



# Final Dissemination Health Infrastructure Development and Post-Earthquake Reconstruction

2017.03.31

Sunil Khadka, Senior Infrastructure Planning and Procurement Adviser

# Transition and Recovery Project (TRP)

# Major Support under TRP

1. **Standard Designs and Reconstruction Guideline:** Developed standard reconstruction guideline, instructions, checklists, prototype design and obligatory documents required for reconstruction with technical support of NHSSP.
2. **Detailed Engineering Assessment of Damaged Health Facilities in 31 District:** Successfully completed the Detailed Damaged Assessment in total 31 districts which provided comprehensive evidence of each health faculty on damage status, geography etc.
3. **Technical Support in Signing MoUs** MoH signed in total 67 MoUs worth 7.52 billion rupees with different national and international organizations to rebuild completely damaged Health Facilities in 14 highly affected districts,
  - a. **Design Reviews**
  - b. **Monitoring:** To date, about **158 health facilities** are completed out of 355 works.
  - c. **Technical Advice to MoU partners**

# Major Support under TRP

4. **Planning and Budgeting:** input for PDRF, AWPB.
5. **Formation of Project Implementation Unit within MoH.**
6. **Retrofit and Prefab-constructions**
  1. **Chautara Hospital**, Sindhupalchok - OCMC Block
  2. **Chautara Hospital**, Sindhupalchok - Remodelling of Eye-care block to resume CEONC function
  3. **Tatopani HP**, Sindhupalchok - Retrofitting of Training Building
  4. **Charikot PHCC**, Dolakha – Retrofitting of Training Building
  5. **Laduk HP**, Dolakha – Retrofitting of Old HP building
  6. **Khopachagu HP**, Dolakha - Retrofitting of HP building
  7. **Dolakha HP**, Dolakha - Retrofitting of HP building and prefab construction
  8. **Manthali PHCC** – Prefab Construction of Block consisting of OCMC, OT, Diagnostic and Delivery services



# Major Support under TRP – Standard Designs and Reconstruction Guideline



Standard Guidelines  
for  
Post-Disaster Reconstruction of  
Health Buildings

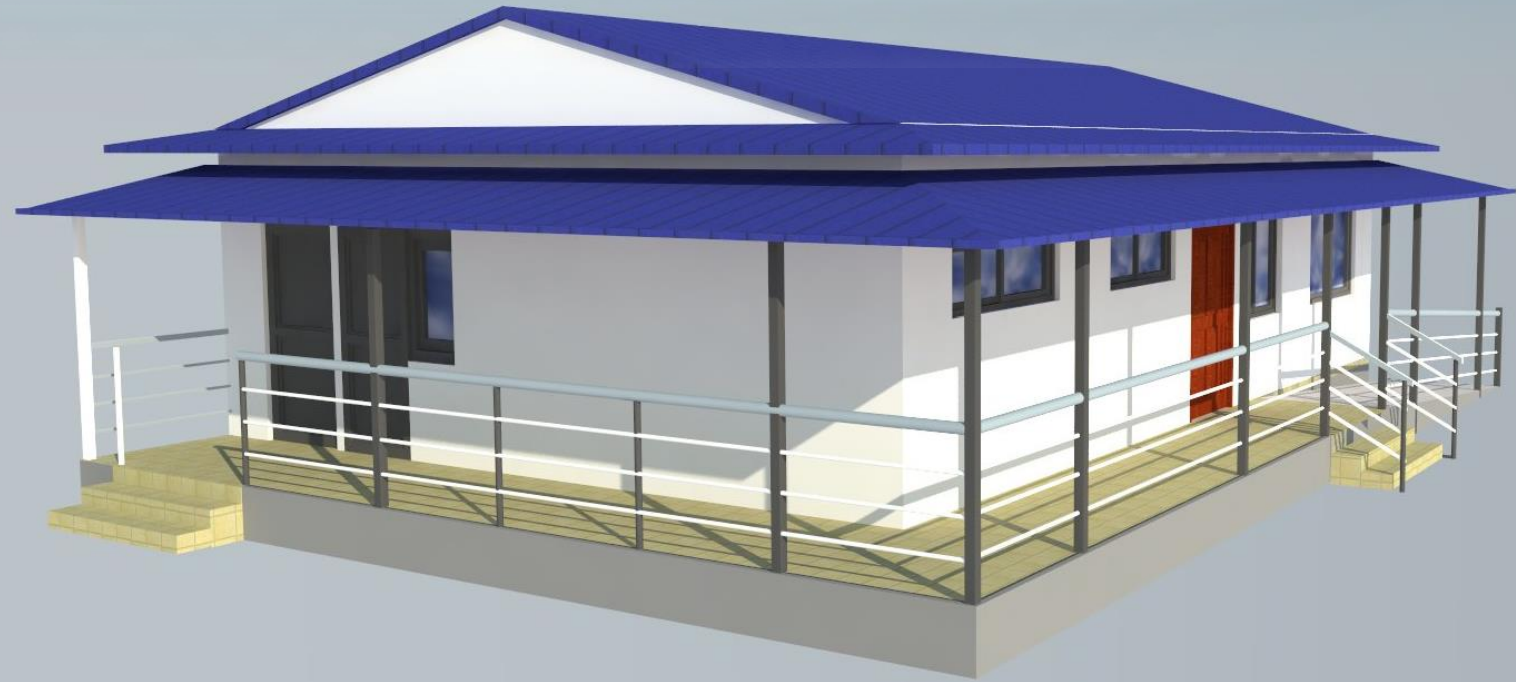
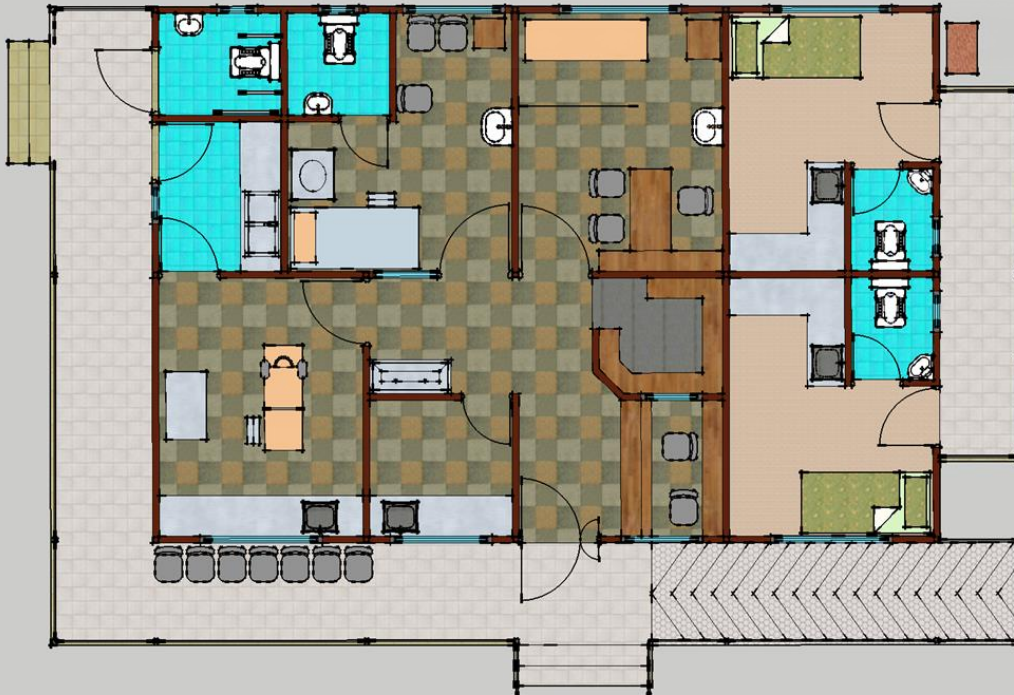
**HEALTH POST**  
Standard Type 1 for Pre-fab  
construction

