstructed by pre-fabricated materials.

Based on the technical assessment of the buildings, reconstruction process will also be initiated for concrete infrastructure. Other activities such as purchase of damaged major equipment, outbreak prevention and response and continuation of service delivery will be carried out in the immediate terms.

While the first and second strategies aim to address the immediate and intermediate needs for the recovery, **third strategy (2015/16 to 2019/20) is much concerned on the reconstruction of the sector from the longer terms perspective.** In this strategy, detail assessment of the existing networks of health facilities and their capacity will be carried out in consideration with geographic situation and population size. Based on this assessment, medium term plan will be developed which will basically consist of setting up the new structures by reconstructing buildings for health facilities along with necessary equipment. Further, setting up a comprehensive preparedness, response mechanism and governance structure is key priority for management any possible disaster in future.

Under this approach, Health Posts which are not yet built by pre-fabricated materials, PHCC and hospitals will be reconstructed in the damaged sites. Similarly, establishing of 9 Richter seismic resistance emergency centres in each of 14 ones and setting geriatric wards in hospitals of affected districts are considered. These measures may take minimum of 3 to 5 years to accomplish and also follows the concept of build back better. This medium term plan for the reconstruction will be built into the routine plans and strategies of the MoHP as feasible. Design of the buildings and other details of the reconstruction plan are provided in annex 4.

Figure 1: Recovery and Reconstruction Strategy



6 Recovery and Reconstruction Initiatives and Costs

The Ministry of Health and Population has developed a comprehensive plan for immediate resumption of critical health services by reconstructing damaged health facilities and, where appropriate, expansion of services to new settlements. It includes package of services for targeted vulnerable population groups- pregnant mothers, new born, and senior citizens – and additional services to meet urgent health needs in the aftermath of the earthquake: mental health, rehabilitation, etc. Through the plan the ministry seeks to strengthen disease surveillance to protect communities from risk of outbreaks and disasters. Recovery and reconstruction plan consist of district and central level activities which are summarised in the following tables.

Table 9: Cost of District Level Recovery and Reconstruction Plan

Amount in million NPR

Immediate term (Until July 2015)	**Amount**	**Intermediate term (FY 2015/2016)**	**Amount**
Demolition of damaged buildings	50	Construction of health facilities (prefab structure)	1,001
Temporary arrangement of building & Rent	10	Repair and maintenance of partially damaged	74
Arrangement of utility services	10	Equipment and drugs	73
Medical instruments and office materials	2	Service delivery	0
Medicine for monsoons and pre-positioning for outbreaks	3	Mobile services (Mobile Camp)	8
Mobile Services (Mobile Camp)	1	Reproductive health & geriatric Care	12
Reproductive health & geriatric Care	2	Psychosocial counseling	7
Psychosocial counseling	1	Rehabilitation services	6
Rehabilitation services	1	Monitoring, supervision and public hearings	8
Outbreak prevention and response	3	**Intermediate term cost**	1,191
Monitoring and supervision	3	**Medium term (FY 2016/2017 to 2019/20)**	

Information Management (HMIS/LMIS tools, data recovery)	0	Construction of health facilities (concrete structure)	4,767
IMMEDIATE COST	86	Purchase of land for health facilities	227
		Medium term cost	4,994
Total of district level recovery and reconstruction cost			**6,270**

Note: Some of activities reflected in intermediate plans will also be continued in medium term.
Source: Cost estimated based on the district assessment and planning.

In the immediate plan, treatment of the injured and resumption of health services are mainly covered. In the intermediate plan, construction of prefab structure, strengthening of services, repair and maintenance and preparedness for disaster and governance system are included. Lastly, medium term plan mainly consist of reconstruction of damaged facilities, setting of health emergency centres at zonal level and purchase of land for selected HPs. Overall cost of recovery and reconstruction plans is estimated to be 11.27 billion NPR cost of district level plan is 6.27 billion while the cost of central level plan is 4.99 billion.

Table 10: Cost of Central Level Recovery and Reconstruction Plan

Amount in million NPR

A. Immediate term plan (until July 2015)		**B. Intermediate term plan (FY 2015/16)**	
Payment to hospitals for treatment of injured	20	Public Health inspector - to monitor the situation and responses	24
MBBS doctor in the HFs of highly affected areas	21	Establish five step down hospital and rehabilitation centres	28
Collection of injured data from hospitals and treatment plan	10	Establish monitoring mechanism and systems of the above all activities	1
Strengthen the surveillance system (diseases and conditions - syndromes)	2	Strengthening HMIS - printing tools, distribution and training	14
Support and mobilise DRRT	1	Strengthen central surveillance unit	2
Create public awareness through media and IEC and BCC activities	5	Human resources for Health Emergency Operation Centre (HEOC)	50
Outbreak investigation and response team at the central level	1	Define and maintain minimum level of logistics requirement at different levels	0
Water and sanitation campaign	7	Establish two tier M & E mechanism	5
Immediate term cost	**67**	Strengthen information management for disaster preparedness	1
Medium term plan (2015/16- 2019/20)		Demolition of central level hospital and administrative blocks	12
Subsidy for household- identified affected population for enrolment into insurance	200	Retrofitting of partially damaged hospital and administrative blocks	36
Establish geriatric ward in highly affected hospitals	17	**Intermediate term cost**	**173**
Reconstruction of Maternity and Bir Hospitals	3,000	**Grand total (central level recovery and reconstruction plan)**	**4,999**
Reconstruction of Pokhara Regional Hospital	800		
Reconstruction of partially damaged	700		

building at centre			
Establishment of 9 Richter seismic resistance emergency centre at zonal level	42		
Medium term cost	**4,759**		

Note: Some of activities reflected in intermediate plans will also be continued in medium term.
Source: Cost estimated based on the district assessment and planning.

