

**Khyber Pakhtunkhwa Province, the Islamic Republic of Pakistan
Communication & Works Department (CWD)
Health Department (HD)
Planning & Development Department (PD)**

**DATA COLLECTION SURVEY
ON
THE IMPROVEMENT OF ACCESS TO
BASIC SOCIAL SERVICES AND
THE STRENGTHENING OF
COMMUNITY INFRASTRUCTURE
IN KHYBER PAKHTUNKHWA
IN
THE ISLAMIC REPUBLIC OF PAKISTAN

FINAL REPORT**

February 2022

Japan International Cooperation Agency

CTI Engineering International Co., Ltd.

ASIA Engineering Consultant Co., Ltd.

Fujita Planning Co., Ltd.

Matsuda Consultants International Co., Ltd.

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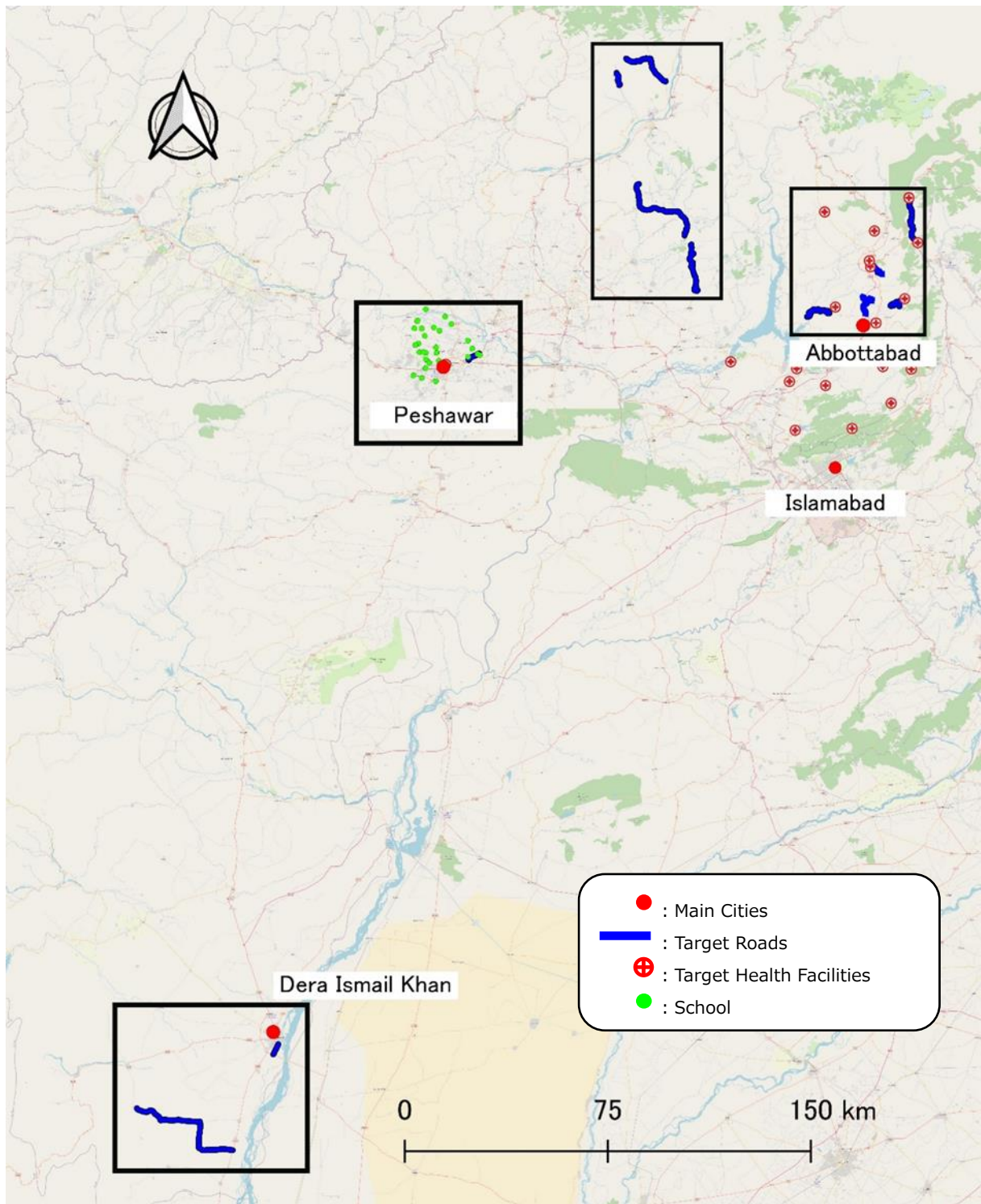
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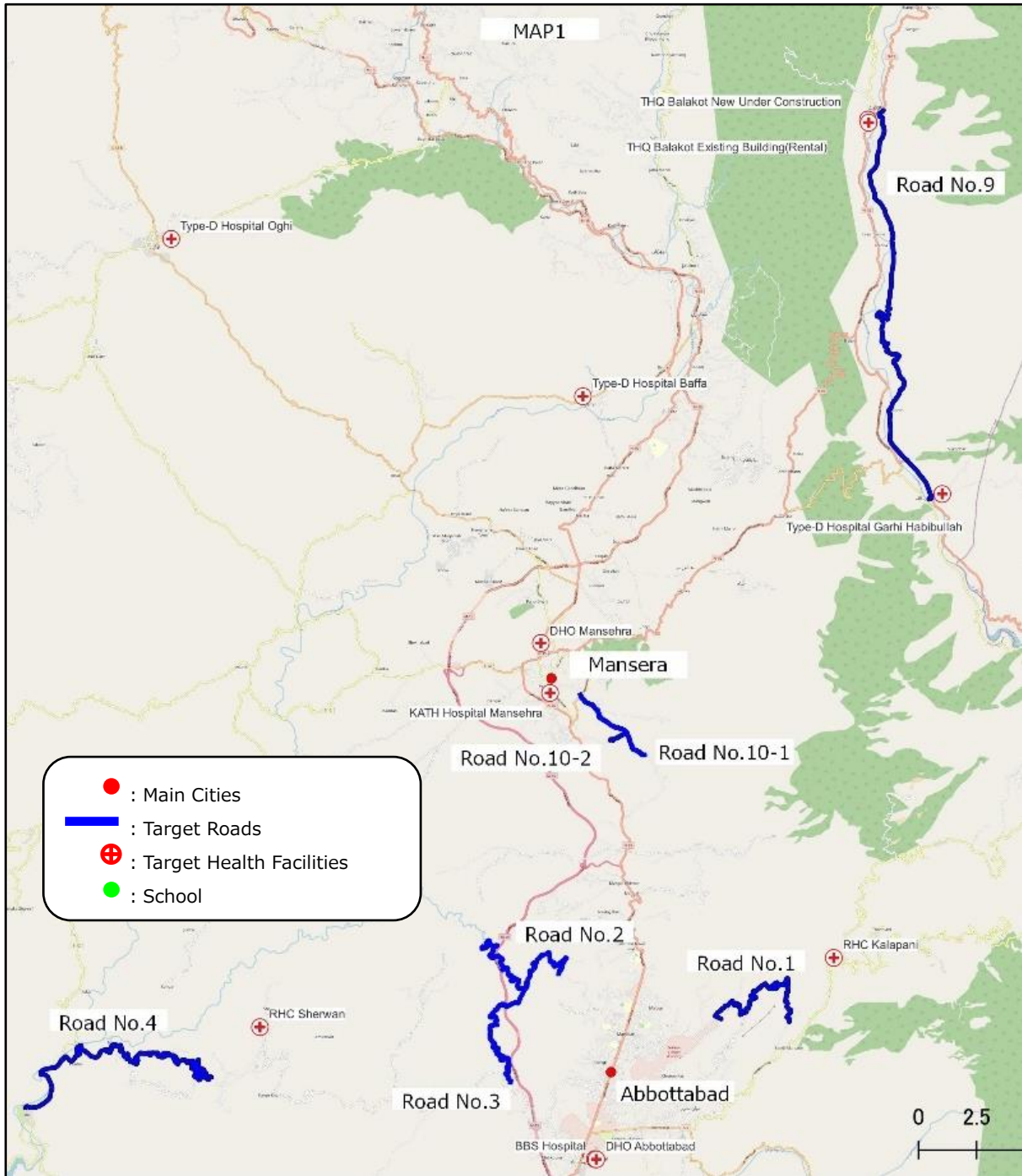
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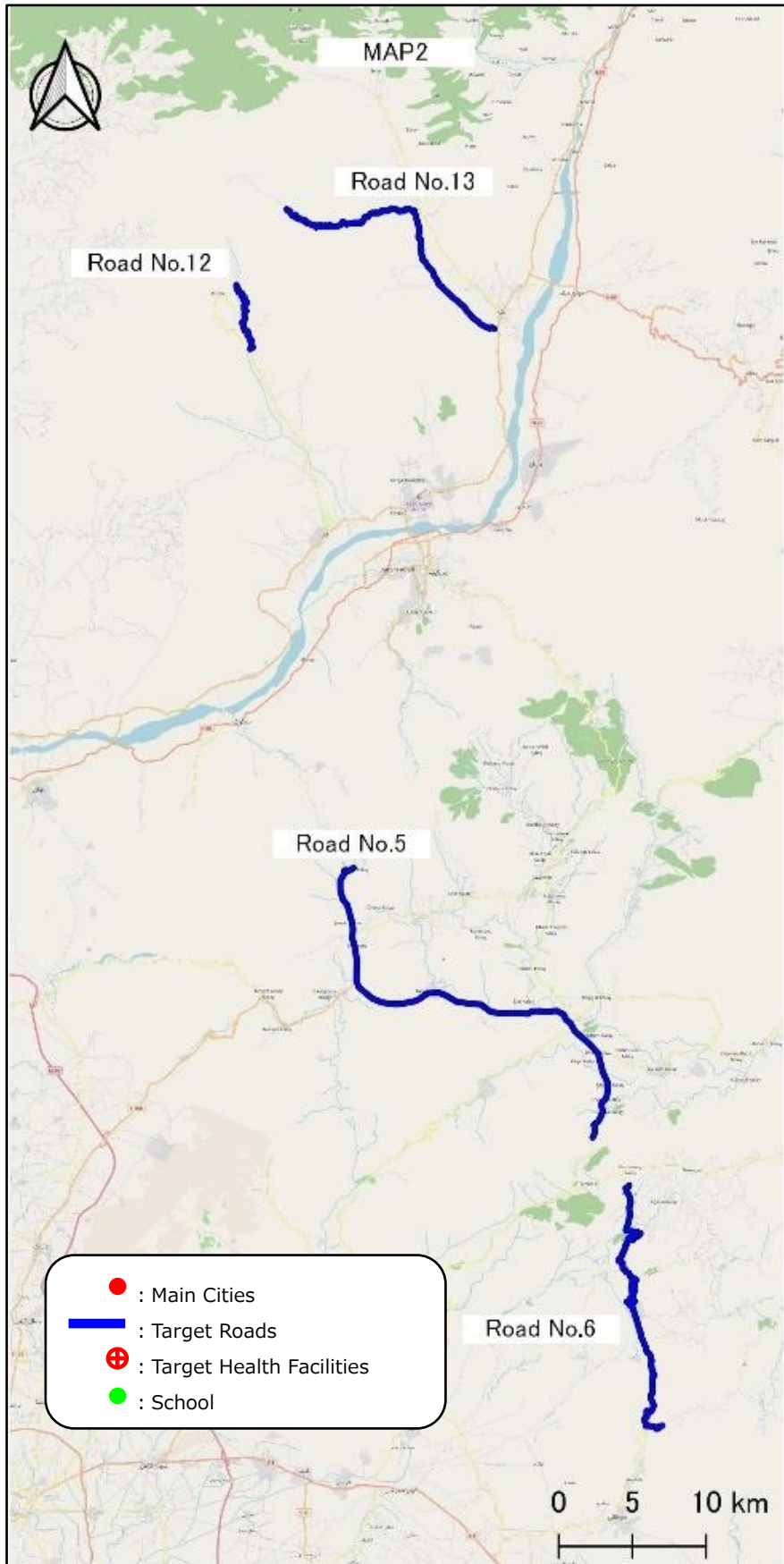
Location of Target Roads for the Survey



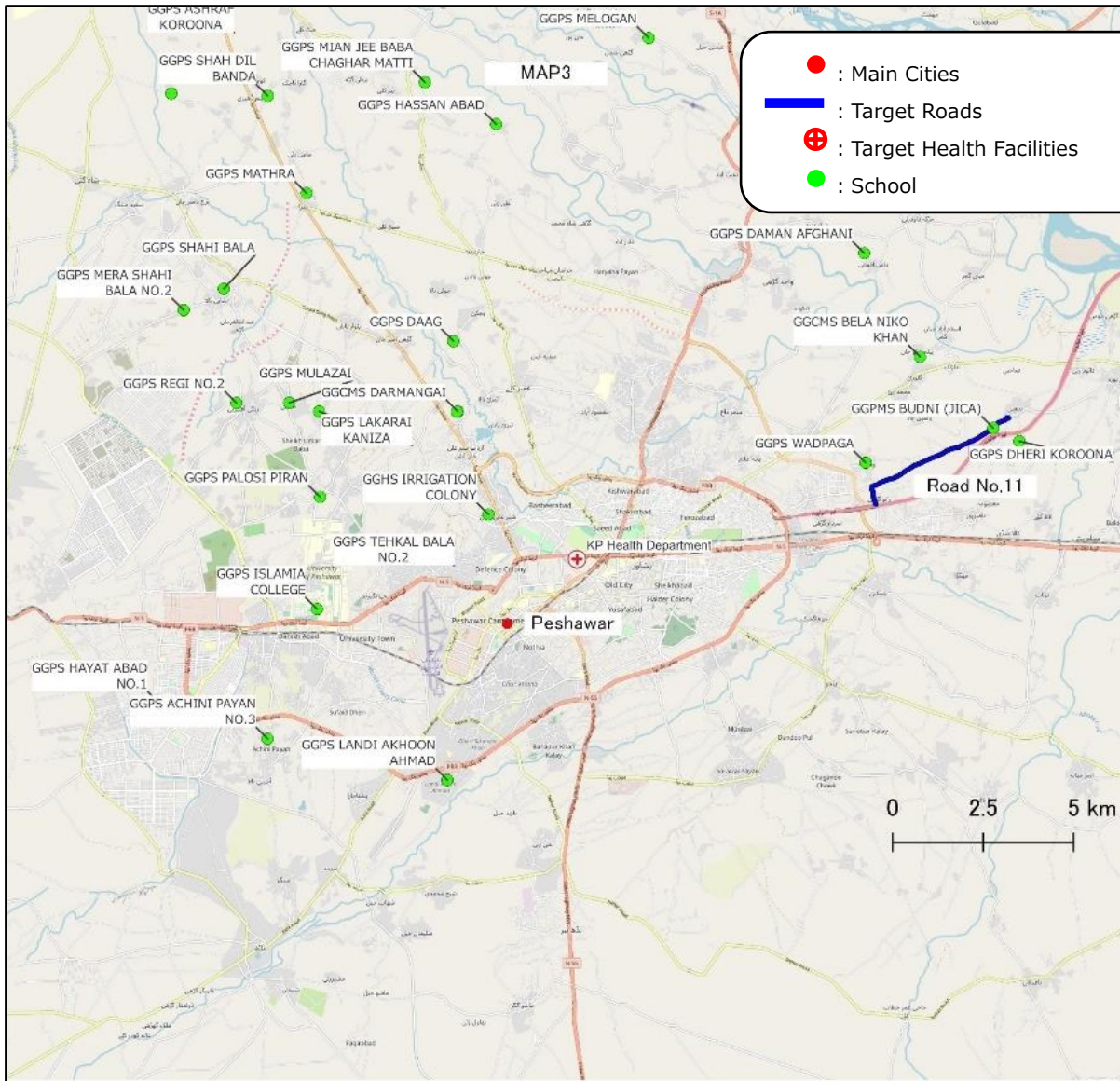
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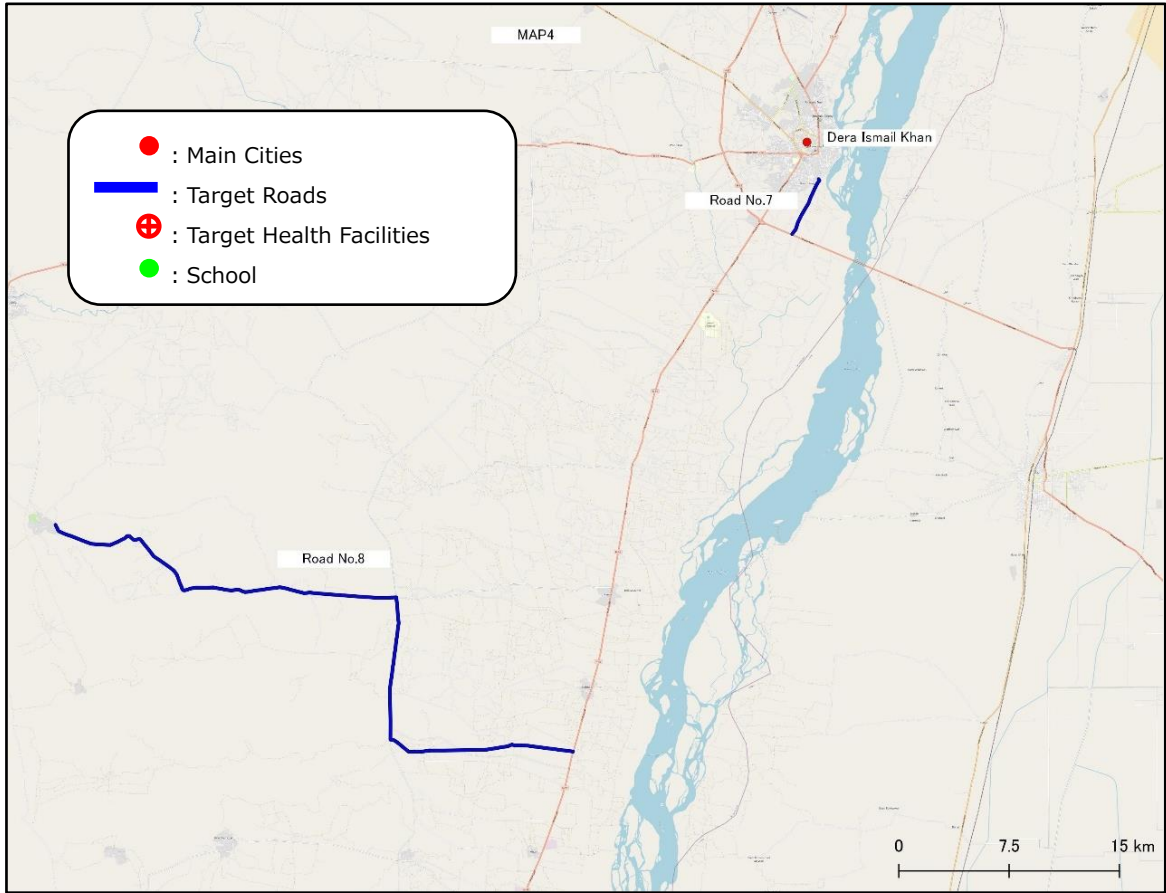
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Map-3



Map-4



Photos (Health Sector)

1. DHQ Haripur Hospital

	
<p>External View</p>	<p>General X-ray Apparatus</p>
	
<p>Infant Incubator</p>	<p>Binocular Microscope</p>
	
<p>Centrifuge</p>	<p>Washing Machine</p>

Photos (Health Sector)

2. CH KTS Haripur

	
<p>External view</p>	<p>Outer corridor</p>
	
<p>Mobile X-ray</p>	<p>Patient Bed</p>
	
<p>Microscope</p>	<p>Automatic X-ray Film Processor</p>

Photos (Health Sector)

3. TDH Khanpur

	
<p>External view</p>	<p>General X-ray Apparatus</p>
	
<p>Ultrasound Apparatus</p>	<p>Autoclave, tabletop</p>
	
<p>Dental Unit</p>	<p>Baby Cot</p>

Photos (Health Sector)

4. TDH Ghazi

 A photograph showing the exterior of T.H.Q Hospital Ghazi. A green sign above the entrance reads "T.H.Q HOSPITAL GHAZI" in English and Urdu, with a crescent moon symbol. A motorcycle is parked near the entrance.	 A photograph of a general X-ray apparatus in a clinical setting. A man in a dark uniform stands next to the white table. A blue cloth is on the table, and a large X-ray tube is mounted on the wall above.
<p>External view</p>	<p>General X-ray Apparatus</p>
 A photograph of an ultrasound apparatus. It features a monitor displaying a scan, a control panel with various buttons and knobs, and a probe.	 A photograph of an infant warmer. It is a white metal frame with a red interior, mounted on a stand with wheels. A control panel is visible on the side.
<p>Ultrasound Apparatus</p>	<p>Infant Warmer</p>
 A photograph of a patient bed in a ward. The bed has white linens and a red cushion. There are other beds visible in the background.	 A photograph of an operation light. The light fixture is suspended from the ceiling and has multiple adjustable lamps. The room below is an operating room with various medical equipment.
<p>Patient Bed</p>	<p>Operation Light</p>

Photos (Health Sector)

5. CH Kotla



External view



External view



Patient Bed



Autoclave, tabletop



Oxygen Cylinder



Medicine Cabinet

Photos (Health Sector)

6. CH Rehana

	
External view	Ultrasound Apparatus
	
Autoclave, tabletop	Dental Unit
	
Binocular Microscope	Examination Light

Photos (Health Sector)

7. BBS DHQ Abbottabad Hospital

	
<p>External view</p>	<p>General X-ray Apparatus</p>
	
<p>Patient Monitor</p>	<p>Dental Unit</p>
	
<p>Suction Unit</p>	<p>Operating Light</p>

Photos (Health Sector)

8. TDH Havelian

	
<p>External view</p>	<p>General X-ray Apparatus</p>
	
<p>Dental Unit</p>	<p>Centrifuge</p>
	
<p>Binocular Microscope</p>	<p>Suction Unit</p>

Photos (Health Sector)

9. TDH Lora

 The photograph shows the entrance of Type D Hospital Lora. A blue sign above the entrance reads "TYPE D HOSPITAL LORA" in English and Urdu. Below it, a sign in Urdu reads "جنرل اوپن ڈی". The entrance has two glass doors and is flanked by pillars.	 The photograph shows a general X-ray apparatus in a clinical setting. It features a long, green-topped table and a large, adjustable X-ray tube head mounted on a stand. The room has white walls and a window with blinds.
<p>External view</p>	<p>General X-ray Apparatus</p>
 The photograph shows a portable ultrasound apparatus. It consists of a white machine with a monitor and a control panel, mounted on a four-wheeled stand. A probe is attached to the machine.	 The photograph shows a suction unit, likely a Dixon brand. It has two large, clear plastic collection chambers on top of a white base. The base has a control panel with a dial and buttons.
<p>Ultrasound Apparatus</p>	<p>Suction Unit</p>
 The photograph shows a dental unit in a clinical setting. It includes a blue dental chair, a large overhead dental light, and various dental equipment on a counter. The room has a window with blinds.	 The photograph shows a binocular microscope on a laboratory bench. The microscope is white and black, with two eyepieces. There are other laboratory items like a green rack and a white container on the bench.
<p>Dental Unit</p>	<p>Binocular Microscope</p>







Photos (Health Sector)

10. CH Tajwal

 A photograph showing the exterior of a long, single-story building with a white facade and a corrugated metal roof. There are several windows and a central entrance. A few people are visible near the entrance. The building is surrounded by trees and a dirt area.	 A photograph showing a different angle of the exterior of the building, focusing on a corner with a window and a door. The building has a white facade and a corrugated metal roof. The ground is dirt and there are some trees in the background.
<p>External view</p>	<p>External view</p>
 A photograph of a general X-ray apparatus in a room. The apparatus is a large, white, rectangular table on a stand. There are some cables and a window in the background.	 A photograph of a dental unit in a room. The unit is a large, white, rectangular table on a stand. There is a green chair in front of it. There are some windows and a mirror in the background.
<p>General X-ray Apparatus</p>	<p>Dental Unit</p>
 A photograph of a patient bed in a room. The bed is a large, white, rectangular table on a stand. There are several other beds in the room. There are some windows and a door in the background.	 A photograph of an operation light in a room. The light is a large, white, rectangular fixture on a stand. There is a green table in front of it. There are some windows and a door in the background.
<p>Patient Bed</p>	<p>Operation Light</p>

Photos (Health Sector)

11. CH Kalapani

	
<p>External view</p>	<p>Ultrasound Apparatus</p>
	
<p>Dental Unit</p>	<p>Dental X-ray</p>
	
<p>Centrifuge</p>	<p>Weighing Machine Adult</p>

Photos (Health Sector)

12. RHC Mohribedbehn

 A photograph showing the exterior of a building with a brick wall and a metal gate. The building has a red roof and is situated in a dry, open area under a clear blue sky.	 A photograph of a general X-ray apparatus in a room. It features a large wooden table in the foreground and a complex X-ray machine with a large detector panel and a control console in the background.
<p>External view</p>	<p>General X-ray Apparatus</p>
 A photograph of an ultrasound apparatus in a room. The machine is mounted on a stand and has a large screen and control panel. A person's hand is visible near the machine.	 A photograph of a mobile operation light in a room. The light is mounted on a stand and has a large, circular, multi-lens head. A person's hand is visible near the light.
<p>Ultrasound Apparatus</p>	<p>Operation Light, mobile</p>
 A photograph of an operation table in a room. The table is a long, flat surface on a stand, with a person's hand visible near the table.	 A photograph of a wheelchair in a room. The wheelchair is a standard four-wheeled chair with a person's hand visible near the chair.
<p>Operation Table</p>	<p>Wheel Chair</p>

Photos (Health Sector)

13. CH Nathiagali

	
<p>External view</p>	<p>Ultrasound Apparatus</p>
	
<p>Suction Unit</p>	<p>Hot Air Sterilizer</p>
	
<p>ECG</p>	<p>Dental Unit</p>

Photos (Health Sector)

14. CH Khanspur

	
<p>External view</p>	<p>General X-ray Apparatus</p>
	
<p>Ultrasound Apparatus</p>	<p>Infant Incubator</p>
	
<p>Operation Table</p>	<p>Operation Light, mobile</p>

Photos (Health Sector)

15. CH Sherwan

	
External view	External view
	
General X-ray Apparatus	Ultrasound Apparatus
	
Binocular Microscope	Centrifuge

Photos (Health Sector)

16. KATH DHQ Mansehra Hospital

	
<p>External view</p>	<p>General X-ray Apparatus</p>
	
<p>Patient Monitor</p>	<p>Patient Monitor and Emergency Cart</p>
	
<p>Suction Unit</p>	<p>Dental Unit</p>

Photos (Health Sector)

17. TDH Garhi Habibullah

	
<p>External view</p>	<p>General X-ray Apparatus</p>
	
<p>Mobile X-ray Apparatus</p>	<p>Ultrasound Apparatus</p>
	
<p>Patient Monitor</p>	<p>Dental Unit</p>

Photos (Health Sector)

18. TDH Baffa

	
<p>External view</p>	<p>External view</p>
	
<p>Ultrasound Apparatus</p>	<p>Infant Incubator</p>
	
<p>High Pressure Steam Sterilizer</p>	<p>Binocular Microscope</p>

Photos (Health Sector)

19. THQ Balakot

	
<p>External view</p>	<p>Mobile X-ray Apparatus</p>
	
<p>ECG</p>	<p>Patient Bed</p>
	
<p>Dental Unit</p>	<p>Binocular Microscope</p>

Photos (Health Sector)

20. TDH Oghi



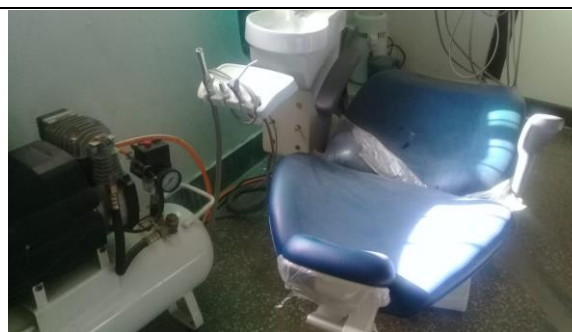
External view



Mobile X-ray Apparatus



Dental Unit



Dental Unit



Suction Unit



Centrifuge

Photos of Survey (Road Sector)



Traffic Volume (No.4)



Traffic Volume (No.5)



Traffic Volume (No.8)



Traffic Volume (No.13)



Riprap Wall (No.1 Sta. 5+650)



Box Culvert (No.2 Sta 2+295)

Photos of Survey (Road Sector)



Pipe Culvert (No.3 Sta 1+792)



Riprap Wall (No.4 Sta 1+700)



Arch Bridge (No.5 2+448)



RC Bridge (No.6 Sta. 3+200)



Riprap Wall (No.7 Sta. 0+038)



Box Culvert (No.8 Sta 3+420)

Photos of Survey (Road Sector)



Riprap Wall (No.9 Sta. 15+500)



RC Bridge (No.10 Sta 1+020)



Ditch (No.11 Sta. 0+527)



Box Culvert (No.12 Sta. 0+725)



PC Bridge (No.13 Sta. 10+050)



RC Bridge (No.13 Sta. 17+595)

Photos of Survey (Road Sector)

	
<p align="center">Pavement Condition (No.1 Sta. 4+000) Asphalt Very Bad</p>	<p align="center">Pavement Condition (No.3 Sta. 1+000) Katcha Very Bad</p>
	
<p align="center">Pavement Condition (No.6 Sta. 5+000) Asphalt Very Good</p>	<p align="center">Pavement Condition (No.9 Sta. 9+000) Asphalt Good</p>
	
<p align="center">High Risk Section (No.1 Sta. 5+600)</p>	<p align="center">High Risk Section (No.1 Sta. 7+400)</p>

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List of Abbreviations and Acronyms

Health Sector

BBS	Benazir Bhutto Shaheed
BHU	Basic Health Unit
CH	Civil Hospital
CMW	Community Midwife
DHO	Department of Health Office
DHQ	District Headquarter Hospital
EME	Electro Medical Equipment
ICU	Intensive Care Unit
KATH	King Abdullah Teaching Hospital
LHV	Lady Health Visitor
MHSDP	Minimum Health Services Delivery Package
PESCO	Peshawar Electric Supply Company
RHC	Rural Health Center
TDH	Type D Hospital

Road Sector

CBR	California Bearing Ratio
CWD	Communication & Works Department
ESAL	Equivalent Single Axle Load
NHA	National Highway Authority
PCI	Pavement Condition Index
PKHA	Pakistan Khyber Pakhtunkhwa Highway Authority

CHAPTER 1. Basic Concept of the Survey

1.1 Background

In the Islamic Republic of Pakistan (hereinafter referred to as “Pakistan”), the domestic industry has been severely damaged, particularly in the tourism, transportation and construction industries, by the slowdown in domestic and overseas economic activities due to COVID-19, and the migrants from overseas have also decreased. The IMF has indicated that the economic growth rate in 2020 is expected to decline to -1.5% (3.3% in fiscal year 2019). In addition, more than 2 million young people were unemployed as of August, and this may have an impact on social stability as well as further reductions in domestic demand and economic growth.

The Province of Khyber Pakhtunkhwa (hereinafter referred to as “KP province”) accounts for approximately 15% (approximately 30 million persons) of the nation's population, and as of September 15, 2020, the total number of COVID-19 infection is 37,140 people. According to the national government's “COVID-19 Socioeconomic Impact Assessment and Response Plan,” the causes of the spread of infections in KP province are difficulties in accessing medical facilities. In rural areas where 80% of KP province's population live, there are many steep mountainous areas and development of medical facilities is insufficient. As a result, infections are spreading due to shortage of COVID-19 tests and treatments. KP province is one of the provinces that have lagged behind other states in the country in terms of development. It is urgently needed to improve access to medical facilities in order to strengthen measures against COVID-19 and other infectious diseases such as polio, and to improve maternal and child health care, which is particularly insufficient. Furthermore, according to UNDP, the recent COVID-19 has affected approximately 2.7 million workers in KP Province, who are in danger of unemployment. In particular, 92% of workers in the construction industry are exposed to the danger of unemployment. KP province is in a geographically important position to interact with Afghanistan and ensure regional security. However, job security has become an urgent issue for regional stability, as many people in distress have been solicited by anti-government organizations due to unemployment and lack of livelihood means.

In May 2020, the Government of Japan announced the “COVID-19 Socioeconomic Impact Assessment and Response Plan,” which consists of (1) measures to strengthen healthcare and testing systems, (2) measures to protect the socially vulnerable, and (3) measures to stabilize the economy to maintain corporate activities, in order to mitigate the negative impact on the socioeconomic aspects of COVID-19. In particular, as an emergency response, the KP provincial governments announced a policy of expanding and enhancing access to medical facilities, and of recovering employment by increasing public works related to these. As such, the KP provincial government is working to improve its referral arrangements from primary medical facilities and access to medical facilities, considering secondary and tertiary medical facilities in Peshawar and Abbottabad as bases. With shrinking revenue and rising expenditure due to COVID-19, donor support is essential for prompt implementation of KP provincial

government-related initiatives.

Based on this background, the “Data Collection Survey on the Improvement of Access to Basic Social Services and the Strengthening of Community Infrastructure in Khyber Pakhtunkhwa” (hereinafter referred to as “the Survey”) is conducted to collect information for the improvement of medical facilities and local roads for Abbottabad, Mansehra, Haripur, etc. in KP Province. JICA provided technical assistance for roads in 2019 for the “Study on Khyber Pakhtunkhwa Rural Roads Improvement and Rehabilitation (Loan Account Technical Assistance)”. In addition, the KP Province Communication & Works Department (hereinafter referred to as “CWD”) is using the same local consultants for the survey to expand the area of the target roads and conducting “KP Provincial Rural Road Survey by CWD”. Regarding medical facilities, the “Data Collection Survey on Health Facilities and Equipment in the Islamic Republic of Pakistan” was conducted in 2018, and the “Preliminary Survey on the Rehabilitation of the Primary Health Facility in KP Province” is currently being conducted by local consultants.

The Survey, considering the results of these surveys, is conducted to collect and confirm information on the secondary medical facilities and equipment to provide basic medical services, and on rural roads which are considered as one of the main infrastructures in rural areas, aiming to examine high-priority projects for the future.