- 1. Standard Designs and Reconstruction Guideline:** Developed standard reconstruction guideline, instructions, checklists, prototype design, architectural working details.

Available online > [www.nshp.org.np](http://www.nshp.org.np)

# Major Support under TRP –

Standard Designs and Reconstruction Guideline:



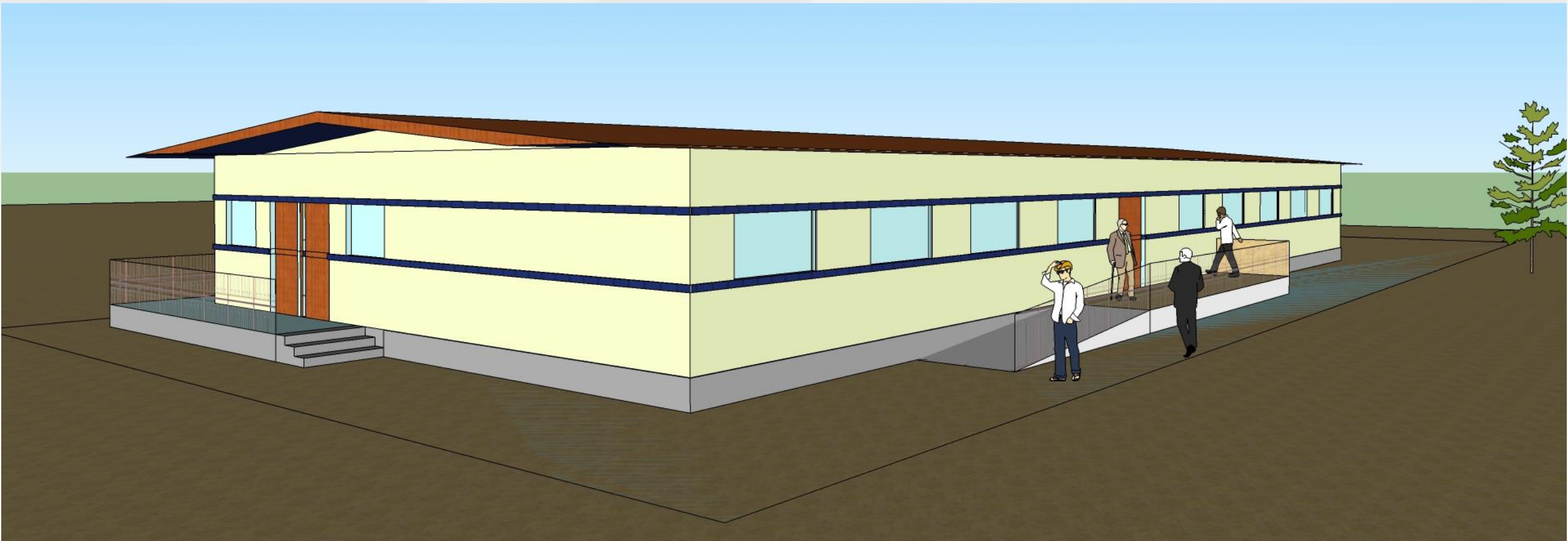
## HEALTH POST

Standard Type 2 for Pre-fab construction



# Major Support under TRP –

## Standard Designs and Reconstruction Guideline:



**PRIMARY HEALTH CARE CENTRE**

Standard for Pre-fab construction



# Major Support under TRP –

Standard Designs and Reconstruction Guideline:



**Dolakha HP,**  
Dolakha  
supported by  
UNICEF





**Ampipal HP, Gorkha**











# Major Support under TRP –

Standard Designs and Reconstruction Guideline:



Shelter Construction at  
Chekampar, Gorkha



# Major Support under TRP

Standard Designs and Reconstruction Guideline:



Ghorthali HP

Ghumatang HP Semi-permanent Shelters





# Major Support under TRP

Standard Designs and Reconstruction Guideline:



**Semi-permanent Shelters** : at Barabise PHCC, Sindhupalchowk





# Major Support under TRP

Standard Designs and Reconstruction Guideline:



Ramechhap Hospital





# Major Support under TRP –

## Standard Designs and Reconstruction Guideline:

### Bilateral Agreement for Reconstruction

Permanent Construction of Health Institutions		
Agency	Work Description	Progress
<b>JICA</b>	Bir Hospital, Paropakar Maternity Hospital	Ready for Tender
<b>KOICA</b>	Nuwakot District Hospital and Some HFs	Design Phase
<b>KFW</b>	Permanent Reconstruction of District Hospital in Rasuwa, Dolakha, Gorkha and Ramechhap	Design Phase
<b>DFID</b>	HFs in Sindhupalchok, Ramechhap and Dolakha	Ongoing and some have completed
<b>USAID</b>	Barabise PHCC	Design Phase
<b>China</b>	Hospital at Chautara and Manang	Feasibility study



# Major Support under TRP –

## Standard Designs and Reconstruction Guideline:

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<b>China</b>	Hospital at Chautara and Manang	Feasibility study



Trishuli Hospital, Nuwakot supported by KOICA

# Progress Status of the Work

District	Health Post		PHCC		Hospital	
	completed	On-going	Completed	On-going	Completed	On-going
Bhaktapur	3		0		0	
Dhading	23	16	1		0	1
Dolakha	18	22	0	2	2	1
Gorkha	27	24	1		0	2
Kathmandu	1	1	0		0	2
Kavrepalanchok	6	31	0		0	
Lalitpur	0	6	0		0	
Makawanpur	4	3	0		0	
Nuwakot	20	26	0		1	1
Okhaldhunga	0	6	0		0	
Ramechhap	1	12	0	2	1	2
Rasuwa	6	10	0		0	2
Sindhuli	0		0		0	
Sindhupalchok	40	13	1	1	2	2
Solukhumbu	0	6	0	2	1	
<b>Total</b>	<b>149</b>	<b>176</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>13</b>
<b>Total MOUs</b>	<b>355</b>					
<b>Completed</b>	<b>158</b>					
<b>Ongoing</b>	<b>195</b>					