Cost of the recovery and reconstruction has increased by around 63% of the value of damage and losses. Higher percentage of increase is mainly because of the reconstruction of damaged health facilities in a bigger size considering the increased catchment population under the concept of build back better. Similarly strengthening of institutional capacity and preparedness for such disaster in future have also resulted higher cost of recovery and reconstruction. However, reconstruction and other activities are based on prevailing network of health facilities. Any major resettlement of population might have implication in the number of health facility and their capacity and hence cost estimates.

7 Implementation Strategy for Recovery

Recovery and reconstruction of the health and population sector will be guided by a Joint Coordination Committee for Health Sector Recovery and Reconstruction which is led by the chief of Policy, Planning and International Cooperation Division and include members of development partners. The Committee will oversee the standards and specifications for health infrastructure and will be responsible for the reconstruction plan for damaged health facilities.

After the finalization of the implementation plans, budgets will be allocated to districts considering the identified needs and resource availability. While major equipment and common supplies and major human resources will be provided from the center, the remaining activities will be accomplished by the districts based on a guideline developed by the MoHP. Recovery and reconstruction initiatives will be implemented over next years requiring approximately 1.4%, 18.1% and 21.9% of the estimated budget respectively in 2014/15, 2015/16 and 2016/17. Rest of the years will require equal proportion of the budget i.e. 19.5% of estimates total budget for each year until 2019/20.

8 Assessment Methodology

8.1 Scope of Assessment Defined

Following the PDNA orientation on May 20-21, MoHP formed a working team at the central level. The central level working team drafted scope of work, working timeline, assessment tools for the situation assessment of infrastructure, service delivery, governance and risks as well as planning template for recovery and reconstruction. Assessment tools mainly covered three aspects of work: validation of data already compiled at the centre, collection of additional information on damages and its effects and identification of recovery and reconstruction needs.

8.2 Field Visit in Fourteen Districts

Fourteen teams were formed for the visit to each of 14 most affected districts which were led by senior officials of the MoHP and co-facilitated by partner agencies. Orientation to the field team was organized on 23rd of May and the teams dispatched to the field on 24th and worked until 27th of May in the filed. The field assessment teams consulted with the district health offices and health facility staff as appropriate as well as other key stakeholders and collected information on the status of damages and

needs as per the provided templates. Collected information and field observations were shared by each of field team on 28th of May.

8.3 Data Compilation, Cleaning and Analysis

While the filed teams were compiling data from the districts, central team in the meantime started preparing the assessment report based on the analysis of secondary data that were already available. All the data collected from the districts were compiled and analysed to produce the summary tables. Unit costs were defined for the infrastructure and major equipment in consultation with experts of the relevant area which was applied to estimate monetary value of damages and reconstruction.

8.5 Costing Approach and Assumptions

Overall estimates of the cost consist of the damage of buildings (complete and partial) and damages of equipment and other logistics plus losses incurred as an effect of earthquake in terms of treatment cost and management of health sector response. Costing of the damages has been done in a disaggregated by the level of health facilities (i.e. HP, PHCC, District Hospitals, Central Hospitals and others) and by districts. Estimate of damages and losses was done based on the data from 14 districts and similar assumptions were applied for the estimation of other districts. Unit cost of damages was defined in consultation with technical experts which are applied for the estimates of total costs by type of health facility and equipment. Unit cost assumed for the estimation of the damages and demolition is given in the table below.

Table 11: Unit Cost for the Estimation of Damages and Losses of Infrastructure

Amount in NPR

Unit cost	Demolition cost	Value of building	Partial damage
HP	100,000	4,500,000	450,000
PHCC	150,000	10,000,000	1,000,000
District hospital	1,000,000	38,000,000	3,800,000
Central hospital block	1,500,000	30,000,000	3,000,000
Private facilities	1,000,000	38,000,000	3,800,000

Consultation was done with association of private sector association and the reported data was used for estimation of damages. All the relevant data collected from the field and received by June 2nd are considered for the estimation of the costs. It should be noted that losses resulted form the health workers not able to work due to earthquake are not accounted as the reliable data were not available for such estimation. Therefore overall volume of the costs might have been underestimated as damages unidentified by 08 June remain non-captured.

8.4 Drafting of Report, Consultation and Finalization

Preliminary cost estimates of the damages and losses as well as recovery and reconstruction needs were discussed within MoHP, NPC and PDNA sector Team and PDNA secretariat. Preliminary estimates of damages, losses and needs were further refined based on the suggestions received. Finally a draft report was produced which was further refined based on the feedback received.