1.2 Objective of the Survey

In KP province, taking into account the results of the “Study on Khyber Pakhtunkhwa Rural Roads Improvement and Rehabilitation”, “KP Provincial Rural Road Survey by CWD (On loan Technical Support)”, the “Data Collection Survey on Health Facilities and Equipment in the Islamic Republic of Pakistan” and “Preliminary Survey on the Rehabilitation of the Primary Health Facility in KP Province”, the Survey is conducted to collect the data on the secondary medical facilities and equipment which are important for strengthening health system in the field of maternal and child health, and on the rural roads which are considered as one of the main infrastructures in rural areas, aiming to examine high-priority projects for the future.

1.3 Target Areas for the Survey

The target areas for the secondary medical facilities are Abbottabad, Mansehra, and Haripur in the eastern region of KP Province. The target areas for rural roads are Abbottabad, Mansehra, Peshawar, Bunnal, Swatt, D.I. Haan, etc.

I. Health Sector

CHAPTER 2. Present Condition of Health Sector in KP Province

2.1 Present Condition of Health Sector in KP Province

2.1.1 Regional Characteristics

KP province is located in the northern part of Pakistan, and is divided into 7 divisions and 25 districts. The population of KP province is 30 million (15% of the total population of the whole country) with the average annual population growth in the 20 years to 2017 is 2.89%, and 80% of the population lives in rural areas. In the three target districts, Mansehra has the largest population. Its rural population is 90%, and the average population growth rate is the highest at 2.47%. Abbottabad has the lowest rural population ratio at 78%, and the population is increasing at 2.20% per year. Haripur has the smallest population and the lowest average growth rate of 1.97%

Table 2.1-1 Population of Target Districts

	Population (2017)	Rural area	%	Urban area	%	Average population growth rate (%) (1998- 2017)
Haripur	1,003,031	876,454	87	126,577	13	1.97
Abbottabad	1,332,912	1,039,775	78	293,137	22	2.20
Mansehra	1,556,460	1,411,605	91	144,855	9	2.47
KP	30,523,371	24,793,737	81	5,729,634	19	2.89
Pakistan	207,774,520	132,189,531	64	75,584,989	36	2.40

Sources : KP Department of Health Office

2.1.2 Indicators of Health Sector in KP Province

(1) Indicators for Newborns, Infants, and Babies

As for the child health indicators in KP Province, the mortality rate for children under 5 years old (per 1,000 live births) has steadily improved from 98 to 64 and the infant mortality rate has improved from 80 to 53 from 1990 to 2017. Although the mortality rate is lower than any other state in Pakistan, the difference in mortality rate between urban and rural areas in KP province is large. On the other hand, neonatal mortality has remained stagnant since the early 2000s, and it is presumed that the causes are low mother's antenatal care and institutional delivery rate. The main causes of death for children under the age of 5 in KP province are preterm complications, neonatal asphyxia, pneumonia, diarrhea and malaria, and neonatal death is a major problem with childbirth care. Early diagnosis and treatment at primary medical facilities and referral of patients to higher-level medical facilities are important for measures against pneumonia, diarrhea, and malaria. It is necessary to increase facilities which can provide necessary medical services since about 80% of the population lives in rural areas.

Table 2.1-2 Transition of Child Mortality Rate

	Before 1990	Early 2000	Around 2010	2017-18
Under 5 mortality rate (per 1,000 live births)	98	75	70	64 (urban 29, rural 45)
Infant mortality rate (per 1,000 live births)	80	63	58	53 (urban 36, rural 59)
Newborn mortality rate (per 1,000 live births)	48	41	41	42 (urban 41, rural 69)

Source : PDHS2017-18

(2) Indicators for Childbirth and Maternity

Pakistan's maternal mortality rate fell from 1990 to 2017 from 431/100,000 to 140/100,000 according to World Development Indicators, but it remains high. The reasons for this include low institutional delivery rates and low rate of antenatal care.

Institutional delivery rate of KP Province is 61.8% (urban 71.6%, rural 59.8%), and is lower than that of Punjab and Sindh. In addition, the percentage of pregnant women who received antenatal cares by doctors during pregnancy is 76.1% (90.7% in urban areas and 72.9% in rural areas), which was below 82% in the whole country, and 21.2% of pregnant women in rural areas did not receive antenatal care. Lack of early detection/early response to high-risk pregnancies through antenatal cares and also lack of continuous follow-up during pregnancy and after childbirth lead to worsening of symptoms and death of pregnant women in KP province. In rural areas, access to medical services is difficult due to shortage of medical facilities and delays in development of transportation infrastructure.

Table 2.1-3 Comparison of Institutional Delivery Rate with Other States

	KP	Punjab	Sindh	Balochistan	Pakistan
KP (%)	61.8	68.9	71.8	34.6	66.2
Urban (%)	71.6	80.5	88.7	55.2	-
Rural (%)	59.8	63.5	58.2	25.8	-

Source : PDHS2017-18

Table 2.1-4 Providers of Antenatal Cares Nationwide and in KP Province

	Pakistan	KP	Urban	Rural
Doctor (%)	82.0	76.1	90.7	72.9
Nurse/Midwife/LHV (%)	4.2	4.0	1.5	4.5
Others (%)	1.7	1.4	1.7	1.3
Without seeing a doctor (%)	12.2	18.5	6.1	21.2

Source : PDHS2017-18

In the target three districts, the facility mortality and mortality rate of Mansehra and Haripur are higher than the average of KP province. With regards to maternal mortality and infant mortality rate, the situations of the three districts are worse than the average of KP province. For Mansehra, the percentage of rural population is large, but the number of facility delivery is the least. The maternal mortality rate of Mansehra is serious, being 1209.51/100,000 and much higher than 170.58/100,000 of KP province average.

Table 2.1-5 Facility Mortality and Mortality Rate

	No. of patient with first examination	No. of deaths	Mortality rate
Haripur	1,140,797	797	0.70
Abbottabad	1,142,641	660	0.58
Mansehra	1,241,091	904	0.73
KP	21,458,267	14,625	0.68

Source : District Health Information System Morbidity Rate and Number of Deaths (012020-122020)

Table 2.1-6 Health Indicators for Pregnant Women and Children in Medical Facility

	Delivery in facility	Number of facility death			Facility mortality rate		
		No. of maternal mortality	No. of deaths under 5 years old	No. of infant death	Maternal mortality rate (/100,000)	Under 5 mortality rate (/1,000)	Infant mortality rate (/1,000)
Haripur	9,026	70	1	439	775.54	0.11	48.64
Abbottabad	7,896	29	0	451	367.27	0.00	57.12
Mansehra	7,441	90	74	685	1209.51	0.94	92.06
KP	243,879	416	3,206	4,324	170.58	13.15	17.73

Source : District Health Information System Mortality Rate (Maternal, Infant, Under 5 Children) (012020-122020)

(3) Indicators for Infectious Diseases

Pakistan is one of the two countries with remaining wild polio outbreaks, with the highest number of new cases from KP province, accounting for 72% of the national total (as of December 2019). Vaccination, along with improving maternal and child health, is one of the priority issues of the KP Health Department.

The vaccination rate in Pakistan seems to be about 70-80 % as a whole, but the situation is different in each state. For KP province, the coverage rate of vaccinations (against polio, tuberculosis, measles, tetanus and others) is 54.7% (urban 75.5%, rural 50.6%), which is lower than 65.5% of national average. It is an issue that there are many unvaccinated children in and around the mountainous area.

2.1.3 Human Resources for Health Sector in KP Province

In Pakistan, in addition to health personnel such as doctors, dentists, nurses and laboratory technician, there are lady health workers (hereinafter referred to as “LHW”), lady health visitors (hereinafter referred to as “LHV”) and community midwife (hereinafter referred to as “CMW”), who are in charge of primary health in the community. LHW training began in the family planning and primary health care program started in 1994. LHW is in charge of about 1,000 residents, and responsible for primary health care (prevention and treatment of disease, family planning, health education, promotion of vaccination, etc.) in the community. CMW began in the maternal and child health program launched in 2006 and is responsible for about 5,000 people and provides maternal/newborn care in the community. LHWs and CMWs are selected from among the women living in the community. LHVs are assigned to a primary medical facility, providing basic nursing care and maternal services.

Issues of healthcare personnel include human resource shortages, imbalance in human resources allocation between urban and rural areas, and inadequate technology. Health human resource development is one of the eight core pillars of the health development vision, and the Pakistan government needs to secure 4.45 doctors, nurses and midwives per 1,000 people in order to achieve the UHC and SDGs. The shortage of female healthcare workers such as nurses and midwives is a serious problem for Pakistan, and issues for healthcare personnel in KP province are similar to the national issues, and the situations are more serious than the national average.

Table 2.1-7 Number of Registered Doctors, Nurses as of the End of 2017

	Doctor • Specialist	(/1,000)	Nurse/Midwife/LHV	(/1,000)
Punjab* ¹	97,866	0.83	65,990	0.56
Sindh	74,166	1.55	21,644	0.45
KP * ²	26,963	0.76	13,672	0.39
Balochistan	6,157	0.50	2,740	0.22
Pakistan	205,152	0.96	104,046	0.49

*1 Including Islamabad Special Zone

*2 Including Federally Administered Tribal Areas (FATA)

Source : Pakistan Human Resources for Health Vision 2018-30

Table 2.1-8 shows that the average annual income of healthcare occupation in KP province. The rate of increase varies depending on each occupation, but it is increasing every year. The annual income of doctors is about 1,800,000 to 1,200,000 PKR, and that of nurses and medical technicians is about 650,000 PKR. Midwives have a low salary of 276,000 PKR compared to other healthcare occupations, which is one of the reasons for the shortage of midwives.

**Table 2.1-8 Average Annual Income and Trends in Health Care and Other Major Occupations
in KP Province**

Unit: PKR

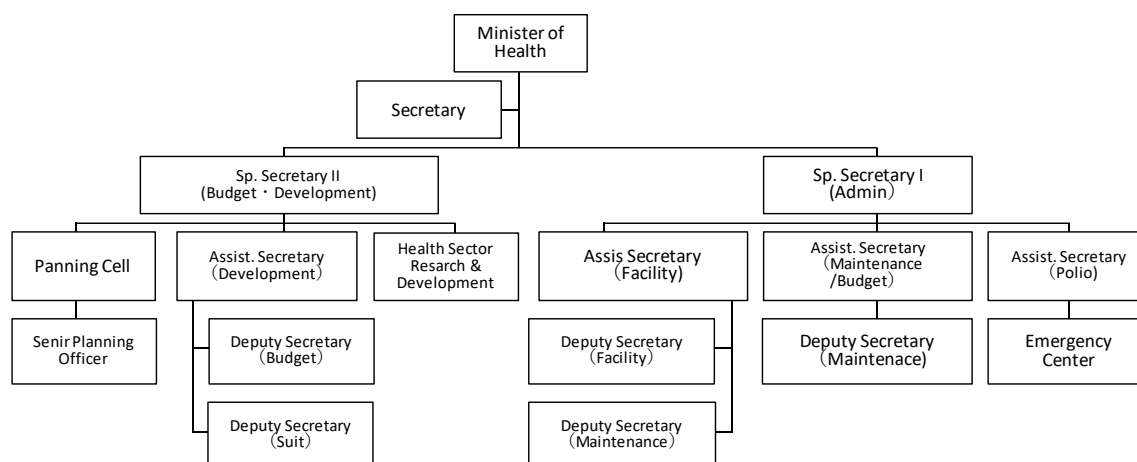
	2018	2019	2020
Medical officers	1,440,000	1,560,000	1,620,000
Specialists	1,600,000	1,800,000	1,860,000
Dental surgeons	1,440,000	1,560,000	1,620,000
Pharmacist	723,000	790,000	858,000
Physiotherapist	723,000	790,000	858,000
Nurses	652,000	675,000	675,000
Midwives	240,000	264,000	276,000
Radiologists	420,000	456,000	480,000
Pathologists	420,000	456,000	480,000
Bio-medical engineer	340,000	350,000	360,000
Accountant	702,000	756,000	858,000
Driver	240,000	240,000	300,000
General affairs	790,000	844,000	897,000
Other staff	198,000	210,000	264,000
Contract employee	198,000	210,000	264,000

Source : KP DHO

2.2 Administration of Health Sector in KP Province

2.2.1 Administrative Structure of Health Sector

The organization structure of the Health Department of the KP provincial government is as follows.



Source: KP DHO

Figure 2.2-1 Organization Chart of Health Department of KP Provincial Government

2.2.2 Staffing and Financial Status of Health Sector

The government of KP province has 34 departments, of which the health department is responsible for the health sector. Both the revenue and expenditure of the KP provincial government in 2021 have doubled from 2017. The expenditure (planned) in 2021 is 111.8 billion PKR of which 7.86% is allocated to the health department. Both the revenue and expenditure of the health department are also increasing every year in line with the increase in revenue and expenditure of the state government, with revenue in 2021 being 2.4 times higher than in 2017 and expenditure in 2021 being 2.1 times higher than in 2017.

Table 2.2-1 Changes of KP Province Budget (FY 2017-18 to FY 2021-22)

Unit: PKR in Billions

	2017	2018	2019	2020	2021 (plan)
1. Revenue	603.000	648.000	900.000	923.000	1,118.309
General receipt	525.190	598.406	851.196	831.255	930.210
Capital receipt	77.810	49.594	48.804	91.745	188.099
2. Expenditure	603.000	618.000	855.000	923.000	1,118.309
General expenditure	421.592	447.157	561.557	649.014	783.722
Capital expenditure	181.408	170.843	293.443	273.986	334.587

Source: KP DHO

Table 2.2-2 Changes of Health Department Budget of KP province

Unit: PKR in Billions

	2017	2018	2019	2020	2021(plan)
1.Revenues	0.638	1.102	1.257	1.100	1.503
2.Expenditures	67.703	78.558	108.020	124.531	142.231
DHO allocation ratio in state expenditure (%)	8.9	7.9	7.9	7.4	7.9

Source: KP DHO

2.2.3 Classification and Establishment Criteria of Medical Facilities

In KP province, the Minimum Health Service Delivery for Primary Health Care Facilities and the Minimum Health Services Delivery Package for Secondary Care Hospitals (hereinafter referred as “MHSDP”) provide as guidelines on the services with facilities and human resources. The MHSDP guidelines aim for one bed for every 2,500 people in the district to ensure access to the services and fairness. The KP guidelines classifies medical facilities into categories A, B, C, and D based on population and the number of beds of each type, and defines requirements for each category such as service to be provided, health personnel, equipment, and essential medicines.

Of the state category A hospitals, affiliate hospitals of medical universities (9 facilities) are positioned as the tertiary level facilities, and all other medical facilities (including District Headquarter Hospitals (hereinafter referred to as ”DHQ”) and Tehsil Headquarter Hospitals (hereinafter referred to as “THQ”)) are positioned at the secondary level regardless of its category. All the target facilities for the Survey are in the secondary level. Category A hospitals in the secondary level are developed to deal with most diseases, but when the hospitals cannot deal with them, patients will be referred to the tertiary-level general hospitals and specialized hospitals.

At the primary level, there are facilities such as Rural Health Center (hereinafter referred to as “RHC¹”), Basic Health Unit (hereinafter referred to as “BHU²”), dispensaries, and maternal and child health center.

Regarding the referral system of maternal and child health services, To provide basic obstetrics care such as normal delivery and caesarean section at secondary medical facilities is one of the aims, but, in practice, it is difficult to provide appropriate treatment to transferred patients due to deterioration of facilities and shortage of medical equipment. The tertiary medical facilities receive the large number of patients who should be treated in the primary and secondary medical facilities, and their conditions on medical equipment and facilities are similar to that of the secondary level facilities.

¹ Rural health Center

² Basic Health Unit

Table 2.2-3 Number of Public Medical Facilities in KP Province

Tertiary Level	Category A Medical university hospitals (350 beds)	9
Secondary Level	Category A (350 beds)	6
	Category B, C, D, DHQ /THQ	102
Primary Level	RHC	111
	BHU	771
	Dispensary	413
	Maternal and Child Health Centers	50
	Other Primary Medical Facilities	42

Source: KP DHO

Table 2.2-4 shows the contents of the secondary medical services and Table 2.2-5 shows the guideline for the number of assigned health personnel described in the MHSDP guidelines.

Table 2.2-4 Service Contents of the MHSDP

	Category A	Category B	Category C	Category D
No. of beds	350, 6 (Dialysis) 6 (Dental)	210, 6 (Dialysis) 6 (Dental)	110, 2 (Dental)	42, 1 (Dental)
Surgery	○	○	○	○
Medicine	○	○	○	○
Gynae/Obs	○	○	○	○
Pediatrics	○	○	○	○
Eye	○	○	○	
ENT	○	○	○	
Orthopedics	○	○	○	
Radiology	○	○	○	
Pathology	○	○	○	
Cardiology	○	○		
Psychiatry	○	○		
Chest/TB	○	○		
Dialysis Unit	○	○		
Dermatology	○	○		
Dentistry Unit	○	○		
Paeds surgery	○			
Neurosurgery	○			
Specialized Services				
Casualty	○	○	○	○
Labor room	○	○	○	○
Dentistry unit	○	○	○	○
Blood bank	○	○	○	○
Operation theater	○	○	○	○
ICU/CCU	○	○	○	
Dialysis unit	○	○		
Nursery Paeds/ICU	○	○		
Physiotherapy	○	○		

Source : Minimum Health Services Delivery Package for Secondary Care Hospitals

Table 2.2-5 Recommended Medical Staffing of the MHSDP

	No. of beds	Category A 350, 6 (Dialysis) 6 (Dental)	Category B 210, 6((Dialysis) 6 (Dental)	Category C 110, 2 (Dental)	Category D 42, 1 (Dental)
Specialists	Physician	2	2	1	1
	Surgeon	2	2	1	1
	Gynecologist	2	2	1	1
	Pediatrician	2	2	1	1
	Anesthetist	8	6	4	1
	Ophthalmologist	2	2	1	0
	ENT Specialist	2	2	1	0
	Pathologist	1	1	1	0
	Radiologist	2	2	2	1
	Orthopedic surgeon	2	2	1	0
	Trauma surgeon	1	0	0	0
	Forensic expert	1	0	0	0
	Neurosurgeon	1	0	0	0
	Psychiatrist	2	1	1	0
	Pulmonologist	1	1	0	0
	Dermatologist	2	1	0	0
	Gastroenterologist	1	1	0	0
	Urologist	1	1	0	0
	Pediatric surgeon	1	0	0	0
	Dental specialist	1	0	0	0
Cardiologist	2	1	0	0	
Neurologist	1	0	0	0	
	Total	40	29	15	6
Medical staff	General cadre medical officers	128 including at least 4 female general practitioners	79 including at least 4 female general practitioners	44 including at least 4 female general practitioners	16 including at least 4 female general practitioners
	Dental surgeons	6	6	2	1
	Total	134	85	46	17
Nursing staff	Charge nurse	4 nurses in 10 general beds, 1 nurse in 2 special beds, 2 nurses in 1 sever bed: 348	Same standard as A category: 211	Same standard as A category: 76	Same standard as A category: 16
	Head nurse	35	21	8	2
	Nursing superintendent	2	1	1	0
	Deputy chief nursing superintendent	1	1	0	0
	Chief nursing superintendent	1	0	0	0
	Total	387	234	85	18

Source : Minimum Health Services Delivery Package for Secondary Care Hospitals

2.2.4 Maintenance System of Medical Equipment in KP province

KP Province Health Department Central Electro Medical Equipment Workshop (hereinafter referred to as “EME”) is the organization responsible for maintenance of medical equipment of the medical facilities in KP province. EME has four workshop branches under the Central workshop, namely, Peshawar (same location as Central workshop), Bannu (located in DHQ Batkhela), Malakand and Abbottabad.

Table 2.2-6 EME Workshop Branches and Districts in Charge

No.	EME branch	District
1	Peshawar	1. District Peshawar, 2. Nowshera, 3. Charsadda, 4. Swabi, 5. Mardan, 6. Mehmand, 7. Khyber
2	Bannu	1. Kohat, 2. Karak, 3. Tank, 4. Lucki Marwat, 5. D.I. Khan, 6. Kurram, 7. South Waziristan, 8. North Waziristan, 9. Hangu 10. Orakzai
3	Malakand	1. District Malakand, 2. Swat, 3. Chitral, 4. Buner, 5. Shangla, 6. Upper Chitral, 7. Lower Chitral, 8. Upper Dir, 9. Lower Dir, 10. Bajaur
4	Abbottabad	1. Abbottabad, 2. Battagram, 3. Haripur, 4. Kolai-Palas, 5. Lower Kohistan, 6. Mansehra, 7. Tor Ghar, 8. Upper Kohistan

The recommended staffing for maintenance by MHS DP for the secondary medical facilities is presented in the table below. This recommendation is not yet fulfilled, and this remains as an issue.

Table 2.2-7 Recommended Staffing by MHS DP

No.	Staff	Categorization			
		A	B	C	D
1	Biomedical Engineer	1			
2	Biomedical Technician	1	1		
3	Plumber	3	2	1	1
4	Electrician	3	2	1	1

2.2.5 Other Donor’s Intervention Plans

The health related projects in-progress/implemented in the past three years in KP Province are as follows. Although the target area of “Human Capital Investment” by the World Bank overlaps with the target area of the Survey (in Haripur), there is no duplication of activities because its objective is improvement of equipment toward BHUs, not secondary medical facilities.

Table 2.2-8 Health Projects in KP Province

Unit : PKR

International organization	Period	Project name and objectives	Target area	Budget
KFW	2014-2024 (10years)	Social Health Protection : Improvement of health card system	- Chitral - Mardan - Kohat - Malakan	10 (Billion)
WB	2021-2024 (3years)	Human Capital Investment : Improvement of Equipment to BHUs	- Swabi -Nowshera, - Peshawar - Haripur	13 (Billion)
KFW	2016-2021 (5year)	Safe Blood : Improvement of Blood bank	- Peshawar - Abbottabad - Swat - Dera Ismail Khan	863.307 (Million)

CHAPTER 3. Present Condition of Target Facilities

3.1 Target Facilities

Of the secondary medical facilities in Haripur, Abbottabad, and Mansehra in KP province, the 20 facilities in Table 3.1-1 are selected as the target facilities. The process of selecting the facilities to be surveyed is as follows.

- Many of indicators of maternal and child health in KP province are lower than the national average and strengthening the health system in the field of maternal and child health is a major issue.
- The following situations are confirmed through discussions with the KP Health Department. (1) In improving health care system related to maternal and child health in KP province, there are issues in the referral system from primary medical facilities to secondary and tertiary medical facilities. (2) In KP province where there are many mountainous areas and access between bases is insufficient, it is necessary to improve and strengthen the facilities and equipment of the secondary and tertiary medical facilities in each district so that they can fully function. Therefore, it is considered that there is a potential need for future cooperation (grant-aid) by Japan to improve facilities and equipment for the secondary and tertiary medical facilities.
- In response to this, the data collection survey on the secondary and tertiary medical facilities was planned in the three eastern areas (Haripur, Abbottabad, and Mansehra) where Japanese staff/consultants are allowed to enter, keeping in mind that it will be used as a reference for consideration of future cooperation. As candidate medical facilities with high support needs, a list of 20 secondary medical facilities was submitted from the KP Health Department, thus those 20 medical facilities were targeted.
- In KP province, equipment improvement and functional enhancement of tertiary level facilities, new establishment and functional enhancement of secondary level facilities, upgrade to tertiary level, and upgrade of primary level facilities to secondary level have been carried out.

Table 3.1-1 Target Facilities

Haripur District	H-1	DHQ Haripur Hospital
	H-2	CH KTS
	H-3	Type-D Hospital Khanpur
	H-4	Type-D Hospital Ghazi
	H-5	CH Kotla
	H-6	CH Rehane
Abbottabad District	A-1	BBS DHQ Abbottabad Hospital
	A-2	Type-D Hospital Havelian
	A-3	Type-D Hospital Lora
	A-4	CH Tajwal
	A-5	CH Kalapani
	A-6	CH Mohribedbehn
	A-7	CH Nathiagali
	A-8	CH Khanaspur
	A-9	CH Sherwan
Mansehra District	M-1	KATH DHQ Mansehra Hospital
	M-2	Type-D Hospital Garhi Habibullah
	M-3	Type-D Hospital Baffa
	M-4	THQ Hospital Balakot
	M-5	Type-D Hospital Oghi

3.2 Service Status of Each Facility

The service status in 2020 collected from each target facility is as follows. Regarding maternal and child health, KP province aims to provide basic obstetric care such as normal delivery and caesarean section at the secondary medical facilities, but it has not been able to provide desired medical services. DHQ in each target district performed most of the caesarean section surgery, while some facilities have no delivery case. It is necessary to establish a maternal and child healthcare system that can provide an environment for safe childbirth, and to contribute to improvement of institutional delivery and access to prenatal care.

Table 3.2-1 Service Status in Haripur District

	H-1 DHQ Haripur Hospital	H-2 CH KTS	H-3 Type-D Hospital Khanpur	H-4 Type-D Hospital Ghazi	H-5 CH Kotla	H-6 CH Rehane
No. of bed	210	3	40	40	9	8
No. of outpatient	491928	-	51278	39011	12721	13945
No. of inpatient	31767	-	587	1152	-	-
Total no. of delivery	9367	-	209	314	-	21
Caesarean section surgery	1781	-	-	10	-	-
Abnormal delivery	1550	-	-	-	-	-

Source : Each target facility

Table 3.2-2 Service Status in Abbottabad District (1/2)

	A-1 BBS DHQ Abbottabad Hospital	A-2 Type-D Hospital Havelian	A-3 Type-D Hospital Lora	A-4 CH Tajwal
No. of bed	370	40	40	21
No. of outpatient	467723	87672	50000	-
No. of inpatient	19423	6290	540	-
Total no. of delivery	3978	1194	320	22
Caesarean section surgery	1567	88	-	-
Abnormal delivery	5	5	-	-

Source : Each target facility

Table 3.2-3 Service Status in Abbottabad District (2/2)

	A-5 CH Kalapani	A-6 CH Mohribedbehn	A-7 CH Nathiagali	A-8 CH Khanaspur	A-9 CH Sherwan
No. of bed	10	10	8	6	1
No. of outpatient	5885	14407	21904	7676	8459
No. of inpatient	-	181	-	-	-
Total no. of delivery	-	203	205	-	16
Caesarean section surgery	-	-	-	-	-
Abnormal delivery	-	21	-	-	-

Source : Each target facility

Table 3.2-4 Service Status in Mansehra District

	M-1 KATH DHQ Mansehra Hospital	M-2 Type-D Hospital Garhi Habibullah	M-3 Type-D Hospital Baffa	M-4 THQ Hospital Balakot	M-5 Type-D Hospital Oghi
No. of bed	350	60	40	10	8
No. of outpatient	281093	23235	108000	46757	26790
No. of inpatient	19940	1069	558	230	-
Total no. of delivery	4715	325	241	208	626
Caesarean section surgery	974	-	28	-	-
Abnormal delivery	5	-	-	-	-

Source : Each target facility

3.3 Present Condition of Target Facilities

3.3.1 Personnel Allocation

The MHS DP standards and allocation of medical personnel for the target medical facilities in 2021 are shown below.

1) Haripur District: 6 medical facilities

	MHS DP Standards		H-1 DHQ Haripur Hospital	H-2 CH KTS	H-3 Type-D Hospital Khanpur	H-4 Type-D Hospital Ghazi	H-5 CH Kotla	H-6 CH Rehane
	B	D	B		D	D		
No. of beds			210	3	40	40	9	8
Specialists	29	6	42	-	3	1	-	-
Anesthetists	6	1	3	-	-	-	-	-
Medical officers	79	16	129	8	14	15	5	7
Dental surgeons	6	1	8	1	3	2	-	1
Pharmacists	4	1	1	-	-	-	-	-
Nursing staff	234	18	134	-	3	3	-	-
Midwives	-	3	6	1	3	3	1	2
Radiologists	9	4	14	-	2	-	1	-
Pathologists	17	6	25	-	-	3	1	1
Nutritionists	2	0	-	-	-	-	-	-
Other medical staff	103	39	353	2	12	11	3	6
Total number staff	603	167	801	21	63	62	13	29

Source : KP DHO

2) Abbottabad District: 9 medical facilities

	MHS DP Standards		A-1 BBS DHQ Abbottabad Hospital	A-2 Type-D Hospital Havelian	A-3 Type-D Hospital Lora	A-4 CH Tajwal
	A	D	A	D	D	-
No. of beds			370	40	40	21
Specialists	40	6	41	4	-	-
Anesthetists	8	1	9	-	-	-
Medical officers	132	16	102	14	21	3
Dental surgeons	6	1	9	2	2	1
Pharmacists	7	1	-	1	2	-
Nursing staff	387	18	140	6	6	-
Midwives			-	1	1	1
Radiologists	13	4	21	-	-	-
Pathologists	27	6	20	2	1	-
Nutritionists	1	0	-	-	-	-
Other medical staff			126	9	3	3
Total number staff	1131	167	723	54	55	16

Source : KP DHO

	A-5 CH Kalapani	A-6 CH Mohribedbehn	A-7C H Nathiagali	A-8 CH Khanaspur	A-9 CH Sherwan
Total number staff	10	10	8	6	1
Specialists	-	-	-	-	-
Anesthetists	-	-	-	-	-
Medical officers	4	4	6	4	4
Dental surgeons	1	1	1	1	1
Pharmacists	-	-	2	2	1
Nursing staff	-	-	-	-	-
Midwives	1	1	1	1	1
Radiologists	-	-	1	1	-
Pathologists	1	1	1	1	-
Nutritionists	-	-	-	-	-
Other medical staff	5	2	1	-	-
Total number staff	15	12	28	14	18

Source : KP DHO

3) Mansehra District: 5 medical facilities

	MHSDP Standards		M-1 KATH DHQ Mansehra Hospital	M-2 Type-D Hospital Garhi Habibullah	M-3 Type-D Hospital Baffa	M-4 THQ Hospital Balakot	M-5 Type-D Hospital Oghi
	A	D	A	D	D		
Total number staff			350	60	40	10	8
Specialists	40	6	18	0	1	0	3
Anesthetists	8	1	-	0	0	0	0
Medical officers	132	16	106	12	22	11	13
Dental surgeons	6	1	7	1	2	1	0
Pharmacists	7	1	1	0	0	0	0
Nursing staff	387	18	105	6	11	5	2
Midwives	-	-	12	1	4	5	3
Radiologists	13	4	10	2	3	1	1
Pathologists	27	6	16	2	4	3	4
Nutritionists	1	0	-	0	0	0	0
Other medical staff			55	19	22	11	17
Total number staff	1131	167	469	52	96	49	60

Source : KP DHO

3.3.2 Medical Equipment

Status of the existing medical equipment and the equipment operator allocation acquired from the replies to the questionnaire and interviews in relation to the requested equipment are presented in continuation. "Yes" is shown in cases the facility does not have existing equipment but has operators who can operate the equipment. Additional requests of each facility stated in the questionnaires are shown in the Appendix Health-5.