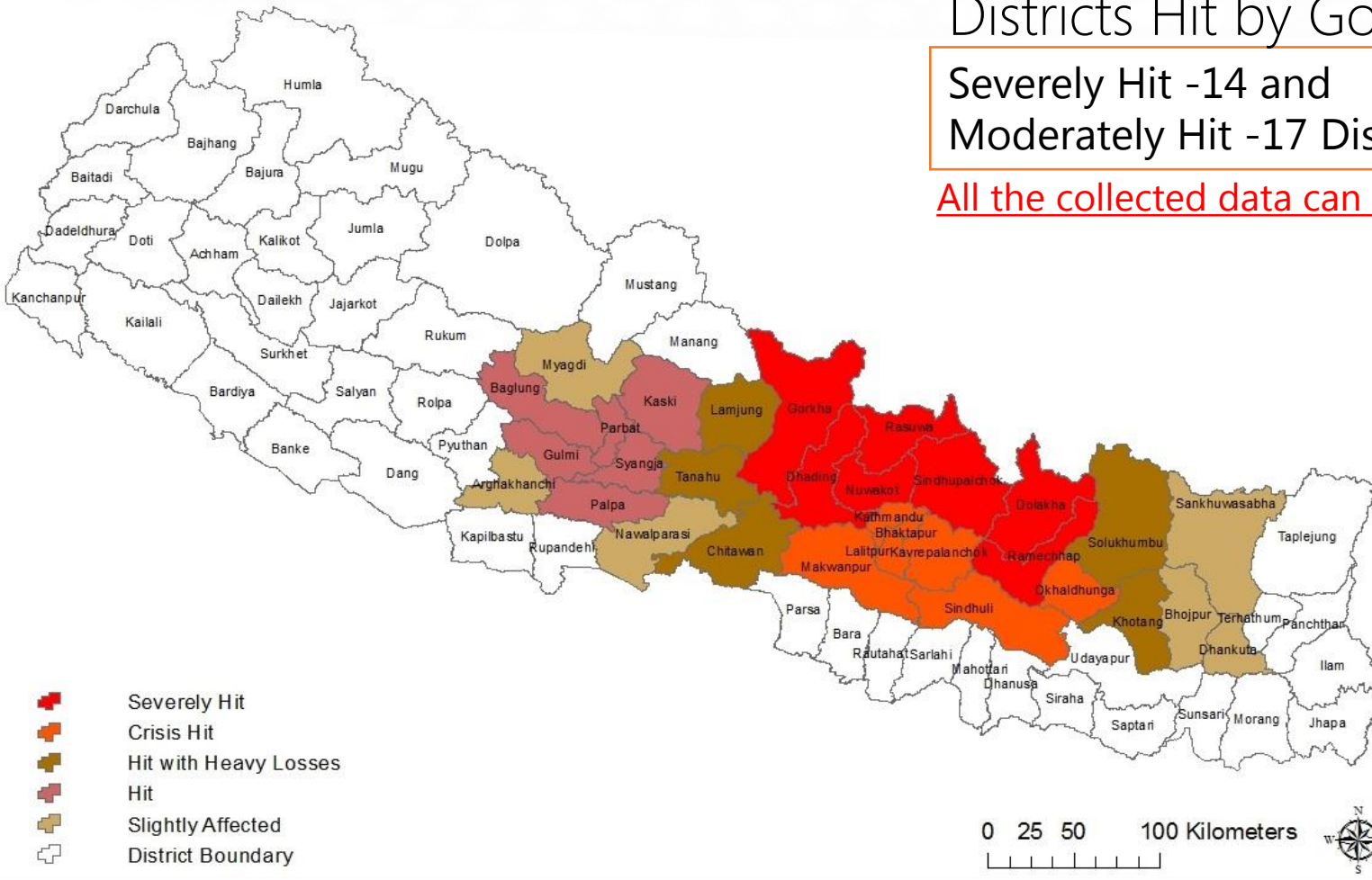
# Major Support under TRP

## Detailed Engineering Assessment of Damaged Health Facilities in 31 District

Districts Hit by Gorkha Earthquake in 2015

Severely Hit -14 and  
Moderately Hit -17 Districts

All the collected data can be accessed online at [www.nhsp.org.np](http://www.nhsp.org.np)



### Makaibari SHP

Location Details	
District	Dolakha
VDC/Municipality	BhimesworN.P.
Ward Number	12
Settlement	Makaibari
Contact Person	Santi pd. Subedi
Phone Number	9741017773



Road Details		Market Details	
<input checked="" type="checkbox"/> Connection to Motorable Road		<input type="checkbox"/> Located in Market Center	
Type of Motor Road	Side Road	Name of Market	
Name of Road	Charikot_serabesi road	Type of Market	
Width of Road (m)	5	Closest Market	Charikot
Condition of Road	Seasonal	Distance to Closest Market	3 Kilometers
Distance to facility using Side Road	3 Kilometers		