Annexes

Annex 1: Number of Foreign Medical Team Returned and Currently Deployed

Districts	FMTs returned	FMTs currently deployed
Bhaktapur	9	1
Dhading	11	1
Dolakha	5	4
Gorkha	8	3
Kathmandu	24	2
Kavrepalanchowk	13	3
Lalitpur	9	0
Makawanpur	1	0
Nuwakot	4	3
Ramechhap	2	1
Rasuwa	4	1
Sindhupalchowk	20	7
Grand Total	111	25

Source: HEOC, MoHP

Annex 2: Support and Medical Relief received from Different Organizations

Agency name	Name of relief items	Unit	Quantity	Type (relief or recovery)
UNICEF	Diarhhea Kits	Box	1	Medical Relief
UNICEF	Diarhhea Kits	Box	1	Medical Relief
UNICEF	Diarhhea Kits	Box	1	Medical Relief
UNICEF	Diarhhea Kits	Box	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m^2	Item	1	Medical Relief
UNICEF	Bed Nets		Unreported	Medical Relief
UNICEF	Bed Nets		Unreported	Medical Relief
UNICEF	IEHK2011, kit, basic unit	set	42	Medical Relief

UNICEF	IEHK2011, kit, basic unit	set	8	Medical Relief
UNICEF	IEHK2011, kit, basic unit	set	8	Medical Relief
UNICEF	IEHK2011, kit, basic unit	set	10	Medical Relief
UNICEF	IEHK2011, kit, basic unit	set	8	Medical Relief
UNICEF	IEHK2011, kit, basic unit	set		Medical Relief
UNICEF	IEHK2011, kit, suppl.1-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1a-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1a-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1a-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1a-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1a-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, suppl.1a-medicines	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.2-equipment	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.2-equipment	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.2-equipment	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.2-equipment	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.2-equipment	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.2-equipment	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.3-renewable	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.3-renewable	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.3-renewable	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.3-renewable	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.3-renewable	set	1	Medical Relief
UNICEF	IEHK2011, kit, Suppl.3-renewable	set	1	Medical Relief
UNICEF	Surg. Inst., abdominal / SET	set	5	Medical Relief
UNICEF	Surg. Inst., abdominal / SET	set	5	Medical Relief
UNICEF	Surg. Inst., abdominal / SET	set		Medical Relief
UNICEF	Surg. Inst., abdominal / SET	set	5	Medical Relief
UNICEF	Surg. Inst., abdominal / SET	set	5	Medical Relief
UNICEF	Surg. Inst., abdominal / SET	set	5	Medical Relief
UNICEF	Surg. Inst., basic surgery / SET	set	10	Medical Relief
UNICEF	Surg. Inst., basic surgery / SET	set	10	Medical Relief
UNICEF	Surg. Inst., basic surgery / SET	set	10	Medical Relief
UNICEF	Surg. Inst., basic surgery / SET	set	10	Medical Relief
UNICEF	Surg. Inst., basic surgery / SET	set	10	Medical Relief
UNICEF	Surg. Inst., basic surgery / SET	set	10	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m2	item	1	Medical Relief