1. DHQ Haripur Hospital, Category A

No	Equipment	Q'ty	Existing device	Operator
1	Construction of 20 beds Labor, Delivery, Recovery room & Postpartum (LDRP) Room. A fully equipped LDRP may be constructed; there is ample space within DHQ hospital main campus.	Fully equipped	(Construction included)	---
2	Construction of 15 beds fully equipped NICU with advanced neonatal care facilities; there is adequate space in within DHQ hospital main campus.	Fully equipped	(Construction included)	---
3	Pediatric echo machine	1	N/A	Yes
4	Laparoscope	1	N/A	Yes
5	Hysteroscope	1	N/A	Yes
6	CT scan	1	N/A	Yes
7	Doppler Ultrasound	1	1: Grey Scale Type	Yes
8	Resuscitation trollies Labor room	2	1: functional	Yes

2. CH KTS Haripur, Category C

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1, year 2015, functional	Yes
2	Heavy duty Generator	1	None	Yes
3	Patient beds with side table, locker and overbed trolley	100	2, functional	Yes

3. TDH Khanpur, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1	Yes
2	Ultrasound Machine	1	1: functional	Yes
3	Heavy duty Generator	1	None	Yes
4	Hematology Analyzer	1	1: non functional	Yes
5	ICU	1	None	Yes

4. TDH Ghazi, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional	Yes
2	Ultrasound Machine	1	1: functional	Yes
3	Heavy duty Generator	1	1: functional	Yes
4	Hematology Analyzer	1	1: non functional	Yes
5	ICU	1	1: functional	Yes

5. CH Kotla, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	None	Yes
2	Ultrasound Machine	1	None	Yes

No	Equipment	Q'ty	Existing device	Operator
3	Delivery table	2	1: functional	Yes
4	Baby Incubator	1	None	Yes
5	Heavy duty Generator	1	None	Yes
6	Baby warmer	2	None	Yes
7	Patient beds with side table, locker and overbed trolley	10	9	Yes
8	Lab incubator	1	None	Yes
9	Chemistry analyzer	1	None	Yes
10	Hematology Analyzer	1	None	Yes
11	Microscope	1	None	Yes
12	Defibrillator	1	None	Yes
13	Incinerator	1	None	Yes

6. CH Rehana, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	None	Yes
2	Ultrasound Machine	1	1: functional	Yes
3	Delivery table	2	1: functional	Yes
4	Baby Incubator	1	None	Yes
5	Heavy duty Generator	1	None	Yes
6	Baby warmer	2	1: functional	Yes
7	Patient beds with side table, locker and overbed trolley	10	8	Yes
8	Lab incubator	1	None	Yes
9	Chemistry analyzer	1	1: functional	Yes
10	Hematology Analyzer	1	None	Yes
11	Microscope	1	1: functional	Yes
12	Defibrillator	1	None	Yes
13	Incinerator	1	None	Yes

7. BBS DHQ Abbottabad Teaching Hospital, Category A

No	Equipment	Q'ty	Existing device	Operator
1	Laparoscope + Hysteroscope	1	None	Yes
2	Ultrasound machine with doppler + vaginal probe	1	1: functional	Yes
3	Baby resuscitation trolley with warmer	1	1: functional	Yes
4	Warmer	2	3: functional, 1990	Yes
5	Incubator	4	3: functional, 1990	Yes
6	Suctioning machine	3	1: functional	Yes
7	Pulse oximeters (high quality)	4	2: functional	Yes
8	Photo therapy lights machine	4	4: functional, 2016 and 2018	Yes
9	Ventilator	2	None	Yes
10	Weighing machine	2	None	Yes
11	Glucometer with strips	2	None	Yes
12	Cardiac monitor	2	None	Yes
13	Nebulizer	1	None	Yes

8. TDH Havelian, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional, 2015	Yes
2	Ultrasound Machine	1	1: functional, 2017	Yes
3	Heavy duty Generator	1	1: functional	Yes
4	Hematology Analyzer	1	1: functional	Yes
5	ICU	1	(Construction included)	N/A

9. TDH Lora, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional, 2015	Yes
2	Ultrasound Machine	1	1: functional, 2017	Yes
3	Heavy duty Generator	1	1: functional	Yes
4	Hematology Analyzer	1	1: functional	Yes
5	ICU	1	(Construction included)	N/A

10. CH Tajwal, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional, 2013	Yes
2	Ultrasound Machine	1	None	N/A
3	Delivery table	2	1: functional	Yes
4	Baby Incubator	1	None	N/A
5	Heavy duty Generator	1	1: functional, 2013	Yes
6	Baby warmer	2	None	N/A
7	Patient beds with side table, locker and overbed trolley	10	21	Yes
8	Lab incubator	1	None	Yes
9	Chemistry analyzer	1	(No information)	Yes
10	Hematology Analyzer	1	None	N/A
11	Microscope	1	(No information)	Yes
12	Defibrillator	1	None	N/A

11. CH Kalapani, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	None	Yes
2	Ultrasound Machine	1	1: functional	Yes
3	Delivery table	2	1: functional	Yes
4	Baby Incubator	1	None	Yes
5	Heavy duty Generator	1	None	Yes
6	Baby warmer	2	None	Yes
7	Patient beds with side table, locker and overbed trolley	10	10	Yes
8	Lab incubator	1	None	Yes
9	Chemistry analyzer	1	1: functional	Yes
10	Hematology Analyzer	1	None	N/A

No	Equipment	Q'ty	Existing device	Operator
11	Microscope	1	2: functional	Yes
12	Defibrillator	1	None	Yes
13	Incinerator	1	None	Yes

12. RHC Mohribedbehn, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional	Yes
2	Ultrasound Machine	1	1: functional	Yes
3	Delivery table	2	1: functional	Yes
4	Baby Incubator	1	None	N/A
5	Heavy duty Generator	1	None	N/A
6	Baby warmer	2	1: functional	Yes
7	Patient beds with side table, locker and overbed trolley	10	(no information)	N/A
8	Lab incubator	1	None	Yes
9	Chemistry analyzer	1	1: functional	Yes
10	Hematology Analyzer	1	None	N/A
11	Microscope	1	1: functional	Yes
12	Defibrillator	1	None	N/A

13. CH Nathiagali, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional	Yes
2	Ultrasound Machine	1	1: non functional	Yes
3	Delivery table	2	1: functional	Yes
4	Baby Incubator	1	None	N/A
5	Heavy duty Generator	1	None	N/A
6	Baby warmer	2	1: functional	Yes
7	Patient beds with side table, locker and overbed trolley	10	(no information)	Yes
8	Lab incubator	1	None	Yes
9	Chemistry analyzer	1	1: functional	Yes
10	Hematology Analyzer	1	1: functional	Yes
11	Microscope	1	1: functional	Yes
12	Defibrillator	1	None	N/A

14. CH Khanspur, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional, 2021	Yes
2	Heavy duty Generator	1	None	Yes
3	Patient beds with side table, locker and overbed trolley	10	6	Yes
4	Lab incubator	1	None	Yes
5	Chemistry analyzer	1	1: functional	Yes
6	Hematology Analyzer	1	None	Yes

No	Equipment	Q'ty	Existing device	Operator
7	Microscope	1	1: functional	Yes
8	Defibrillator	1	None	Yes

15. CH Sherwan, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Digital X-ray	1	1: functional	Yes
2	Ultrasound Machine	1	1: functional, 2018	Yes
3	Delivery table	2	1: functional	Yes
4	Baby Incubator	1	None	N/A
5	Heavy duty Generator	1	1: functional	N/A
6	Baby warmer	2	None	N/A
7	Patient beds with side table, locker and overbed trolley	10	(no information)	N/A
8	Lab incubator	1	None	Yes
9	Chemistry analyzer	1	1: functional	Yes
10	Hematology Analyzer	1	None	N/A
11	Microscope	1	1: functional	Yes
12	Defibrillator	1	None	N/A

16. KATH DHQ Mansehra Hospital, Category A

No	Equipment	Q'ty	Existing device	Operator
1	CTG machine	2	1: functional	Yes
2	Infant warmer / resuscitation	2	1: functional	Yes
3	Heavy duty suction machine	3	None	Yes
4	Cardiac monitor	4	1: functional, 2021	Yes
5	Ultrasound machine	1	6: functional, 2014	Yes
6	MVA kit	6	1: functional	Yes
7	Oxygen concentrator	1	None	Yes
8	Delivery table	6	1: functional, 2018	Yes
9	OT table	1	1: functional, 2008	Yes
10	Examination lights attached to roof for labor room	2	2: 2017, 1 functional	Yes
11	Incubator	4	3: 2017, 2 functional	N/A
12	Pediatric warmer	4	5: 2017, 2 functional	N/A
13	Photo therapy machine	6	None	Yes
14	Suction machine	6	1: functional	Yes
15	O2 concentrator	10	1: functional	Yes
16	Audiometer	4	None	Yes
17	Pulse oximeter	6	None	Yes
18	Cardiac monitor	2	None	Yes
19	Glucometer	6	None	Yes
20	Crash cart trolley	2	None	Yes
21	Ophthalmoscopes	4	None	Yes
22	BP apparatus pediatric cough	6	None	Yes
23	Pediatric ventilator	1	None	Yes
24	Resuscitation table pead	2	None	Yes

No	Equipment	Q'ty	Existing device	Operator
25	ECG machine pediatric	1	1: functional, 2016	Yes
26	Incubation set	2	None	Yes
27	Electric mosquito killer	10	1: functional	Yes
28	Baby warmer	4	1: functional	Yes
29	Heating blowers for Nursery	6	None	Yes

17. TDH Garhi Habibullah, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Baby warmer	1	1: functional	Yes
2	Delivery kit	1	50, disposable	Yes
3	D&C kit	3	1: functional	Yes
4	Autoclave	2	1: functional	Yes
5	USG Machine	1	None	Yes
6	Examination Light	1	1: functional	Yes
7	Nebulizer	2	1: functional	Yes

18. TDH Baffa, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Baby warmer	2	1: functional	Yes
2	Delivery kit	1	1: functional	Yes
3	D&C kit	5	1: functional	Yes
4	Autoclave	4	1: functional	Yes
5	USG Machine	1	1: functional	Yes
6	Examination Light	2	1: functional	Yes
7	Disposable delivery kit	15	---	Yes

19. THQ Balakot, Category D

No	Equipment	Q'ty	Existing device	Operator
1	Baby warmer	1	1: functional	Yes
2	Delivery kit	1	1: functional	Yes
3	D&C kit	3	1: functional	Yes
4	Autoclave	2	1: functional	Yes
5	USG Machine	1	1: functional	Yes
6	Examination Light	2	1: functional	Yes
7	Nebulizer	4	2: functional 2: non functional	Yes

20. TDH Oghi

No	Equipment	Q'ty	Existing device	Operator
1	Baby warmer	1	1: functional	Yes
2	Delivery kit	1	1: functional	Yes
3	D&C kit	2	1: functional	Yes
4	Autoclave	2	1: non functional	Yes
5	USG Machine	1	1: functional	Yes
6	Nebulizer	2	1: non functional	Yes

3.3.3 Maintenance System of Medical Equipment

As aforementioned in 2.4, the EME Abbottabad workshop under EME Central is in charge of maintenance of the 20 target facilities of the Survey. The EME Abbottabad workshop is located at BBS DHQ Abbottabad Hospital. It is in charge of medical equipment maintenance of 17 secondary facilities (including five DHQ Hospitals) and 399 primary medical facilities of the eight districts of Hazara division that includes Haripur, Abbottabad and Mansehra where the target facilities of the Survey are located.

Table 3.3-1 Medical Facilities, EME Abbottabad

No.	District	Secondary	Primary	Sub total
1	Abbottabad	4	106	110
2	Batgram	3	44	47
3	Haripur	5	65	70
4	Kolai-Palas	0	12	12
5	Lower Kohistan	1	10	11
6	Mansehra	3	133	136
7	Tor Ghar	0	10	10
8	Upper Kohistan	1	19	20
Total		17	399	416

The EME Abbottabad workshop has six staff members including the head which consists of two Electrical Engineers, two Mechanical Technologists and two Electrical Technologists and is performing inventory, preventive maintenance, corrective maintenance, check of equipment specification for procurement, etc. (Reply to the Questionnaire). However, the number of the workshop staff is not enough to deal with all requests from many facilities in appropriate manner. User training of the medical equipment is implemented by the supplier during the handing over. Additional user training by the EME Abbottabad workshop is difficult to implement due to lack of human resources.

When considering a general grant aid project, it is necessary to confirm in detail the KP Province Health Department's plan for the medical equipment maintenance system in order to ensure maintenance after implementation, and support for strengthening maintenance capacity should be examined as one of the options.

3.3.4 Operation Budget

The budget for the target facilities in 2021 is as follows. Staff salaries are paid directly by the Province Health Department.

(1) Haripur District: 6 target medical facilities

Unit : PKR

	H-1 DHQ Haripur Hospital	H-2 CH KTS	H-3 Type-D Hospital Khanpur	H-4 Type-D Hospital Ghazi	H-5 CH Kotla	H-6 CH Rehane
Revenue	(6month)					
KP DHO	-	-	-	-	-	-
Patient	3,660,250	243,776	762,019	115,597	76,280	206,974
Donor	-	-	-	-	-	-
Total Revenue	3,660,250	243,776	762,019	115,597	76,280	206,974
Expenditure						
Fuel, electricity, water	8,660,358	352,500	753,750	1,000,000	77,500	254,000
Medical materials/consumables	5,580,220	75,000	235,000	235,000	75,000	75,000
Stationary	741,000	15,000	20,000	25,000	15,000	15,000
Medical equipment maintenance	-	-	-	-	-	-
Facility maintenance	-	-	-	-	-	-
Vehicle maintenance	116,000	15,000	15,000	25,000	10,000	15,000
Training	-	-	-	-	-	-
Drug	36,000,000	1,300,000	2,750,000	3,000,000	1,400,000	1,450,000
Others	-	-	-	-	-	-
Total Expenditure	51,097,578	1,757,500	3,773,750	4,285,000	1,577,500	1,809,000

Source : KP DHO

(2) Abbottabad District 9 target medical facilities

Unit : PKR

	A-1 BBS DHQ Abbottabad Hospital I	A-2 Type-D Hospital Havelian	A-3 Type-D Hospital Lora	A-4 CH Tajwal
Revenue	2021/1 ~11	-	-	-
KP DHO	-	-	-	-
Patient	34,261,383	818,540	445,200	54,210
Donor	-	-	-	-
Total Revenue	34,261,383	818,540	445,200	54,210
Expenditure		-	-	-
Fuel, electricity, water	11,451,000	1,100,000	800,000	35,000
Medical materials/consumables	828,000	-	-	-
Stationary	264,000	50,000	50,000	3,500
Medical equipment maintenance	-	-	-	-
Facility maintenance	200,000	-	-	-
Vehicle maintenance	150,000	150,000	70,000	-
Training	-	-	-	-
Drug	63,001,000	600,000	800,000	200,000
Others	3,2391,000	100,000	200,000	30,000
Total expenditure	115,540,000	2,000,000	1,920,000	268,500

Source : KP DHO

Unit : PKR

	A-5 CH Kalapani	A-6 CH Mohribedbehn	A-7 CH Nathiagali	A-8 CH Khanspur	A-9 CH Sherwan
Revenue		-	-	-	-
KP DHO	-	-	-	-	-
Patient	52,660	155,862	156,920	94,170	112,480
Donor	-	-	-	-	-
Total Revenue	52,660	155,862	156,920	94,170	112,480
Expenditure	-	-	-	-	-
Fuel, electricity, water	80,000	200,000	400,000	350,000	200,000
Medical materials/consumables	-	-	-	-	-
Stationary	7,000	8,000	20,000	15,000	12,000
Medical equipment maintenance	-	-	-	-	-
Facility maintenance	-	-	-	-	-
Vehicle maintenance	-	20,000	45,000	150,000	50,000
Training	-	-	-	-	-
Drug	250,000	400,000	415,000	400,000	450,000
Others	200,000	20,000	40,000	70,000	-
Total expenditure	537,000	648,000	920,000	985,000	712,000

Source : KP DHO

(3) Mansehra District 5 target medical facilities

Unit : PKR

	M-1 KATH DHQ Mansehra Hospital	M-2 Type-D Hospital Garhi Habibullah	M-3 Type-D Hospital Baffa	M-4 THQ Hospital Balakot	M-5 Type-D Hospital Oghi
Expenditure					
KP DHO	-	-	-	-	-
Patient	240,000.000	-	-	-	-
Donor	-	-	-	-	-
Total Revenue	240,000.000	-	-	-	-
Expenditure					
Fuel, electricity, water	400,000/-	1,027,000	1,027,000	970,000	1,027,000
Medical materials/consumables	2,000,000/- 2,200,000/-	-	-	-	-
Stationary	5000,00	90,000	90,000	30,000	90,000
Medical equipment maintenance	KSA FUND	60,000	60,000	60,000	60,000
Facility maintenance		-	-	-	-
Vehicle maintenance	350,000/-	40,000	40,000	150,000	40,000
Training		-	-	-	-
Drug	50,000,000/-	1,500,000/-	1,500,000/-	12,500,000/-	1,500,000/-
Others	1,634,900/-	90,000/-	90,000/-	50,000/-	90,000/-
Total expenditure	70,404,896	1,457,000	2,736,000	14,300,000	1,457,000

*KSA FUND: Kingdom of Saudi Arab

Source : KP DHO

3.3.5 Building and Equipment Condition

● Access and facility overview

The target 20 medical facilities are located in three districts of KP Province, widely from the central city to mountainous area. All facilities are accessible by automobile. Although most of the premises of the facilities belong to the government, CH³ Kotla and THQ Hospital Balakot lease private properties.

Most facilities have several blocks in their premises, consisting of the main block for medical service, ward block, staff residence, service, etc. Only small-scale CH Kotla has one block in the premise.

Most facilities are reinforced concrete frame systems with a masonry wall and have a single story or two stories. Only BBS⁴ DHQ⁵ Abbottabad Hospital has a three-story block. TDH⁶ Ghari Habibullah is by drywall construction.

CH KTS and BBS DHQ Abbottabad Hospital were just constructed in 2019. Facilities with relatively new-constructed main blocks are CH Tajwal (constructed in 2016), TDH Lora and KATH⁷ DHQ Mansehra Hospital (in 2014), TDH Havelian and TDH Baffa in (2013). On the other hand, CH Mohribebehn (in 1987) and CH Nathiagali (in 1944) respond that their facilities are aged and need renovation and repairs. CH Khanspur (in 1916 and 2005) responds that the wiring was damaged and needs repairs. CH Sherwan and THQ Hospital Balakot are now carrying out construction of new facilities, and they are going to move the main function to the new buildings after completion. New constructed CH KTS and TDH Baffa respond that they cannot make full use of their beds due to shortage of equipment and staff.

³ Civil Hospital

⁴ Benazir Bhutto Shaheed

⁵ District Headquarter Center

⁶ Type D Hospital

⁷ King Abdullah Teaching Hospital

Table 3.3-2 Basic Information of Target Facilities

	hospital	establish year	location	new building (*)	nos. of stories
H-1	DHQ Haripur Hospital	1993	district capital	2008	two-stories
H-2	CH KTS Haripur	1978	district capital	2019	two-stories
H-3	TDH Khanpur	1974	village	renovated	two-stories
H-4	TDH Ghazi	1965	village	2009	single-story
H-5	CH Kotla	2002	mountain	-	single-story
H-6	CH Rehana	1959	mountain	-	single-story
A-1	BBS DHQ Abbottabad Hospital	1952	district capital	2019	three-stories
	block B			1980	two-stories
A-2	TDH Havelian	1968	village	2013	two-stories
A-3	TDH Lora	1953	mountain	2014	two-stories
A-4	CH Tajwal	1970, 2021	mountain	2016	single-story
A-5	CH Kalapani	1979	mountain	-	single-story
A-6	RHC Mohribedbehn	1987	mountain	-	single-story
A-7	CH Nathiagali	1944	mountain	renovated	single-story
A-8	CH Khanspur	1916	mountain	2005	single-story
A-9	CH Sherwan	1967	mountain	under construction	single-story
M-1	KATH DHQ Mansehra Hospital	1975	district capital	2014	two-stories
M-2	TDH Garhi Habibullah	2007	village	-	single-story
M-3	TDH Baffa	1935	village	2013	two-stories
M-4	THQ Hospital Balakot	1945	village	under construction	two-stories
M-5	Type-D Hospital Oghi	1985	village	2010	single-story

(*) It means the latest year of new construction for each hospital.

●Electricity

All of the 20 medical facilities are supplied with electric power by Peshawar Electric Supply Company (hereinafter referred to as “PESCO”), nine of them experience daily load shedding, and three are facing voltage instability. CH Nathiagali and CH Khanspur located in mountainous areas, experience power failure for three or four days when it snows.

Nine medical facilities have no power generators, or cannot use its generator due to lack of power, aging, damages, financial problems purchasing fuel etc. TDH Ghazi and TDH Ghari Habibullah have had PV generators, but they are not available now due to battery drain or damage.

●Water supply and drainage

Only five facilities among the target twenty use city water, but CH Rehana, CH Kotla, and Type-D Hospital (=TDH) Baffa use for a limited period; two hours, four to six hours, four hours, respectively. TDH Baffa also uses a tube well. Thirteen facilities use tube wells. CH Tajwal uses water from near streams, and CH Kalapani uses water from the neighborhood.

Only five facilities conducted water quality tests and confirmed that there are no problems with the quality. Other fifteen have not examined or have problems in water quality. Nine facilities answer that they can get enough water, but six facilities answer of shortage. Among the six, TDH Lora responds that they get only 10 to 15 % of its demand, and CH Mohribedbehn can use a small amount due to low water levels.

Only TDH Baffa has water treatment plants. Although thirteen facilities have septic tanks, two of them don't maintain their tanks, and one cannot use its tank that is out of order. Six facilities have no water treatment facility.

●Heaters

TDH Havelian has gas heaters. Nine facilities have air conditioners, but two of them are facing severe problems in medical service due to the cold. The remaining ten facilities have no heaters, and some negative effects on medical activities are assumed like the two.

Table 3.3-3 Equipment Condition of Target Facilities

	hospital	electricity			water supply			drainage	HAVC
		PESCO	generator, >50kVA	solar	resource	quality	quantity		
H-1	DHQ Haripur Hospital	two feeders	200kVA, 100kVAx2	-	tube well	good	good	SPT	AC (10)
H-2	CH KTS Haripur	-	-	-	tube well	OK, tested	OK	no	no
H-3	TDH Khanpur	-	-	-	tube well	OK, tested	OK	SPT, not maintained	AC(1)
H-4	TDH Ghazi	sometimes LS	NA, financial issue	NA	tube well	not tested	OK	no, open ditch	AC(2)
H-5	CH Kotla	sometimes LS	-	NA	city water, 4-6hr.			owner' SPT	no
H-6	CH Rehana	-		5kW	city water, 2hr.	not tested	sufficient	no	no
A-1	BBS DHQ Abbottabad Hospital block B	-	200kVA, 90kVA		tube well	tested	sufficient	SPT	AC (12)
		-	50kVA		tube well	tested	sufficient		
A-2	TDH Havelian	occasional LS	NA, decrepit	NA	tube well	not tested		SPT, not maintained	GH (18)
A-3	TDH Lora	frequent LS	NA		tube well		10-15%	no	AC(2)
A-4	CH Tajwal	-	45kVA		stream water	not sufficient	not sufficient	SPT	no
A-5	CH Kalapani	frequent LS, voltage drop	-	available	from nearby	not sufficient	not sufficient	SPT	no
A-6	RHC Mohribebehn	-	-	available	NA, tube well	not good	drop water level	SPT, not maintained	no
A-7	CH Nathiagali	NA 2-3 days due to snow	-		city water	not tested	NA in winter	SPT	no
A-8	CH Khanspur	NA 3-4 days due to snow	-		tube well, shallow		not sufficient	no, open ditch	no
A-9	CH Sherwan	voltage issue and long LS	-		tube well, shallow	not sufficient	not sufficient	no	no
M-1	KATH DHQ Mansehra Hospital	-			tube well	OK, tested	OK	SPT	AC (155)
M-2	TDH Garhi Habibullah	LS, unstable voltage	NA, too big (500kVAx2)	NA, decrepit	city water	not tested	OK	SPT	AC (11)
M-3	TDH Baffa	-	NA, financial issue	NA, decrepit	city water, 4hr., well	not tested	OK	WWTP	AC (64)
M-4	THQ Hospital	-	-	NA	well	not tested	OK	SPT	no
M-5	Type-D Hospital	-	-	NA	tube well	not tested	OK	SPT	AC(1)

* There are some issues of service in gray cells.

AC=Air Conditioner

GH=Gas Heater

HVAC=Heating, Ventilation, and Air Conditioning

LS=Load-shedding

SPT=Septic Tank

WWTP=Waste Water Treatment Plant

●Maintenance System

Department of Health Office of each district (hereinafter referred to as “DHO”) is responsible for repair and maintenance of facilities controlled under DHO. The number of maintenance staff are five for DHO Haripur, three for DHO Mansehra, and no answer for DHO Abbottabad. EME maintains the facilities of BBS and CH Sherwan, and KATH has a maintenance & repair services section.

The main role of DHO is to examine requests for repair and maintenance from each facility for its approval. Facilities prepare an estimation and procurement for minor repairs by themselves, and DHO will hire a private consultant for bidding and quotation service for major works. For work with a certain amount or more, DHO will transfer them to C&W. Since some facilities complain of defects that are left unrepaired and have severe effects on medical activities, the maintenance system may not work well.

3.4 Evaluation of Target Facilities

Analysis on the actual status of the target facilities of the Survey is conducted prior to examining contents of the requests. The evaluation items (draft) are shown below.

Table 3.4-1 Evaluation Items (draft) for the Facilities

No.	Evaluation items (draft)	Criteria (draft)
1	Facility categorization	a: Category A, B, C and D (secondary medical facility) b: RHC, etc., (Primary medical facility)
2	Staffing	a: more than half of recommendation b: less than half of recommendation
3	Number of beds	a: more than half b: less than half
4	Electricity	a: stable b: unstable

Regarding the number of staff, the facilities are sorted based on 50% of the total number of staff recommended by MHSDP. Similarly, the number of beds are sorted based on more than half of the MHSDP regulation number or less than half. The classification of MHSDP facilities, the recommended total number of staff, and the number of beds are shown below.

Table 3.4-2 Recommended Total Number of Staff and Number of Beds by Category

No.	Category	Staff	Beds
1	Category A	1,131	350
2	Category B	603	210
3	Category C	361	110
4	Category D	167	42
5	RHC	63	20

Source: MHSDP

The secondary medical facilities are classified into Category A, B, C and D, and RHC is the highest category of the primary medical facilities. The following eight facilities out of the twenty target

facilities use the name of Civil Hospital or RHC, and their position in the classification is not clear from the Survey. As for 15. CH Sherwan, construction of new building is ongoing, which is expected to complete within year 2022, and it is planned to upgrade to Category D upon completion.

Table 3.4-3 Facilities which Category is not Clear

No.	Medical Facility
5	CH Kotla
6	CH Rehana
10	CH Tajwal
11	CH Kalapani
12	RHC Mohribedbehn
13	CH Nathiagali
14	CH Khanspur
15	CH Sherwan

The table below compares the survey results of the 20 target facilities with the facility classification, the recommended total number of staff, and the number of beds listed in the MHS DP. The eight facilities whose classification is unclear are compared according to the requirements of Category D, which is the smallest secondary medical facility, and the comparison with the requirements of RHC is shown in column *1 as reference.

Table 3.4-4 Comparison between Survey Result and MHS DP

No.	Facility	Cat.	Staff			Beds		
			Actual	%	*1	Actual	%	*1
1	DHQ Haripur Hospital	A	801	70.8%		210	60.0%	
2	CH KTS Haripur	C	21	5.8%		100	90.9%	
3	TDH Khanpur	D	63	37.7%		40	95.2%	
4	TDH Ghazi	D	62	37.1%		40	95.2%	
5	CH Kotla	D	13	7.8%	20.6%	8	19.0%	40.0%
6	CH Rehana	D	29	17.4%	46.0%	3	7.1%	15.0%
7	BBS DHQ Abbottabad Hospital	A	723	63.9%		370	105.7%	
8	TDH Havelian	D	54	32.3%		40	95.2%	
9	TDH Lora	D	55	32.9%		40	95.2%	
10	CH Tajwal	D	16	9.6%	25.4%	21	50.0%	105.0%
11	CH Kalapani	D	15	9.0%	23.8%	10	23.8%	50.0%
12	RHC Mohribedbehn	D	12	7.2%	19.0%	10	23.8%	50.0%
13	CH Nathiagali	D	28	16.8%	44.4%	8	19.0%	40.0%
14	CH Khanspur	D	14	8.4%	22.2%	6	14.3%	30.0%
15	CH Sherwan	D	18	10.8%	28.6%	1	2.4%	5.0%
16	KATH DHQ Mansehra Hospital	A	469	41.5%		350	100.0%	
17	TDH Garhi Habibullah	D	52	31.1%		60	142.9%	
18	TDH Baffa	D	96	57.5%		40	95.2%	
19	THQ Hospital Balakot	D	49	29.3%		10	23.8%	
20	TDH Oghi	D	60	35.9%		8	19.0%	

*1: calculated based on RHC recommendation and standard

The number of staff at DHQ hospitals in the three districts is more than 50% of the recommended number, and the number of staff at other facilities does not meet 50%. Nine facilities have less than 25% of the standard number of beds. Category C, facility number 2. CH KTS Haripur respond that it can accommodate 100 beds. In Table 3.4-4, the percentage is calculated based on the number of beds of 100. However, facility staff and medical equipment are not yet allocated. The facility currently has three patient beds, and the percentage with three beds as the denominator is 2.7%. The result of the evaluation is presented in Table 3.4-5.

Table 3.4-5 Evaluation Result

No.	Facility	Cat.	Staff	Beds	Electricity
1	DHQ Haripur Hospital	a	a	a	a
2	CH KTS Haripur	a	b	a	a
3	TDH Khanpur	a	b	a	a
4	TDH Ghazi	a	b	a	a
5	CH Kotla	a	b	b	a
6	CH Rehana	a	b	b	a
7	BBS DHQ Abbottabad Hospital	a	a	a	a
8	TDH Havelian	a	b	a	a
9	TDH Lora	a	b	a	b
10	CH Tajwal	a	b	a	a
11	CH Kalapani	a	b	b	b
12	RHC Mohribedbehn	a	b	b	a
13	CH Nathiagali	a	b	b	b
14	CH Khanspur	a	b	b	b
15	CH Sherwan	a	b	b	b
16	KATH DHQ Mansehra Hospital	a	b	a	a
17	TDH Garhi Habibullah	a	b	a	b
18	TDH Baffa	a	a	a	a
19	THQ Hospital Balakot	a	b	b	a
20	TDH Oghi	a	b	b	a

* a: stable b: unstable

Aforementioned eight facilities whose categorization position is not clear are treated as secondary medical facility Category D in Table 3.4-5. It should be noted that facility number 17. TDH Garhi Habibullah is a prefabricated building that has reached the end of its useful life. Regarding the electrical situation, the facilities that answered "occasional power outages", "voltage fluctuations", or no special notes in the questionnaire were sorted into "a: stable", while facilities that answered "frequent or long-term power outages" and "continuous power outage for 2 days or more in winter" were classified as "b: unstable".

CHAPTER 4. Suggestions for the Consideration on the Future Project

4.1 Confirmation Results and Needs Analysis of Surveyed Equipment

The Survey confirmed the needs of equipment by the equipment needs list submitted by the 20 target medical facilities based on the following ideas.

- Equipment that Pakistani side should bear the cost such as disposable product and inexpensive equipment is excluded. Specifically, among the submitted equipment needs list, disposable delivery set, glucose meter and ophthalmoscopes are excluded.
- Equipment that will not be effective without construction work or large-scale renovation work such as LDRP, NICU and ICU is excluded from the needs analysis
- Regarding other equipment on the list, the Survey confirmed conditions of existing ones with operation and management situations of each facility. In case the facility has relatively new and well maintained ones already, the facility's need on that equipment is judged as low. Such case will be classified as "b: low relevance". On the other hand, when the facility does not have any available substitution, the equipment will be classified as "a: relevant". Equipment which information of existing one is not acquired will be included in "a: relevant" since there is no ground to judge as low relevance.

The results are presented in Table 4.1-1. Equipment in the needs list is basically confirmed to be relevant.

Table 4.1-1 Results of the Confirmation of the Equipment Needs

Facility No.	Facility	Equip. No	Medical Equipment	Qty	Result
1	DHQ Haripur Hospital	1	Construction of 20 beds LDRP room	1	---
		2	Construction of 15 beds fully equipped NICU	1	---
		3	Pediatric echo machine	1	a
		4	Laparoscope	1	a
		5	Hysteroscope	1	a
		6	CT scan	1	a
		7	Doppler Ultrasound	1	a
		8	Resuscitation trolies Labour room	2	a
2	CH KTS Haripur	1	Digital X-ray	1	b
		2	Heavy duty Generator, 80kVA	1	a
		3	Patient beds	100	a
3	TDH Khanpur	1	Digital X-ray	1	a
		2	Ultrasound Machine	1	a
		3	Heavy duty Generator, 100kVA	1	a
		4	Hematology Analyzer	1	a
		5	ICU	1	---
4	TDH Ghazi	1	Digital X-ray	1	a
		2	Ultrasound Machine	1	a
		3	Heavy duty Generator, 80kVA	1	a
		4	Hematology Analyzer	1	a

Facility No.	Facility	Equip. No	Medical Equipment	Qty	Result
		5	ICU	1	---
5	CH Kotla	1	Digital X-ray	1	a
		2	Ultrasound Machine	1	a
		3	Delivery table	2	a
		4	Baby Incubator	1	a
		5	Heavy duty Generator, 30kVA	1	a
		6	Baby warmer	2	a
		7	Patient beds	10	a
		8	Lab incubator	1	a
		9	Chemistry analyzer	1	a
		10	Hematology Analyzer	1	a
		11	Microscope	1	a
		12	Defibrillator	1	a
		13	Incinerator	1	a
6	CH Rehana	1	Digital X-ray	1	a
		2	Ultrasound Machine	1	a
		3	Delivery table	2	a
		4	Baby Incubator	1	a
		5	Heavy duty Generator, 50kVA	1	a
		6	Baby warmer	2	a
		7	Patient beds	10	a
		8	Lab incubator	1	a
		9	Chemistry analyzer	1	a
		10	Hematology Analyzer	1	a
		11	Microscope	1	a
		12	Defibrillator	1	a
		13	Incinerator	1	a
7	BBS DHQ Abbottabad Hospital	1	Laparoscope + Hysteroscope	1	a
		2	Ultrasound machine with doppler, vaginal probe	1	a
		3	Baby resuscitation trolley with warmer	1	a
		4	Warmers	2	a
		5	Incubators	4	a
		6	Suctioning machine	3	a
		7	Pulse oximeters (high quality)	4	a
		8	Photo therapy lights machine	4	b
		9	Ventilator	2	a
		10	Weighing machine	2	a
		11	Glucometer with strips	2	---
		12	Cardiac monitor	2	a
		13	Nebulizers	1	a
8	TDH Havelian	1	Digital X-ray	1	b
		2	Ultrasound Machine	1	b
		3	Heavy duty Generator, 50kVA	1	a
		4	Hematology Analyzer	1	a
		5	ICU	1	---
9	TDH Lora	1	Digital X-ray	1	b
		2	Ultrasound Machine	1	b
		3	Heavy duty Generator, 50kVA	1	a
		4	Hematology Analyzer	1	a
		5	ICU	1	---
10	CH Tajwal	1	Digital X-ray	1	a
		2	Ultrasound Machine	1	a
		3	Delivery table	2	a

Facility No.	Facility	Equip. No.	Medical Equipment	Qty	Result		
		4	Baby Incubator	1	a		
		5	Heavy duty Generator, 50kVA	1	a		
		6	Baby warmer	2	a		
		7	Patient beds	10	a		
		8	Lab incubator	1	a		
		9	Chemistry analyzer	1	a		
		10	Hematology Analyzer	1	a		
		11	Microscope	1	a		
		12	Defibrillator	1	a		
		11	CH Kalapani	1	Digital X-ray	1	a
				2	Ultrasound Machine	1	a
				3	Delivery table	2	a
4	Baby Incubator			1	a		
5	Heavy duty Generator, 50kVA			1	a		
6	Baby warmer			2	a		
7	Patient beds			10	a		
8	Lab incubator			1	a		
9	Chemistry analyzer			1	a		
10	Hematology Analyzer			1	a		
11	Microscope			1	a		
12	Defibrillator			1	a		
13	Incinerator			1	a		
12	RHC Mohribebehn	1	Digital X-ray	1	a		
		2	Ultrasound Machine	1	a		
		3	Delivery table	2	a		
		4	Baby Incubator	1	a		
		5	Heavy duty Generator, 50kVA	1	a		
		6	Baby warmer	2	a		
		7	Patient beds	10	a		
		8	Lab incubator	1	a		
		9	Chemistry analyzer	1	a		
		10	Hematology Analyzer	1	a		
		11	Microscope	1	a		
		12	Defibrillator	1	a		
13	CH Nathiagali	1	Digital X-ray	1	a		
		2	Ultrasound Machine	1	a		
		3	Delivery table	2	a		
		4	Baby Incubator	1	a		
		5	Heavy duty Generator, 50kVA	1	a		
		6	Baby warmer	2	a		
		7	Patient beds	10	a		
		8	Lab incubator	1	a		
		9	Chemistry analyzer	1	a		
		10	Hematology Analyzer	1	a		
		11	Microscope	1	a		
		12	Defibrillator	1	a		
14	CH Khanspur	1	Digital X-ray	1	a		
		2	Heavy duty Generator, 50kVA	1	a		
		3	Patient beds	10	a		
		4	Lab incubator	1	a		
		5	Chemistry analyzer	1	a		
		6	Hematology Analyzer	1	a		
		7	Microscope	1	a		

Facility No.	Facility	Equip. No.	Medical Equipment	Qty	Result
		8	Defibrillator	1	a
15	CH Sherwan	1	Digital X-ray	1	a
		2	Ultrasound Machine	1	b
		3	Delivery table	2	a
		4	Baby Incubator	1	a
		5	Heavy duty Generator, 50kVA	1	a
		6	Baby warmer	2	a
		7	Patient beds	10	a
		8	Lab incubator	1	a
		9	Chemistry analyzer	1	a
		10	Hematology Analyzer	1	a
		11	Microscope	1	a
		12	Defibrillator	1	a
16	KATH DHQ Mansehra Hospital	1	CTG machine	2	a
		2	Infant warmer / resuscitation	2	a
		3	Heavy duty suction machine	3	a
		4	Cardiac monitors	4	a
		5	Ultrasound machine	1	a
		6	MVA kits	6	a
		7	Oxygen concentrator	1	b
		8	Delivery tables	6	b
		9	OT table	1	a
		10	Examination lights attached to roof for labour room	2	a
		11	Incubators	4	b
		12	Paediatric warmers	4	a
		13	Photo therapy machine	6	a
		14	Suction machine	6	a
		15	O2 concentrator	10	a
		16	Audiometer	4	a
		17	Pulse oximeter	6	a
		18	Cardiac monitors	2	a
		19	Glucometers	6	---
		20	Crash cart trolley	2	a
		21	Fundosscopes	4	---
		22	BP apparatus paediatric cough	6	a
		23	Paediatric ventilator	1	a
		24	Resuscitation table peads	2	a
		25	ECG machine peadiatric	1	a
		26	Incubation set(INTUBATION)	2	a
		27	Electric mosquito killers	10	a
		28	Baby warmers	4	a
		29	Heating blowers for Nursery	6	a
17	TDH Garhi Habibullah	1	Baby warmer	1	a
		2	Delivery kit	1	a
		3	D&C kit	3	a
		4	Autoclave, tabletop	1	a
		4	Autoclave, 100 liters	1	a
		5	USG Machine	1	a
		6	Examination Light	1	a
7	Nebulizer	2	a		
18	TDH Baffa	1	Baby warmer	2	a
		2	Delivery kit	1	a

Facility No.	Facility	Equip. No	Medical Equipment	Qty	Result
		3	D&C kit	5	a
		4	Autoclave, tabletop	1	a
		4	Autoclave, 100 liters	1	a
		4	Autoclave, 150 liters	2	a
		5	USG Machine	1	a
		6	Examination Light	2	a
		7	Disposable delivery kit	15	---
19	THQ Hospital Balakot	1	Baby warmer	1	a
		2	Delivery kit	1	a
		3	D&C kit	3	a
		4	Autoclave, tabletop	1	a
		4	Autoclave, 100 liters	1	a
		5	USG Machine	1	a
		6	Examination Light	2	a
20	TDH Oghi	7	Nebulizer	4	a
		1	Baby warmer	1	a
		2	Delivery kit	1	a
		3	D&C kit	2	a
		4	Autoclave, 150 liters	2	a
		5	USG Machine	1	a
		6	Nebulizer	2	a

4.2 Points to Note

Regarding the equipment which needs were confirmed in 4.1, the following points should be considered when considering a future cooperation.