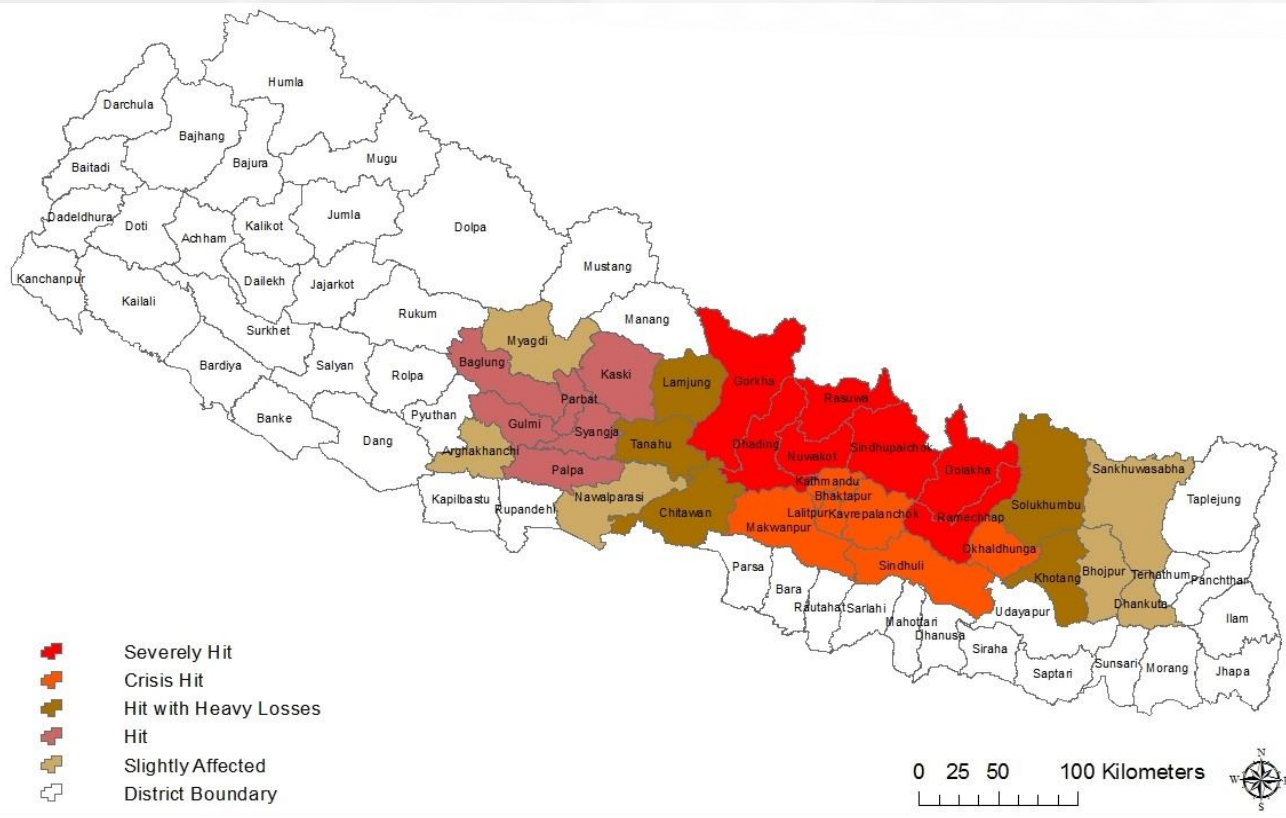
Life Lines			
Water Supply Details		Electricity Details	
Primary Source	Not Available	Electricity Connection	Not Available
Secondary Source		Connection Type	
<input type="checkbox"/> Water Sufficient		Power Backup Source	Not Available
<input type="checkbox"/> Water Potable		Land Plots	
Tank Type	Year	Capacity	Operational?
<input type="checkbox"/> Overhead Tank			<input type="checkbox"/>
<input checked="" type="checkbox"/> Overground Tank	2071	1000	<input checked="" type="checkbox"/>
<input type="checkbox"/> Underground Tank			<input type="checkbox"/>
Plot Name/Num	Own Status	Area sqmt	
Not available	Private Land	1524.22	

Materials/Labour		
<input checked="" type="checkbox"/> Wood	<input type="checkbox"/> Brick	<input type="checkbox"/> Others
<input checked="" type="checkbox"/> Stone	<input type="checkbox"/> Sand	
<input checked="" type="checkbox"/> Bamboo	<input type="checkbox"/> Aggregate	
Labour		
<input checked="" type="checkbox"/> Skilled	<input checked="" type="checkbox"/> Unskilled	

Building Damage Information		
Name of Building	Purpose of Building	Damage Status
Health Post Building	Health Post Building	Completely Collapsed

# Major Support Under TRP

DETAILED ENGINEERING ASSESSMENT OF DAMAGED HEALTH FACILITIES IN 31 DISTRICT



## Salient Features

- 1. Detailed Infrastructure Data along with damage information.**
- 2. Use of smart mobile technology for data collection.**
- 3. Assessment based on Vulnerability assessment Guideline published by DUDBC.**
- 4. Mapping and quantifying the crack**
- 5. Recommending the intervention (Reconstruction, Repair, Retrofit)**
- 6. Costing for the reconstruction and repair.**



# Major Support under TRP

## Detailed Engineering Assessment of Damaged Health Facilities in 31 District

### Damaged Status in 14 Districts based on Detailed Damaged Assessment

SN	District Name	Damage Status					Total
		Completely Damaged	Partially Damaged	Superficial Damage	No Damage	Damaged Ayurveda HFs	
1	Bhaktapur	4	7	8	1	3	26
2	Dhading	22	11	5	2	6	59
3	Dolakha	28	13	4	1	4	60
4	Gorkha	46	7	6	7	6	79
5	Kathmandu	10	16	17	27	15	89
6	Kavre	22	11	33	20	8	104
7	Lalitpur	13	9	9	13	5	51
8	Makawanpur	10	11	9	16	6	54
9	Nuwakot	29	15	14	2	10	78
10	Okhaldhunga	20	14	12	3	5	62
11	Ramechhap	24	11	6	6	6	61
12	Rasuwa	12	3	2	1	4	22
13	Sindhuli	15	2	25	11	7	63
14	Sindhupalchowk	50	14	7	3	6	86
<b>Total</b>		<b>305</b>	<b>144</b>	<b>157</b>	<b>113</b>	<b>91</b>	<b>894</b>

# Major Support under TRP

## Detailed Engineering Assessment of Damaged Health Facilities in 31 District

### Damaged Status in 17 Districts based on Detailed Damaged Assessment

#### Building Block-wise Data

SN.	District	No of Building Blocks	Building owned by others	Completely Collapsed	Partially Damaged - non repairable	Partially Damaged Load Bearing Wall - repairable	Superficial Damage	No Damage
1	Arghakhanchi	67		1		2	7	57
2	Baglung	157	3	1	20	6	9	118
3	Bhojpur	123	11	2	19	7	15	69
4	Chitwan	167	5	1	6	10	12	133
5	Dhankuta	78		2	4	21	22	29
6	Gulmi	150	25		12	6		107
7	Kaski	96	1				8	87
8	Khotang	172		6	39	18	18	91
9	Lamjung	128		2	31	8	7	80
10	Myagdi	90	6	2	15	3		64
11	Nawalparasi	197	23		31	2	2	139
12	Palpa	158	10		1	12	24	111
13	Parbat	91	8	2	2	2	28	49
14	Sankhuwasabha	91	1		10	10	27	43
15	Solukhumbu	90	4	6	19	9	16	36
16	Syangja	133	17		19	1	6	90
17	Tanahu	97	1	2	13	7	16	58
<b>Total</b>		<b>2085</b>	<b>115</b>	<b>27</b>	<b>241</b>	<b>124</b>	<b>217</b>	<b>1361</b>