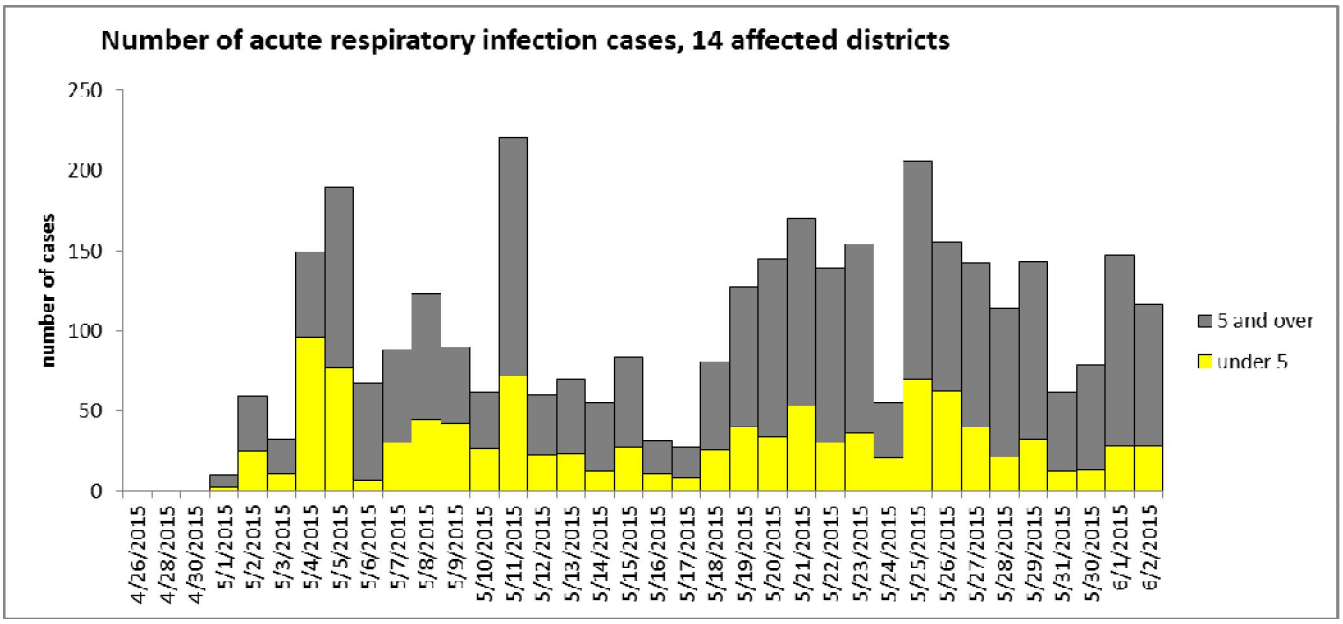
UNICEF	Tent, light weight, rectangular, 72 m2	item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m2	item	3	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m2	item	2	Medical Relief
UNICEF	Tent, light weight, rectangular, 72 m2	item	1	Medical Relief
UNICEF	Tent, light weight, rectangular, 42 m2	item	5	Medical Relief
UNICEF	Tent, light weight, rectangular, 42 m2	item	2	Medical Relief
UNICEF	blanket flees	item	100	Medical Relief
UNICEF	blanket flees	item	100	Medical Relief
UNICEF	blanket flees	item	100	Medical Relief
UNICEF	blanket flees	item	100	Medical Relief
UNICEF	blanket flees	item	100	Medical Relief
UNICEF	blanket flees	item	100	Medical Relief
UNICEF	First Aid kit	set	18	Medical Relief
UNICEF	First Aid kit	set	18	Medical Relief
UNICEF	First Aid kit	set	18	Medical Relief
UNICEF	First Aid kit	set	18	Medical Relief
UNICEF	First Aid kit	set	18	Medical Relief
UNICEF	First Aid kit	set	18	Medical Relief
UNICEF	Sodium composite Inj 1000mlX10 bottles	bottle	75	Medical Relief
UNICEF	Sodium composite Inj 1000mlX10 bottles	bottle	75	Medical Relief
UNICEF	Sodium composite Inj 1000mlX10 bottles	bottle	25	Medical Relief
UNICEF	Sodium composite Inj 1000mlX10 bottles	bottle	75	Medical Relief
UNICEF	Sodium composite Inj 1000mlX10 bottles	bottle	30	Medical Relief
UNICEF	Sodium composite Inj 1000mlX10 bottles	bottle	20	Medical Relief
WHO	IEHK2011, kit, basic unit	set	3	Medical Relief
WHO	Major Surgical Kits	set	1	Medical Relief
WHO	Minor Surgical Kits	set	1	Medical Relief
WHO	Major Trauma Backpack	set	4	Medical Relief
WHO	Triage Tags	item	550	Medical Relief
WHO	RRT Jackets	item	30	Medical Relief
WHO	IEHK Basic Units	set	1	Medical Relief
WHO	Major Trauma Backpack	item	2	Medical Relief
WHO	IEHK Basic Units	set	2	Medical Relief
WHO	IEHK Basic Units	set	1	Medical Relief
WHO	Complete IEHK w/o Malaria	set	1	Medical Relief
WHO	Chlorhexadin Cream	tube	10000	Medical Relief
WHO	Bleaching Powder	bags	25	Medical Relief
WHO	IEHK Basic Units	set	1	Medical Relief
WHO	Major Trauma Backpack	item	1	Medical Relief
WHO	Bodybags	item	175	Medical Relief
GIZ	tent, large	unit	1	Medical Relief
GIZ	Generator	unit	1	Medical Relief
WHO	Tent, light weight, rectangular, 72 m^2	item	1	Medical Relief

WHO	Tent, light weight, rectangular, 72 m^2	item	1	Medical Relief
WHO	Tent, light weight, rectangular, 72 m^2	item	1	Medical Relief
WHO	Tent, light weight, rectangular, 72 m^2	item	1	Medical Relief
WHO	Tent, light weight, rectangular, 72 m^2	item	1	Medical Relief
UNFPA	RH Kits (11A and 11B), supplies and medicines	set	1	Medical Relief
UNFPA	RH kits(1A,3,4,5,7,8,9,11A, 11B, 12)	set	9	Medical Relief
UNFPA	RH Kits (1A,4,5,7,8,9)	set	6	Medical Relief
UNFPA	RH kits (0,1A, 2A, 4,5,6A,6B,7)	set	7	Medical Relief
UNFPA	RH Kits (0, 1A, 6A,6B, 8,9)	Set	5	Medical Relief
UNFPA	RH Kits (1A, 2A,2B,3,4,5,6A,6B,7,8,9, 11A,11B,12)	set	11	Medical Relief
UNFPA	RH Kits(0,1A,2B,3,4,5,6A,6B,8,9)	set	9	Medical Relief
UNFPA	RH kits (2A,2B,6B,8)	set	4	Medical Relief
UNFPA	RH Kits (0)	set	1	Medical Relief
UNFPA	RH kits (6A,6B,8,9)	set	3	Medical Relief
UNFPA	RH Kits (6A,6B)	set	1	Medical Relief
UNFPA	RH kits (0, 1A,2A,2B,3,4,5,6A,6B,7,8,9)	set	10	Medical Relief
UNFPA	RH Kits (2A,2B,4,5,6A,6B)	set	4	Medical Relief
UNFPA	RH kits (1A,2A,2B,3,4,5,6A,6B,7,8)	set	8	Medical Relief
UNFPA	RH kits (1A, 2A,2B,4)	set	3	Medical Relief
JSI/UNFPA	Tent, 24 m^2	Set	3	Medical Relief
UNFPA	Tent, 24 m^2	Set	4	Medical Relief
UNFPA	Tent, 42 m2	set	3	Medical Relief
UNFPA	Tent, 42 m2	Set	3	Medical Relief
UNFPA	Tent, 42 m2	Set	3	Medical Relief
UNFPA	RH kits (2A) - Clean Delivery Kits	set	1	Medical Relief
UNFPA	RH kits (1A, 2A,2B)	set	2	Medical Relief
UNFPA	RH kits (1A, 2A, 2B, 3,4,5)	set	5	Medical Relief
UNFPA	RH kits (2A - Clean delivery kit)	set	1	Medical Relief
FHD/UNFPA	Misoprostol	pcs	600	Medical Relief
UNFPA	RH kits (2A - Clean Delivery Kits)	set	3	Medical Relief
UNFPA	RH Kit (2A)	set	1	Medical Relief
UNFPA	RH Kit (1A, 2A, 2 B, 3, 4, 5, 7)	set	6	Medical Relief
UNFPA	RH Kit (1A, 2A, 2B, 4)	set	3	Medical Relief
Direct Relief	Medicines and Supplies	kg	27,080	Medical Relief