(1) Condition of target facilities

As a matter common to all facilities in relation to medical device management, although corrective maintenance is partially performed, it has not achieved the level of comprehensive medical device management involving equipment inventory management, life cycle management and so on. Plans to strengthen the system should be confirmed to ensure the sustainable system after the procurement of the equipment within the cooperation. Other points to note are described in continuation by medical facility.

1. DHQ Haripur Hospital, category A

- It was upgraded to category A in 2021. Plans to fulfill the requirements as specified category should be confirmed.
- Requested CT scanner is a high cost and high performance equipment. Operation and maintenance plans should be confirmed in detail.
- The number of Caesarean section surgery in 2020 is 1,781 cases. In the maternal and child healthcare system, its position and future plans should be confirmed.

2. CH KTS Haripur, category C

- It is planned to be category C. Its buildings were constructed in 2019, but improvement of staff and equipment is ongoing. It does not perform delivery. Only three beds are functioning. In the maternal and child healthcare system, its position and future plans should be confirmed.

3. TDH Khanpur, category D

- It has less staff than half of the recommended staffing for category D facility by the MHSDP. In the maternal and child healthcare system, its position and future plans should be confirmed.

4. TDH Ghazi, category D

- It has less staff than half of the recommended staffing for category D facility by the MHSDP. The number of Caesarean section surgery in 2020 is only 10 cases. In the maternal and child healthcare system, its position and future plans should be confirmed.
- It is suffering from power failure, and its power generator is not available due to financial issues. It has no wastewater treatment facility.

5. CH Kotla, category D

- It is the smallest facility within the target 20 facilities of the Survey. It is not divided into departments, and it does not provide obstetrics, gynecology and delivery services. In the maternal and child healthcare system, its position and future plans should be confirmed.
- The city water is available only four to six hours daily.
- It leases the private property for its operation and has no plan to build its own building. It uses wastewater treatment facility of the neighborhood.

6. CH Rehana, category D

- It has eight beds. Its building and personnel scale are small as a secondary medical facility. In the maternal and child healthcare system, its position and future plans should be confirmed.
- The city water is available only two hours daily, and it has no wastewater treatment facility.

7. BBS DHQ Abbottabad Hospital, category A

- It was upgraded to category A in 2021. Plans to fulfill the requirements as said category should be confirmed.

- The number of Caesarean section surgery in 2020 is 1,567 cases. In the maternal and child healthcare system, its position and future plans should be confirmed.
- Its facilities are located in two separate premises but they are operated integrally.

8. TDH Havelian, category D

- It has less staff than half of the recommended staffing for category D facility by the MHSDP. The number of Caesarean section surgery in 2020 is 88 cases. In the maternal and child healthcare system, its position and future plans should be confirmed.
- It is suffering from power failure, and its power generator is not available. It has no wastewater treatment facility.

9. TDH Lora, category D

- It has less staff than half of the recommended staffing for category D facility by the MHSDP. In the maternal and child healthcare system, its position and future plans should be confirmed.
- It suffers from frequent power failures and a severe impact on medical activities without heating utilities.
- A tube well is available, but only 10 to 15% of demand is supplied.

10. CH Tajwal, category D

- Its building and personnel scale are small as a secondary medical facility. There is no obstetrics and gynecology department, but there were 22 births in 2020. In the maternal and child healthcare system, its position and future plans should be confirmed.
- It answered that it has no operators who can operate ultrasound machine and hematology analyzer. Thus, allocation plans should be confirmed.
- It suffers from a severe impact on medical activities without heating utilities.
- Water from near streams is available, but the amount is not enough, and the quality is not confirmed.

11. CH Kalapani, category D

- Its building and personnel scale are small as a secondary medical facility. There is no delivery service. In the maternal and child healthcare system, its position and future plans should be confirmed.
- Frequent power outages and voltage drops occur.

- Water is available from the neighborhood, but the amount is not enough, and the quality is not confirmed.

12. RHC Mohribedbehn, category D

- Its building and personnel scale are small as a secondary medical facility. In the maternal and child healthcare system, its position and future plans should be confirmed.
- Its building is old and needs renovation and repairs. The water table is too low to get enough water.

13. CH Nathiagali, category D

- Its building and personnel scale are small as a secondary medical facility. In the maternal and child healthcare system, its position and future plans should be confirmed.
- Power outages for 2-3 days due to snowing occur.
- All the buildings are so old, and CH Nathiagali considers necessity of full-scale rehabilitation.
- Enough amount of water is not available due to the low water table of a tube well.

14. CH Khanspur, category D

- Its building and personnel scale are small as a secondary medical facility. There is no obstetrics and gynecology department and delivery service. In the maternal and child healthcare system, its position and future plans should be confirmed.
- Power outages for 3-4 days due to snowing occur. Enough amount of water is not available due to the low water table of a tube well.
- Electrical wiring system is damaged and needs repair.

15. CH Sherwan, category D

- Its building and personnel scale are small as a secondary medical facility. The number of deliveries in 2020 is 16 cases. In the maternal and child healthcare system, its position and future plans should be confirmed.
- Long term power outage and voltage fluctuation occur. Enough amount of water is not available due to the low water table of a tube well.
- As construction of new building is ongoing, the schedule and progress should be confirmed.

16. KATH DHQ Mansehra Hospital, category A

- It has less staff than half of the recommended staffing for category A facility by the MHSDP. The number of Caesarean section surgery in 2020 is 974 cases. In the maternal and child healthcare system, its position and future plans should be confirmed.

17. TDH Garhi Habibullah, category D

- It has no obstetrics and gynecology department, but there were 325 births in 2020. In the maternal and child healthcare system, its position and future plans should be confirmed.
- Power outages and voltage fluctuation occur.
- The operation theaters are not available in winter due to the cold because it has no heating utilities.

18. TDH Baffa, category D

- As it reported shortage of staff and equipment, allocation plans should be confirmed.
- The number of Caesarean section surgery in 2020 is rather small, 28 cases. In the maternal and child healthcare system, its position and future plans should be confirmed.
- The city water is available only four hours daily. It has a tube well but the well doesn't work now due to pump system problems.

19. TDH Balakot, category D

- It has less staff than half of the recommended staffing for category D facility by the MHSDP. In the maternal and child healthcare system, its position and future plans should be confirmed.
- The prefabricated building has already reached the end of its useful life.
- As construction of new building is ongoing, the schedule and progress should be confirmed.

20. TDH Oghi, category D

- It has less staff than half of the recommended staffing for category D facility by the MHSDP. In the maternal and child healthcare system, its position and future plans should be confirmed.

(2) Non-clinical use equipment

Some non-clinical use equipment is included in the needs list. Operation and maintenance status of the facilities should be confirmed when analyzing relevance of these non-clinical use equipment. Points to be confirmed per equipment are described below.

- Generator: reconfirmation of the capacity, detailed examination (in case it is planned to cover the entire facility), continuous plan for fuel budgeting, etc.
- Incinerator: system for medical waste processing
- Heating equipment: condition of heating system of the entire facility

4.3 Reference Information for Materialization of Future Cooperation

4.3.1 Equipment Procurement Plan

In Pakistan, the Medical Devices and Medicated Cosmetics Division, Drug Regulatory Authority of Pakistan is in charge of medical device import control⁸. When importing medical devices, medical device agencies must receive conformity documents from manufacturer, and have a valid medical device license and registration. Then they are able to import medical devices by complying with appropriate storage facilities and notification requirements.

The supplier for medical equipment procurement through general grant projects will be a Japanese company. The supplier purchases medical equipment from Japanese manufacturers and/or Pakistani manufacturers and delivers it to KP province. When expanding conditions of equipment procurement in countries other than Japan or Pakistan from the viewpoint of ensuring bid competitiveness and maintenance, it is necessary to apply for procurement from a third country. It is possible to procure locally from the medical equipment agencies in Pakistan. A list of medical equipment agencies including the ones which have worked with the KP Province Health Department is presented in the Appendix Health-4.

4.3.2 Plans/Projects and Operation/Maintenance by KP Province

(1) Plans/projects by KP province

The Survey targets to secondary medical facilities. As aforementioned in 4.1, categorization of eight facilities out of the twenty is unclear from the Survey. Perspective of the KP Province Health Department on them should be obtained when planning a grant aid project for these facilities.

(2) Operation/maintenance staff

Staff allocation plans should be obtained when planning a grant aid project for the facilities which lack operational and maintenance staff.

(3) Operation/maintenance budget

Budget plans for operation and maintenance including generator fuel cost and for personnel according to the staff allocation plan mentioned in (2) above should be obtained.

⁸ Medical Devices Rules Ch. II, Part II, 9

4.4 Comparison with Similar Projects and Lessons Learnt

In equipment procurement project to secondary medical facilities to strengthen the health system centered on maternal and child health, planned equipment should be examined paying attention to the specification level, allocation of appropriate equipment operator and appropriate medical device maintenance and management system, based on the defined role and healthcare as secondary medical facility positioned between primary and tertiary within the maternal and child referral health system. It is desirable to determine the management system in advance⁹, and also to consider strengthening the capacities and systems of engineers involved in preventive maintenance of medical equipment¹⁰ and implementing soft components related to formulation of procurement plans for consumables, reagents, and spare parts for medical equipment¹¹.

⁹ The project for improvement of child health institute in Karachi, Pakistan. It took time to confirm and proceed with the change of the management policy at the time of detailed design survey and is recommended the need to determine the management system in advance.

¹⁰ Ex-post evaluation of the Grant Aid for Sri Lanka "the Project for Improvement of Anuradhapura Teaching Hospital Phase 1 / Phase 2" (evaluation year 2013) pointed out that routine maintenance and preventive maintenance are not performed. The lesson has been learned that preventive maintenance such as regular inspections before the need for repair come out is desired.

¹¹ Ex-post evaluation of the Grant Aid "the project for the improvement of central functions of Jaffna Teaching Hospital in Sri Lankan" (evaluation year 2015) pointed out that considerable amount of work was required based on the cooperation of several departments to implement improvement of inventory and books for preventive maintenance and it took time to introduce and implement preventive maintenance reliably and quickly.

II. Road Sector

CHAPTER 5. Present Condition of Road Sector

5.1 Present Condition and Issues of Road Sector in KP Province

The transport sector contributes to about 10% to Pakistan's gross domestic product and more than 6% to the country's overall employment. Roads are main means of transportation in Pakistan, accounting for more than 92% of passenger transport and 96% of freight traffic in 2010. All these economic activities require strengthening of road networks and competitive transportation cost.

KP Province is located in the northwestern region of the country. It ranks third in terms of population (about 30 million, 15% of the country's population), and its economic production accounts for 10.5% of Pakistan's economy. The economy in KP Province is dominated by forestry (about 61% of the national forestry output); mining (20% of national output); agriculture (main cash crops are wheat, maize, tobacco, rice, sugar beets, and a wide variety of fruits and vegetables); and some manufacturing. The length of province's classified paved road network is 15,102 km, which includes 1,878 km of national highways managed by the National Highway Authority (hereinafter referred to as "NHA"), 1,824 km of provincial highways managed by the Pakhtunkhwa Highways Authority (hereinafter referred to as "PKHA"), and 11,400 km of district roads managed by the provincial CWD. Provincial highways connect district centers with the national highway network, and play a vital role in the economic development of the province.

Because of an aging infrastructure and insufficient asset management, road surface conditions and travel quality have been deteriorating. Inadequate drainage is a major cause of premature road failure. Out of 1,824 km of provincial roads, about 700 km suffer from a maintenance backlog and have a pavement condition index (PCI) of less than 2; at least a third of the backlogged roads will require reconstruction, while the remaining sections will need major rehabilitation.¹² In addition, overloading has always been an issue in Pakistan, and is a particularly serious problem in KP Province with its logging, quarrying, and mining traffic, especially in the marble-producing areas. Although light-duty vehicles account for 80%–90% of the traffic in the province, trucks in all categories tend to be overloaded by up to 95%, and some are as high as 100% above the permissible load limits.¹³ Overloading reduces the design life of pavements and results in premature deterioration, often leading to catastrophic collapse. The PKHA set up two stationary weighbridges, and is investing in mobile vehicle-weighing equipment to tackle this problem. However, vehicle overloading control requires a multifaceted approach, such as a regulatory overhaul, self-regulation by the trucking industry, selective enforcement with modern technology, vehicle taxation to encourage replacement of rigid single-axle configurations by multi-axle ones,

¹² ADB Proposed Loan for Additional Financing Islamic Republic of Pakistan

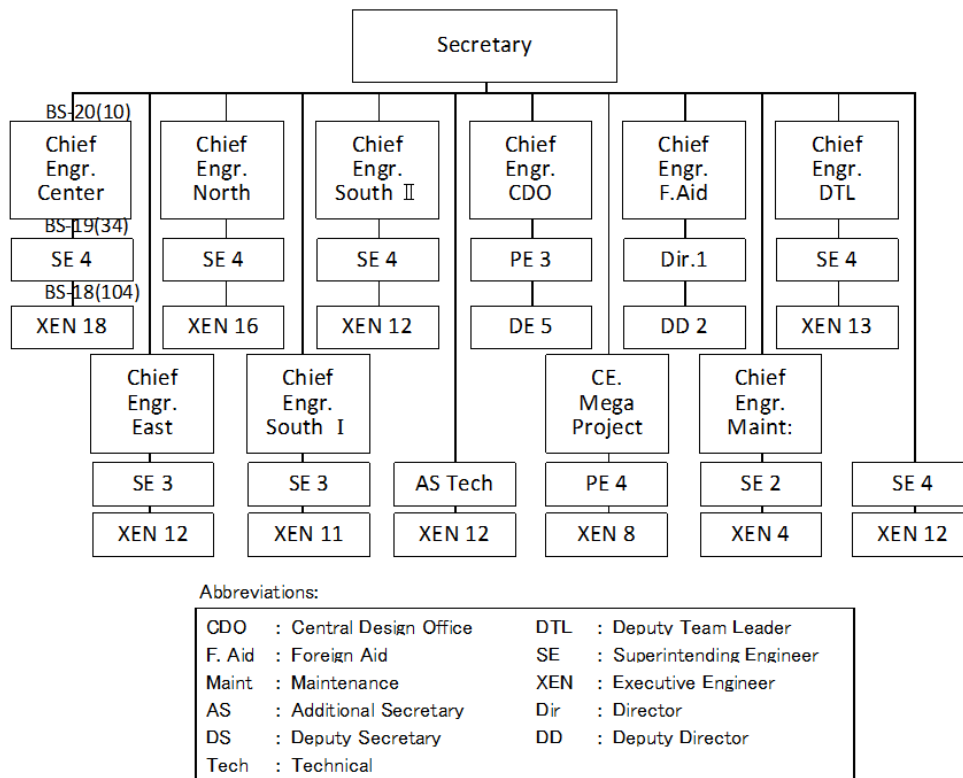
¹³ Since the life of a road is determined from the fourth power of the ratio of the actual axle weight to the basic axle weight (8.1 tons), the impact of overloading by more than 100% on the life of a road is very high.

overloading control at source, and use of stronger pavements based on actual axle loads.

Road maintenance sustainability has been a challenge in KP Province. Annual budget allocations for road maintenance and preservation have been insufficient to operate and maintain the road system at an acceptable service level.

5.2 Implementation Structure and Budgetary Situation of KP Provincial CWD

The organization structure of CWD in KP province is shown in Figure 5.2-1. The CWD is responsible for all 13,224 km of provincial and district roads in KP province. The PKHA, an independent entity under the CWD, is the custodian of the 25 provincial highways. It is headed by a managing director with responsibilities for the planning, development, construction, and operation and maintenance of the provincial highways and district roads. The PKHA has four regional offices in the north, center, south, and east of the province, and one road maintenance unit.



Abbreviations:

CDO : Central Design Office	DTL : Deputy Team Leader
F. Aid : Foreign Aid	SE : Superintending Engineer
Maint : Maintenance	XEN : Executive Engineer
AS : Additional Secretary	Dir : Director
DS : Deputy Secretary	DD : Deputy Director
Tech : Technical	

Source : Survey Team

Figure 5.2-1 Organization Structure of KP Province CWD

Table 5.2-1 shows the number of projects and budgets by sector for the year 2021-2022 for KP Province, Pakistan. The budgets have been allocated to 34 sectors, but the amounts for the major sectors are only presented here.¹⁴ The budget for roads has been allocated to 312 projects and these projects are being implemented. Since the implementation structure has been established and detailed budget plans are in place, the planning capacity is considered to be high.

Table 5.2-1 Budget and Number of the Project in KP Province by Sector 2021-2022

No	Sector	No. of Project	Million Rs
1	Agriculture	41	5,656
2	Drinking Water, Hygiene	78	5,908
3	Education	108	16,449
4	Health	99	16,620
5	Road	312	23,945
6	Irrigation	163	10,796
7	Other	588	91,198
	Total	1,389	165,000

PKR 1.00 = ¥ 0.6487 (Pakistan Rupee vs Japanese Yen Exchange Rate)

Source : ANNUAL DEVELOPMENT PROGRAMME 2021-22

5.3 Plans by Other Donors in the Target Area

The road project by foreign donors listed in the ANNUAL DEVELOPMENT PROGRAMME 2021-22 is only the FATA Infrastructure Project (FIP-QIPs) (USAID), which does not include the target roads for the Survey. It was also confirmed that there are no other development plans by donors in and around the target roads. It was also confirmed that the target roads are not included in the on-going 312 projects mentioned above and in the future District Development Plan of the country's budget.

¹⁴ Pakistan's fiscal year runs from July 1 to June 30 of the following year.

CHAPTER 6. Prioritization Method and Results of the Target Roads

6.1 List of the Survey Target Roads

As a result of discussions with the CWD at the beginning of the Survey, 13 roads were identified as target roads of the Survey. In the past, JICA conducted a study on rural roads that were damaged by floods and needed to be rehabilitated under the "Study on Khyber Pakhtunkhwa Rural Roads Improvement and Rehabilitation (Loan Account Technical Assistance)", assuming the formation of ODA loan, but the 13 roads were separately identified as priority rural roads, which require rehabilitation due to aging. The list of roads to be surveyed is shown in Table 6.1-1. The roads in Pakistan are classified into eight categories: Motoryways, National Highways, Expressways, Strategic Roads, Provincial Roads, District Roads, Farm to Market Roads, and Urban Roads. The 13 target roads in the Study are all classified as District Roads.

Table 6.1-1 List of Target Roads

Road No.	Road Name	District	Beginning Point	Ending Point	Length
1	Kakul to Dana via Balolia with link to Jabbi	Abbottabad	N34.199853° E73.280757°	N34.198729° E73.312412°	9.16 km
2	Link Road to Sherwan Road	Abbottabad	N34.217258° E73.204592°	N34.227235° E73.168956°	10.71 km
3	Banda Ali Khan to Shahokot Main Road	Abbottabad	N34.211517° E73.189118°	N34.175497° E73.182211°	8.84 km
4	Takia Hall to Beer / Pid Gali Road	Abbottabad	N34.177415° E73.042597°	N34.165633° E72.955662°	20.35 km
5	GS Marble to Lewganai Road Buner	Buner	N34.589037° E72.305953°	N34.425333° E72.481981°	33.43 km
6	Kankawai to Dandar Road	Buner	N34.395771° E72.509278°	N34.250000° E72.533333°	25.11 km
7	Indus View Road from Dhappan Wala Morto Main Bakhar Road	Dera Ismail Khan	N31.808445° E70.911903°	N31.774601° E70.893025°	4.19 km
8	Ramak to Chodwan Road	Dera Ismail Khan	N31.598137° E70.366018°	N31.459912° E70.736322°	48.17 km
9	Balakot to Ghar Habibullah Road	Mansehra	N34.549513° E73.356415°	N34.400877° E73.378909°	20.66 km
10-1	Chakia Farsh to Khushala and Mattan Wali Ziarat / Khushala Hayana Road-1	Mansehra	N34.324719° E73.214900°	N34.301623° E73.244731°	4.21 km
10-2	Chakia Farsh to Khushala and Mattan Wali Ziarat / Khushala Hayana Road-1	Mansehra	N34.310082° E73.236623°	N34.307262° E73.228758°	0.85 km
11	Rano Garhi to Budni Village Peshawar	Peshawar	N34.027286° E71.648436°	N34.048323° E71.688399°	4.84 km
12	Langar to Archillai Road	Swat	N34.902961° E72.229846°	N34.941707° E72.219730°	6.04 km
13	Pir Kalay to Shawar Road	Swat	N34.915108° E72.409646°	N34.987217° E72.256805°	21.36 km

Source : Survey team

6.2 Setting of Evaluation Indices

In this study, the following evaluation criteria were adopted and prioritized.

Table 6.2-1 Evaluation index for road prioritization

No.	Index	Evaluation Method
1	Traffic Volume(a)	To survey traffic volumes and give higher priority to routes with high traffic volumes.
2	Pavement Condition(b)	To survey road surface conditions and give higher priority to routes with poor road surface conditions.
3	Feeder Road(c)	To survey the number of feeder roads and give higher priority to routes with more feeder roads.
4	Improvement of accessibility to hospital (d)	To survey the locations of hospitals, and based on the relationship between the locations of hospitals and the target roads, the road that improve access to hospitals are given a high priority.

Source : Survey team

6.2.1 Traffic Volume Survey

A traffic volume survey was conducted for each road. We measured the 12-hour traffic volume from 6:00 a.m. to 6:00 p.m. at the point with the highest traffic volume for each target road. From the results, the daily traffic volume was calculated using the estimated day/night ratio. The results of the traffic volume calculation are shown in Table 6.2-2. Detailed data of the traffic volume survey results are shown in Appendix 2. The measurement points were determined by the outsourced consultant after driving the target roads.

Table 6.2-2 Result of Traffic Volume Survey

Type of Vehicle	Car	Truck/Trailer	Bus	other	Sub Total	Day night ratio	Volume /Day
No.1	2,510	29	8	12	2,559	5%	2,694
No.2	580	22	1	3	606	5%	638
No.3	162	3	-	-	166	5%	175
No.4	678	41	108	53	880	5%	926
No.5	27,945	501	685	596	29,727	20%	37,171
No.6	3,831	47	102	100	4,080	20%	5,100
No.7	8,148	35	60	511	8,752	5%	9,213
No.8	1,286	4	0	119	1,420	5%	1,495
No.9	4,802	294	209	114	5,420	10%	6,022
No.10	4,285	22	25	100	4,531	10%	5,034
No.11	2,903	44	15	191	3,053	5%	3,214
No.12	2,789	117	172	14	3,092	5%	3,255
No.13	5,327	258	259	20	5,858	20%	7,323

Source : Survey Team

The calculated traffic volumes were evaluated using the following criteria with reference to Japanese standards.

Table 6.2-3 Results of the Evaluation

	Mark	Road Number
Less than 5,000/day	1	No. 2, 3, 4, 8, 11, 12
5,000/day to 7,000/day	2	No. 6, 10
7,000/day to 9,000/day	3	No. 7
9,000/day to 11,000/day	4	-
More than 11,000/day	5	No. 5

Source : Survey Team

6.2.2 Pavement Condition Survey

The results of the pavement type survey are shown in Table 6.2-4 by target road.

Table 6.2-4 The Results of the Pavement Type Survey

Type of Pavement	Length (m)	Asphalt Concrete	Concrete	DBST /SBST	Gravel /Earth
No.1	9,160	1,000	4,000	0	4,160
No.2	10,710	8,000	0	0	2,710
No.3	8,840	0	840		8,000
No.4	20,350	0	0	12,350	8,000
No.5	33,430	32,430	0	0	1,000
No.6	25,110	24,000	1,110	0	0
No.7	4,190	4,190	0	0	0
No.8	48,170	38,170	0	0	10,000
No.9	20,660	16,660	0	1,000	4,000
No.10	4,210	2,000	2,000	0	210
No.11	4,840	4,840	0	0	0
No.12	6,040	5,040	0	0	1,000
No.13	21,360	20,360	0	0	1,000

Source : Survey Team

The condition of the road pavement was evaluated according to the criteria shown in Table 6.2-5.

Table 6.2-5 Indicis of Evaluation for Pavement Condition

Criteria	Status of Pavement
Very Good (1)	Almost no damages on the pavement
Good (2)	Some minor damages on the pavement / It will contribute for road structures.
Fair (3)	Damages on the Pavement / It still contribute for road structures.
Bad (4)	Fatal damages on the pavement / It contributes for road structures a little.
Very Bad (5)	Fatal damages on the pavement. It does not contribute for road structures.

Source : Survey Team

The results of the pavement condition survey are shown in Table 6.2-6. Details are shown in the Appendix Road-3, which was evaluated as Bad (4) to Very Good (1). In this Survey, the roads are evaluated by the average of the entire section. However, in the case of a long section or a section where the road surface condition changes significantly within the same route, it should be noted that even the roads with Very Good have partly bad condition surfaces. The sections with partly poor road surface condition in No.6 and No.13, which were evaluated as Very Good, are shown below.

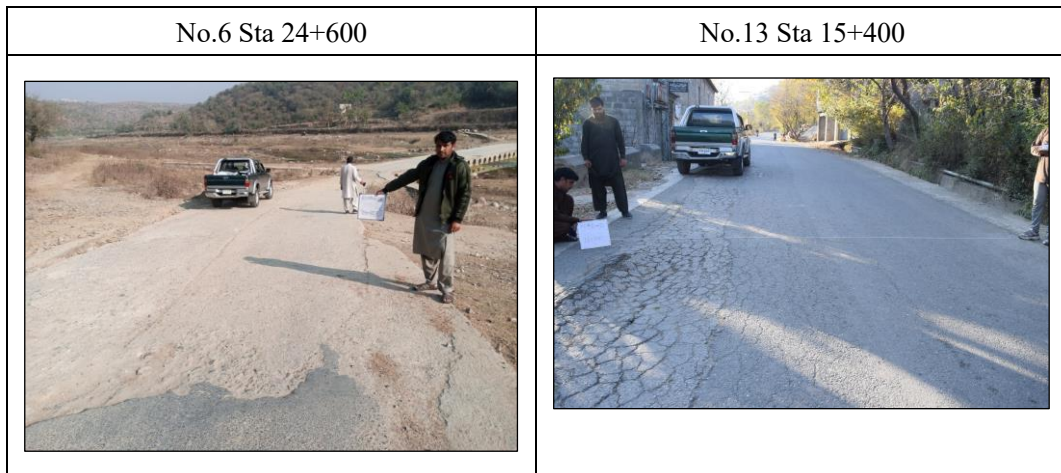


Table 6.2-6 Results of the Pavement Condition Survey

	Length (m)	Mark	Result
No.1	9,160	4.3 (4)	Bad
No.2	10,710	3.2 (3)	Fair
No.3	8,840	4.4 (4)	Bad
No.4	20,350	3.5 (4)	Bad
No.5	33,430	1.8 (2)	Good
No.6	25,110	1.3 (1)	Very Good
No.7	4,190	2.2 (2)	Good
No.8	48,170	3.5 (4)	Bad
No.9	20,660	2.7 (3)	Fair
No.10	5,060	2.8 (3)	Fair
No.11	4,840	1.5 (2)	Good
No.12	6,040	3.7 (4)	Bad
No.13	21,360	1.4 (1)	Very Good

Source : Survey Team

Examples of evaluation results are shown below.

Very Good No.6 Sta. 7+000	Good No.4 Sta. 3+000
	
Fair No.4 Sta.12+000	Bad No.8 Sta. 15+000
	
Very Bad No.1 Sta. 9+000	Very Bad No.2 Sta.9+000
	

6.2.3 Feeder Road Survey

The result of feeder road survey is shown in Table 6.2-7. The details are shown in Appendix Road-4. All roads with a feeder road length of 1 km or more were counted as feeder roads. It is also possible to evaluate feeder roads by classifying them by road standard or traffic volume. The final results showed a very large variation.

Table 6.2-7 Result of Feeder Road Survey

	Length (m)	No. of Feeder Road	Mark
No.1	9,160	8	0.9
No.2	10,710	8	0.7
No.3	8,840	9	1.0
No.4	20,350	10	0.5
No.5	33,430	36	1.1
No.6	25,110	15	0.6
No.7	4,190	12	2.9
No.8	48,170	9	0.2
No.9	20,660	40	1.9
No.10	5,060	9	1.8
No.11	4,840	7	2.1
No.12	6,040	10	1.7
No.13	21,360	41	0.2

Source : Survey Team

The evaluation results for the feeder roads are shown in Table 6.2-8.

Table 6.2-8 Evaluation Criteria/Results for Feeder Roads

Criteria	Mark	No. of Road
Less than 0.5/km	2	No. 8, 13
0.5/km to 1.0/km	4	No. 1, 2, 4, 6
1.0/km to 1.5/km	6	No. 3, 5
1.5/km to 2.0/km	8	No. 9,10, 12
2.0/km to 2.5/km	10	No. 7, 11

Source : Survey Team

6.2.4 Proximity of Medical Facility

The relationship between the 20 target medical facilities and the 13 target roads of the Survey was confirmed. Table 6.2-9 shows the number of target hospitals that are located along or near the target roads and contribute to improvement of accessibility for the local residents (see the location map at the beginning of this report).

JICA is currently implementing a grant aid project "The Improvement of Disaster Resilient Schools Infrastructure in Khyber Pakhtunkhwa Province" (Collaboration with UN-Habitat) in KP province, and one of targeted schools under the grant aid was identified around the road No. 11. In the Survey, the accessibility to hospitals was set as an evaluation criterion, but in the future, it may be an idea to consider more broadly in terms of improving access to social services.

Table 6.2-9 Number of Medical Facility Improved the Accessibility

Road No	1	2	3	4	5	6	7	8	9	10	11	12	13
Medical Facility	1	1	1	1	-	-	-	-	2	2	-	-	-

6.2.5 Summary of Evaluation Indices

Table 6.2-10 shows the scoring results by indicator for prioritization.

Table 6.2-10 Scoring Results for Prioritization

Indices	Traffic 1 - 5 less - many	Condition 1 - 5 less - many	Feeder Road 2 - 10 less - many	No of Clinics Access is improved	No of schools Access is improved
No.1	1	4	4	1	-
No.2	1	3	4	1	-
No.3	1	4	6	1	-
No.4	1	4	4	1	-
No.5	5	2	6	-	-
No.6	2	1	4	-	-
No.7	3	2	10	-	-
No.8	1	4	2	-	-
No.9	1	4	8	2	-
No.10	2	3	8	2	-
No.11	1	2	10	-	3
No.12	1	4	8	-	-
No.13	1	1	2	-	-

Source : Survey Team

6.3 Study on Economic and Benefit Effects around Target Areas

The section from Sta. 6 to Sta. 8 of No.1 road is a mountain road and lacks width. There is a risk of landslides, and there are areas that need to be repaired as soon as possible.

In addition, there is a marble factory along No.5, a mining site along No.9, and a brick and cement harrow block production area along No.10, which makes these roads economically effective.

6.4 Evaluation Results of Prioritization

The target roads are prioritized based on the results in Table 6.2-10. The evaluation results are shown in Table 6.4-1.