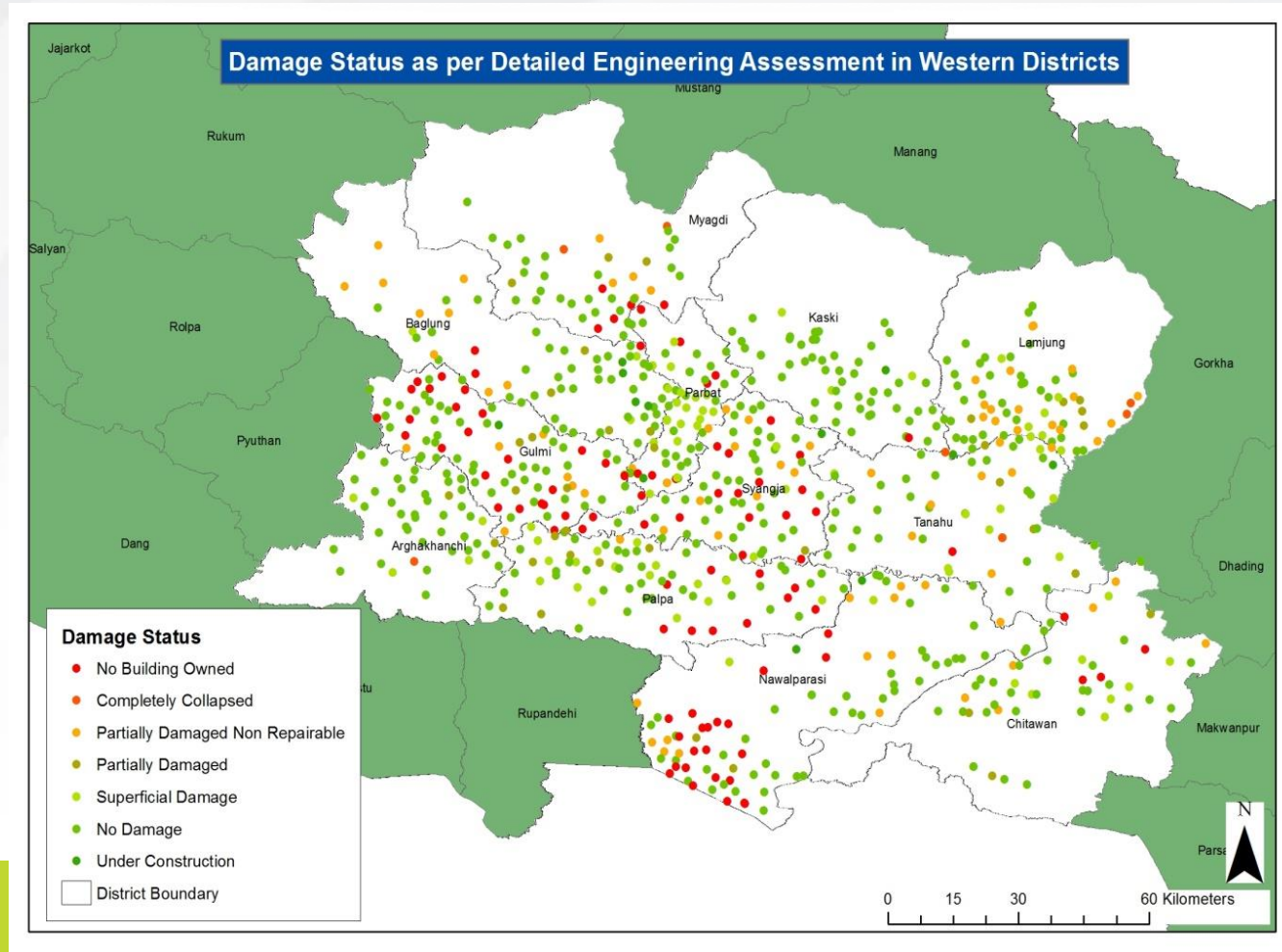
#### Facility -wise Data

District	Number of Facilities	Completely Collapsed	No Building Owned	No Damage	Partially Damaged	Partially Damaged Non Repairable	Superficial Damage	Under Construction
Arghakhanchi	45	1		38	2		4	
Baglung	69		3	46	4	9	4	3
Bhojpur	65		11	35	3	7	6	3
Chitwan	50		5	28	3	6	8	
Dhankuta	40	1		13	11	3	12	
Gulmi	87		25	49	5	7		1
Kaski	56		1	51			3	1
Khotang	75	1		30	7	25	11	1
Lamjung	69	2		36	5	19	6	1
Myagdi	44	2	6	28	3	5		
Nawalparasi	88		22	48	2	12	2	2
Palpa	74		10	39	7	1	17	
Parbat	59		8	27	1	2	20	1
Sankhuwasabha	42		1	17	5	3	13	3
Solukhumbu	37	1	4	10	6	8	6	2
Syangja	75		17	42	1	11	3	1
Tanahu	57	2	1	31	4	8	10	1
<b>Total</b>	<b>1032</b>	<b>10</b>	<b>114</b>	<b>568</b>	<b>69</b>	<b>126</b>	<b>125</b>	<b>20</b>