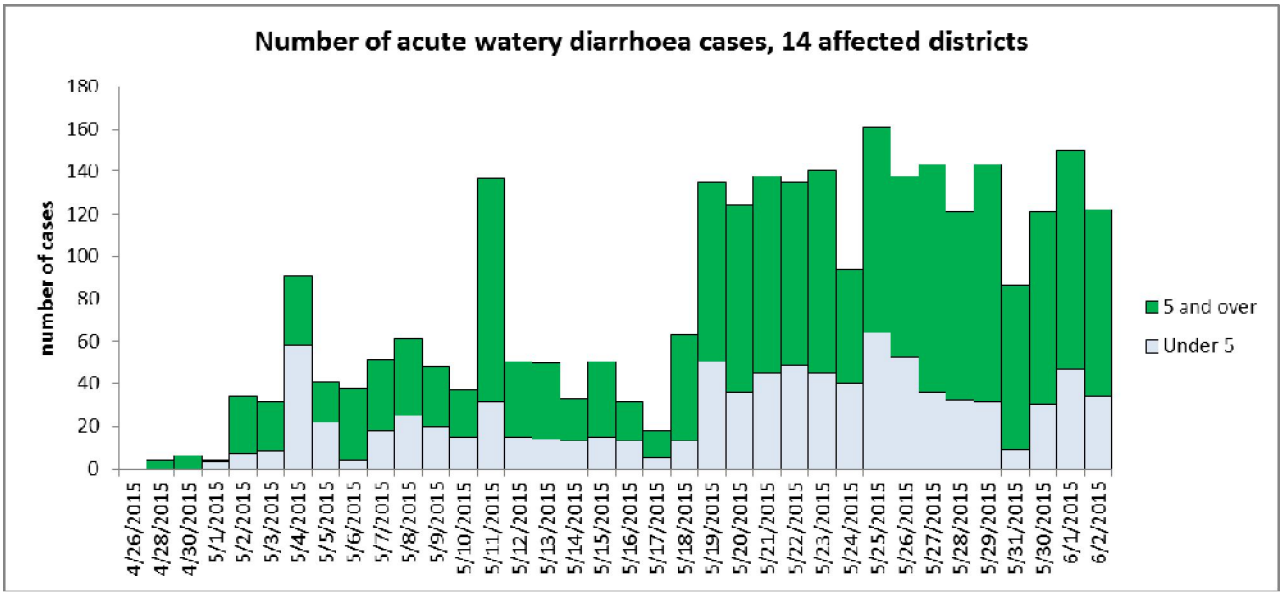
Note: List is not be exhaustive as some of the agencies may not have reported in detail.

Annex 3: Trend in outbreak prone syndromes

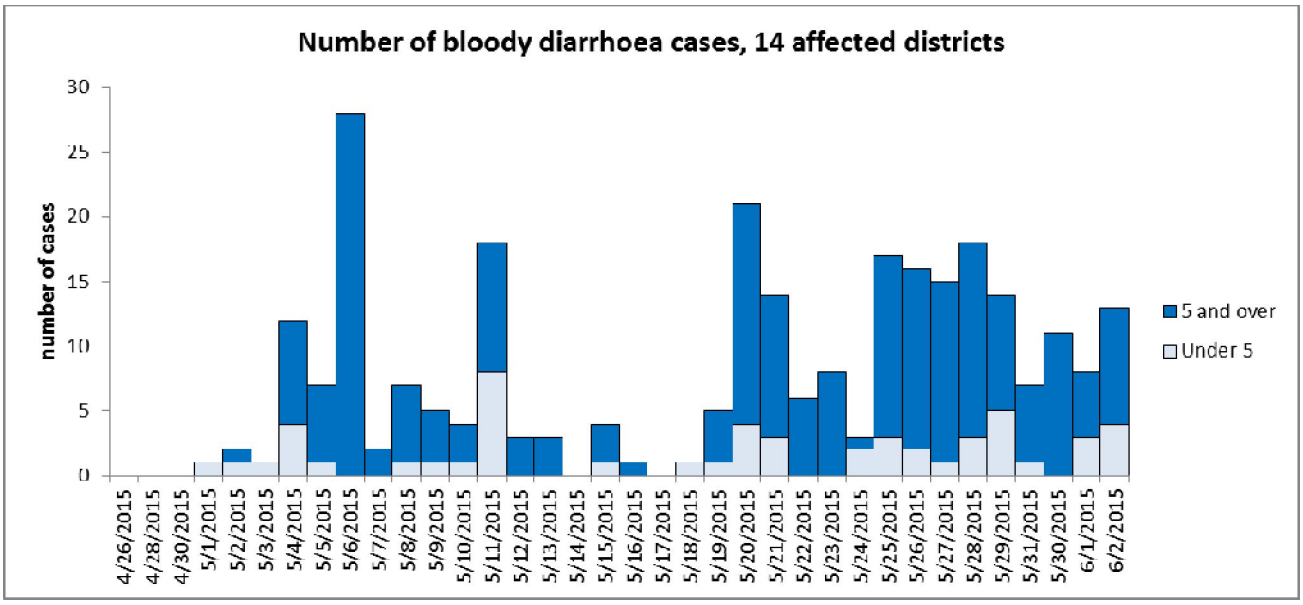
The number of ARI cases peaked on 11th May with 221 cases which represents about 6% of outpatient visits. The second peak was on 24th May and it has remained above 60 cases since then. However, there was no any clustering of cases and no outbreak reported.