Table 6.4-1 Results of the Evaluation of Target Road

Item	Traffic Volume		Pavement Condition		Feeder Road		No of Hostilas access is improved	Score
Judge	a		b		c		d	$a \times b \times (d+1) + c$
	Heavy	5	Very Bad	5	Plenty	10	No. of Hospitals contributed on access	
		4	Bad	4		8		
	Normal	3	Fair	3	Normal	6		
		2	Good	2		4		
	Less	1	Very Good	1	Less	2		
No.1	1		4		4		1	12
No.2	1		3		4		1	10
No.3	1		4		6		1	14
No.4	1		4		4		1	12
No.5	5		2		6		0	16
No.6	2		1		4		0	6
No.7	2		2		10		0	14
No.8	1		4		2		0	6
No.9	2		3		8		2	26
No.10	2		3		8		2	26
No.11	1		2		10		0	12
No.12	1		4		8		0	12
No.13	2		1		2		0	4

Source : Survey Team

Table 6.4-2 shows the final rankings, with the economic benefits taken into account.

Table 6.4-2 Final Prioritization Results

Priority	Road No.	Score	Remarks
High	1	No.9	26
	1	No.10	26
	3	No.5	16
Medium	4	No.3	14
	5	No.7	14
	6	No.12	12
	7	No.1	12
	7	No.4	12
	7	No.11	12
	10	No.2	10
Low	11	No.6	6
	11	No.8	6
	13	No.13	4

CHAPTER 7. Basic Design Policy

7.1 Policy of the Design

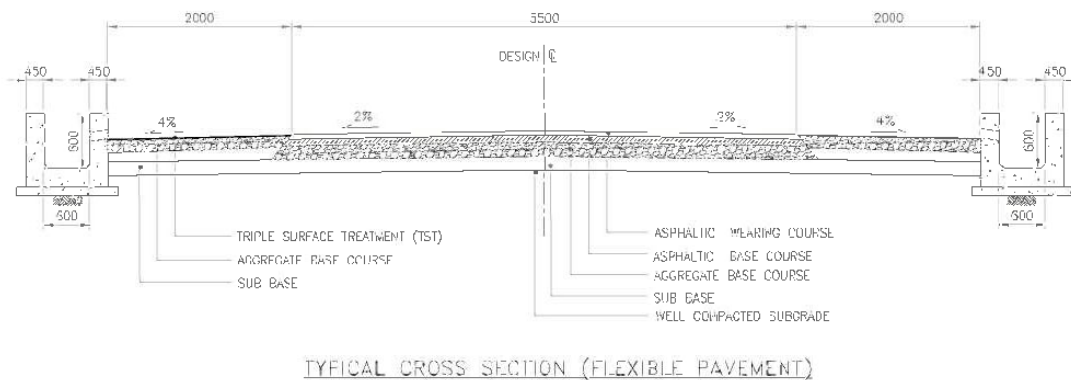
The standard cross section of Pakistan shall be adopted. However, the detailed design requires detailed planning to match the topography based on these standard cross-sections.

7.1.1 Study of the Standard Section

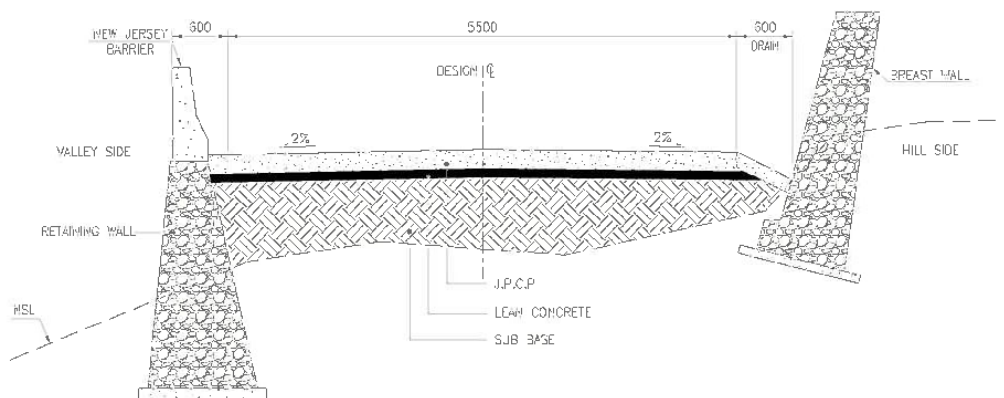
(1) Standard cross section

The standard cross section of the target road consists of the following four cross sections.

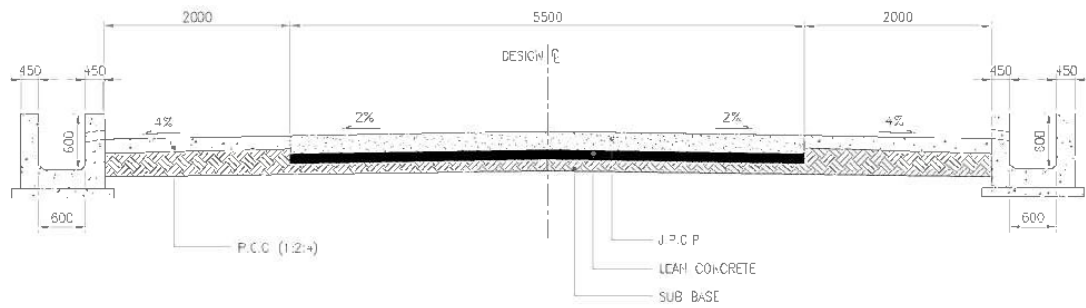
1) Typical Cross Section (Flexible Pavement)



2) Typical Cross Section (Flexible Pavement) (Cut/Fill)

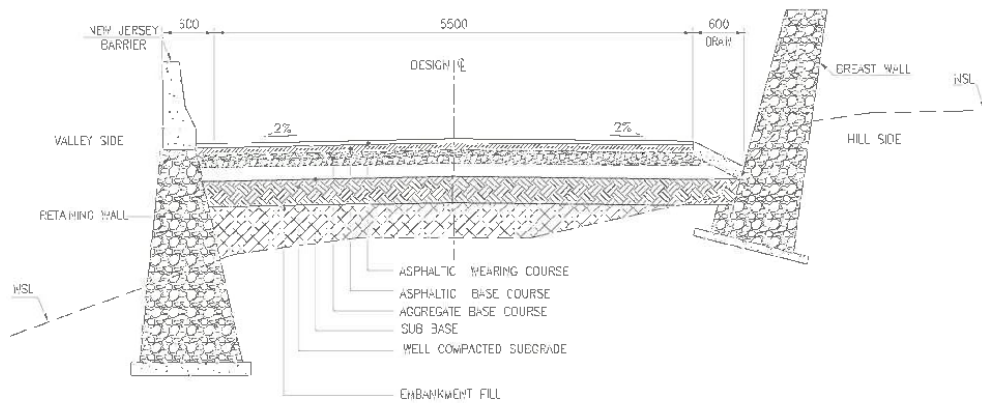


3) Typical Cross Section (Rigid Pavement)



TYPICAL CROSS SECTION (RIGID PAVEMENT)

4) Typical Cross Section (Rigid Pavement) (Cut/Fill)



(2) Road class

The roads in Pakistan are classified as shown in Table 7.1-1. All the roads covered in the Study are classified as District Roads.

Table 7.1-1 Road Classification in Pakistan

1	Motorways
2	National Highways
3	Expressways
4	Strategic Roads
5	Provincial Roads
6	District Roads
7	Farm to Market Roads
8	Urban Roads

(3) Width of carriageway

The width of carriageway at Pakistan standard cross section is 5,500 mm (2,750+2,750), but the Japanese standard specifies it as shown in Table 7.1-2. It is classified by traffic volume and topography.

However, since the Survey was conducted only at one point where the traffic volume was expected to be the highest among the target routes, it is necessary to conduct the survey at multiple appropriate locations in the future.

The shoulder width of the standard cross section at Pakistan is 2,000 mm, while the Japanese standard is as shown in Table 7.1-3. The shoulder width of the standard cross-section is wider than the Japanese standard, as it is 750mm in Type 3 where the subject road is classified.

The comparison between the Japanese standard and the local standard cross section for the total road width is shown in Table 7.1-4. Although the Japanese standard is satisfied for the total width, cross sections (2) and (4) are significantly insufficient. It is recommended to secure shoulder width as much as possible in order to maintain the sight distance.

Table 7.1-2 Road width in Japanese Standard and Target Roads

Type		Class	Traffic Volume	Width	Road No
1	Motorway (rural)	1 to 3	8,000 to 12,000	3.50 m	
		4	8,000 to 11,000	3.25 m	
2	Motorway (city)	1	18,000	3.50 m	
		2	17,000	3.25 m	
3	Other road (rural)	1	Flat : 11,000	3.50 m	5, 7
		2	Flat : <9,000 Mountain : <7,000	3.25 m	
		3	Flat : <8,000 Mountain : <6,000	3.00 m	1, 2, 3, 4, 6, 8, 10, 11,12
		4	Mountain : <5000	2.75 m	9, 13
4	Other road (city)	1	> 12,000	3.25 m	
		2	> 10,000	3.00 m	
		3	> 10,000		

Source : Survey Team

Table 7.1-3 Shoulder Width according to Japanese Standards and Target Road

Type		Class	Traffic Volume	Width	Road No
1	Motorway (rural)	1, 2	8,000 to 12,000	2.50 m	
		3, 4	8,000 to 11,000	1.75 m	
2	Motorway (city)	1	18,000	1.25 m	
		2	17,000		
3	Other road (rural)	1	Flat : <11,000	0.75 m	5, 7
		2	Flat : <9,000 Mountain : <7,000		
		3	Flat : <8,000 Mountain : <6,000		1, 2, 3, 4, 6, 8, 10, 11,12
		4	Mountain : <5000		9, 13
4	Other road (city)	1	< 12,000	0.5m	
		2	< 10,000		
		3	< 10,000		

Source : Japanese Road Structure Ordinance

Table 7.1-4 Comparison of Total Road Widths

Class 3	Target Roads	Width by Japanese standards (shoulder+roadway+roadway+shoulder)	Width at this time (shoulders shall be provided)
Type-1	No. 5	0.75+3.5+3.5+0.75 =8.5 m	2.0+2.75+2.75+2.0 =9.5 m
Type-2	No. 7	0.75+3.25+3.25+0.75 =8.0 m	
Type-3	No. 1, 6, 8, 9, 10, 11, 12, 13	0.75+3.0+3.0+0.75 =7.5 m	
Type-4	No. 2,3,4	0.75+2.75+2.75+0.75 =7.0 m	

Source : Japanese Road Structure Ordinance

(4) Pavement composition

The standard pavement section commonly adopted is shown in Table 7.1-5.

Table 7.1-5 Standard Pavement Section

Type	Flexible Pavement (Asphalt Pavement)	Rigid Pavement (Concrete Pavement)
Asphaltic Wearing Course	50 mm	
Asphaltic Base Course	80 mm	
JPCP (Jointed Plain Concrete Pavement)		300 mm
Aggregate Base Course	150 mm	
Sub Base Course	150 mm	100 mm

Source : Survey Team

The 10-year cumulative ESAL (Equivalent Single Axle Load) value was calculated, assuming that the 18kip¹⁵ ESAL¹⁶ of the truck was 2. The CBR value of the subgrade was assumed to be 8, and the pavement section was examined. As a result, as shown in Table 7.1-6, the required SN¹⁷ was cleared for all roads, and it was confirmed that the design was on the safe side. For roads with low traffic volume, it is sufficient to omit the Asphaltic Base Course.

Table 7.1-6 10years estimated ESAL Value and Evaluation

Road No	Cumulative ESAL Value	SN Value	Required SN Value	Judge
1	275,000	3.772	2.10	Passed
2	208,000	3.772	2.03	Passed
3	28,000	3.772	1.43	Passed
4	303,000	3.772	2.17	Passed
5	4,754,000	3.772	3.42	Passed
6	446,000	3.772	2.31	Passed
7	332,000	3.772	2.20	Passed
8	37,000	3.772	1.50	Passed
9	2,790,000	3.772	2.13	Passed

¹⁵ 1000lbf / 453.59kg

¹⁶ Converted axle weight calculated based on unit axle weight

¹⁷ Indicators of pavement strength

Road No	Cumulative ESAL Value	SN Value	Required SN Value	Judge
10	208,000	3.772	2.03	Passed
11	417,000	3.772	2.29	Passed
12	1,110,000	3.772	2.69	Passed
13	2,448,000	3.772	3.07	Passed

Source : Survey Team

(5) Asphalt road, concrete road

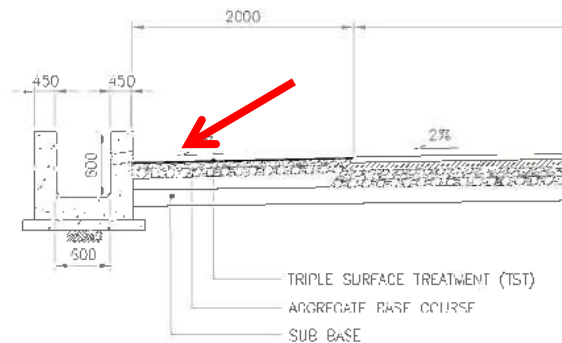
For flat roads, asphalt pavement is considered effective due to its speed of construction and cost. However, for mountain roads, it is recommended to use concrete pavement because surface water may damage the pavement.

(6) Number of lanes

It is recommended that routes with a daily traffic volume of more than 10,000 vehicles should have four lanes.

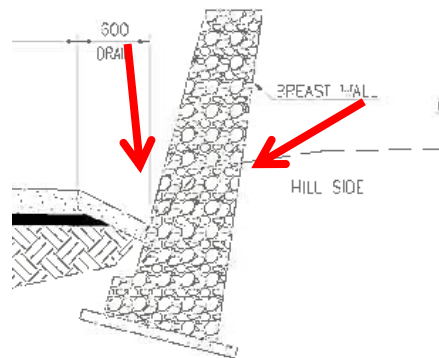
7.1.2 Study of the Ancillary Facilities

(1) Ditch



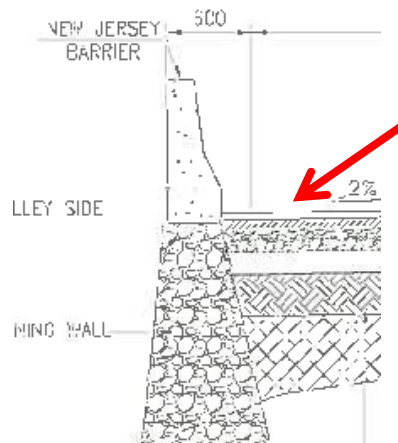
- The capacity of the holes made in the ditch wall needs to be checked. If the cross-section of the pipe is insufficient, surface water will flow over the road surface, which is a traffic safety problem and a factor in damaging the pavement surface.
- If the cross-section of the ditch is insufficient, water will flow back to the road surface through the holes in the ditch wall. This is a traffic safety problem as well as a cause of damage to the pavement surface.
- There is little advantage in raising the channel above the road surface. The top of the channel should be at the same level as the road surface.

(2) Riprap leaning and retaining wall



- There is no gravel backfill at the back of the retaining wall and drainage pipe. They shall be provided.
- Water will flow to the edge of the pavement. When the pavement cracks, surface water will seep into the pavement.

(3) Railing



- Surface water will run, which is a problem for traffic safety and pavement condition. Drainage pipes need to be installed accordingly.

7.1.3 Study of the Seismic Analysis

There are no dimensions in the standard cross section. Only gravity type retaining walls are considered for this seismic study.





In Japan, the maximum height of gravity type retaining wall is 7 m. Therefore, the maximum height of gravity type retaining walls in Pakistan should also be 7 m. In addition, retaining walls of 8 m or less are not subject to verification because the seismic action is very small, and it is considered that these are not subject to verification in this study.

CHAPTER 8. Reference Information on the Study for Potential Projects

8.1 Collection of Related Information

8.1.1 Road Width Survey

The results of the road width survey and photographs of the cross section are shown in the Appendices. Along the new roads, the 5.5 m carriageway width specified in the standard cross-section is secured. However, there are many relatively old roads that do not meet the 5.5 m requirement. As for shoulders, there were few roads that met the 2.0 m requirement.

Standard Section No.6 Sta.19+800 Carriage Way : 5.5 m Shoulder : None	Standard Section No.13 Sta.4+000 Carriageway : 5.5 m Shoulder : 2.0m
	
Bottle Neck No.4 Sta.3+600 Carriage way : 3.5 m DBST	Bottle Neck No.9 Sta.15+200 Carriage way : 3.7 m Asphalt Concrete
	

8.1.2 Road Inventory Survey

A summary of the inventory survey results is shown in Table 8.1-1. The details are shown in Appendix Road-4. The main structures are bridges, slope protection works, culverts, and ditches. This information is indispensable for examining the estimated project cost, and all these structures should be reviewed for detailed design.

Table 8.1-1 Results of Road Inventory Survey


Road No.	L(m)	Item/Type	Q'ty	Unit
No.1	9,160	Slope Protection/ Stone Masonry	105.7	m
		Culvert/ Pipe Culvert	4	location
		Side Ditch	3	location
No.2	10,710	Slope Protection/ Stone Masonry	259.8	m
		Culvert/ Stone Masonry	9	location
		Culvert/ Pipe Culvert	3	location
		Side Ditch	1	location
No.3	8,840	Slope Protection/ Stone Masonry	46.0	m
		Culvert/ Pipe Culvert	1	location
No.4	20,350	Slope Protection/ Stone Masonry	10255.5	m
		Culvert/ RC Slab	16	location
		Culvert/ Pipe Culvert	4	location
		Side Ditch	1	location
		Causeway	1	location
No.5	33,430	Slope Protection/ Stone Masonry	4946.5	m
		Slope Protection/ Concrete	50.0	m
		Culvert/ RC Slab	65	location
		Culvert/ Pipe Culvert	36	location
		Side Ditch	36	location
		Bridge/ Circular Arch Bridge	1	location
		Bridge/ RC Beam and Slab	1	location
		Bridge/ RC Beam	1	location
		Bridge/ Prestressed Concrete Bridge	1	location
No.6	25,110	Slope Protection/ Stone Masonry	13128.6	m
		Culvert/ RC Slab	62	location
		Culvert/ Pipe Culvert	8	location
		Side Ditch	22	location
		Causeway	1	location
		Bridge/ Circular Arch Bridge	1	location
		Bridge/ RC Beam	1	location
No.7	4,190	Slope Protection/ Stone Masonry	30.0	m
		Slope Protection/ Concrete	1511.0	m
No.8	48,170	Slope Protection/ Stone Masonry	15.0	m
		Slope Protection/ RC Slab	7.6	m
		Slope Protection/ Concrete	27	m
		Culvert/ Brick Masonry	41	location
		Culvert/ RC Slab	67	location
		Culvert/ Pipe Culvert	5	location
		Causeway	3	location
		Irrigation Canal	2	location
		Bridge/ RC Slab Brick Masonry Wall	1	location
		Bridge/ Prestressed Concrete Bridge	1	location
		Bridge/ RC Bridge	1	location
No.9	20,600	Slope Protection/ Stone Masonry	1687.9	m
		Slope Protection/ Concrete	289.0	m
		Slope Protection/ Concrete + Masonry	161.6	m
		Culvert/ RC Slab	46	location
		Culvert/ Pipe Culvert	17	location
		Causeway	3	location

Road No.	L(m)	Item/Type	Q'ty	Unit
		Side Ditch	13	location
		Bridge/ RC Slab	1	location
		Bridge/ Prestressed Concrete Bridge	1	location
		Bridge/ Steel	1	location
No.10-1	4,210	Slope Protection/ Brick Masonry	266.4	m
		Culvert/ RC Pipe Culvert	3	location
		Culvert/ RC Slab	1	location
		Culvert/ Stone Masonry	1	location
		Side Ditch	3	location
No.10-2	850	Culvert/ Pipe Culvert	1	location
		Culvert/ Plastic Pipe Culvert	1	location
		Side Ditch	1	location
		Bridge/ RC Slab	1	location
No.11	4,840	Slope Protection/ Concrete	26	m
		Culvert/ RC Pipe Culvert	10	location
		Culvert/ RC Slab	4	location
		Side Ditch	10	location
No.12	6,040	Slope Protection/ Stone Masonry	1101.4	m
		Culvert/ RC Pipe Culvert	11	location
		Culvert/ RC Slab	13	location
		Side Ditch	2	location
No.13	21,360	Slope Protection/ Concrete	5145.4	m
		Slope Protection/ Stone Masonry	3211.0	m
		Slope Protection/ RC Slab	8	m
		Culvert/ RC Slab	42	location
		Culvert/ Pipe Culvert	42	location
		Culvert/ RC Circular Culvert	2	location
		Culvert/ RC Arch	1	location
		Culvert/ Arch Type Stone Masonry	1	location
		Side Ditch	28	location
		Bridge/ Stone Masonry	2	location
		Bridge/ RC Slab	3	location
		Bridge/ Prestressed Concrete Bridge	2	location
		Bridge/ RC Girder Bridge	1	location
Bridge/ Arch Type	1	location		

Typical ancillary facilities and their characteristics are as follows.



(1) Bridge

Three types of bridges are confirmed such as Arch bridges, RC bridges, and PC bridges. There were also PC bridges with long spans, showing the high level of technology. In addition, there are many arch bridges that are rarely seen nowadays in this area. This is a very classic, rare and beautiful bridge type.

No.5 Sta.2+448 L=8.1 m Arch Bridge	No.8 Sta.33+700 L=81.2 m RC Bridge
	
No.9 Sta.12+841 L=37 m PC Bri	No.9 Sta.4+411 L=28 m PC Bri
	
No.13 Sta.10+050 L=45 m PC Bri	No.13 Sta.17+600 L=5.3 m Arch Bri
	

(2) Slope Protection Works

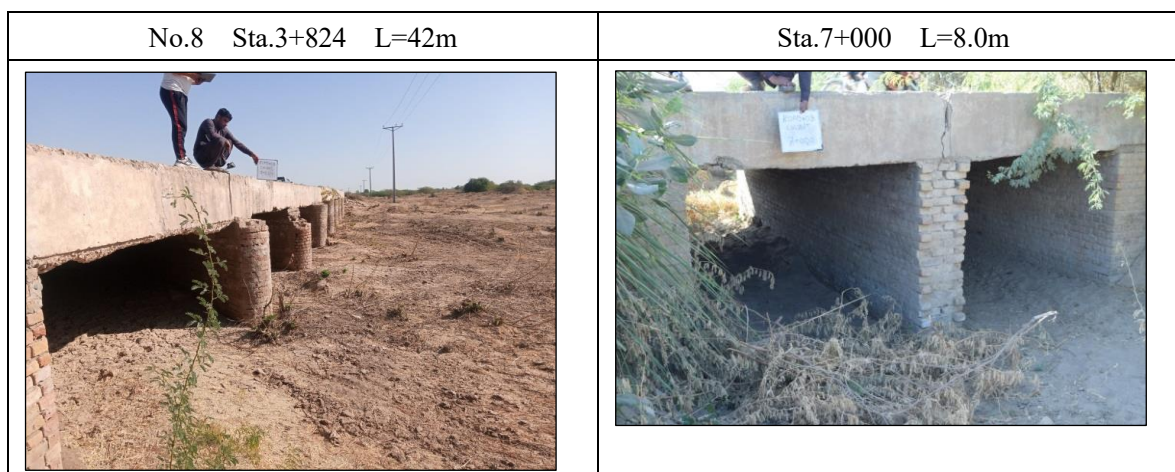
In mountain roads, field masonry is often used to protect slopes. Large retaining walls over 7 m should be RC structures. It is recommended that retaining walls over 3 m should be equipped with fall prevention measures.

No.1 Sta.5+650 H=3.0 m	No.4 Sta.15+455 H=5.0 m
	

(3) Culvert

There are two types of culverts: box type and pipe type. The pipe type is a common construction method. Walls of the box type are generally RC structure, but here they are made of field-laid masonry. For earthquake resistance, it is recommended that the box culvert be RC structure.

No.2 Sta.2+295 L=35 m	No.3 Sta.1+792 D=0.7 m
	
No.6 Sta.24+619 D=0.6 m	No.8 Sta.3+420 L=8.0 m
	



8.2 Basic Policy

8.2.1 Standard Cross Section

The four cross sections described in Chapter 7.2 were planned as standard cross sections. The cross-sections for each section of the target roads were determined based on the results of the drive recorder survey, photographs of the width survey, and the inventory survey. (See Appendix Road-5).

Table 8.2-1 Length of Standard Section by Target Road (m)

Road No	Asphalt Plain	Asphalt Mountain	Concrete Plain	Concrete Mountain
1	4,760	200	0	4,200
2	4,600	6,110	0	0
3	0	5,240	0	3,600
4	0	15,150	0	5,200
5	33,430	0	0	0
6	25,110	0	0	0
7	4,190	0	0	0
8	39,570	8,600	0	0
9	14,460	5,000	1,200	0
10-1	2,210	0	2,000	0
10-2	0	0	850	0
11	4,840	0	0	0
12	2,040	4,000	0	6,040
13	18,560	2,800	0	21,360

Source : Survey Team

8.3 Cost Estimate

8.3.1 Outline of the Cost Estimate Guideline

Pakistan's costing standards consist of the following documents.

- **Market Rate System (MRS-2021)**

This is a list of construction unit prices and it consists of about 4,000 unit prices. Each unit price is given an Item Code, which is linked to the technical specifications and Rate Analysis. The construction cost is calculated based on this unit price.

- **Technical Specifications for Workmanship**

This specifies the materials and workmanship of each construction type. In addition, the measurement method is described as Measurement, which is used for payment in case of BoQ contract.

- **Rate Analysis**

The details of the unit price are described. It is calculated by multiplying the unit price of machinery, labor and productivity. Profit (10%), overhead (2.0%), and taxes (7.5%) are included in the unit price. The concept of the estimate method in Pakistan is similar to the concept of cost estimate in Japan.

8.3.2 Study on the Cost Estimate Method

The following shows the method of cost estimate in Pakistan. The Area Factor is provided for each District in the range of 1 to 1.14.

Construction cost = Direct cost x (1 + 0.195 (profit + overhead + tax)) x Area Factor

The following table shows a comparison of the indirect cost ratio between Pakistan and Japan. However, in the Japanese standard, the range is provided by construction amount. The ratio of indirect cost and profit in Pakistan's cost estimate standards is set at a very small value compared to Japan's standards. The ways of cost estimate for the ancillary works vary. In most cases about 1% of the cost is provided as lump-sum.

Table 8.3-1 Comparison of Indirect Costs between Pakistani and Japanese

Pakistan Standard		Japanese Standard	
Ancillary Works	Around 1%	Temporary Works	5.92% to 17.09%
Over Head	2%	Site Expense	20.13% to 42.54
Contractor Profit	10%	Contractor Profit	7.47% to 22.72%
Income Tax	7.5%	Vat	10%

Source: Survey Team

8.3.3 Cost Estimate of Each Standard Section

The unit prices for each standard cross section are shown below. (See Appendix Road-5)

Table 8.3-2 Unit Price by Standard Section

Asphalt Pavement (Plain)	PKR 86,230,000/km
Asphalt Pavement (Mountain)	PKR 81,155,000/km
Concrete Pavement (Plain)	PKR 85,655,000/km
Concrete Pavement (Mountain)	PKR 88,119,000/km

Source : Survey Team

8.3.4 Cost Estimate of the Target Roads

The length of standard cross section for each section was multiplied by the above amount to calculate the construction cost for each type. The results are shown in Table 8.3-3.

Table 8.3-3 Construction Cost by Target Road

Road No	Road Name	Length (Km)	Cost (Ks)	District
1	Kakul to Dana via Balolia with link to Jabbi	9.16	980,730,790	Abbottabad
2	Link Road to Sherwan Road	10.71	1,098,558,059	Abbottabad
3	Banda Ali Khan to Shahkot Main Road	8.84	913,884,574	Abbottabad
4	Takia Hall to Beer Pid Gali Road	20.35	2,077,330,882	Abbottabad
5	GS Marble to Lewganai Road Buner	33.43	3,754,859,696	Buner
6	Kankawai to Dandar Road	25.11	2,820,356,774	Buner
7	Indua View Road from Dhappan Wala Morto Mian Bakhar Road	4.19	444,715,316	Dera Ismail Khan
8	Ramak to Chodwan Road	48.17	5,058,905,191	Dera Ismail Khan
9	Balakot to Ghar Habibullah Road	20.66	2,265,597,913	Mansehra
10-1	Chakia Farsh to Khushala and Mattan Wali Ziarat Khusala Hayana Road-1	4.21	467,043,938	Mansehra
10-2	Chakia Farsh to Khushala and Mattan Wali Ziarat Khusala Hayana Road-2	0.85	93,964,914	Mansehra
11	Rano Galhi to Budni Village Peshawar	4.84	498,742,297	Peshawar
12	Langar to Archillai Road	6.04	645,985,910	Swat
13	Pie Kalay to Shawar Road	21.36	2,358,803,623	Swat
		217.92	23,479,479,879	

Source : Survey Team

8.4 Confirmation of the Policy for the Operation and Maintenance

The maintenance work consists of periodic inspection, daily maintenance and repair, and the estimated cost of maintenance is estimated to be 64,000 PKR (about 360 US\$)/month/km as shown in Table 8.4-1.

The annual maintenance cost for the target roads is estimated to be 166 million PKR (about 107 million yen), which is about 0.7% of the construction cost, and is considered to be feasible.

Table 8.4-1 Operation Maintenance Cost

Item	Contents	Frequency	Equipment, Materials	Cost (PKR)
Periodic Inspection	Check road condition, damages and deformation	1/month	Shovel, Hammer, Sickle, Barricade, Pickup	4,000 PKR/Month
	Cracks on structures	1/year		4,000 PKR/Month
	Road lighting	1/month	Pickup	4,000 PKR/Month
Repair	Shoulder and Slope repair	2/year	Plate compactor, base course materials, asphalt concrete, cement, truck	4,000 PKR/Month
	Pavement repair	1/year		40,000 PKR/Month
	Concrete Structure	1/year	Cement, truck	8,000 PKR/Month
Total				64,000 PKR (¥42,000)

※PKR 1.0 =¥ 0.648

8.5 Points to be Considered in Future Cooperation

8.5.1 Quality of the Works

In the target roads, the main types of works are small bridges, grouted riprap retaining walls, roadbed / base course, asphalt pavement, concrete pavement, culverts, and drainage. They never include difficult works. Local contractors are considered to be able to handle the works adequately since paving on soft ground, and large scale bridges are also not included. However, there might be slopes which have high risks and have not been identified in the Survey. If there are such slopes, it will be necessary to conduct an accurate survey of the natural conditions at the time of design.

8.5.2 Utilization of Local Contractors

According to Japanese contractors about the possibility of construction in this area, the target roads are located in the mixture of relatively safe and dangerous areas including mountainous areas, which raises concerns about safety. In addition, some areas in KP province are restricted to Japanese nationals for security reasons. Therefore, it is necessary to consider how to implement specific projects on the premise that the entry of Japanese nationals into the area will be severely restricted.

8.5.3 Traffic Volume Survey, Standard Design, Cost Estimate, etc.

Since the members of the survey team did not travel to Pakistan for this survey and all the information was collected through outsourcing, the following points should be considered for the materialization.

- Traffic volume surveys were conducted only at one location per target road. In order to obtain more accurate traffic volume, it is necessary to identify appropriate several survey points based on the field survey.
- For the road surface condition, the evaluation criteria were presented to the outsourced company, and the company conducted the survey in accordance with the evaluation criteria. In order to confirm the validity of the road condition survey results, it is desirable to verify them by actual field by an expert.
- In the Survey, the standard cross-sections are set at four types, but it is necessary to survey the entire section and structures that cannot be confirmed only by drive recorders and photographs, etc. It is important to add the number of standard cross-sections as necessary to improve the accuracy of the cost estimate.
- It is desirable to verify the validity of Pakistan's costing guidelines through surveys of prevailing unit prices and interviews with construction companies.

