PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY

DASU HYDROPOWER PROJECT

SOCIAL AND RESETTLEMENT MANAGEMENT PLAN

VOLUME 7: PUBLIC HEALTH ACTION PLAN

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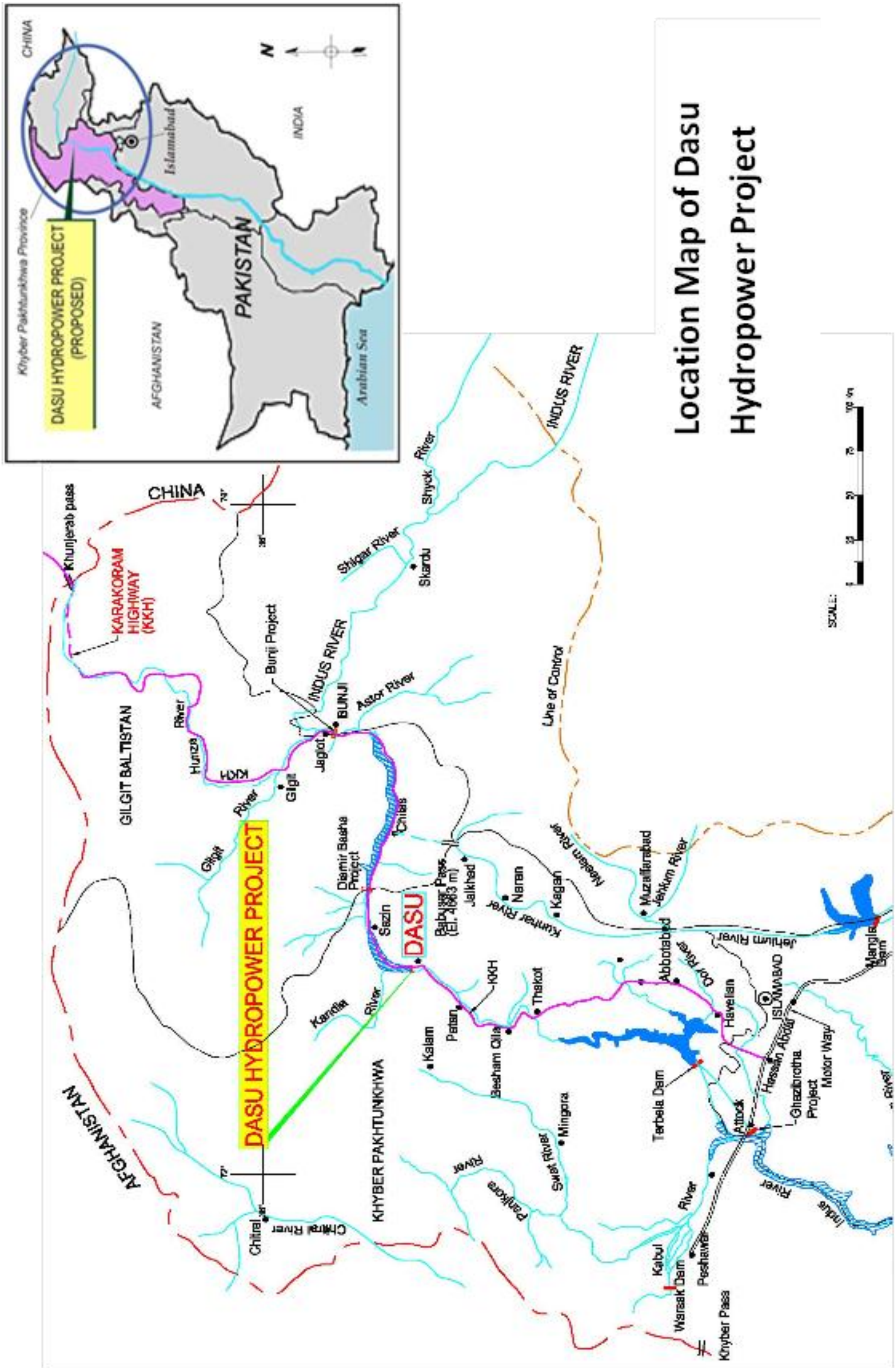
Location Map of Dasu Hydropower Project
DASU HYDROPOWER PROJECT (PROPOSED)
Khyber Pakhtunkhwa Province
CHINA
AFGHANISTAN
PAKISTAN
INDIA
Islamabad
Arabian Sea
CHINA
Khunjerab pass
KARAKORAM HIGHWAY (KKH)
GILGIT BALTISTAN
Hunza River
KKH
Gilgit River
Gilgit
Jaglot
BUNJI
Bunji Project
INDUS RIVER
Astor River
Shigar River
Skardu
Shyok River
INDUS RIVER
Line of Control
DASU HYDROPOWER PROJECT
Diamir Basha Project
Chilas
Sazin
DASU
Babusar Pass (El. 4063 m)
Jalkhad
Naran
Kunhar River
Kagan
Neelam River
Muzaffarabad
Jehlum River
Jehlum River
Abbotabad
Dor River
Havelian
ISLAMABAD
Mangla Dam
Kandia River
KKH
Patan
Thakot
Besham Qila
Kalam
KHYBER PAKHTUNKHWA
Tarbela Dam
Hassan Abdal
Motor Way
Ghazibrotha Project
Attock
Mingora
Swat River
Panjkora River
AFGHANISTAN
Chitral
Chitral River
Kabul River
Warsak Dam
Peshawar
Khyber Pass
Indus River
SCALE:

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ABBREVIATIONS

AFB	Acid Fast Bacilli
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ARI	Acute Respiratory Tract Infection
asl	Above Sea Level
AWD	Acute Watery Diarrhoea
BHU	Basic Health Unit
COI	Corridor of Impact
CPR	Contraceptive Prevalence Rate
CSC	Construction Supervision Consultants
DHPP	Dasu Hydropower Project
DHO	District Health Officer
DOTS	Directly Observed Treatment Short Course
EPI	Extended Programme of Immunisation
EMA	External Monitoring Agency
FIDIC	International Federation of Consulting Engineers
FP	Family Planning
GAP	Gender Action Plan
GDP	Gross Domestic Product
GoP	Government of Pakistan
GMS	Greater Mekong Sub-region
GPI	Gender Parity Index
GRAP	Gender Reform Action Program
GRC	German Red Cross
HIV	Human Immunodeficiency Virus
HTN	Hypertension
HSW	Hire Sex Workers
IDU	Injecting Drug Users
IEC	Information, Education, Communication
IMR	Infant Mortality Rate
IP	Implementing Partner
KPK	Khyber Pakhtunkhwa
KKH	Karakorum Highway
Lab	Laboratory
LHV	Lady Health Visitor
M&E	Monitoring and Evaluation
MO	Medical Officer
MoH	Ministry of Health
MoU	Memorandum of Understanding
MSW	Male Sex Worker
NID	National Immunization Days
NGO	Non-Governmental Organization
PAP	Project Affected Person
PCSC	Project Construction Supervision Consultants
PDHS	Pakistan Demographic and Health Survey
PNC	Postnatal Care
PHAP	Public Health Action Plan
PHSC	Public Health Steering Committee
PRCS	Pakistan Red Crescent Society
PSLM	Pakistan Social and Living Standards Measurement Survey
RAP	Resettlement Action Plan
RH	Reproductive Health
RHC	Rural Health Centre
SAARC	South Asian Association for Regional Cooperation
SRMP	Social and Resettlement Management Plan
STD	Sexual Transmitted Disease(s)
STI	Sexual Transmitted Infection
TA	Technical Assistance
TB	Tuberculosis

TFR	Total Fertility Rate
TOR	Terms of Reference
UNDP	United Nations Development Program
WAPDA	Water and Power Development Authority
WB	World Bank
WHO	World Health Organisation

Units of Measurements

m	Meter (Unit of Length)
km	Kilometre (Unit of Length)
Kw	Kilo Watt (Unit of Energy)
MW	Mega Watt (Measuring Unit of Power)