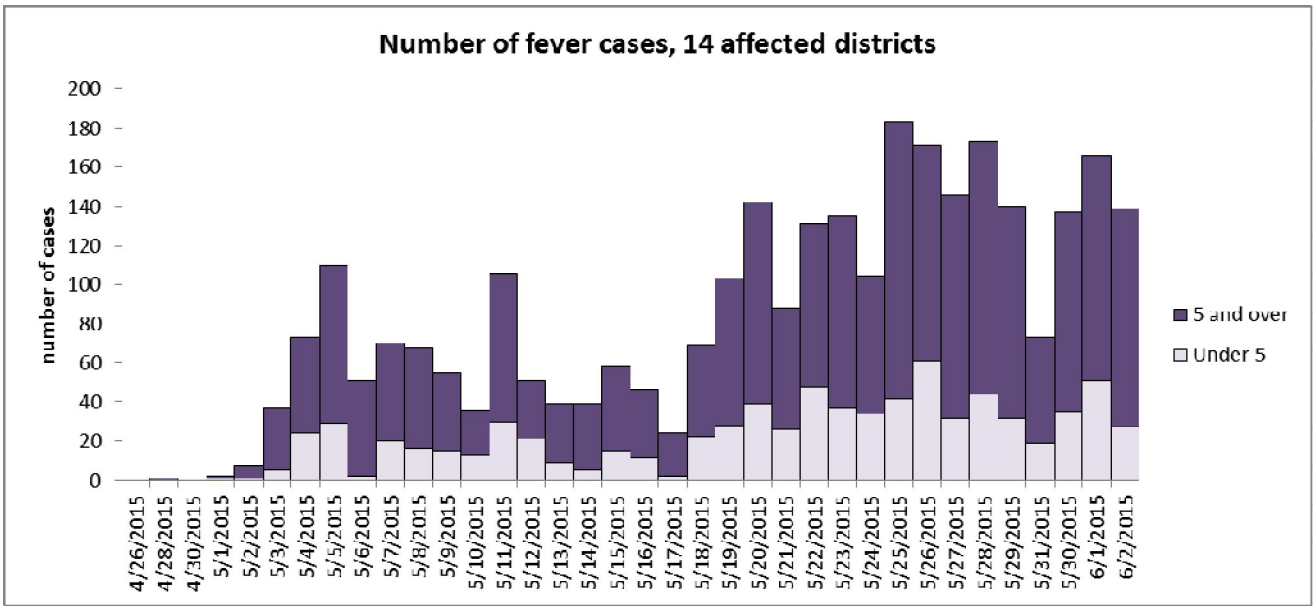
The number of acute watery diarrhoea cases peaked on 25th May with 161 cases which represents about 3.5% of outpatient visits. It has remained above 86 cases since 19th May. These cases were sporadic and no outbreak reported.



The number of bloody diarrhoea cases peaked on 6th May with 28 cases which represents about 2% of outpatient visits. But it has remained below 15 cases since 25th May except on 29th May. These cases were sporadic and no outbreak reported.



The number of fever cases peaked on 25th May with 183 cases which represents about 2% of outpatient visits. It has remained above 73 cases since 25th May. These cases were sporadic and no any disease specific outbreak reported.



Annex 4: Basis for Reconstruction and Design of the Health facilities

The structure proposed for intermediate reconstruction of the damaged health posts in the 14 affected districts is approximately 124 m^2 (1350 ft^2). It incorporates a birthing unit (delivery room, ante-/post-natal areas), clinic, dispensary, waiting area, administration room as well as staff accommodation (2 staff residence units). The health post is designed for pre-fabricated construction using steel structures and walls/partitions using one of the following technologies – fiber cement board, aerated cement boards, or PUF (Poly Urethane Foam) panels.

This design is 4.2 times smaller than the standard Integrated Health Post design (520m^2) from the Management Division of the Department of Health Services. Even though smaller in size, the pre-fab design aims to incorporate the most essential functions of a health post, and allows for fast construction, in turn helping to resume health services in the disaster hit areas. These structures are estimated to last a minimum of 15 years.