APPENDICES

Appendix Health-1 Summary of Target Medical Facilities

Appendix Health-2 Building Layout of Target Medical Facilities

Appendix Health-3 List of Parties Concerned in the Recipient Country

Appendix Health-4 List of Medical device Agency

Appendix Health-5 List of Additional Request for Medical Device

Appendix Health-6 Classification and Selection of Equipment

Appendix Road-1 Photos of Target Roads

Appendix Road-2 Traffic Volume Survey

Appendix Road-3 Pavement Condition Survey

Appendix Road-4 Road Inventory Survey

Appendix Road-5 Data of Cost Estimation for Road Sector

【Appendix Health-1】

Summary of Target Medical Facilities

SUMMARY OF TARGET HEALTH FACILITIES

code	hospital	classification	establishment year	beds	staff	outpatients	inpatients	deliveries	C-section	department												facility				drainage	HAVC						
										Outpatient	Dental	Obstetrics	Pediatrics	Radiology	EPI	Surgery	Emergency	Orthopedics	Otorhinolaryngology	Cardiology	Gastroenterology	Ophthalmology	Physical therapy	Dermatology	Urology			Anesthesiology	BE/MNC	Dialysis	COVID	location	latest construction year
H-1	DHQ Haripur Hospital	A	1993	210	801	549,592	31,912	6,516	1,627	X	X	X	X	X	X	X	X	X	X	X	X	X	X	two stories	two stories	PESCO	two feeders	>50kVA	-	tube well	good	sufficient	AC(10)
H-2	CH KTS Haripur	C	1978	100(*)	21	24,534				X	X	X	X	X	X	X	X	X	X	X	X	X	two stories	two stories	-	-	tube well	OK tested	sufficient	no	no		
H-3	TDH Khampur	D	1974	40	63	39,335	579	293		X	X	X	X	X	X	X	X	X	X	X	X	X	renovated	two stories	-	-	tube well	OK tested	sufficient	SPT, not maintained	AC(1)		
H-4	TDH Ghazi	D	1965	40	62	44,950	972	302	4	X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	NA, financial issue	NA	tube well	not tested	sufficient	no, open ditch	AC(2)		
H-5	CH Kotla	D	2002	9	13	7,998				X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	NA	NA	city water, 4-6hr.	not tested	sufficient	owner' SPT	no		
H-6	CH Rehana	D	1959	8	29	18,022		60		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	-	5KW	city water, 2hr.	not tested	sufficient	no	no		
A-1	BBS DHQ Abbottabad Hospital	A	1952	370	723	620,497	16,379	2,156	1,341	X	X	X	X	X	X	X	X	X	X	X	X	X	three stories	three stories	-	200kVA, 90kVA	tube well	tested	sufficient	SPT	AC(12)		
A-2	TDH Havelian	D	1968	40	54	91,276	5,241	1,037	137	X	X	X	X	X	X	X	X	X	X	X	X	X	two stories	two stories	occasional LS	NA, decrepit	tube well	not tested	sufficient	SPT, not maintained	GH(18)		
A-3	TDH Lora	D	1953	40	55	50,000	540	330		X	X	X	X	X	X	X	X	X	X	X	X	X	two stories	two stories	frequent LS	NA	tube well		10-15%	no	AC(2)		
A-4	CH Tajawal	D	1970, 2021	21	16	4,964	-	18		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	-	45kVA	stream water	not sufficient	sufficient	SPT	no		
A-5	CH Kalapani	D	1979	10	15	4,635				X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	frequent LS, voltage drop	-	from nearby	not sufficient	sufficient	SPT	no		
A-6	RHC Mohribedbehn	D	1987	10	12	12,522	174	184		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	-	-	NA, tube well	not good	drop water	SPT, not maintained	no		
A-7	CH Nathagali	D	1944	8	28	20,870		160		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	NA 2-3 days due to snow	-	city water	not tested	NA in winter	SPT	no		
A-8	CH Khanspur	D	1916	6	14	9,900				X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	NA 3-4 days due to snow	-	tube well, shallow	not sufficient	sufficient	no, open ditch	no		
A-9	CH Sherwan	D	1967	1	18	10,717		5		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	voltage issue and long LS	-	tube well, shallow	not sufficient	sufficient	no	no		
M-1	KATH DHQ Manshera Hospital	A	1975	350	469	333,050	23,917	3,689	1,032	X	X	X	X	X	X	X	X	X	X	X	X	X	two stories	two stories	-	-	tube well	OK, sufficient	tested	SPT	AC(155)		
M-2	TDH Garhi Habibullah	D	2007	60	52	34,883	1,048	322		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	LS, unstable voltage	NA, too big (500kVAx2)	city water	not tested	sufficient	SPT	AC(11)		
M-3	TDH Baffa	D	1935	40	96	101,000	620	230		X	X	X	X	X	X	X	X	X	X	X	X	X	two stories	two stories	-	NA, financial issue	city water, 4hr., well	not tested	sufficient	WWTP	AC(64)		
M-4	THQ Hospital Balakot	D	1945	10	49	59,321	254	250		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	-	-	well	not tested	sufficient	SPT	no		
M-5	Type-D Hospital Oghi	D	1985	8	60	36,670	-	715		X	X	X	X	X	X	X	X	X	X	X	X	X	single-story	single-story	-	-	tube well	not tested	sufficient	SPT	AC(1)		

(*) Number of beds in service is three.

AC=Air Conditioner

BE/MNC=Basic Emergency Obstetric and Newborn Care

CH=Civil Hospital

DHQ=District Headquarter Hospital

GH=Gas Heater

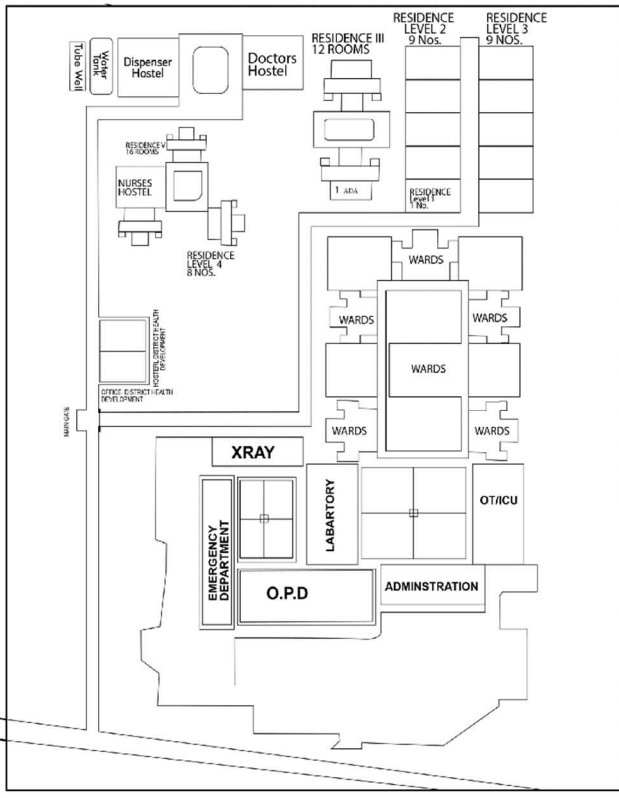
HVAC=Heating, Ventilation, and Air Conditioning