# Major Support under TRP

Detailed Engineering Assessment of Damaged Health Facilities in 31 District

## Damaged Status in 17 Districts based on Detailed Damaged Assessment





# Major Support under TRP

Retrofit and pre-fab construction works



**Charikot PHCC Training Building**



# Major Support under TRP

## Retrofit and pre-fab construction works



Laduk HP, Dolakha



# Major Support under TRP

## Retrofit and pre-fab construction works



**Manthali PHCC** (OCMC, OT, Diagnostics)  
in 3D Panel Systems

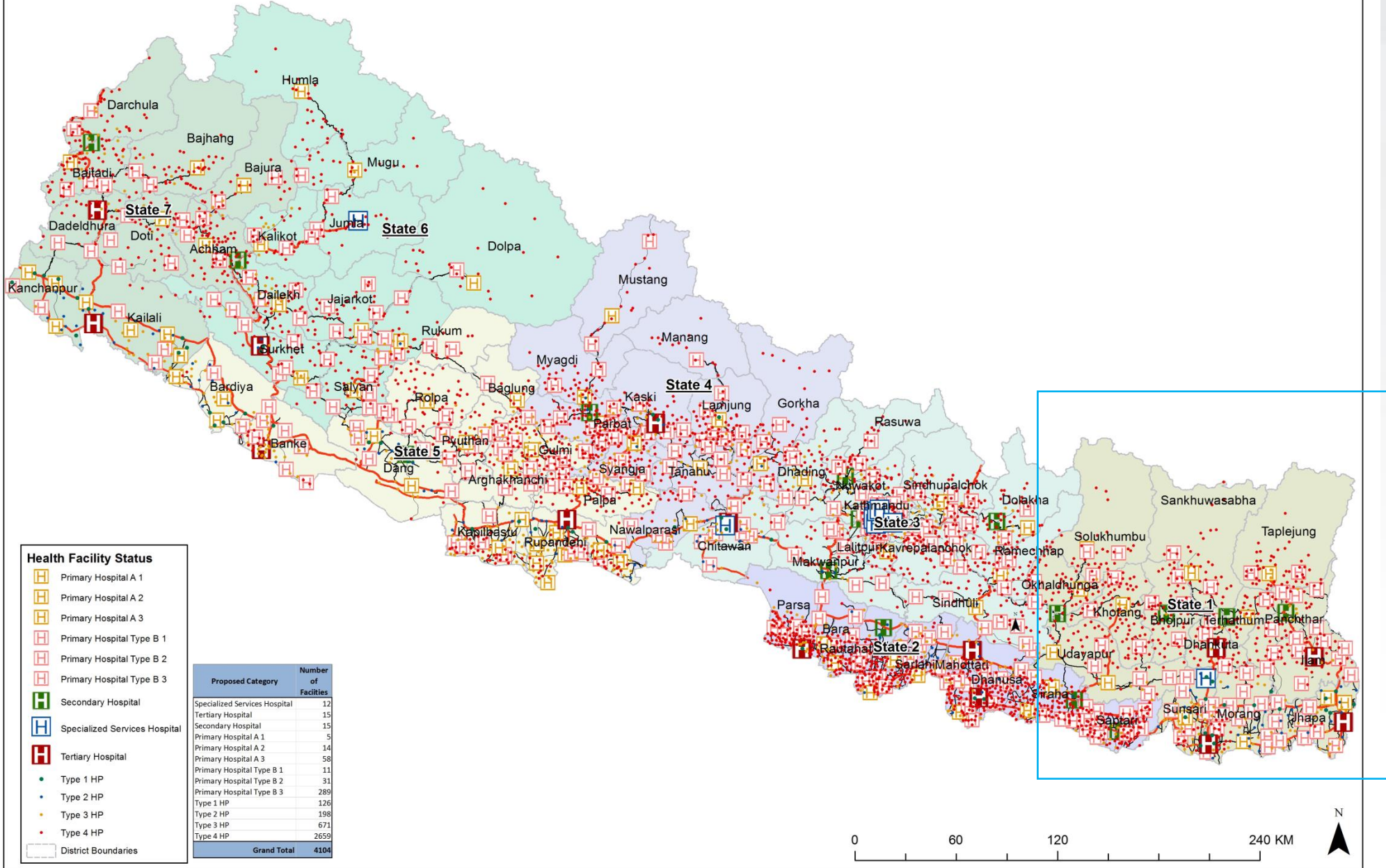
# Support to MoH

(Besides reconstruction and recovery works)

- 1. Delineation of Health Facilities in line with existing and proposed federal structure (Based on catchment area, services and strategic location)**
- 2. Standard Designs and Reconstruction Guideline for Regular Construction Works**
- 3. Support to DUDBC and, MD-DoHS and MoH to prepare designs of Hospital Facilities (Narayani Sub-regional Hospital, Mehalkuna Hospital etc.)**
- 4. Support to Bir Hospital to prepare designs for renovation of the hospital.**

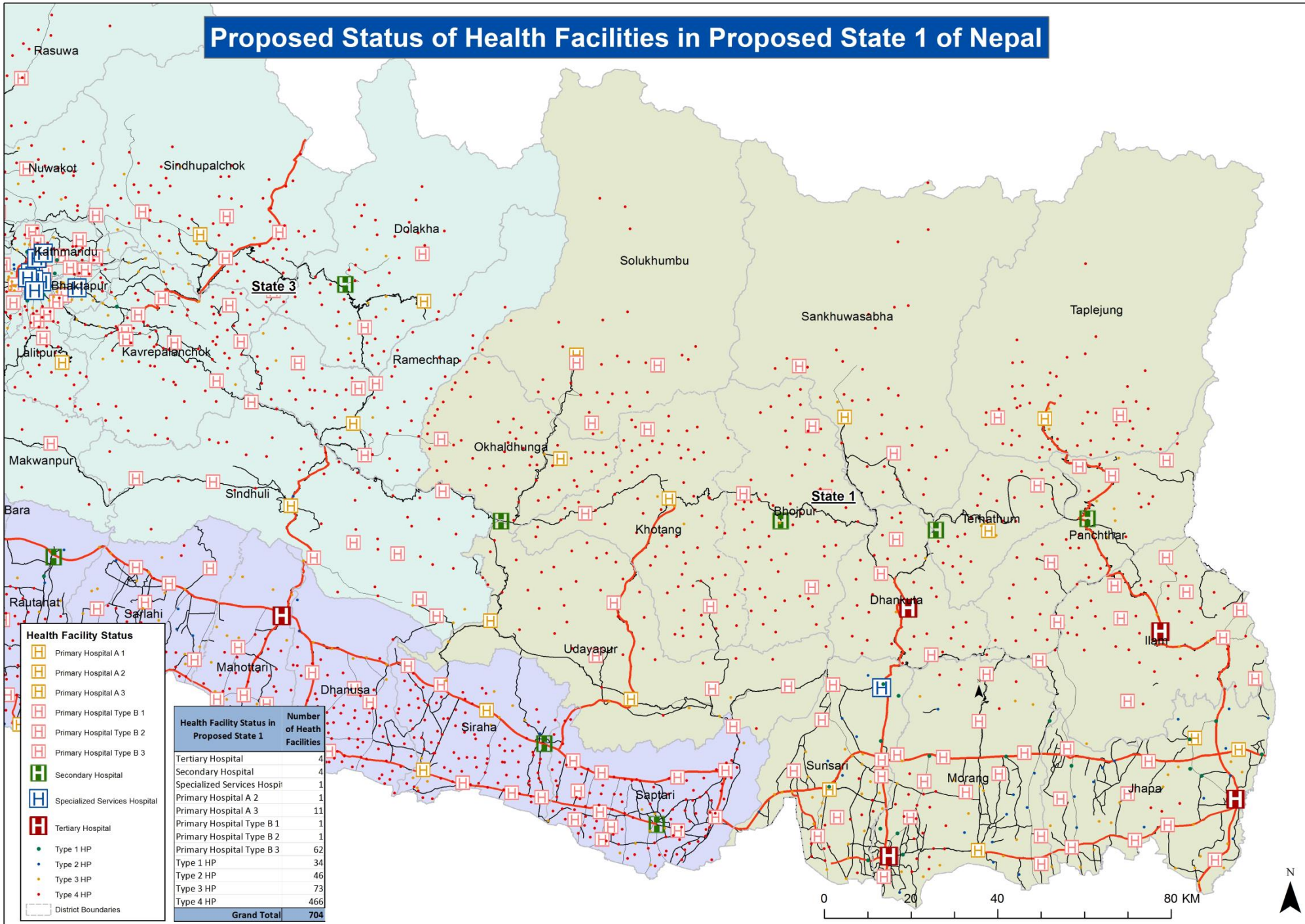


# Proposed Status of Health Facilities of Nepal





# Proposed Status of Health Facilities in Proposed State 1 of Nepal



## Health Facility Status

- Primary Hospital A 1
- Primary Hospital A 2
- Primary Hospital A 3
- Primary Hospital Type B 1
- Primary Hospital Type B 2
- Primary Hospital Type B 3
- Secondary Hospital
- Specialized Services Hospital
- Tertiary Hospital
- Type 1 HP
- Type 2 HP
- Type 3 HP
- Type 4 HP
- District Boundaries

Health Facility Status in Proposed State 1	Number of Health Facilities
Tertiary Hospital	4
Secondary Hospital	4
Specialized Services Hospital	1
Primary Hospital A 2	1
Primary Hospital A 3	11
Primary Hospital Type B 1	1
Primary Hospital Type B 2	1
Primary Hospital Type B 3	62
Type 1 HP	34
Type 2 HP	46
Type 3 HP	73
Type 4 HP	466
<b>Grand Total</b>	<b>704</b>