GLOSSARY OF TERMS

Antenatal Care	Proportion of women who delivered during the last 3 years and who made at least one antenatal care visit to either a public or private health practitioner
Adequate	Enough to satisfy a need or meet a requirement
Appropriate	Suitable for identified needs or requirements.
Baseline	A set of pre-project conditions used as a basis for project.
Community	A group of individuals broader than the household, who identify themselves as a common unit due to recognized social, religious, economic and traditional ties or a shared locality.
Compliance	Faithfulness to legal requirements, and public commitments
Contraceptive Prevalence Rate	Proportion of currently married women aged 15-49 who are (or their spouses are) using contraception
Full Immunisation Rate	Proportion of children from 12 to 23 months of age who are fully vaccinated against the Expanded Program of Immunization (EPI) target diseases
Gender Parity Index	Proportion of girls to boys in any given category or group
Household	A group of persons living together who share the same cooking and eating facilities, and form a basic socio-economic and decision-making unit. One or more households often occupy a house.
Hamlet	Locally refer to cluster of households, often related by kinship. Hamlets are small village settlement.
Infant Mortality Rate	No. of deaths of children under 1 year of age per 1000 live births
Impact	Positive or negative affect over a period of time.
Livelihood	Means of resources required for living.
Living standards	Access to well-being indicators to individual, group or nation such as health, education drinking water, sanitation, employment, nutrition, housing, transport and electricity.
Maternal Mortality Rate	No. of mothers dying due to complications of pregnancy and delivery per 100,000 live births
Net Primary Enrolment Ratio	Number of children aged 5 to 9 attending primary level classes, divided by the total number of children in this age cohort
Prevalence of Underweight Children	Proportion of children under 5 years who are underweight for their age
Project Affected Area	The associated area affected by project interventions
Short-Term	Related to day to day, not permanent
Tehsil	Administrative below a district (A district is divided into several tehsils)
Total Fertility Rate	Average number of children delivered by a woman during her reproductive years
Under 5 Mortality Rate	No. of deaths of children under 5 years of age per 1000 live births

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EXECUTIVE SUMMARY

THE CONTEXT AND PURPOSE

This plan presents an integrated part of the safeguard compliance in the detailed design of the Dasu Hydropower Project (DHPP). It has to be read and utilised in the context and in light of the purpose of the entire social and environmental safeguard plans. The plan covers the pre-construction, construction and post-construction periods, aiming at a holistic, effectively coordinated, public health plan and at the same time ensures a technically and managerially sustainable approach in meeting the public health needs of the people in the project area. While public health and the health system in the project area are in a deplorable state, the Public Health Action Plan (PHAP) is not meant to be a health development plan but has rather to set distinct boundaries and focus on issues which can be reasonably related to effects of the construction and the reservoir without replicating or reducing the responsibilities of the District Health Office and related sectors/ministries.

TARGET GROUPS AND BENEFICIARIES

In developing this PHAP several target groups (populations and sub-populations) have been considered having effects on public health during and after the construction period: (i) population of the Dasu (and Kandia) Tehsil in particular and the resident population in the closer surrounding of the construction sites; (ii) families to be resettled; (iii) construction workers; and (iv) the followers of the large construction workforce (people temporarily or permanently migrating to the area, being attracted by commercial and business expectations).

The Plan refers to the factors which have to be considered when establishing the PHAP: populations and subgroups, determinants of health in the affected Tehsils' including gender related aspects (cultural restrictions, poverty, education, water, food and nutrition, climate), risk factors due to the construction of the reservoir and the present national health policy, the health status of the population in Kohistan and the existent health services. This includes the following:

- Key observations are made on health and nutrition: morbidity, mortality, nutritional status, maternal and child health, malaria, dengue, tuberculosis and in particular sexual transmitted diseases (STD) and human immunodeficiency virus (HIV). The public sector structure of health management and health services at present is described as far as relevant, including availability, accessibility and quality of services.
- Health related factors and risks to be taken into account are elaborated: biophysical health risk factors (emissions to air, water and soil, waste management, biological waste, noise and road safety), the presence of a large construction workforce in a remote environment, (STI and HIV/AIDS, tuberculosis, occupational health, possible poverty trap), resettlement related public health aspects (drinking-water and sanitation, water born and vector transmitted diseases, solid waste disposal, medical waste disposal, nutrition, houses and villages, psycho-social effects) and access to health services.
- Relevant policy and strategic issues for the provision of safeguarding health services are discussed with special emphasis on sustainability of those interventions which have or should have an impact beyond the construction period.

The Plan is oriented to the protection of target populations and groups and to the effects of the construction and the reservoir while respecting the responsibilities of the District Health Office and other related sectors offices.

OBJECTIVES AND OUTCOMES

The overall objective of the PHAP is to contribute to (mitigating of adverse and optimising positive) the social developmental impact expected from the construction of and operating the Dasu Hydropower Project through minimising risks and possible harmful effects on public health. The purpose is the inclusion of adequate public health actions in the overall safeguarding plan in all three phases of construction and development. The expected outcomesare as follows:

(i) Adequate public health safeguarding in the relocation and resettlement processes of persons affected by the project as well as the resident population while observing the context, conditions and parameters prevailing in the related Tehsils and the Kohistan District.

(ii) Provisions for adequate and appropriate measures to minimise adverse effects on the health of the population in the surrounding of the construction sites.