LS=Load-shedding

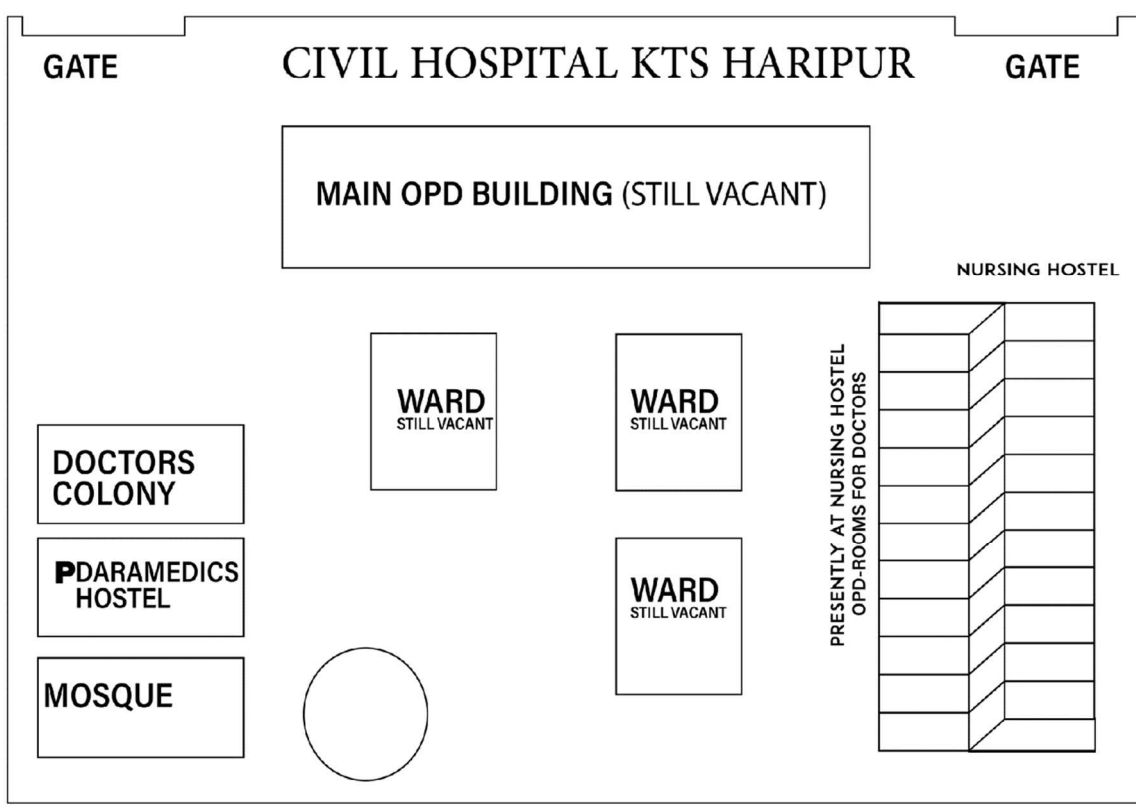
【Appendix Health-2】

Building Layout of Target Medical
Facilities

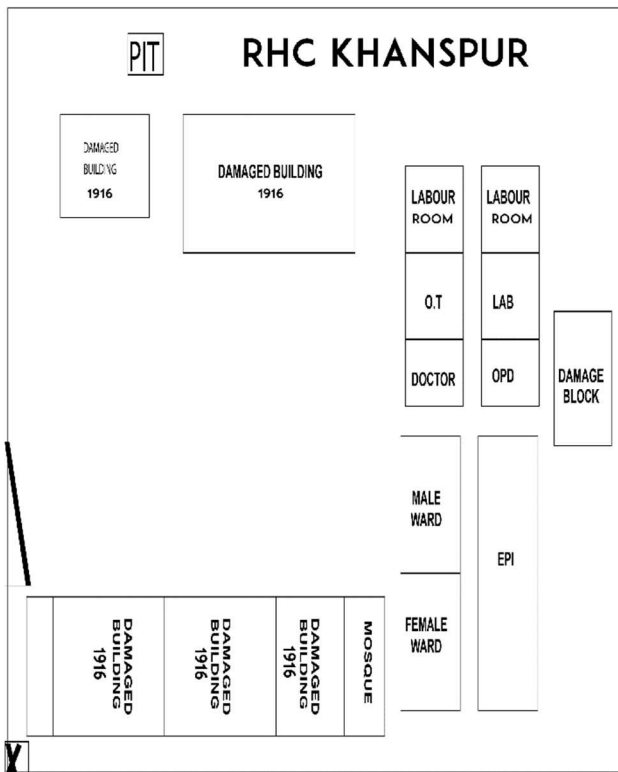
H1 DHQ Haripur Hospital



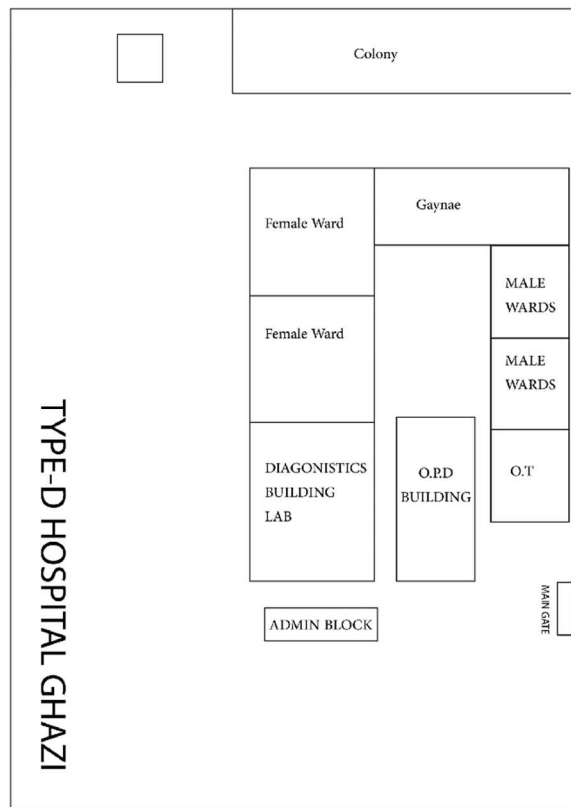
H2 CH KTS



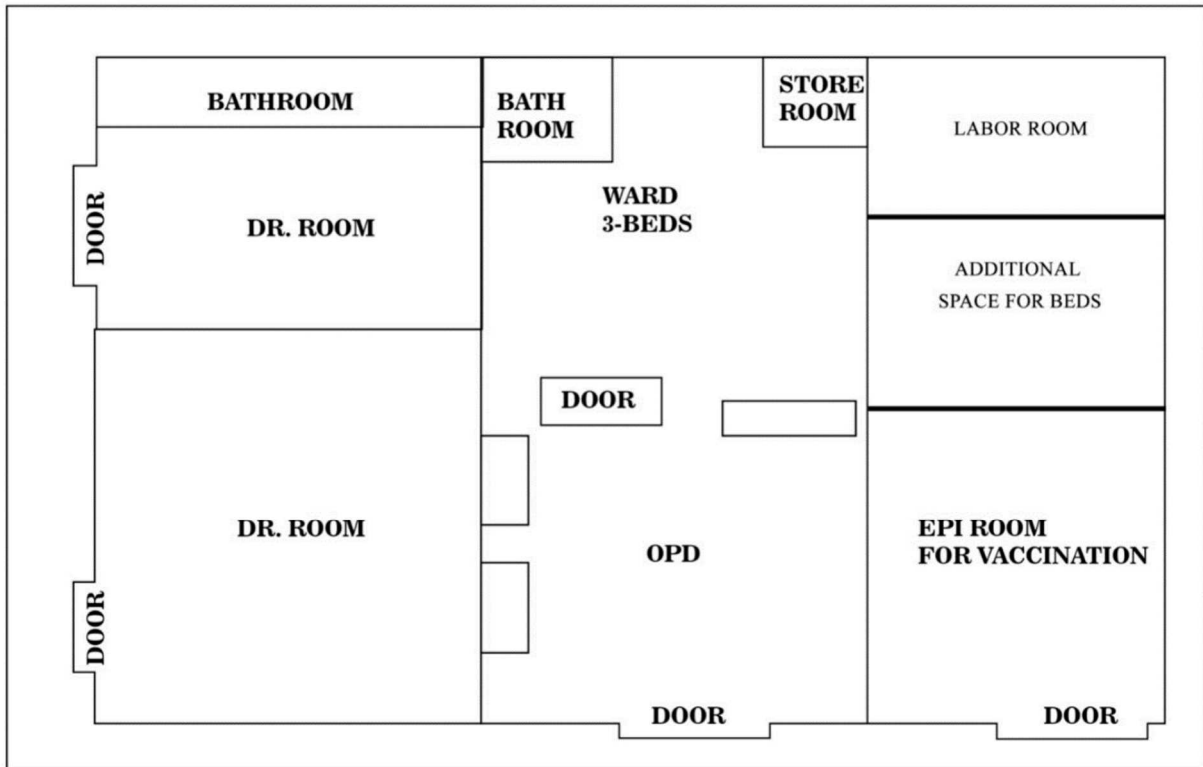
H3 Type-D Hospital Khanpur



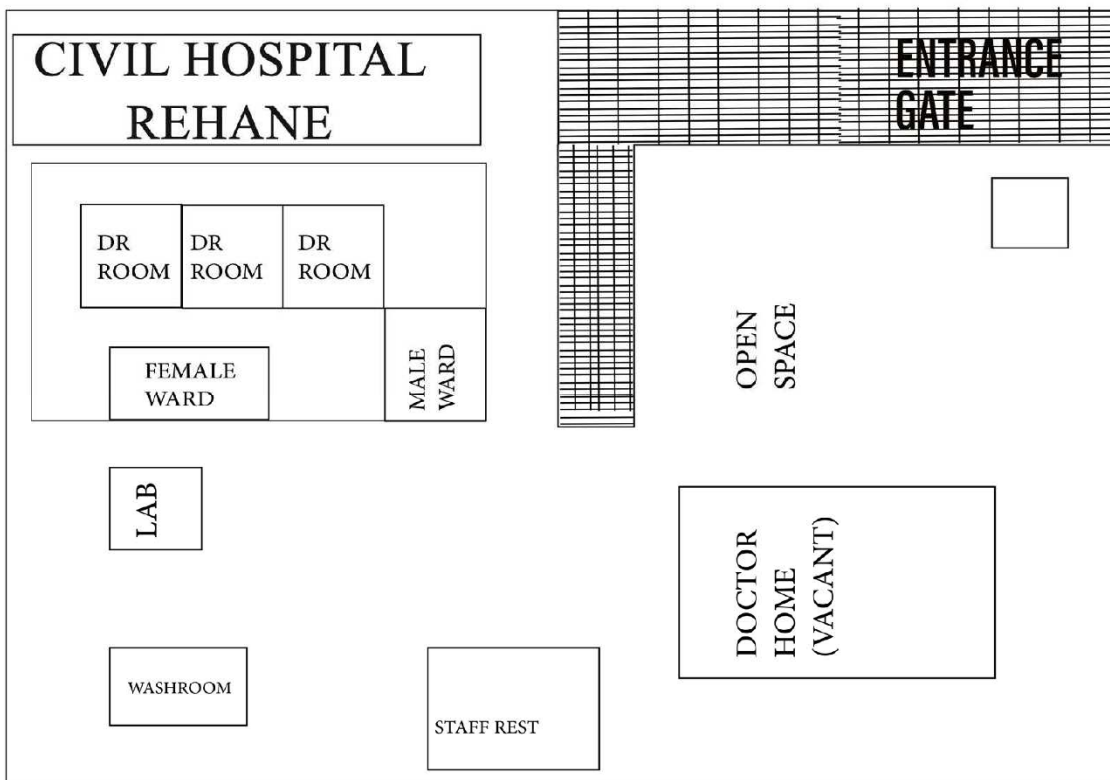
H4 Type-D Hospital Ghazi



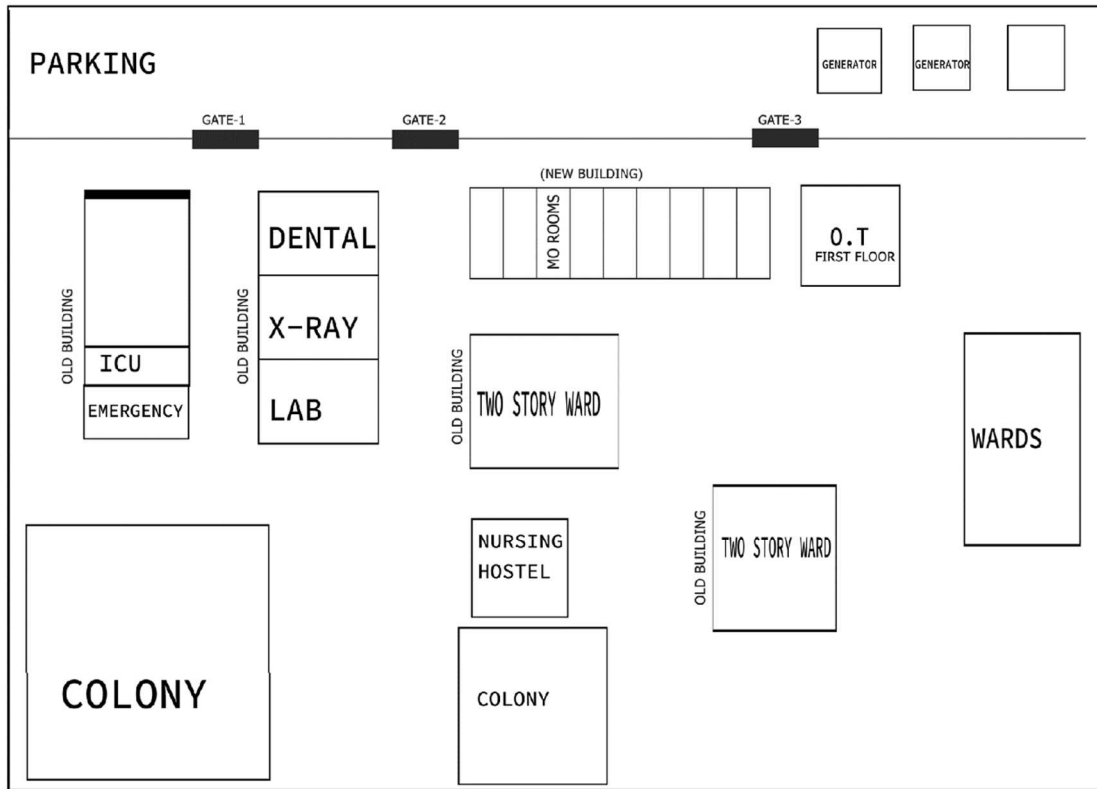
H5 CH Kotla



H6 CH Rehane



A1 BBS DHQ Abbottabad Hospital/ block A



block B

WOMENS & CHILD BLOCK-B
BBS HOSPITAL

GATE

COLONY &
HOSTELS

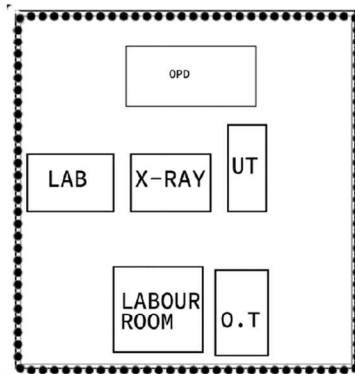
PEADS

OPD

LAWN

DR
BANGLOW

MOSQUE

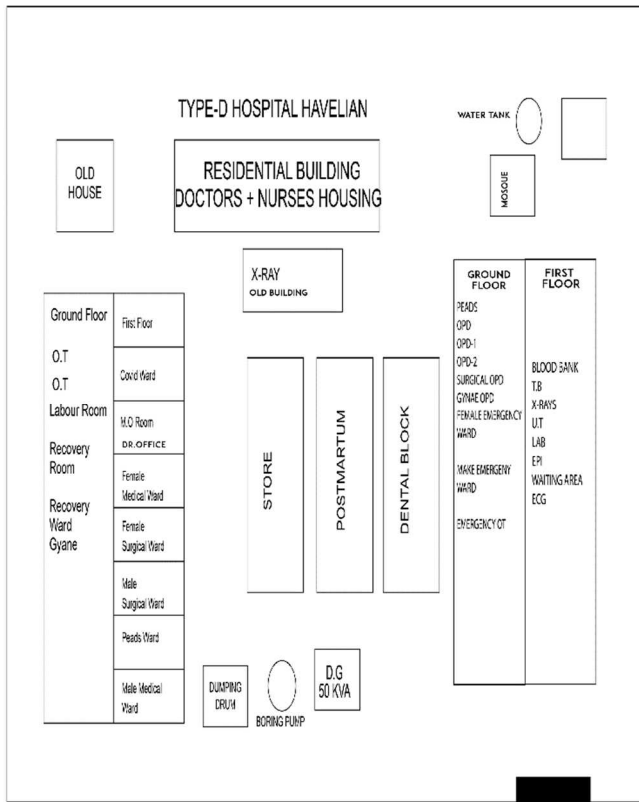


GROUND FLOOR

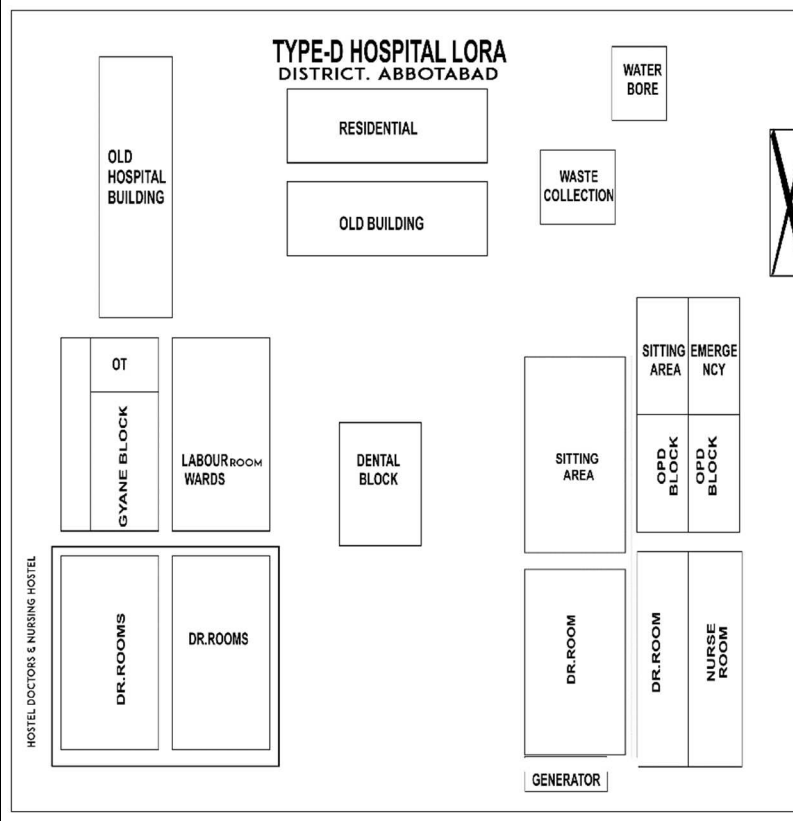


FIRST FLOOR

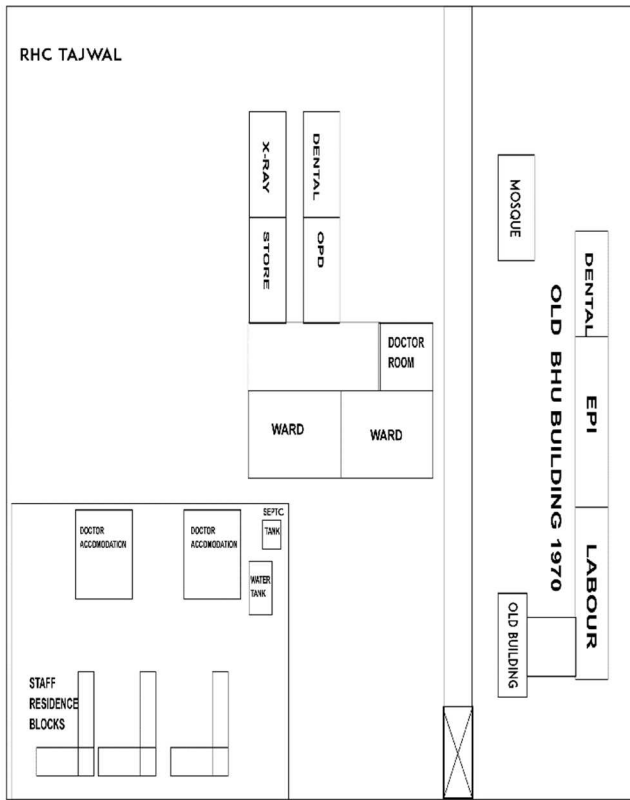
A2 Type-D Hospital Havelian



A3 Type-D Hospital Lora

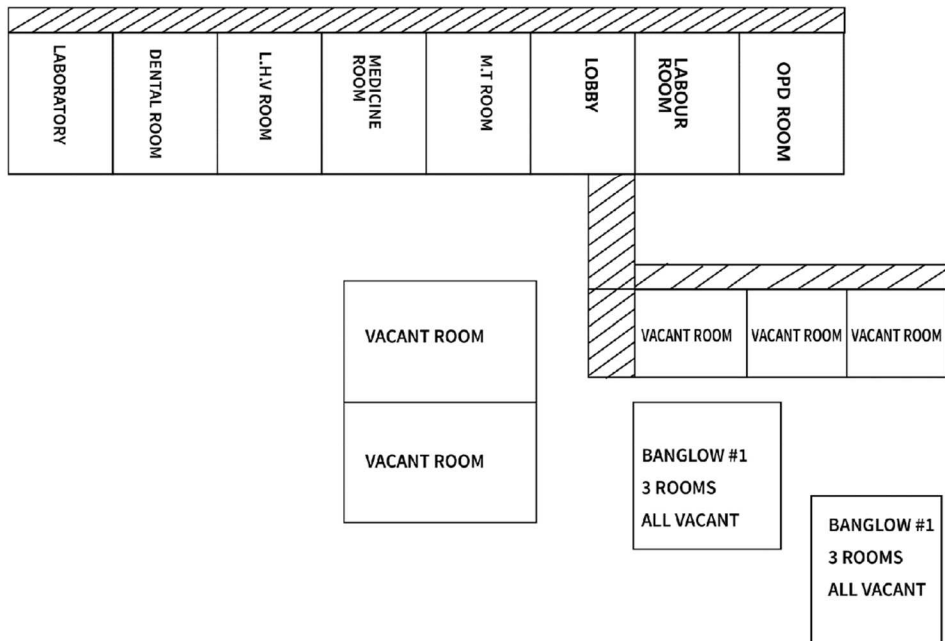


A4 CH Tajwal

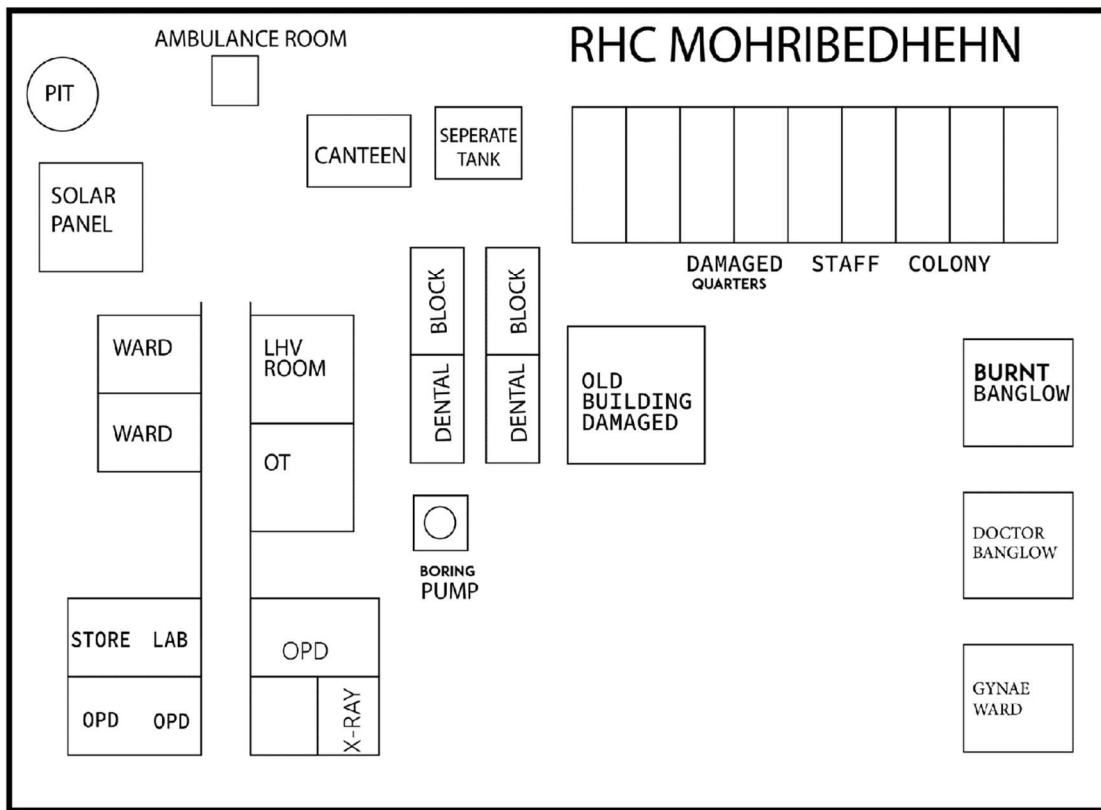


A5 CH Kalapani

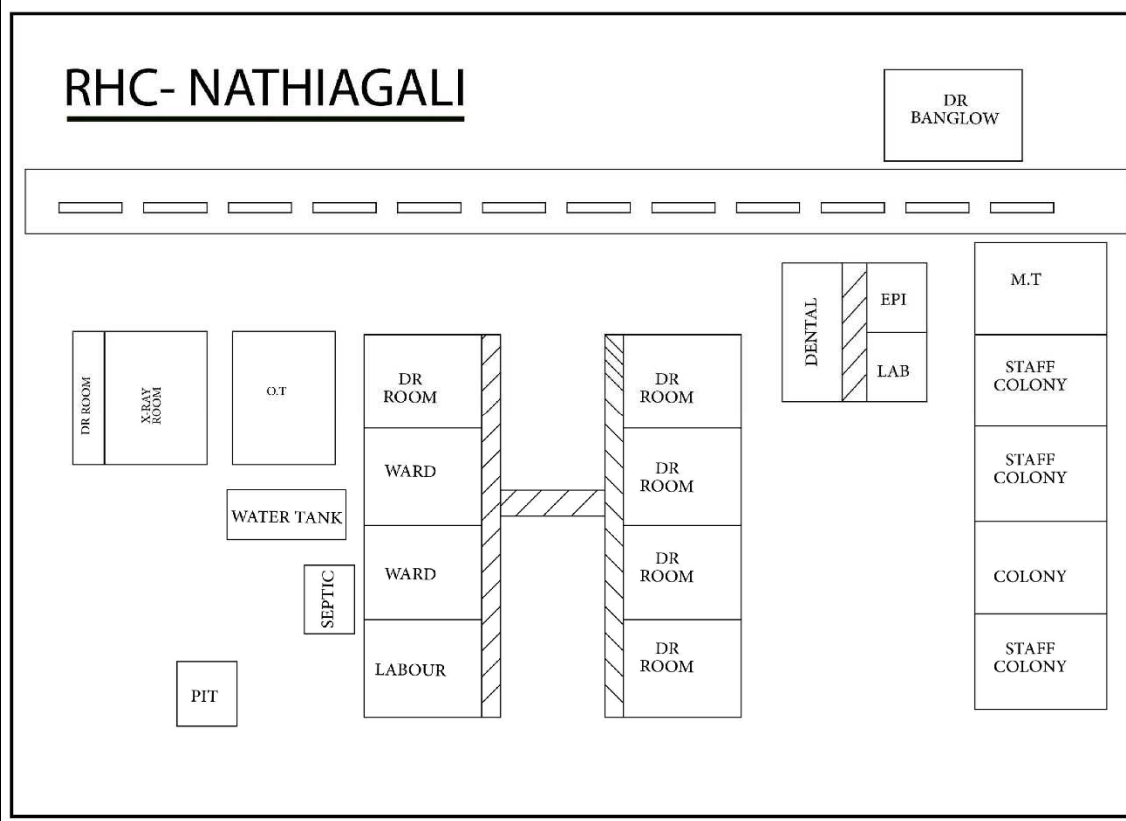
RHC KALAPANI



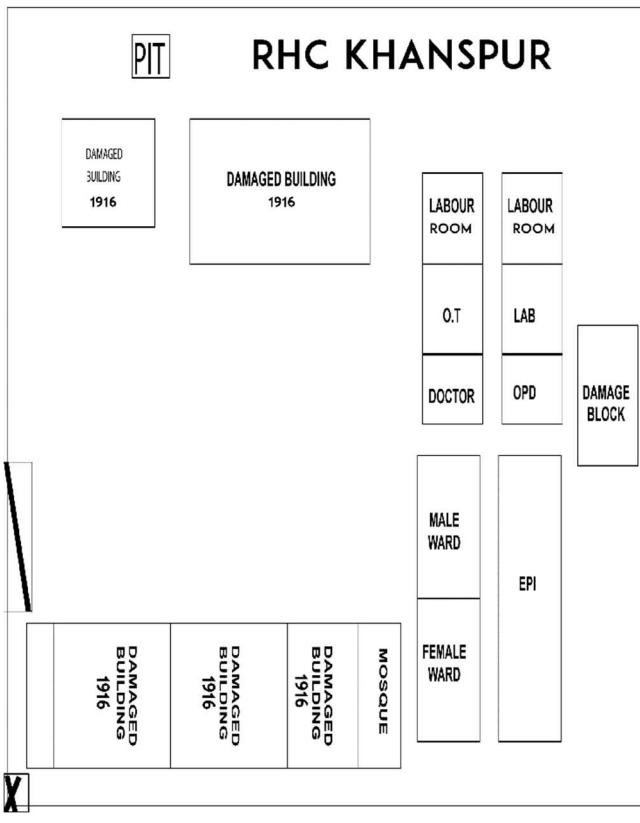
A6 CH Mohribedbehn



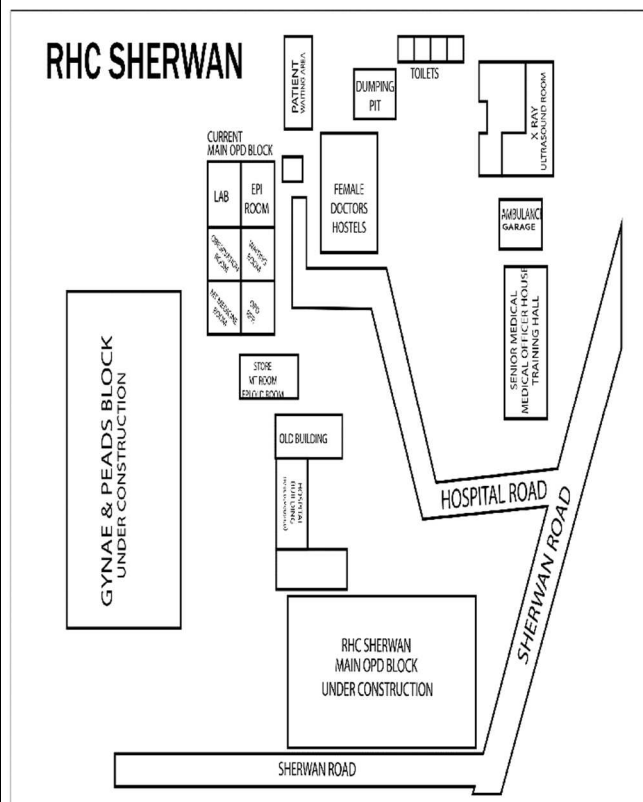
A7 CH Nathiagali



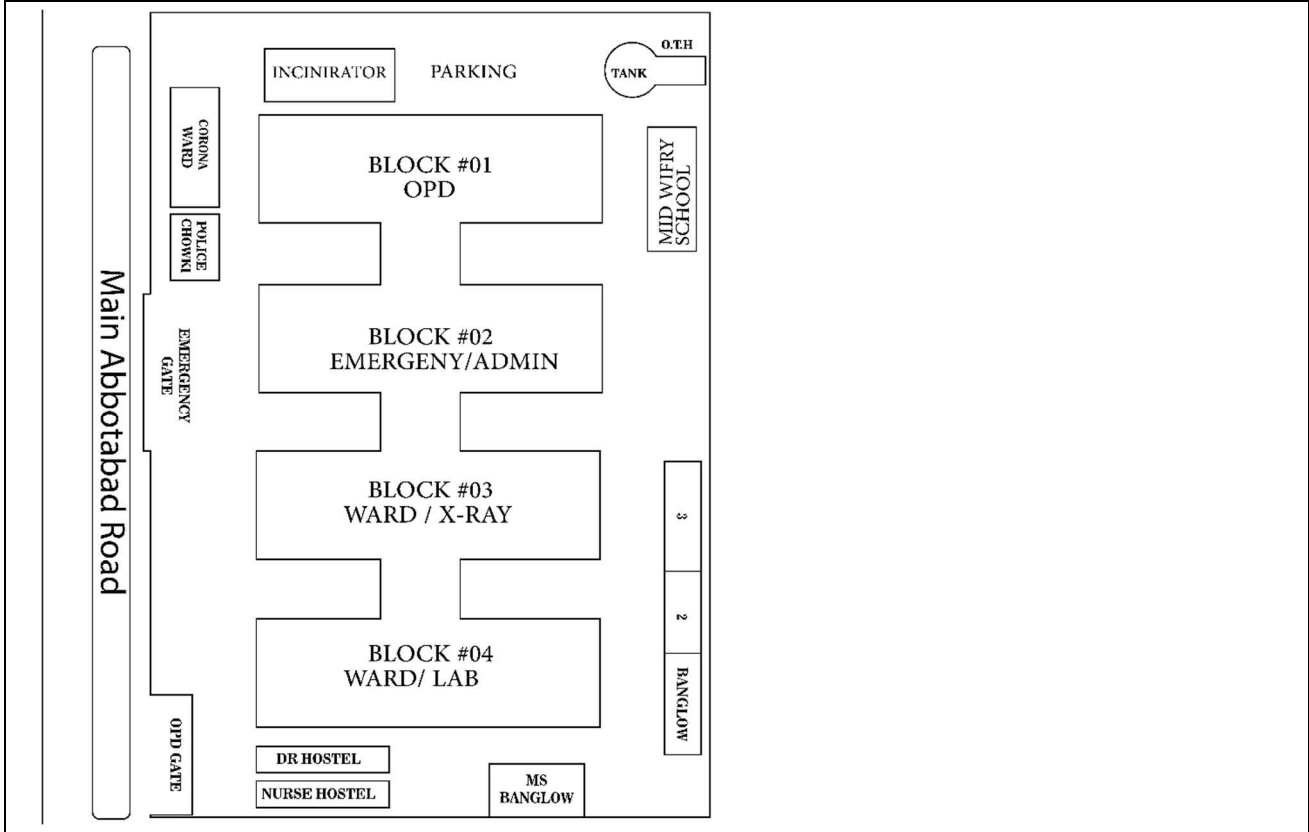
A8 CH Khanspur



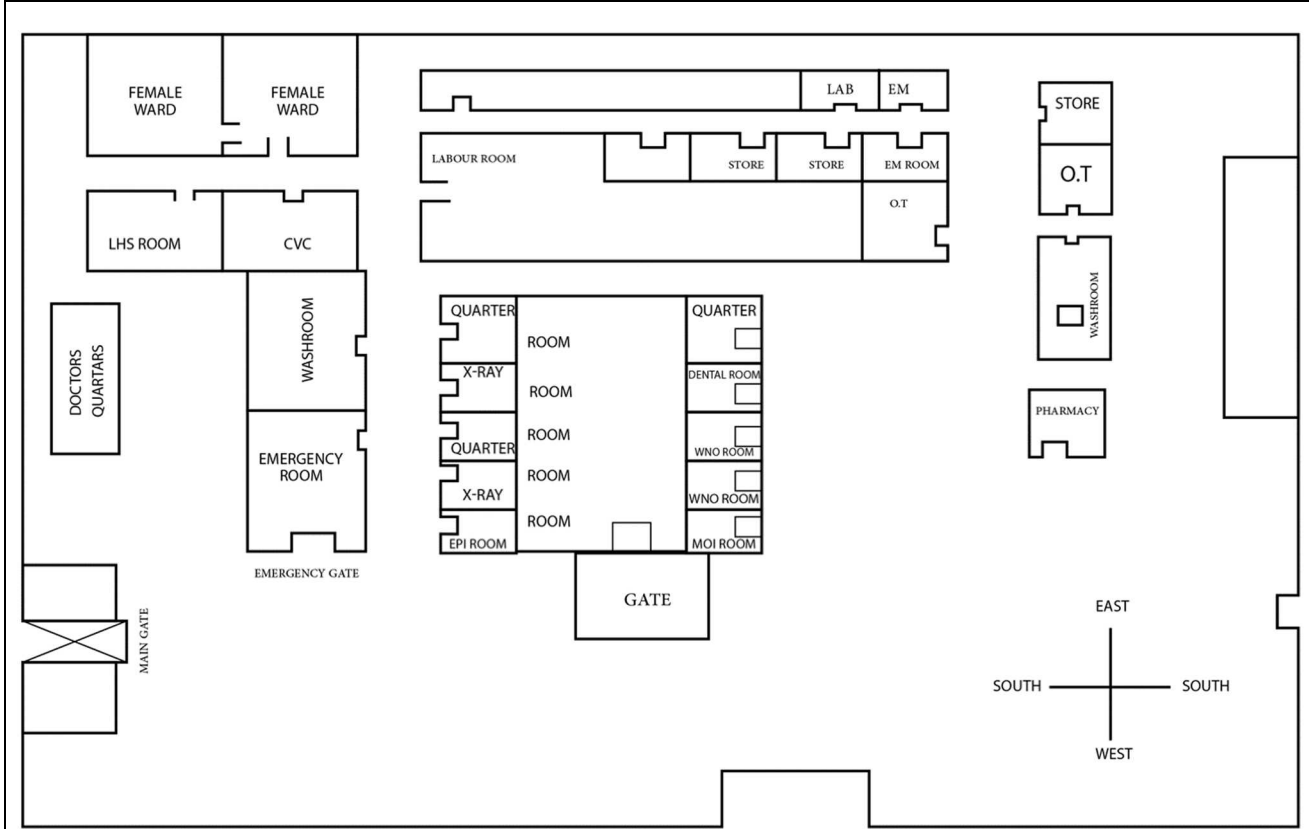
A9 CH Sherwan



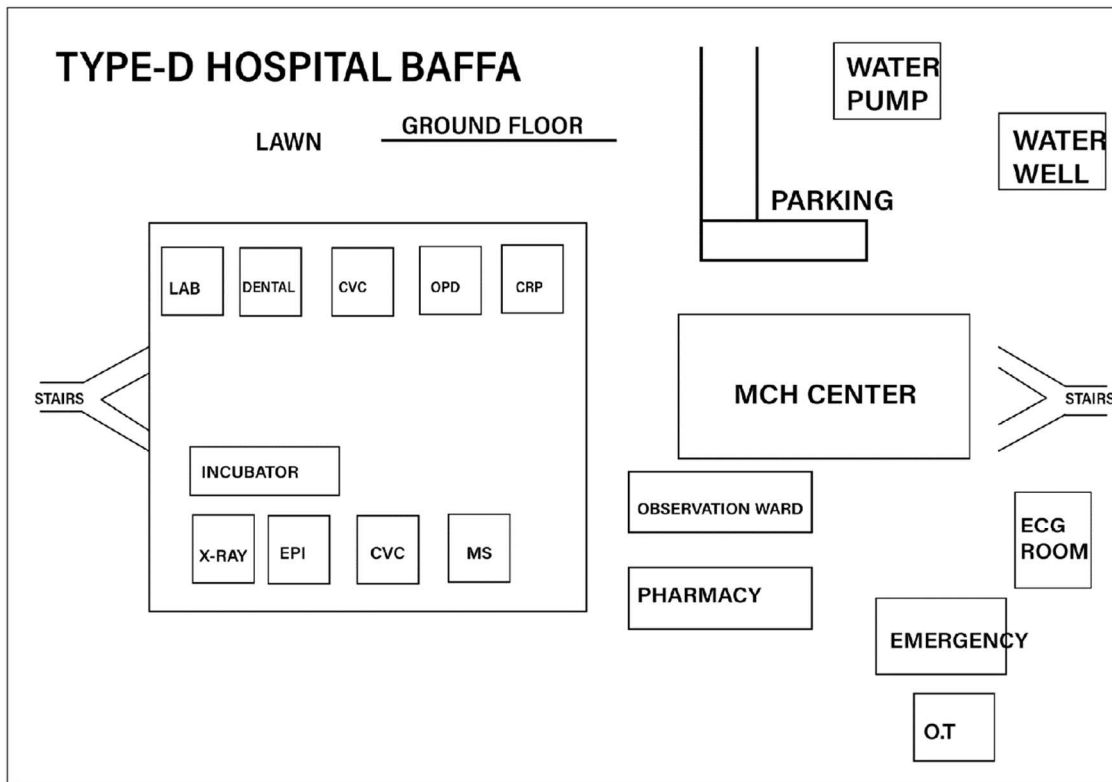
M1 KATH DHQ Mansehra Hospital



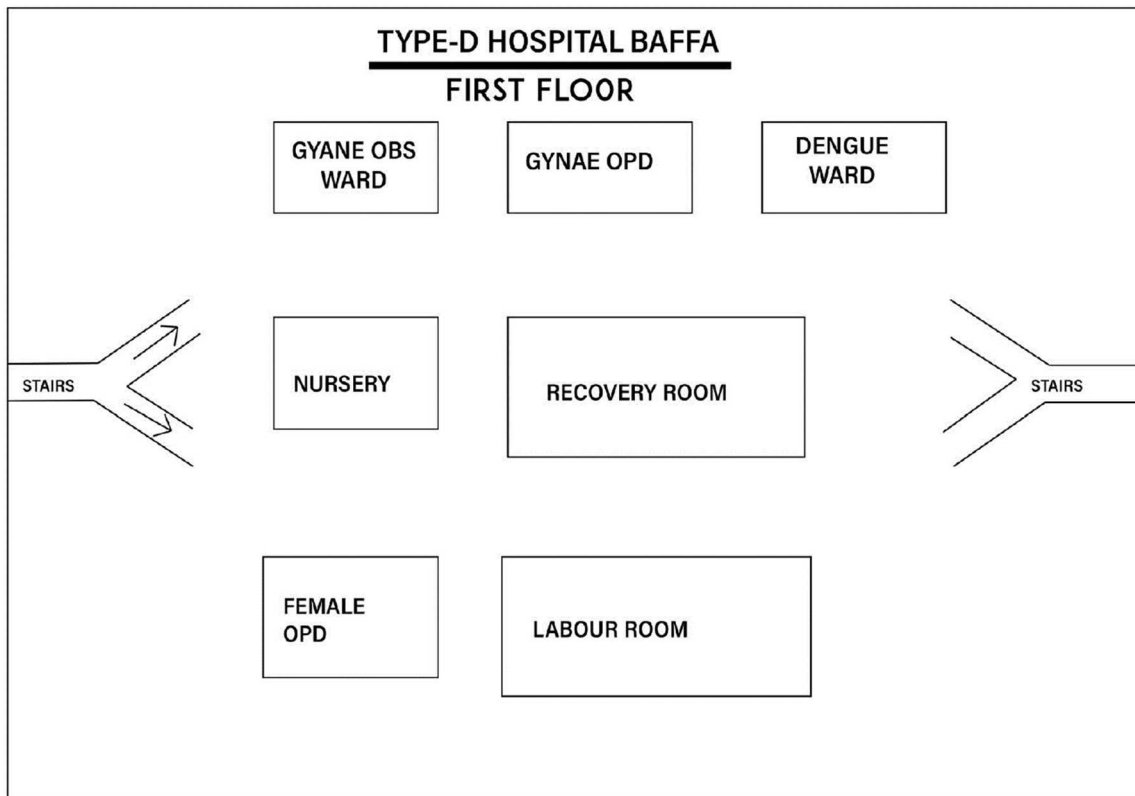
M2 Type-D Hospital Garhi Habibullah



M3 Type-D Hospital Baffa, ground floor

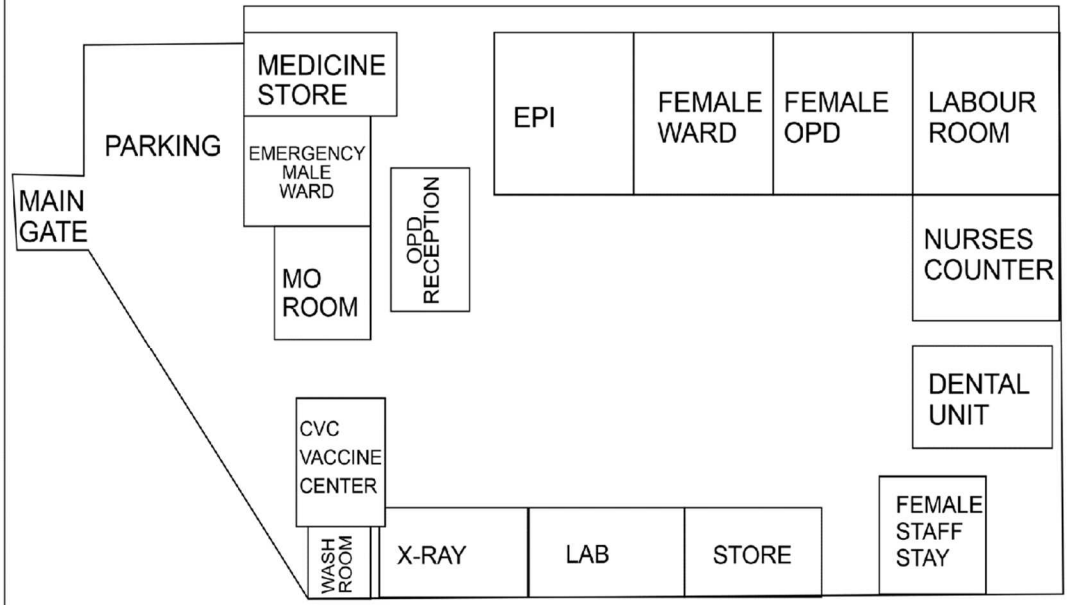


first floor



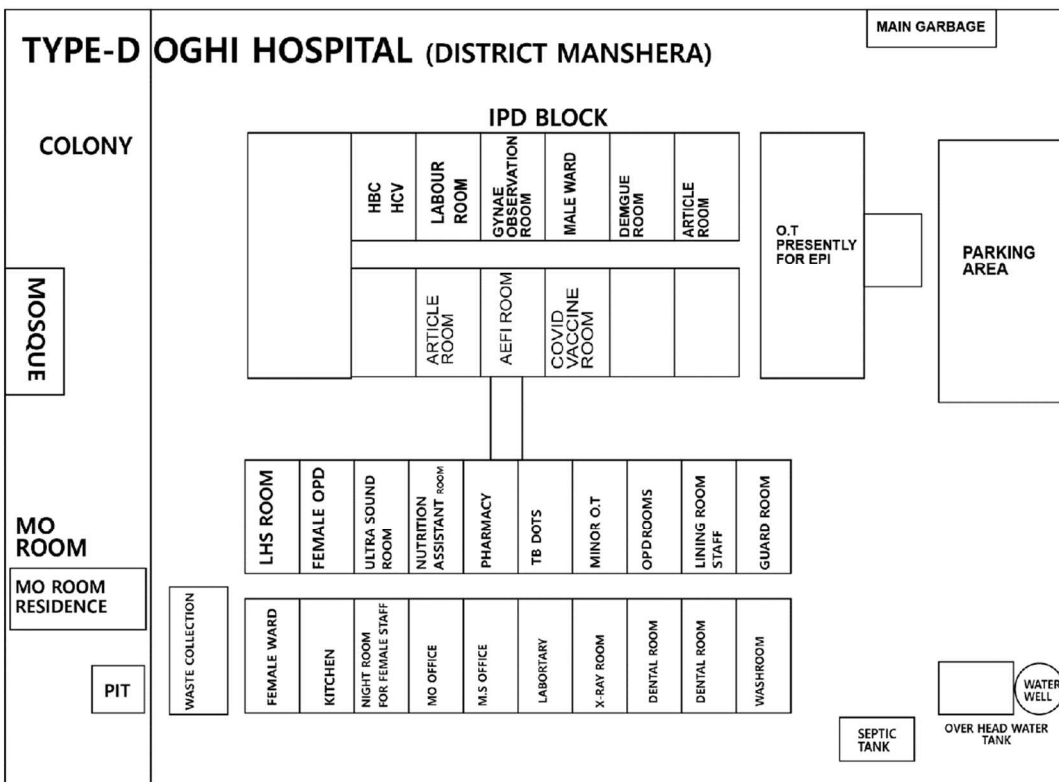
M4 THQ Hospital Balakot

D-TYPE BALAKOT



M5 Type-D Hospital Oghi

TYPE-D OGHİ HOSPITAL (DISTRICT MANSHERA)



【Appendix Health-3】

List of Parties Concerned in the Recipient
Country

No	Names	Designation	Department	Remarks
1	Atta Ullah KHAN	Coordinator	Health Secriteriat KP	
2	Ikram ULLAH	Chief HSRU	Health Secriteriat KP	
3	Muhammad Tahir ORAKZAI	Secretary	Health Secriteriat KP	
4	Niaz MUHAMMED	Director General	Health Dept KP	
5	Syed Farooq JAMIL	Special Secretary	Health Secriteriat KP	
6	Shahid KHAN	Coordinator	Health Secriteriat KP	
7	Khudiga ASAD	Coordinator	Health Secriteriat KP	
8	Zawar MASHWANI	Director	Procurement, Health Dept KP	
9	Adil SHAH	Procurement Officer	Procurement, Health Dept KP	
10	Afsar ULLAH	Director	PSHA, Heath Dept KP	
11	Jan SAID	Planing Officer	Planing Dept Secriteriat KP	
12	Asad ULLAH	Financial Officer	FMC, Health Dept KP	
13	Ejaz SHAH	Director	IMU, Health Dept KP	
14	Aftab AHMAD	Data Base Admin	IMU, Health Dept KP	
15	Muhamamd Aleem KHAN	Office Staff	DHIS, Health Dept KP	
16	Abdul HAMEED	Office Staff	DHIS, Health Dept KP	
17	Tanveer INAAM	Director	Mid Wife Data, Health Dept KP	
18	Shahab Ud DIN	Section Officer	Finance, Ministry of KP	
19	Mushtaq Ahmed Khan TANOLI	District Health Officer	DHO Office Mansehra	
20	Khalid KHAN	Incharge Stores	DHO Office Mansehra	
21	Muhammed ISRAR	Clerk	DHO Office Mansehra	
22	Faisal KHANZADA	District Health Officer	DHO Office Abbotabad	
23	Noor UI SABA	Incharge Development Section	DHO Office Abbotabad	
24	Sohail IDREES	Hospital Head	Civil Hospital Rehana	
25	Fauzia KHALIL	Hospital Head	Civil Hospital Kotla	
26	Dildar KHAN	Hospital Head	Type-D Hospital Khanpur	
27	Aysha KHAN	Hospital Head	Type-D Hospital Ghazi	
28	Mohsin Raza TURABI	Hospital Head	DHQ Hospital Haripur	
29	Imran TAJ	Medical Officer	DHQ Hospital Haripur	
30	Muhammed ASGHAR	Store Incharge	DHQ Hospital Haripur	
31	Saira NASEEM	Medical Officer	DHQ Hospital Haripur	
32	Muhammed HAROON	Medical Officer	DHQ Hospital Haripur	
33	Muhammad Asad KHAN	Hospital Head	Civil Hospital KTS	
34	Saleem MARWAT	Hospital Head	Type-D Hospital Baffa	

No	Names	Designation	Department	Remarks
35	Muhammad ABDULLAH	Medical Officer	Type-D Hospital Baffa	
36	Zia Ul HAQ	Hospital Head	THQ Hospital Balakot	
37	Syed UMAIR	Deputy Medical Supritendent	Mansehra DHQ KATH	
38	Tariq KHAN	Hospital Head	Mansehra DHQ KATH	
39	Aneela FARHAT	Incharge Gynae	Mansehra DHQ KATH	
40	Zulqarnain BANARS	Technical Staff	Mansehra DHQ KATH	
41	Waqar SHAH	Data Base Officer	Mansehra DHQ KATH	
42	Shehla YASIR	Medical Officer	Gynea, Mansehra DHQ KATH	
43	Abdur RASHID	Medical Officer	Mansehra DHQ KATH	
44	Kasur WAHAB	Store Incharge	Mansehra DHQ KATH	
45	Ejaz AHMED	Registrar Peeds Dept	Mansehra DHQ KATH	
46	Syed Ihsan-ul-Haq SHAH	Hospital Head	Type-D Hospital Garhi Habibullah	
47	Farzana AYUB	Hospital Head	CH Kalapani	
48	Amir ISRAR	Hospital Head	DHQ Abbotabad, BBS Hospital	
49	Minhaj LODHI	Incharge	WCH Abbotabad, BBS Hospital	
50	IBRAR SHAH	LAB INCHARGE	WCH Abbotabad, BBS Hospital	
51	Muhammad IRSHAD	Hospital Head	Type-D Oghi	
52	Mohsin ANWAR	Medical Technician	Type-D Oghi	
53	Asif MEHMOOD	Hospital Head	RHC Mohribedbehn	
54	Iqbal JAN	Hospital Head	CH Sherwan	
55	Ajmal KHALIL	Medical Officer	CH Sherwan	
56	Samia SHAHEEN	Medical Officer	CH Sherwan	
57	Shugufta ALTAF	Hospital Head	THQ Havalian	
58	Bakhtawar KHAN	Deputy Medical Supretendent	THQ Havalian	
59	Muhammad FIRDOUS	Hospital Head	Type-D Hospital Lora	
60	Sana GUL	Hospital Head	CH Hospital Tajwal	
61	Muazzam Ali SHEHZAD	Hospital Head	CH Hospital Khanspur	
62	Javed IQBAL	medical officer	CH Hospital Khanspur	
63	Sajjad ANWAR	Inchagre Paramedics	CH Hospital Khanspur	
64	Syed Awais SHAH	Hospital Head	CH Nathiagali	
65	Muhammed ISRAR	Inchrge EME (XEN)	EME, Health Dept KP	
66	Abu TURAB	Incharge EME(Engineer)	EME Abbotabad	

【Appendix Health-4】

List of Medical device Agency

No	Company name	Address	TEL	Brand / manufacturer	Product line
1	Agfa Health Care	Sugra Building No.8, Opp. State Life, Sadar Road, Peshawar.	92-91-5271487	DRGEM	X-Ray Plant, 500mA
2	BIOMADICS	Ground Floor, Happy Heights, Modern Housing Society, Shaheed-E-Millat Road, Karachi, Pakistan.	9221-34558494	Techno Medica	Blood Gas Analyzer
3	Biotech Services (Pvt) Ltd	746, Shadman-1, Lahore, Pakistan		FUJIFILM Healthcare Corporation	Ultrasound apparatus,
4	Endo-Kare	14-A Aibak Block, New		Olympus	Endoscopes
5	Friends Traders	Ground Floor Peshawar Medical Center, Shoba Chowk, Khyber Bazar Peshawar	92-91-2211052	1. Mindray Bio-Medical Electronics 2. Genoray	1. Anesthesia Machines, Cardiac Monitor, Color Doppler, Echo Machines, ICU Central Station, ICU Ventilator, Portable Ventilator, Ultrasound Machines, 2. Digital OPG X-Ray
6	Fuji Film Pakistan	37-D, Block-6 PECHS, Karachi	92-21-34535502	FUJI FILM	CR System, X-Ray Plant, 300mA, 500mA
7	Hooraa Pharma	Plot#WH-01-20-A7-A8 Korangi Creek Industrial Park, Near Pakistan Refinery, Karachi 75190	92-21-38899000	Shimadzu	Digital X-ray apparatus,
8	Idrees Busines Products	40 - Hamza Plaza, University Road, Peshawar.	92-91-5700833	RO-CHAIN	Autoclaves (complete range)
9	Latif Brothers	14-Commercial Building, Shahrah-e-Quaid Azal, Lahore.	92-332-9070578	Quantal	B.Scan, Argon Lazer,
10	Med Elec Corporation	1402, 403 4th Floor, International Auto Parts Market, Karachi, Pakistan	92-32-778-082	Mizuho	Operating table, suction unit, Electrosurgical unit
11	MEDEQUIPS SMC PVT. Ltd.	30, Shahrah-E-Quaid-Azam, Lahore,	92-42-37233241	Atom	Infant incubator, Infant warmer, Delivery table
12	Shirazi Trading	114C, AL-Murtaza Commercial Lane-3, Khayaban-e-Iqbal, DHA-8, Karachi	92-335-9819880	GE Health Care	EET Machine
13	Technology Links (Pvt) Ltd	4/11-12 Rimpa Plaza, M.A. Jinnah Road, Karachi Pakistan	92-21- 32734260-61	Yamada Shadowless Lamp	Operation light
14	UNIVERSAL ENTERPRISES	29, Block 3, Overseas Co-Operative Housing Society. Stadium Rd, Karachi, 74800	92-21-34930695 & 0092-21- 34930755	TERUMO	Infusion pump, syringe pump
15	Vertex Medical Pvt Ltd	70-B1, Gulberg III , Lahore – Pakistan.	92-42-357 56 330-31	Drägerwerk	Anesthesia machine, Artificial ventilator, infant incubator,

【Appendix Health-5】

List of Additional Request for Medical Device

Additional Request(追加要請)

01. DHQ Haripur Hospital

<ul style="list-style-type: none">- OT Lights- Ortho Table- ECG Machines- Oxygen Concentrator- Phototherapy Machine- Incinerator- Delivery tables- Dental Unit- CT Scan- MRI- Generator- Solar Panel- Fully automation Chemistry Analyzer- Paraffin Wax Bath- Forearm Bicycle- Defibrillator with Trolley	<ul style="list-style-type: none">無影灯整形外科用手術台心電計酸素濃縮装置光線治療器焼却機分娩台歯科ユニットCT スキャナーMRI発電機太陽光パネル全自動生化学分析装置パラフィン浴バス前腕自転車除細動器 (トロリー付き)
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02. CH KTS Haripur

<p>FOR RADIOLOGY DEPT:</p> <ul style="list-style-type: none"> - Digital X-Ray Unit - CT Scan Unit - MRI Unit - Ultrasound Machine - Led Plate Installation in Radiation Area - Dosimeter for protection 	<p>放射性部門 デジタル X 線撮影装置 CT スキャナー MRI 超音波診断装置 鉛板 (据え付け用) X 線線量計</p>
<p>FOR ICU</p> <ul style="list-style-type: none"> - Defibrillators - Portable Echo machine / ultrasound - ICU Beds inside Monitors - Central Monitoring System - Oxygen Suction Port - ICU Specialist Beds - Crush Port - ECG Machines - ABG Machines - BiPAP Machine - Ventilators 	<p>集中治療室 除細動器 ポータブル超音波診断装置 患者監視装置付き ICU ベッド 中央患者監視装置システム 酸素吸引ポート ICU スペシャリスト用ベッド クラッシュポート 心電計 動脈血液ガス分析装置 二相性陽圧人工呼吸器 人工呼吸器</p>
<p>FOR PEADS DEPARTMENT</p> <ul style="list-style-type: none"> - Central Oxygen - Baby Warmers - Incubators - Ventilators - Phototherapy Unit - Capsule Phototherapy 	<p>小児科 中央酸素供給システム 新生児ウオーマー 保育器 人工呼吸器 光線治療器 カプセル型光線治療器</p>
<p>FOR OT Department</p> <ul style="list-style-type: none"> - OT Table with bridge - OT Lights - Anesthesia Machines - Diathermy Machine - Suction Machine - Pulse oximeter 	<p>手術室 手術台 (下肢開脚台付き) 無影灯 麻酔器 温熱療法器 吸引器 酸素飽和度計</p>
<p>FOR LAB</p> <ul style="list-style-type: none"> - Hematology Analyzer - Chemistry Analyzer - Microscope - Centrifuge 	<p>臨床検査室 血液分析装置 生化学分析装置 顕微鏡 遠心器</p>

03. Type-D Hospital Khanpur

<p>For Gynae Ward:</p> <ul style="list-style-type: none">- Autoclave- Suction Machine- Heating System for Labor Room- Baby Blankets <p>For Dental Department:</p> <ul style="list-style-type: none">- Advanced Dental Unit- Dental X-Ray Unit- Compressor- Ultrasonic Scaler <p>Other Equipment</p> <ul style="list-style-type: none">- Radiolucent OT Table- Traction Table- Anesthesia Machine- OT Light- Photolights- Invertors- Infant weight Machine- ECG Machines- O2 Concentrator (self oxygen generator)- OT Tables- Generator	<p>婦人科病棟 高圧蒸気滅菌装置 吸引器 分娩室暖房システム 乳児用毛布</p> <p>歯科ユニット 歯科用 X 線撮影装置 コンプレッサー 超音波スケーラー その他 X 線透過性手術台 牽引テーブル 麻酔器 無影灯 光線治療器 インバーター 新生児用体重計 心電計 酸素濃縮器 手術台 発電機</p>
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04. Type-D Hospital Ghazi

No additional Request 追加要請なし

05. CH Kotla

<ul style="list-style-type: none">- Fridge- Solar Panel- ECG Machine- X-Ray Illuminator- Standing BP Appertus- Lab Equipment- Dental Chair	<p>薬用保冷庫 太陽光パネル 心電計 シャウカステン スタンド型血圧計 臨床検査室用機材 歯科ユニット</p>
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06. CH Rehana

1) 4 A/C's (Heat & Cool)	エアコン
2) Geyser (electric/gas)	温水器
3) Water filtration System	水処理システム
4) ECG Machine	心電計
5) Ambulance	救急車
6) Wheel chairs	車椅子
7) Sterilizer	高压蒸気滅菌装置
8) Nebulizer	薬液噴霧器

07. BBS DHQ Abbottabad Hospital

<ul style="list-style-type: none"> - CT Scan machine - Unit - MRI Machine – 1unit - Portable 300mA Digital X-Ray with DR – 2 units - Digital 500mA X-Rays – 1 unit - Digital 1000mA X-Ray with Led sheet – 1unit - Dosi Meters – 20 units - Cardio Echo Machine – 1 unit - Image Machine – 1unit - Dental OPG – 1unit - Dental Chairs – 3 units - ECG Machines – 5 units - Ultrasound Machines – 2 units - Baby Incubators with phototherapy units – 8 units - Baby Warmers – 8 units - Topography machines – 2units - Infant Ventilator – 4 units - Anesthesia Ventilator – 3 units - Suction Machines – 2units - Hydraulic OT Table – 2 units - OT lights - Central Cardiac Monitor – 2 units - Dialysis Machines for Positive Patient – 8 units - Defibrillator for OT AED – 2 units - Oxygen Concentrators – 2units - Autoclave 200 liters – 3 units - Lepro-scope – 2unit - Chemistry Analyzer – 1unit - Blood Analyzer – 1unit - Blood Bag shaking Machine – 3 units - ICU for Labour Room - Heating System - Incinerators – 2units 	<p>CT スキャナー1 台 MRI 1 台 ポータブルデジタル X 線 300mA (DR 付き) 2 台 デジタル X 線 500mA 1 台 デジタル X 線 1000mA (鉛シート付き) 1 台 X 線線量計 20 台 超音波診断装置 (心臓用) 1 台 イメージ装置 歯科 OPG 1 台 歯科ユニット 3 台 心電計 5 台 超音波診断装置 2 台 保育器、光線治療器 各 8 台 新生児ウオーマー 8 台 小児用人工呼吸器 4 台 麻酔器 3 台 吸引器 2 台 油圧式手術台 2 台 无影灯 中央心電図監視装置システム 2 台 透析装置 8 台 AED 式除細動器 2 台 酸素濃縮装置 2 台 高圧蒸気滅菌装置 200L 3 台 腹腔鏡 2 台 生化学分析装置 1 台 血液分析装置 1 台 血液バック振とう機 3 台 ICU 暖房システム 焼却炉 2 台</p>
<p>EME DEPT. DEMAND</p> <ul style="list-style-type: none"> - Digital Oscilloscope Dual Channel - RF Generator - EVO Meter - Mechanical Tool Kit - Electrical Tool Kit - Power Supply Machine 	<p>EME 部門 デュアルチャンネルデジタルオシロスコープ RF 発電機 EVO メーター 機械工具キット 電気工具キット 発電機</p>