To select which of the fully damaged facilities are to be rebuilt using the pre-fabricated design, the following selection criteria are to be used:

1. If the fully damaged facility has enough land to construct the new structure, and owns such land.

2. Total Population: This is the population that falls under the catchment area of the particular health institution. Catchment area (in terms of walking distance and radius of coverage) and respective population size as per the hierarchy of the institution is given in table 1. The assigned figures in this table have been derived from GIS analysis.

Type of Health Institution	Geographical Region	Distance to be travelled (Km)	Walking Distance (minutes)	Total Population
Health Post	Mountain	2	30	3000

	Hill	2	30	4000
	Terali	3	30	5000
Primary Health Care Center	Mountain	4	60	10000
	Hill	4	60	15000
	Terali	6	60	50000
16-30 bed capacity Hospital	Mountain	7	120	15000
	Hill	7	120	30000
	Terali	10	120	80000
31-50 bed capacity Hospital	Mountain	7	120	30000
	Hill	7	120	50000
	Terali	10	120	120000
51-70 bed capacity Hospital	Mountain	9	180	80000
	Hill	9	180	120000
	Terali	15	180	300000

3. Serving Population: This is defined as the net population after deducting the population served by the health institution of same or higher level from the total population fall under the catchment area of that institution. Since catchment area of one institution may overlap with another, this deduction must be done to obtain the actually served population. Served population is calculated using GIS tool.

4. Accessibility: The location of the health facility plays an important role in providing effective health service. Besides, availability of adequate physical infrastructure (building, road network and enabling environment) is also important. Hence, to make decision for upgrading and new construction, criteria such as road network, potential for larger service coverage are taken into account. Such potential institution can serve larger population effectively. For this, prioritization is done based on analysis of availability of roads and their hierarchy (highway, secondary road, graveled road, seasonal road, agriculture road). These information are collected from department of roads and the concerned stakeholders which is mapped in GIS system and used for analysis. Besides, availability of other services such as agricultural, educational, commercial, administrative services also contribute in gaining higher score.

Annex 5: Number of Public Health Facilities and Population Size by District

SN	District Name		Number of health facilities				Size of Population by subgroups								
		Effects of earthquake	Hospital	PHCC/ HC	Health Post	Sub Health Post	Total Population	Population of 0-11	Population of 0-4 years	Female population of 15-44 years	Women of Reproductive of 15-49	Married Women of Reproductive age 15-49	Expected Pregnancies	Adolescent Population of 10-19 years	Expected Live birth
	Eastern Development Region														
1	Taplejung	C	1	2	12	39	128	3	13	33	36	28	3	30	3
2	Panchthar	C	1	2	20	20	194	4	19	51	56	43	5	46	4
3	Ilam	C	1	4	18	26	298	6	28	78	86	65	7	68	6
4	Jhapa	C	1	6	16	28	856	18	84	230	252	191	22	192	18

5	Morang	C	2	7	34	26	1,014	22	101	265	291	220	26	229	22
6	Sunsari	C	2	5	17	30	820	18	82	214	234	177	21	187	18
7	Dhankuta	B	1	2	24	11	166	4	16	45	49	37	4	38	4
8	Teharthum	C	1	2	15	14	101	2	10	27	30	22	3	23	2
9	Sankhuwasabha	B	1	2	23	13	157	3	16	41	45	34	4	36	3
10	Bhojpur	B	1	3	21	39	172	4	18	44	49	37	5	40	4
11	Solukhumbu	B	1	2	18	14	104	2	11	26	29	22	3	24	2
12	Okhaldhunga	A	1	1	15	39	149	3	15	39	43	32	4	35	3
13	Khotang	B	1	2	24	49	193	4	20	50	55	41	5	46	4
14	Udaypur	C	2	1	20	24	331	7	34	88	96	73	9	78	7
15	Saptari	C	1	4	30	82	665	14	68	168	184	139	17	150	14
16	Siraha	C	2	4	20	84	661	15	70	168	184	140	18	149	15
	Central Development Region														
17	Dhanusha	C	1	5	29	69	786	17	81	194	213	161	21	179	18
18	Mahottari	C	2	5	18	52	656	15	70	162	177	134	18	148	15
19	Sarlahi	C	1	5	26	68	814	19	87	196	214	162	22	185	19
20	Sindhuli	A	3	4	25	26	301	7	31	77	84	64	8	71	7
21	Ramechhap	A	1	3	23	29	204	4	20	54	59	45	5	49	4
22	Dolkha	A	1	2	25	27	186	4	18	49	54	41	5	44	4
23	Sindhupalchowk	A	1	3	26	49	290	6	28	74	81	62	7	67	6
24	Kavre	A	1	4	25	64	390	8	37	102	111	84	10	91	8
25	Lalitpur	A	2	4	22	16	505	10	46	129	141	107	12	112	10
26	Bhaktapur	A	1	2	14	5	328	7	30	84	92	69	8	73	7
27	Kathmandu	A	9	8	26	32	1,917	38	175	486	529	401	45	427	38
28	Nuwakot	A	1	3	30	34	281	6	27	73	80	61	7	66	6
29	Rasuwa	A	1	1	14	3	44	1	4	11	12	9	1	10	1
30	Dhading	A	1	2	33	16	342	7	34	90	99	75	9	80	8
31	Makawanpur	A	1	4	23	17	436	9	44	111	121	92	11	101	10
32	Rautahat	C	2	4	23	69	742	17	81	175	191	145	20	168	17
33	Bara	C	1	5	42	54	738	17	79	176	192	146	20	167	17