(iii) Minimise adverse effects on the health of migrating and resident people attracted by and interacting with the construction related workforce, including in respect to reproductive health and prevention of STI and HIV/AIDS.

(iv) Safety of the construction workforce from occupational hazards, health risks of living jointly in compounds and to assure easy access to clinical care.

(v) Promotion of future beneficial and reduction of adverse effects on health after completion of the dam, reservoir and the access roads.

ADMINISTRATION AND IMPLEMENTATION

The objectives and the required interventions go beyond the health sector and demand an inter-sectoral approach with a range of responsible entities and implementing authorities:

- The District Health Officer (DHO) of Kohistan District as the overall health authority and public sector provider of health services.
- WAPDA in its engineering, managerial and coordinating capacity.
- WAPDA Medical Services with its long standing experience in providing health services for its staff and in public health of its colonies.
- The contractors with their responsibilities to minimise harmful effects on the population and their own workforce caused by the construction, to implement occupational health measures, as well to keep its workers' camp safe from health threats.
- The colony manager with its responsibilities to keep the colony inhabitants safe from health threats.
- The health facilities providing primary and secondary health care.

HEALTH PARTNERS

The following three health partners are foreseen:

(a) Primary and secondary care of the residing and resettled population: The provision of primary and secondary care is expected to be systematically and sustainably boosted contracting a private care provider who would manage the facilities on behalf of the DHO. Therefore, the link will need to be established through the DHO between the DHP and the selected implementing partner.

(b) Construction worker camp: The contractor has the responsibility for its workers and the camp, the health facility included.

(c) Colony: The WAPDA medical services have large and long standing experience in providing health services in their colonies.

It remains the responsibility of WAPDA and of DHO to monitor the performance of the health care providers in order to assure the quality of delivery, technical and financial

accountability. This implies a contractual relationship with WAPDA a formalised four-partite understanding between WAPDA, DHO, the construction company and the implementing private health care provider under contract with WAPDA for implementing the Plan.

BUDGET AND MONITORING ARRANGEMENTS

The estimated budget for the PHAP for a 12-year period is US$ 20.10 million (Table A).

Table A: PHAP Budget – Summary

Sr. No.	Items	Cost (USD million)
1	Prevention and promotion	2.47
2	Curative care	2.32
3	Training and skill upgrading	0.58
4	Personnel	5.68
5	Capital costs (without training or capacity development)	2.46
6	Management, meeting and administration costs	0.04
7	Studies and operational research	0.15
8	M&E and auditing	1.41
Total		**15.09**
Contingencies @ 25% + 9%		5.01
Grand Total		20.10

A three-tier monitoring system has been designed to monitor on-going and evaluate progress. These 3-levels comprise of:

(i) Internal monitoring at health care provider level involving the health project implementing partner, the health provider of the construction company and of the consultant, the DHO and WAPDA field offices;
(ii) Monitoring by the Construction Supervision Consultant (CSC); and
(iii) Independent external monitoring.

The responsibility to oversee adequate reporting by the various partners and to compile the reporting rests with the WAPDA medical services with adequate contribution by the health care providing actors. Reporting will include an inception report, brief monthly activity listings, quarterly progress reports and annual reports.

Periodical multi-year reviews are foreseen to be conducted by WAPDA with the co-financier. The Financial Audits of WAPDA medical services and the health facility of the contractor are aimed to be performed in joint audits of the construction.

Under the guidance of the overall safeguard governance oversight the public health safeguarding oversight comprises of WAPDA and DHO (chair), the health project manager, the contractor health care service provider, WAPDA medical services, other health actors in Kohistan and a gender action plan representative.

1 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

This plan presents an integrated part of the safeguard compliance in the detailed design of the Dasu Hydropower Project (the Project). It has to be read and utilised in the context and in light of the purpose the entire social and environmental safeguard plans. The plan covers the pre-construction, construction and post-construction phases of the project. The objective has been to design a holistic, effectively coordinated public health plan and at the same time ensure a technically and managerially sustainable approach in meeting the public health needs of the people in the project area. While public health and the health system in the project area are in a poor state, the Public Health Action Plan (PHAP) is not meant to be a health development plan but rather sets distinct boundaries and focus on issues which can be reasonably related to the effects of the construction and the reservoir without replicating or reducing the responsibilities of the District Health Office and related sectors/ministries.