08. Type-D Hospital Havelian

<p>RADIOLOGY DEPT</p> <ul style="list-style-type: none">- Digital X-Ray Machine + CR- Led Screen- Dosimeter	<p>放射線部門</p> <p>デジタル X 線撮影装置、CR</p> <p>鉛スクリーン</p> <p>X 線線量計</p>
<p>DENTAL DEPT</p> <ul style="list-style-type: none">- Dental Unit- X-Ray Unit- Auto developing Processor- Autoclave Type B	<p>歯科部門</p> <p>歯科ユニット</p> <p>歯科用 X 線撮影装置</p> <p>自動現像器</p> <p>高圧蒸気滅菌装置（卓上型）</p>
<p>PEADS / Gynae</p> <ul style="list-style-type: none">- Infant incubators- Beds- Baby Warmer- Nebulizer Machines- Examination lamps- Oxygen Concentrator- Oxygen distribution system- OT Table- OT Lights- ICU- Autoclave- Cardiac Monitor- Defibrillator AED- Ultrasound Machine- ECG Machines- Laundry- Solar system	<p>小児科／婦人科</p> <p>保育器</p> <p>ベッド</p> <p>新生児ウオーマー</p> <p>薬液噴霧器</p> <p>診察灯</p> <p>酸素濃縮装置</p> <p>酸素供給システム</p> <p>手術台</p> <p>无影灯</p> <p>ICU</p> <p>高圧蒸気滅菌装置</p> <p>心電モニター</p> <p>AED 型除細動器</p> <p>超音波診断装置</p> <p>心電計</p> <p>洗濯機</p> <p>太陽光システム</p>

09. Type-D Hospital Lora

<ul style="list-style-type: none">- Digital X-Ray Machine- Ultrasound Machine- ECG Machine- Autoclaves- Suction Machines- Suction bulbs for Newborns- Incubators- Infant Ventilators- Baby Warmers- Weight Machine for Infants- Cardiac Monitors- Delivery tables- Nebulizers- Central Oxygen Supply system- Oxygen Concentrators- Color Doppler- Defibrillators- CTG Machine- Incinerator- Heating System	<ul style="list-style-type: none">デジタル X 線撮影装置超音波診断装置心電計高圧蒸気滅菌装置吸引器新生児用吸引バルブ保育器乳児用人工呼吸器新生児ウオーマー新生児用体重計心電モニター分娩台薬液噴霧器中央酸素供給システム酸素濃縮装置カラードプラー超音波診断装置除細動器分娩監視装置焼却炉暖房システム
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10. CH Tajwal

<ul style="list-style-type: none">- Ultrasound Machine- ECG Machine- Digital X-ray machine- Infant incubator- Baby Warmer- TPG for Labour Room- Cardiac Monitor- Dental X-ray- Autoclave- Solar System- Heating System- Tube-Well- Ambulance- Defibrillator AED- Small ICU with Labour OT	<ul style="list-style-type: none">超音波診断装置心電計デジタル X 線撮影装置保育器新生児ウオーマーTPG心電モニター歯科用 X 線撮影装置高圧蒸気滅菌装置太陽光システム暖房システムチューブ救急車AED 型除細動器小規模 ICU、分娩手術付き
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11. CH Kalapani

<ol style="list-style-type: none"> 1) Digital X-Ray unit 2) Ultrasound Machine 3) ECG Machine 4) Defibrillator (AED) 5) Oxygen Concentrators 6) Dental unit with consumable 7) Hematology Analyzer 8) Water bath 9) Baby Warmer 10) Autoclaves 11) Infant Incubators 12) Blue Light 13) Gynae Table 14) OT Table 15) OT Light 16) Anesthesia Machine 17) Heating System 18) Ambulance 19) Generator 50KVA 20) Tube well 21) Incinerator 	<p>デジタル X 線撮影装置 超音波診断装置 心電計 AED 型除細動器 酸素濃縮装置 歯科ユニット (消耗品付き) 血液分析装置 恒温水槽 新生児ウオーマー 高圧蒸気滅菌装置 保育器 ブルーライト 婦人科診察台 手術台 無影灯 麻酔器 暖房システム 救急車 発電機 (50KVA) 堀貫井戸 焼却炉</p>
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12. CH Mohribedbehn

<p>LAB</p> <ul style="list-style-type: none"> - Hematology Analyzer - Microscope (existing microscope is 10 years old) <p>GYNAE</p> <ul style="list-style-type: none"> - Infant Incubators - Ultrasound Machine - OT Lights - Heating System - Solar System <p>OTHERS DEPT</p> <ul style="list-style-type: none"> - Digital X-ray Machine - Autoclave - Oxygen Concentrator - Nebulizer - Defibrillator with Trolley (AED Type) - Cardiac Monitor - ECG Machine - Examination Couch - Oxygen Cylinder system - Generator - Incinerator 	<p>臨床検査室 血液分析装置 顕微鏡</p> <p>婦人科 保育器 超音波診断装置 無影灯 暖房システム 太陽光システム</p> <p>その他の部門 デジタル X 線撮影装置 高圧蒸気滅菌装置 酸素濃縮装置 薬液噴霧器 AED 型除細動器 心電モニター 心電計 診察台 酸素シリンダーシステム 発電機 焼却炉</p>
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13. CH Nathiagali

<ul style="list-style-type: none">- Digital X-Ray unit with lead plates- Dental X-ray unit- Ultrasound Machine- ECG Machine- Delivery Table- Ventouse for labour room- Infant Incubator- Baby Warmer- TPG meter- Autoclaves- OT Table- OT Light- Examination Lights- Defibrillator- Haematology Analyzer- Oxygen Concentrator (10ml)- Cardiac Monitor- Heating System- Water Heating System- Drinking Water filtration Plant- Waste water treatment plant- Incinerator- Tube-well- Generator (about 50KVA)- Solar System	<ul style="list-style-type: none">デジタル X 線撮影装置歯科用 X 線撮影装置超音波診断装置心電計分娩台吸引分娩カップ保育器新生児ウオーマーTPG メーター高圧蒸気滅菌装置手術台無影灯診察灯除細動器血液分析装置酸素濃縮装置 (10ml)心電モニター暖房システム湯沸器システム飲料水システム廃棄水処理システム焼却炉堀貫井戸発電機 (50KVA)太陽光システム
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14. CH Khanspur

<ul style="list-style-type: none">- Delivery Table- Infant incubators- Baby Warmers- TPG- Dental X-ray- Autoclave- ECG Machine- Ultrasound- Heating System- Generator- Solar System	<ul style="list-style-type: none">分娩台保育器新生児ウオーマーTPG歯科用 X 線撮影装置高圧蒸気滅菌装置心電計超音波診断装置暖房システム発電機太陽光システム
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15. CH Sherwan

1) Dental X-Ray unit	歯科用 X 線撮影装置
2) Autoclave	高圧蒸気滅菌装置
3) Ultrasound machine	超音波診断装置
4) Infant incubators	保育器
5) Baby Warmer	新生児ウォーマー
6) Nebulizer	薬液噴霧器
7) Heating system	暖房システム
8) ECG and Cardiac Monitor	心電計、心電モニター
9) Defibrillator AED with trolley	AED 型除細動器 (カート付き)
10) Oxygen Concentrator (10ML)	酸素濃縮装置 (10ML)
11) Topographic Meter for infant	新生児用トポグラフィックメーター
12) Drinking Water Treatment plant	飲料水製造プラント
13) Dosi Meter	X 線線量計
14) Electrical Shaker Machine	電気式振とう機
15) Centrifuge Machine	遠心器
16) Incinerator	焼却炉
17) 50KVA Generator	発電機 (50KVA)
18) 10KVA Solar system (2 sets)	太陽光システム (10KVA) 2 台
19) New Tube well.	堀貫井戸

16. DHQ Mansehra Hospital (1/2)

<p>1) LABORATORY</p> <ul style="list-style-type: none"> - Auto-chemistry Analyzer - Semiauto Biochemistry Analyzers - 5 Part Hematology Analyzers - Centrifuge Machines - Micropipettes - 5 Part Electrolyte Analyzer - Microscopes <p>2) ANESTHESIA</p> <ul style="list-style-type: none"> - Defibrillators with Trolley – 5 units - Patient Monitor with BP, Pulse, ECG, end tidal Co2 Parameters – 7 units - Glucometer with Strips – 5 units - Nebulizers 4 sets - ICU Ventilators – 3 units - ICU Ventilator Paediatric – 3 sets - Ultrasound Machines (Low frequency / High frequency) – 2 sets - Image Intensifier 12mm – 5 sets <p>3) NURSERY</p> <ul style="list-style-type: none"> - Phototherapy – 4 units - Cardiac Monitors – 2 units - ECG Machines Peads – 1 unit - Defibrillators with Trolley – 1 unit - Suction Machines – 2 units - Oxygen Concentrator – 4units - Baby Warmers – 2 units - New Incubators – 4 units - Crash Trolley – 1 unit - Oxygen Gauges – 10 sets - Ventilator Nerrates – 1 set <p>4) PAEDS</p> <ul style="list-style-type: none"> - Crash Trolleys – 3 units - Cardiac Monitors – 5 units - Oxygen Concentrators – 5 units - Suction Machines (Portable) – 3 units - Height/Weight Scales – 4 units - Infant weight Scales – 2 sets - Examination Lights – 2units - Ventilator – 1 unit - Paediatric Defibrillators – 2 units <p>5) C.C.U</p> <ul style="list-style-type: none"> - Hydraulic Beds CCU – 8 sets - I/V Stands – 10 sets - Infusion Pump – 5 sets 	<p>臨床検査室 生化学分析装置 半自動生化学分析装置 血液分析装置 (5分類) 遠心器 マイクロピペット 電解質分析装置 (5分類) 顕微鏡</p> <p>麻酔科 除細動器 (トロリー付き) 5台 患者監視装置 (血圧、パルス、心電、エンドタイダル、Co2) 7台 血糖計 5台 薬液噴霧器 4台 人工呼吸器 3台 小児用人工呼吸器 超音波診断装置 (低周波、高周波) 2台</p> <p>イメージインテンシファイアー (12mm) 5台</p> <p>新生児室 光線治療器 4台 心電モニター 2台 心電計 (小児用電極) 1台 除細動器 (トロリー付き) 1台 吸引器 2台 酸素濃縮装置 4台 新生児ウオーマー 2台 保育器 4台 クラッシュトロリー 1台 酸素ゲージ 10セット 人工呼吸器 1セット</p> <p>小児科 クラッシュトロリー 3台 心電モニター 5台 酸素濃縮装置 5台 ポータブル吸引器 3台 身長体重計 4台 新生児体重計 2台 診察灯 2台 人工呼吸器 1台 除細動器 (小児用) 2台</p> <p>心臓病専用集中治療室 油圧式ベッド (CCU) 8台 輸液スタンド 10台 輸液ポンプ 5台</p>
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16. DHQ Mansehra Hospital (2/2)

<p>6) RADIOLOGY</p> <ul style="list-style-type: none"> - DR System 500mA – 1unit - CR System – 2units - Ultrasound Doppler – 2 units - Processor Heavy Duty – 3 sets - Dental Processor – 2 sets - Lead Apron – 10 sets - Lead Screen – 4 sets - DR Printer – 1set <p>7) SURGICAL</p> <ul style="list-style-type: none"> - Suction Machines – 2 units - Cautery Machines – 2 units - Anesthesia Machines – 2 units - OT Tables – 2 sets - <p>8) EYE</p> <ul style="list-style-type: none"> - Autorefractokerratometer – 2units - Phacoemulsification Machine - B Scan - Operating Microscope - Lensometer - Slit Lamp - Ultrasonic Instrument Cleaner - Cataract Sets - DCR sets - OT Table for Eye Surgery - OT Trolley 	<p>放射線部門</p> <p>DR システム (500mA) 1 台 CR システム 2 台 ドプラー超音波診断装置 2 台 フィルム現像機 3 台 歯科用フィルム現像機 2 台 鉛エプロン 10 台 鉛スクリーン 4 台 DR プリンター 1 台</p> <p>外科</p> <p>吸引器 2 台 電気メス 2 台 麻酔器 2 台 手術台 2 台</p> <p>眼科</p> <p>屈折計 2 台 水晶体超音波乳化吸引機 B スキャン 手術用顕微鏡 レンズメーター 細隙灯 超音波機材クリーナー 白内障セット DCR セット 眼科用手術台 手術用トロリー</p>
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17. Type-D Hospital Garhi Habibullah

<ul style="list-style-type: none"> - Automated External Defibrillators – 2units - Oxygen Concentrators – 5 sets - ECG Machines – 2units - Digital X-ray Machine – 1unit - Ultrasound Machines – 2units - Autoclaves – 4 units - ENT Sets – 2 sets - Chemistry Analyzer – 1unit - Generator – 1 unit - Solar System - Heavy duty Stabilizer 	<p>除細動器 2 台</p> <p>酸素濃縮装置 5 台 心電計 2 台 デジタル X 線撮影装置 1 台 超音波診断装置 2 台 高圧蒸気滅菌装置 4 台 ENT セット 2 セット 生化学分析装置 1 台 発電機 1 台 太陽光システム スタビライザー</p>
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18. Type-D Hospital Baffa

<ul style="list-style-type: none">- Oxygen Concentrators- Hematology Analyzer for Lab- Digital X-ray Machines- Mobile X-Ray Machines- ECG Machines	酸素濃縮装置 血液分析装置 デジタル X 線撮影装置 移動型 X 線撮影装置 心電計
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19. THQ Hospital Balakot

<ol style="list-style-type: none">1) Digital X-ray units2) Dose meter3) Dental X-ray unit4) Dental unit chair5) Chemistry Analyzer6) Haematology Analyzer7) Autoclave8) Microscopes9) Solar Panel10) Generator / UPS Back up11) Baby Warmers12) Examination light13) Ultrasouth Machines	デジタル X 線撮影装置 X 線線量計 歯科用 X 線撮影装置 歯科ユニット 生化学分析装置 血液分析装置 高压蒸気滅菌装置 顕微鏡 太陽光パネル 発電機、停電時電圧供給装置 新生児ウオーマー 診察灯 超音波診断装置
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20. Type-D Hospital Oghi

<ul style="list-style-type: none">- Digital X-Ray- 7 Color- Digital System Machine FCR 2000- Generator / Solar System- Hematology Machine- Bio Chemistry Machine- Bio Chemistry Machine- Glucometer- Urine Strip Meter- ACs- Blood Bank- Ultrasound Machines- Oxygen Concentrator- Dental Unit- Dental X-ray unit- Autoclave	デジタル X 線撮影装置 7 カラー デジタルシステム機 発電機、太陽光システム 血液分析装置 生化学分析装置 血糖計 尿ストリップメーター AC s 血液銀行用冷蔵庫 超音波診断装置 酸素濃縮装置 歯科ユニット 歯科用 X 線撮影装置 高压蒸気滅菌装置
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【Appendix Health-6】

Classification and Selection of Equipment

Classification and Selection Criteria of Equipment (draft)

No.	Evaluation item (draft)	Criteria (draft)	Note
1	Facility categorization	a: category A, B, C and D (secondary) b: RHC, etc. (primary)	Based on categories of MHSDP.
2	Staffing	a: more than half of recommendation b: less than half of recommendation	Based on MHSDP recommended staffing.
3	Number of beds	a: more than half b: less than half	Based on MHSDP definition.
4	Electricity status	a: stable b: unstable	Based on site survey.
5	Necessity of construction / major renovation	a: not necessary b: necessary	b: request which require construction or major renovation such as LDRP, NICU, ICU.
6	Evaluation in relation to existing equipment	a: relevant b: low relevance	Classified according to the status of existing equipment. Refer to aforementioned explanation.
7	Undertaking country	a: Japan b: Pakistan	b: disposable, low cost equipment which undertaking by Pakistani side is desirable
8	Availability of operator	a: available b: not available	Based on answer to the questionnaire
9	Use of equipment	a: clinical use b: non clinical	Equipment which is not directly used to patient such as facility ones.

Request for construction of LDRP, NICU, and ICU which involve construction works or large-scale renovation work shall be classified into “b: necessary”. When examining the necessity depending on the existing equipment status, equipment which the facility has not too old existing equipment and well administrated will be classified as “b: low relevance”. At the other hand equipment the facility does not have existing one, the existing one is old or not functional, will be classified as “a: relevant”. Equipment which information of existing one is not acquired will be included in “a: relevant” since there is no ground to judge as low relevance. As for undertaking country, equipment which undertaking by the Pakistani side is desirable such as disposables, low cost equipment, will be classified as “b: Pakistan” and the others as “a: Japan”. In the evaluation of the existence of equipment operators, the answer to the questionnaire that an appropriate operator is enrolled is classified into "a: Yes", and the others are classified into "b: No". For use of equipment, the ones which are directly use in diagnosis or treatment of the patient will be classified as “a: clinical” and the other as “b: non clinical”.

Classification and Selection of Equipment(1/3)

Facility No.	Facility	ME No	Medical Equipment	Qty	Facility Cat.	Staff	Number of beds	Electricity	Necessity of construction	Existing equipment	Undertaking country	Operator availability	Use of equipment	
1	DHQ Haripur Hospital	1	Construction of 20 beds LDRP room	1	a	a	a	a	b	---	---	---	---	
		2	Construction of 15 beds fully equipped NICU	1	a	a	a	a	b	---	---	---	---	
		3	Pediatric echo machine	1	a	a	a	a	a	b	a	a	a	
		4	Laparoscope	1	a	a	a	a	a	b	a	a	a	
		5	Hysteroscope	1	a	a	a	a	a	b	a	a	a	
		6	CT scan	1	a	a	a	a	a	b	a	a	a	
		7	Doppler Ultrasound	1	a	a	a	a	a	a	a	a	a	
		8	Resuscitation trolies Labour room	2	a	a	a	a	a	a	a	a	a	
2	CH KTS Haripur	1	Digital X-ray	1	a	b	a	a	a	a	a	a	a	
		2	Heavy duty Generator, 80kVA	1	a	b	a	a	a	b	a	a	b	
		3	Patient beds	100	a	b	a	a	a	a	a	a	a	
3	TDH Khanpur	1	Digital X-ray	1	a	b	a	a	a	a	a	a	a	
		2	Ultrasound Machine	1	a	b	a	a	a	a	a	a	a	
		3	Heavy duty Generator, 100kVA	1	a	b	a	a	a	b	a	a	b	
		4	Hematology Analyzer	1	a	b	a	a	a	a	b	a	a	a
		5	ICU	1	a	b	a	a	b	---	---	a	---	
4	TDH Ghazi	1	Digital X-ray	1	a	b	a	a	a	a	a	a	a	
		2	Ultrasound Machine	1	a	b	a	a	a	a	a	a	a	
		3	Heavy duty Generator, 80kVA	1	a	b	a	a	a	a	a	a	b	
		4	Hematology Analyzer	1	a	b	a	a	a	a	a	a	a	
		5	ICU	1	a	b	a	a	b	---	---	---	---	
5	CH Kotla	1	Digital X-ray	1	a	b	b	a	a	b	a	a	a	
		2	Ultrasound Machine	1	a	b	b	a	a	b	a	a	a	
		3	Delivery table	2	a	b	b	a	a	a	a	a	a	
		4	Baby Incubator	1	a	b	b	a	a	b	a	a	a	
		5	Heavy duty Generator, 30kVA	1	a	b	b	a	a	b	a	a	b	
		6	Baby warmer	2	a	b	b	a	a	b	a	a	a	
		7	Patient beds	10	a	b	b	a	a	a	a	a	a	
		8	Lab incubator	1	a	b	b	a	a	b	a	a	a	
		9	Chemistry analyzer	1	a	b	b	a	a	b	a	a	a	
		10	Hematology Analyzer	1	a	b	b	a	a	b	a	a	a	
		11	Microscope	1	a	b	b	a	a	b	a	a	a	
		12	Defibrillator	1	a	b	b	a	a	b	a	a	a	
		13	Incinerator	1	a	b	b	a	a	b	a	a	b	
6	CH Rehana	1	Digital X-ray	1	a	b	b	a	a	b	a	a	a	
		2	Ultrasound Machine	1	a	b	b	a	a	a	a	a	a	
		3	Delivery table	2	a	b	b	a	a	a	a	a	a	
		4	Baby Incubator	1	a	b	b	a	a	b	a	a	a	
		5	Heavy duty Generator, 50kVA	1	a	b	b	a	a	b	a	a	b	
		6	Baby warmer	2	a	b	b	a	a	a	a	a	a	
		7	Patient beds	10	a	b	b	a	a	a	a	a	a	
		8	Lab incubator	1	a	b	b	a	a	a	a	a	a	
		9	Chemistry analyzer	1	a	b	b	a	a	a	a	a	a	
		10	Hematology Analyzer	1	a	b	b	a	a	b	a	a	a	
		11	Microscope	1	a	b	b	a	a	a	a	a	a	
		12	Defibrillator	1	a	b	b	a	a	b	a	a	a	
		13	Incinerator	1	a	b	b	a	a	b	a	a	b	
7	BBS DHQ Abbottabad Hospital	1	Laparoscope + Hysteroscope	1	a	a	a	a	a	b	a	a	a	
		2	Ultrasound machine with doppler, vaginal probe	1	a	a	a	a	a	a	a	a	a	
		3	Baby resuscitation trolley with warmer	1	a	a	a	a	a	a	a	a	a	
		4	Warmers	2	a	a	a	a	a	a	a	a	a	
		5	Incubators	4	a	a	a	a	a	a	a	a	a	
		6	Suctioning machine	3	a	a	a	a	a	a	a	a	a	
		7	Pulse oximeters (high quality)	4	a	a	a	a	a	a	a	a	a	
		8	Photo therapy lights machine	4	a	a	a	a	a	a	a	a	a	
		9	Ventilator	2	a	a	a	a	a	b	a	a	a	
		10	Weighing machine	2	a	a	a	a	a	b	a	a	a	
		11	Glucometer with strips	2	a	a	a	a	a	b	b	a	a	
		12	Cardiac monitor	2	a	a	a	a	a	b	a	a	a	
		13	Nebulizers	1	a	a	a	a	a	b	a	a	a	
8	TDH Havelian	1	Digital X-ray	1	a	b	a	a	a	a	a	a	a	
		2	Ultrasound Machine	1	a	b	a	a	a	a	a	a	a	
		3	Heavy duty Generator, 50kVA	1	a	b	a	a	a	a	a	a	b	
		4	Hematology Analyzer	1	a	b	a	a	a	a	a	a	a	
		5	ICU	1	a	b	a	a	b	---	---	b	---	
9	TDH Lora	1	Digital X-ray	1	a	b	a	b	a	a	a	b	a	
		2	Ultrasound Machine	1	a	b	a	b	a	a	a	a	a	
		3	Heavy duty Generator, 50kVA	1	a	b	a	b	a	a	a	a	b	
		4	Hematology Analyzer	1	a	b	a	b	a	a	a	a	a	
		5	ICU	1	a	b	a	b	b	---	---	b	---	

Classification and Selection of Equipment (2/3)

Facility No.	Facility	ME No	Medical Equipment	Qty	Facility Cat.	Staff	Number of beds	Electricity	Necessity of construction	Existing equipment	Undertaking country	Operator availability	Use of equipment	
10	CH Tajwal	1	Digital X-ray	1	a	b	a	a	a	a	a	a	a	
		2	Ultrasound Machine	1	a	b	a	a	a	b	a	b	a	
		3	Delivery table	2	a	b	a	a	a	a	a	a	a	
		4	Baby Incubator	1	a	b	a	a	a	b	a	b	a	
		5	Heavy duty Generator, 50kVA	1	a	b	a	a	a	a	a	a	b	b
		6	Baby warmer	2	a	b	a	a	a	b	a	b	a	
		7	Patient beds	10	a	b	a	a	a	a	a	a	b	a
		8	Lab incubator	1	a	b	a	a	a	a	a	a	a	a
		9	Chemistry analyzer	1	a	b	a	a	a	b	a	a	a	a
		10	Hematology Analyzer	1	a	b	a	a	a	b	a	b	a	a
		11	Microscope	1	a	b	a	a	a	a	b	a	a	a
		12	Defibrillator	1	a	b	a	a	a	b	a	b	a	a
11	CH Kalapani	1	Digital X-ray	1	a	b	b	b	a	b	a	a	a	
		2	Ultrasound Machine	1	a	b	b	b	a	a	a	b	a	
		3	Delivery table	2	a	b	b	b	a	a	a	a	a	
		4	Baby Incubator	1	a	b	b	b	a	b	a	a	a	
		5	Heavy duty Generator, 50kVA	1	a	b	b	b	a	b	a	a	b	
		6	Baby warmer	2	a	b	b	b	a	b	a	a	a	
		7	Patient beds	10	a	b	b	b	a	a	a	a	a	
		8	Lab incubator	1	a	b	b	b	a	b	a	a	a	
		9	Chemistry analyzer	1	a	b	b	b	a	a	a	a	a	
		10	Hematology Analyzer	1	a	b	b	b	a	b	a	b	a	
		11	Microscope	1	a	b	b	b	a	a	a	a	a	
		12	Defibrillator	1	a	b	b	b	a	b	a	a	a	
		13	Incinerator	1	a	b	b	b	a	b	a	a	b	
12	RHC Mohribebehni	1	Digital X-ray	1	a	b	b	a	a	a	a	a	a	
		2	Ultrasound Machine	1	a	b	b	a	a	a	a	b	a	
		3	Delivery table	2	a	b	b	a	a	a	a	a	a	
		4	Baby Incubator	1	a	b	b	a	a	b	a	b	a	
		5	Heavy duty Generator, 50kVA	1	a	b	b	a	a	b	a	b	b	
		6	Baby warmer	2	a	b	b	a	a	a	a	b	a	
		7	Patient beds	10	a	b	b	a	a	b	a	b	a	
		8	Lab incubator	1	a	b	b	a	a	b	a	a	a	
		9	Chemistry analyzer	1	a	b	b	a	a	a	a	a	a	
		10	Hematology Analyzer	1	a	b	b	a	a	b	a	b	a	
		11	Microscope	1	a	b	b	a	a	a	a	a	a	
		12	Defibrillator	1	a	b	b	a	a	b	a	b	a	
13	CH Nathiagali	1	Digital X-ray	1	a	b	b	b	a	a	a	a	a	
		2	Ultrasound Machine	1	a	b	b	b	a	b	a	a	a	
		3	Delivery table	2	a	b	b	b	a	a	a	b	a	
		4	Baby Incubator	1	a	b	b	b	a	b	a	b	a	
		5	Heavy duty Generator, 50kVA	1	a	b	b	b	a	b	a	b	b	
		6	Baby warmer	2	a	b	b	b	a	a	a	b	a	
		7	Patient beds	10	a	b	b	b	a	b	a	a	a	
		8	Lab incubator	1	a	b	b	b	a	b	a	a	a	
		9	Chemistry analyzer	1	a	b	b	b	a	a	a	b	a	
		10	Hematology Analyzer	1	a	b	b	b	a	a	a	a	a	
		11	Microscope	1	a	b	b	b	a	a	a	b	a	
		12	Defibrillator	1	a	b	b	b	a	b	a	b	a	
14	CH Khanspur	1	Digital X-ray	1	a	b	b	b	a	a	a	a	a	
		2	Heavy duty Generator, 50kVA	1	a	b	b	b	a	b	a	a	b	
		3	Patient beds	10	a	b	b	b	a	a	a	a	a	
		4	Lab incubator	1	a	b	b	b	a	b	a	a	a	
		5	Chemistry analyzer	1	a	b	b	b	a	a	a	a	a	
		6	Hematology Analyzer	1	a	b	b	b	a	b	a	a	a	
		7	Microscope	1	a	b	b	b	a	a	a	a	a	
		8	Defibrillator	1	a	b	b	b	a	b	a	a	a	
15	CH Sherwan	1	Digital X-ray	1	a	b	b	b	a	a	a	a	a	
		2	Ultrasound Machine	1	a	b	b	b	a	a	a	b	a	
		3	Delivery table	2	a	b	b	b	a	a	a	a	a	
		4	Baby Incubator	1	a	b	b	b	a	b	a	b	a	
		5	Heavy duty Generator, 50kVA	1	a	b	b	b	a	a	a	b	b	
		6	Baby warmer	2	a	b	b	b	a	b	a	b	a	
		7	Patient beds	10	a	b	b	b	a	b	a	b	a	
		8	Lab incubator	1	a	b	b	b	a	a	a	a	a	
		9	Chemistry analyzer	1	a	b	b	b	a	a	a	a	a	
		10	Hematology Analyzer	1	a	b	b	b	a	b	a	b	a	
		11	Microscope	1	a	b	b	b	a	a	a	a	a	
		12	Defibrillator	1	a	b	b	b	a	b	a	b	a	

Classification and Selection of Equipment (3/3)

Facility No.	Facility	ME No	Medical Equipment	Qty	Facility Cat.	Staff	Number of beds	Electricity	Necessity of construction	Existing equipment	Undertaking country	Operator availability	Use of equipment	
16	KATH DHQ Mansehra Hospital	1	CTG machine	2	a	b	a	a	a	a	a	a	a	
		2	Infant warmer / resuscitation	2	a	b	a	a	a	a	a	a	a	a
		3	Heavy duty suction machine	3	a	b	a	a	a	a	a	a	a	a
		4	Cardiac monitors	4	a	b	a	a	a	a	a	a	a	a
		5	Ultrasound machine	1	a	b	a	a	a	a	a	a	a	a
		6	MVA kits	6	a	b	a	a	a	a	b	a	a	a
		7	Oxygen concentrator	1	a	b	a	a	a	a	a	a	a	a
		8	Delivery tables	6	a	b	a	a	a	a	a	a	a	a
		9	OT table	1	a	b	a	a	a	a	a	a	a	a
		10	Examination lights attached to roof for labour room	2	a	b	a	a	a	a	b	a	a	a
		11	Incubators	4	a	b	a	a	a	a	a	a	a	a
		12	Paediatric warmers	4	a	b	a	a	a	a	a	a	a	a
		13	Photo therapy machine	6	a	b	a	a	a	a	b	a	a	a
		14	Suction machine	6	a	b	a	a	a	a	a	a	b	a
		15	O2 concentrator	10	a	b	a	a	a	a	a	a	b	a
		16	Audiometer	4	a	b	a	a	a	a	b	a	a	a
		17	Pulse oximeter	6	a	b	a	a	a	a	a	a	a	a
		18	Cardiac monitors	2	a	b	a	a	a	a	a	a	a	a
		19	Glucometers	6	a	b	a	a	a	a	b	b	a	a
		20	Crash cart trolley	2	a	b	a	a	a	a	b	a	a	a
		21	Fundosopes	4	a	b	a	a	a	a	b	b	a	a
		22	BP apparatus paediatric cough	6	a	b	a	a	a	a	b	a	a	a
		23	Paediatric ventilator	1	a	b	a	a	a	a	b	a	a	a
		24	Resuscitation table peads	2	a	b	a	a	a	a	b	a	a	a
		25	ECG machine paediatric	1	a	b	a	a	a	a	b	a	a	a
		26	Incubation set(INTUBATION)	2	a	b	a	a	a	a	b	a	a	a
		27	Electric mosquito killers	10	a	b	a	a	a	a	b	a	a	b
		28	Baby warmers	4	a	b	a	a	a	a	a	a	a	a
		29	Heating blowers for Nursery	6	a	b	a	a	a	a	b	a	a	b
17	TDH Garhi Habibullah	1	Baby warmer	1	a	b	a	b	a	a	a	a	a	
		2	Delivery kit	1	a	b	a	b	a	a	a	a	a	
		3	D&C kit	3	a	b	a	b	a	a	a	a	a	
		4	Autoclave, tabletop	1	a	b	a	b	a	a	a	a	a	
		4	Autoclave, 100 liters	1	a	b	a	b	a	a	a	a	a	
		5	USG Machine	1	a	b	a	b	a	b	a	a	a	
		6	Examination Light	1	a	b	a	b	a	a	a	a	a	
18	TDH Baffa	1	Baby warmer	2	a	a	a	a	a	a	a	a	a	
		2	Delivery kit	1	a	a	a	a	a	a	a	a	a	
		3	D&C kit	5	a	a	a	a	a	a	a	a	a	
		4	Autoclave, tabletop	1	a	a	a	a	a	a	a	a	a	
		4	Autoclave, 100 liters	1	a	a	a	a	a	a	a	a	a	
		4	Autoclave, 150 liters	2	a	a	a	a	a	a	a	a	a	
		5	USG Machine	1	a	a	a	a	a	a	a	a	a	
19	THQ Hospital Balakot	1	Baby warmer	1	a	b	b	a	a	a	a	a	a	
		2	Delivery kit	1	a	b	b	a	a	a	a	a	a	
		3	D&C kit	3	a	b	b	a	a	a	a	a	a	
		4	Autoclave, tabletop	2	a	b	b	a	a	a	a	a	a	
		4	Autoclave, 100 liters	2	a	b	b	a	a	a	a	a	a	
		5	USG Machine	1	a	b	b	a	a	a	a	a	a	
		6	Examination Light	2	a	b	b	a	a	a	a	a	a	
20	TDH Oghi	1	Baby warmer	1	a	b	b	a	a	a	a	a	a	
		2	Delivery kit	1	a	b	b	a	a	a	a	a	a	
		3	D&C kit	2	a	b	b	a	a	a	a	a	a	
		4	Autoclave	2	a	b	b	a	a	b	a	a	a	
		5	USG Machine	1	a	b	b	a	a	a	a	a	a	
		6	Nebulizer	2	a	b	b	a	a	a	a	a	a	