# Support to MoH

## Updating of standard Design and Guidelines for Health Infrastructure

### स्वास्थ्य भवन पूर्वाधारको डिजाइन तथा निर्माण सम्बन्धी निर्देशिका



नेपाल सरकार  
स्वास्थ्य तथा जनसंख्या मन्त्रालय  
यसभारत नगर

- Use of Authorized Budget
- Coordination with stakeholders
- Standard Design
- Construction Sites
- Master Plan
- Site Planning
- Signage and Spatial Orientation
- Doors and windows
- Sanitary Design
- Working Counters
- Toilets and waste disposal
- Lighting
- Ventilation
- Air Exhaust to minimize pathogens
- Climatic Design
- Infection Control
- Electrical Design
- Use of Solar Energy
- Heating Ventilation and Air Conditioning (HVAC) System
- Oxygen Gas Supply System:
- Choice of Building Material and Technology
- Universal Accessibility
- Dumbwaiter
- Architectural Detailing
- Project Management
- Handover
- Design Consideration for Hospital Waste Management
- Security Consideration
- Disaster Risk safety, management and preparedness
- Specific Guidelines for the Various Building types
- Guidelines for Different components of Health Facilities (OPD, IPD, ICU, Emergency, Diagnostics, CEONC, CSSD, Laundry, Mortuary etc)



# Support to MoH

## Standard Design and Guidelines for Health Infrastructure



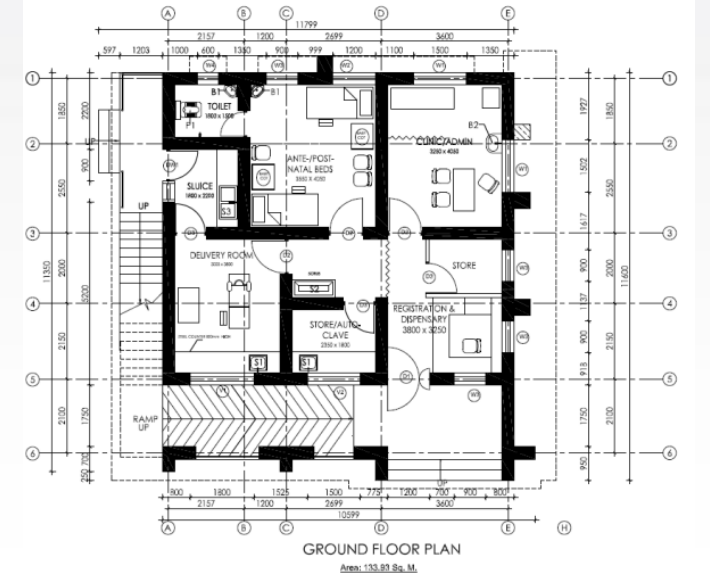
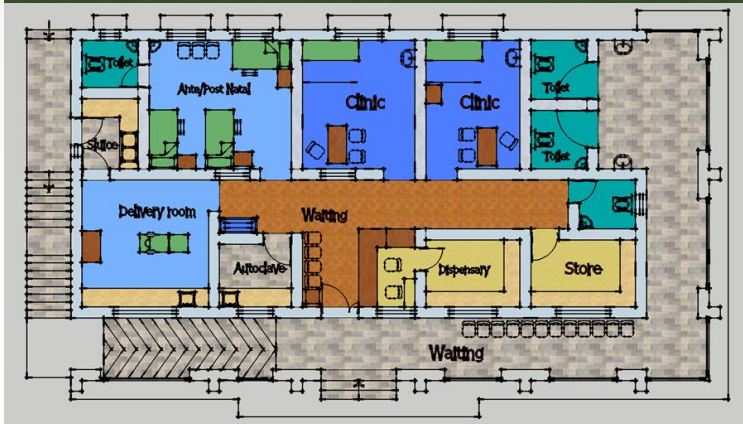
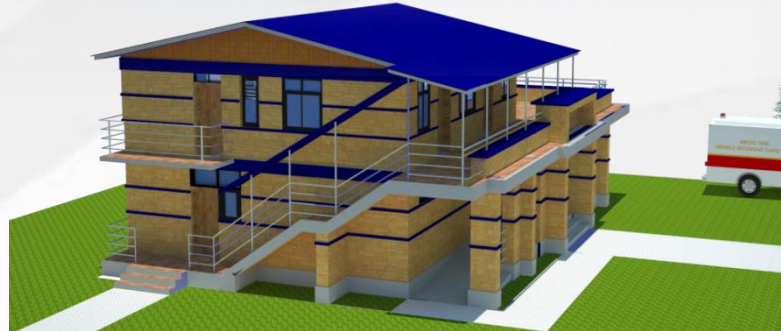
**HEALTH POST STANDARD TYPE A** - (for population above 12000)  
Total Floor area = 537.57 sqm