1.2 SETTING

The Dasu Hydropower is planned to be constructed about 8km upstream of Dasu Bridge near Dasu town in the District Kohistan of the Khyber Pakhtunkhwa (KPK) province. The aim of the Project is to generate 4320MW of electricity by constructing a 242m high dam on the River Indus. The Project would be operated on a “run of river” basis. The reservoir of up to 74 km length would cover an area of 4,643 ha at an altitude of 950 meters above sea level (m asl) and may extend up to 957m asl by different components. The Karakorum Highway (KKH) will be realigned over a length of about 70 km at an elevation of 964 m.

The Project has considerable social and environmental impacts, including the relocation of the affected population due to land acquisition, submerged land, influx of thousands of construction workers during the construction phase and to operate the plant, as well as changes to patterns of livelihood. Newly constructed roads will also facilitate greater passage of goods and people through the project area.

The project aims to mitigate potential negative impacts on public health and safety in compliance with the World Bank Operational Guidelines, including concern to hold the spread of HIV and STDs, although in this particular setting, the risk appears lower than in a comparable setting in another context. The public health component addresses, in conjunction with other safeguarding components such as resettlement, livelihoods, cultural heritage, and labour and working conditions[1], the population of the Project area and its vicinity (including the local residents) and those who will in-migrate as construction workforce, people being attracted by the commercial business expectations and consultants.

1.3 OBJECTIVES AND EXPECTED OUTCOMES

The PHAP (or the Plan) uses the logical frame work to outline its objectives, indicators, source of verification and assumptions. Therefore, its phraseology follows the formulation used in logical frameworks. The Plan aims to contribute to the mitigating of adverse health impacts and optimise the social developmental impacts expected from the construction of the hydro project through the inclusion of adequate public health actions in the overall safeguarding plan of the Dasu Hydropower Project. These intentions are formulated in objectives.

The overall objective is to mitigate as well as promote social developmental impacts expected from the construction of and operating the Dasu Hydropower Project through

[1] The social safeguard documents include 14-Volume reports titled Social and Resettlement Management Plan (SRMP). Similarly, the Environmental Management Action Plan (EMAP) includes 8-volume reports.

minimising risks and possible harmful effects on local public health. In sum, it aims inclusive coverage of all project affected persons – directly and indirectly affected by the project in all three phases of project development. The expected outcomes include:

(i) Adequate public health safeguarding in the relocation and resettlement processes of persons affected by the project as well as the resident population while observing the context, conditions and parameters prevailing in the related Tehsils and the Kohistan District.

(ii) Provisions for adequate and appropriate measures to minimise adverse effects on the health of the population in the surrounding of the construction sites.

(iii) Minimise adverse effects on the health of migrating and resident people attracted by and interacting with the construction related workforce, including in respect to reproductive health and prevention of STI and HIV/AIDS.

(iv) Safety of the construction workforce from occupational hazards, health risks of living jointly in compounds and to assure easy access to clinical care.

(v) Promotion of future beneficial and reduction of adverse effects on health after completion of the dam, reservoir and the access roads.

1.4 METHODOLOGY

In the development of the Public Health Action Plan (PHAP), the following steps were taken:

- Review of documents[2]; although a variety of sources were consulted, some relevant, especially Tehsil specific health data are not available.
- Consultation meetings and interviews of key offices and key informants[3] were held on district level, and as well in the concerned health facilities.
- Consultation meetings with community members were limited to the men only, because of traditional restrictions which inhibit conversations with women, even in major meetings with district administration or affected community heads meetings.
- Interactive work with the safeguard team, especially with the colleagues designing the gender action plan in an attempt to identify approaches to address the health needs of women.
- The project area and all concerned health facilities were visited.

1.5 LIMITATIONS

Public health implications of the construction were mentioned but not elaborated in the previous (feasibility) studies. Therefore, a limited public health impact assessment was conducted prior to the formulation of the PHAP. Adequate consultations with women in the households were not possible due to local customs and tribal setup and their perceptions and opinions are likely not to be well understood and appropriate responses possibly not or not sufficiently identified. However, community wide consultations, meetings and feedbacks were received for the consultation plan. Therefore, the plan foresees space and opportunities for pursue and engagement of women by the implementing agency with women during operation.

Affected area specific data on the health status of the population and their utilisation of health services were only partially and incomplete available. Therefore, country, province or district wide trends and tendencies were used as a guide and for extrapolation. This lack of data inhibits the identification of more specific public health needs, strongly focussed public health action plan/s and the use as base line data for monitoring.