34	Parsa	C	2	3	38	41	642	14	69	150	164	125	17	144	15
35	Chitwan	B	2	4	24	12	624	13	59	166	182	138	15	143	13
	Western Development Region														
36	Gorkha	A	2	3	19	46	261	6	26	71	78	59	7	61	6
37	Lamjung	B	1	2	20	38	169	4	17	46	50	38	4	39	4
38	Tanahu	B	2	2	26	19	331	7	33	93	101	77	8	77	7
39	Syangja	B	1	3	26	39	274	6	27	77	85	64	7	64	6
40	Kaski	B	1	3	25	20	527	11	50	140	153	116	13	121	11
41	Manang	C	1	0	10	3	6	0	1	1	2	1	0	1	0
42	Mustang	C	1	1	12	3	13	0	1	3	3	3	0	3	0
43	Myagdi	B	1	1	16	23	112	3	12	30	33	25	3	26	3
44	Parbat	B	1	2	19	33	147	3	15	41	45	34	4	34	3
45	Baglung	B	1	3	21	37	274	6	28	77	84	64	7	64	6
46	Gulmi	B	1	4	23	53	270	6	28	76	83	63	7	63	6
47	Palpa	B	2	2	29	33	256	6	26	72	78	59	7	60	6
48	Nawalparasi	B	1	5	18	53	675	14	67	181	198	150	17	156	14
49	Rupandehi	C	2	5	26	38	950	20	95	245	268	203	24	220	21
50	Kapilvastu	C	3	3	16	57	607	14	65	150	164	124	16	140	14
51	Arghakhanchi	B	1	2	20	19	199	5	21	56	61	46	5	46	5
	Mid Western Development Region														
52	Pyuthan	C	1	2	23	23	232	6	26	64	70	53	7	54	6
53	Rolpa	C	1	2	20	29	229	6	25	61	67	51	7	53	6
54	Rukum	C	1	2	14	27	215	5	23	56	61	47	6	51	5
55	Salyan	C	1	2	15	30	253	6	27	66	72	54	7	60	6
56	Dang	C	2	3	20	16	588	13	60	158	172	131	15	138	13
57	Banke	C	1	3	20	24	534	12	55	136	148	112	14	124	12
58	Bardiya	C	1	3	18	12	446	10	45	118	129	98	12	105	10
59	Surkhet	C	2	3	29	18	375	9	40	97	106	80	10	87	9
60	Dailekh	C	1	3	16	40	274	7	31	68	74	56	8	64	7

61	Jajarkot	C	1	2	11	21	180	5	21	44	47	36	5	42	5
62	Dolpa	C	1	0	10	13	39	1	4	9	10	8	1	9	1
63	Jumla	C	1	1	15	14	114	3	13	28	30	23	3	26	3
64	Kalikot	C	1	1	17	11	144	4	17	34	37	28	5	33	4
65	Mugu	C	1	1	15	9	58	2	7	14	15	11	2	13	2
66	Humla	C	1	0	14	12	54	1	6	13	14	10	2	12	1
	Far Western Development Region														
67	Bajura	C	1	1	17	9	142	4	16	35	38	29	4	33	4
68	Bajhang	C	1	2	21	24	204	5	23	51	56	42	6	47	5
69	Achham	C	1	2	17	55	267	7	31	68	74	56	8	62	7
70	Doti	C	2	2	20	29	211	5	24	56	62	47	6	48	5
71	Kailali	C	2	5	20	17	839	18	85	218	237	180	22	197	18
72	Kanchanpur	C	1	3	14	4	480	11	49	128	139	105	13	113	11
73	Dadeldhura	C	1	1	20	4	148	4	16	39	42	32	4	35	4
74	Baitadi	C	1	2	20	45	256	6	28	66	72	55	7	59	6
75	Darchula	C	1	1	14	26	137	3	15	35	38	29	4	32	3
	Nepal		104	208	1,559	2,247	27,723	609	2,820	7,144	7,813	5,922	725	6,366	615

Note: A = highly affected, B = moderately affected, C = others

References

Central Bureau of Statistics. (2011). *Nepal Living Standard Survey 2010/11.* Kathmandu: Central Bureau of Statistics.

Central Bureau of Statistics. (2014). *Population Monograph of Nepal 2014, Volume 2.* Kathmandu: Central Bureau of Statistics.

Department of Health Services. (2014). *Annual Report 2070/71.* Kathmandu: Department of Health Services.

Department of Health Services. (2014/15). *Estimated Target Population Fiscal Year 2071/72 (2014/2015).* Kathmandu: Management Division, Department of Health Services.

Ministry of Finance. (2013/14). *Red Book.* Kathmandu: Ministry of Finance.

Ministry of Home Affairs. (2015). *Incident Report.* Kathmandu: Ministry of Home Affairs.

WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division. (2014). *Trends in Maternal Mortality: 1990 to 2013.* Geneva: WHO.