# Support to MoH

## Standard Design and Guidelines for Health Infrastructure



**HEALTH POST STANDARD TYPE B**  
(For Population 7001 to 12000)  
Total Floor area = 348.58sqm

**HEALTH POST STANDARD TYPE C**  
(For Population 3000 to 7000)  
Total Floor area = 302.47sqm

**HEALTH POST STANDARD TYPE D**  
(For Population below 3000)  
Total Floor area = 218.11sqm



# Support to MoH

## Standard Design and Guidelines for Health Infrastructure



Primary Hospital 'B' Class



Primary Hospital 'A' Class



# Support to MoH

## Standard Design and Guidelines for Health Infrastructure



**Secondary Level Hospital**



# Support to MoH

## Standard Design and Guidelines for Health Infrastructure



**Tertiary Level Hospital**

# Support to MoH

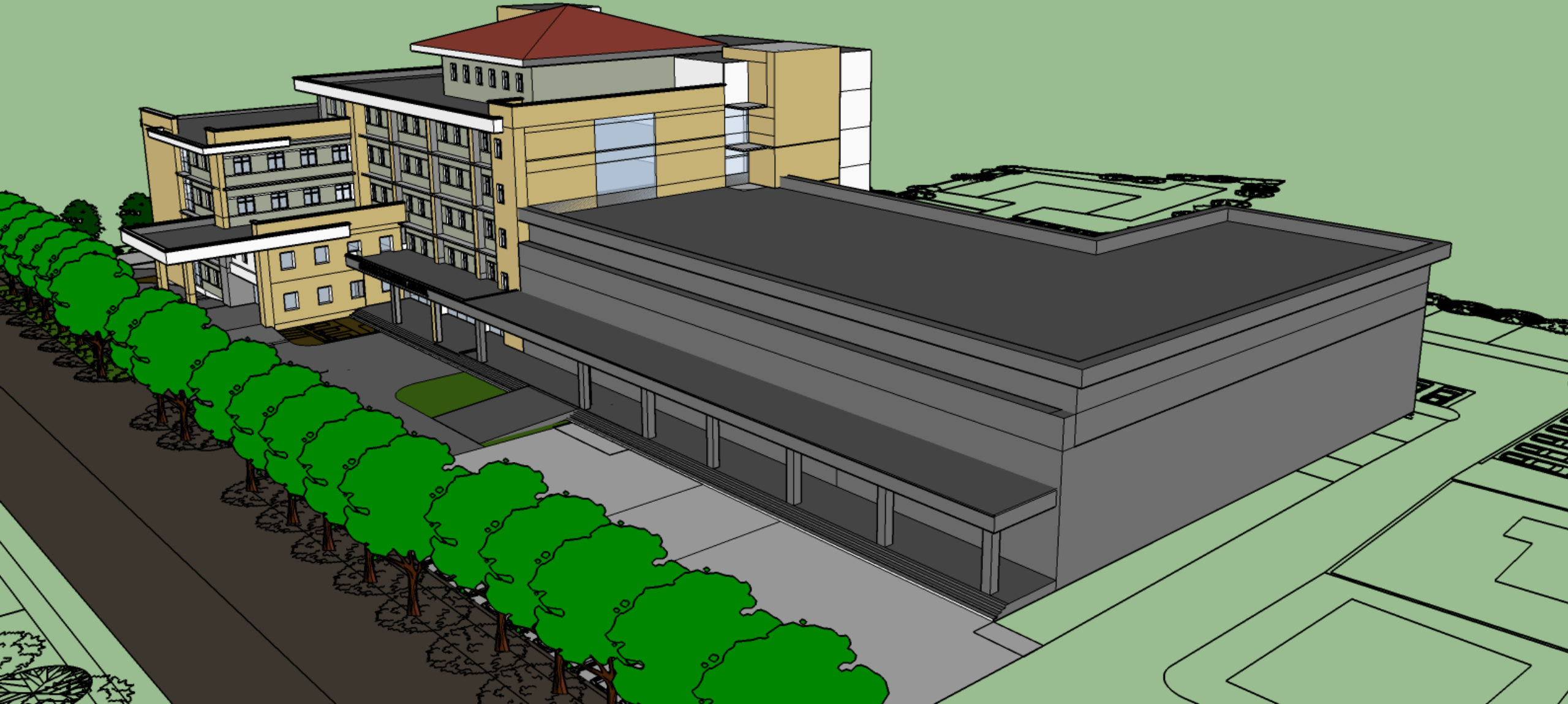
## Standard Design and Guidelines for Health Infrastructure

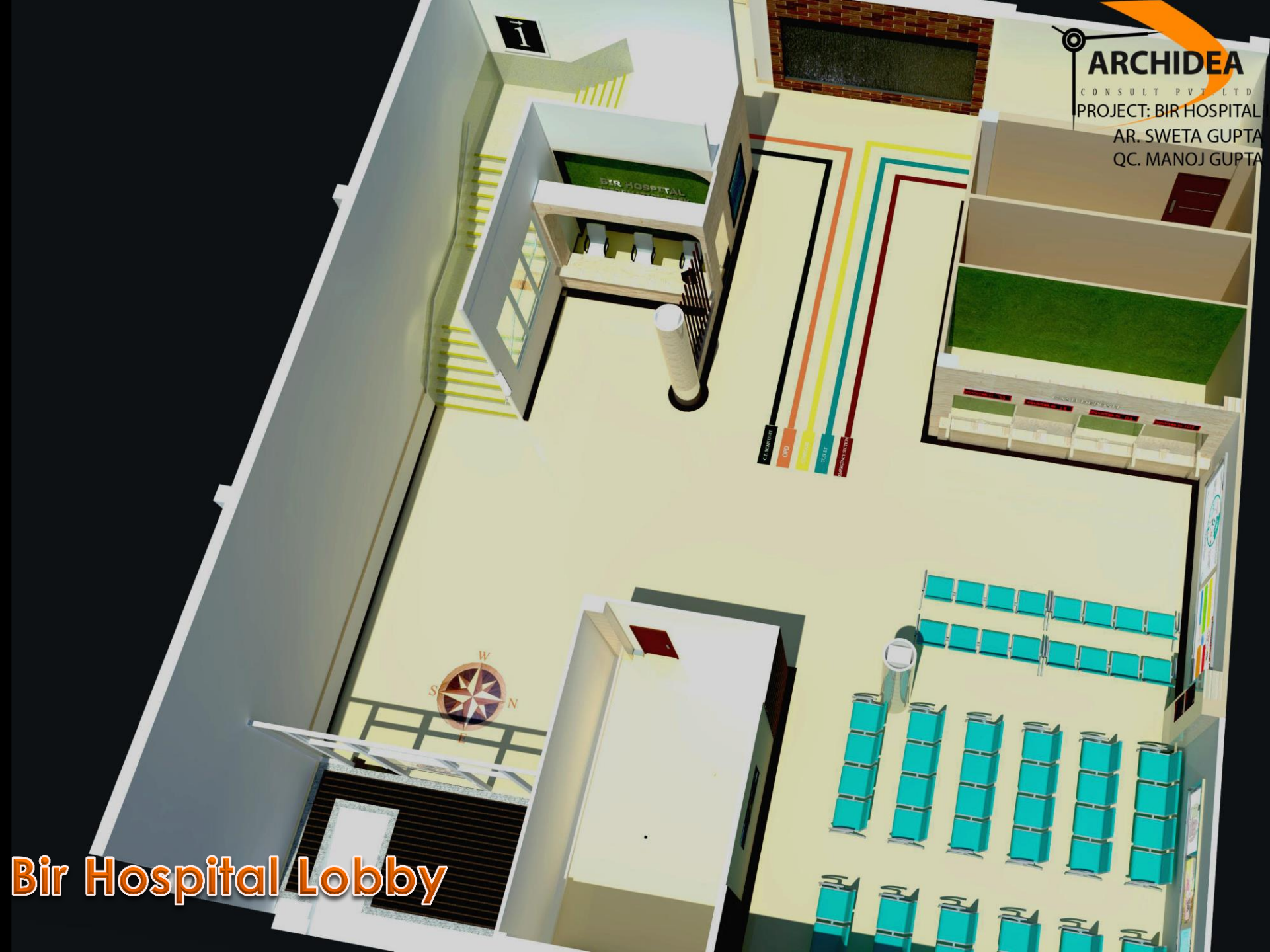
### Physical Infrastructure Development Status (2005/06-2015/16)

Construction Initiated through DUDBC	<b>1824</b>
Completed and waiting for handover	59
Completed and handed over	1120
Ongoing construction	545
Sick projects to the date	179



# Narayani Sub-Regional Hospital, Birgunj





# Renovation of Bir Hospital Lobby



# Renovation of Bir Hospital Lobby







**BIR HOSPITAL  
INFORMATION DESK**

COUNTER 01 75

COUNTER 02 15

# Renovation of Bir Hospital Lobby





INFORMATION DESK  
**Renovation of Bir Hospital Lobby**