[2] See in Appendix N List of References

[3] See in Appendix M list of People consulted

1.6 STRUCTURE OF DOCUMENT

The key points and the plan are presented in various chapters in the text. These include (i) an explanation of the main factors and the working environment of the Plan; (ii) brief elaborations on the interventions, followed by a list and description of the roles of the implementing partners; (iii) estimated budget; and (iv) management, implementation and monitoring framework. The Appendices provide further details of the issues addressed in this plan.

2 BACKGROUND AND PROJECT AREA PROFILES

This chapter refers to public health in its wider definition and focuses on key issues which have to be considered in the PHAP. These key issues are elaborated in detail in the Appendices G-J of this report and this chapter summarises the main points in order to provide the basic information for easier understanding and analysis of the local situation and thereby, comprehension of the Public Health Action Plan. The expected advantageous impact of the Dasu dam and its access roads extend of course far beyond the immediate resident, relocated and hosting population in Kohistan. However, this includes some positive impacts during the construction period, as well as medium and long term health effects on the population residing in the affected area.

2.1 TARGET GROUPS AND SOCIAL PROFILES

All populations directly or indirectly affected have been considered, including the host area people, and the potential in-migrants and their "followers" to the project area to work in the project construction. In essence, the population of the entire project area was considered in developing the Plan, with a particular focus on the dislocated and resettlement communities. For the PHAP, the entire catchment population of the existing health facilities are considered. The facilities in place now include (i) four Basic Health Units (BHUs); and (ii) two Rural Health Centres (RHCs) which are providing primary health care in the affected area.

According to the 1998 Census, the total population of Kohistan was 472,570 with an average annual growth rate of 0.09 % (see Table 2.1). The male to female ratio was 1.22. At the time of the 5th Population Census, Kohistan had three Tehsils, of which Dasu had the highest population with 184,746; Palas had 165,613; and Pattan 122,244. Population density was 63.1 people per sq. km. Both literacy and school enrolment rates are among the lowest in the country. Only one-quarter of the population is active economically. The female labor force participation is less than 1%.

Table 2.1: Population Distribution in Kohistan

Population				
Social Indicators	**1998**			
	Total	**Rural**	**Male**	**Female**
Population (in thousand Number)	472570	472570	Male/Female Ratio is 1.22	
Annual Growth Rate (%)	0.09	0.09		
Life Expectancy	60 yrs.			
Literacy Ratio	11.01	11.01	17.23	2.95
Enrolment Ratio	6.89	6.89	10.60	1.34
Under 10 Population Vaccination Ratios (%)	44.68	44.68	23.92	20.76
Labor Force Participation	37.53	37.53	65.37	0.78
Economically Active Population	24.55	24.55	43.90	0.49
Disabled Population	1.05	1.05	0.58	0.47

Source: District Census Report, Kohistan, 1998

The 1998 Census reported the district's literacy rate among those aged 10 years and above, as 11.1%, but there were significant gender differences: male literacy was 17.23% and female literacy 2.95%. The total school enrolment rate was 6.89% (10.60% for males and 1.34% for females). Further socio-economic details and project area profiles are reported in Vol. 2 Socio-economic Baseline and Impact Assessments.

The construction of the Project will displace 767 households (6953 persons) from 34 hamlets/villages (17 on the Left bank and 17 Right bank) upstream of the reservoir. The displaced households and communities will be resettled as per their desires in upper elevations in newly established village sites with basic social and civic amenities. A Resettlement Action Plan (RAP) has been prepared for mitigation of resettlement related

impacts of the project.[4] It is estimated that around 2000 to 3000 workers will be present at any point of time during the construction. The large construction workforce attracts "followers" of many categories – most likely groups are traders, grocery and food sellers, restaurant-owners, and other service providers from other parts of the country. These issues are also separately addressed by the Project in terms of management of the associated project impacts such as influx of in-migrants and construction workers to the project site.[5]

2.2 FACTORS CONSIDERED IN PHAP

Factors considered in the development of the PHAP are discussed at greater details in the Appendices G, H, J – for instances, populations, tribes/sub-tribes, determinants of health in the affected Tehsils' including gender related aspects (cultural restrictions, poverty, education, water, food and nutrition, climate), risk factors due to the construction and the reservoir and the present national health policy, the health status of the population in Kohistan and the existent health services. The listed Appendices further elaborate on health and nutrition: morbidity, mortality, nutritional status, maternal and child health, malaria, dengue, tuberculosis and in particular STD and HIV/AIDS. The public sector structure at present is described as far as relevant, including availability, accessibility and quality of services.

Health risks and factors to be taken into account are elaborated more in detail: biophysical health risk factors (emissions to air, water and soil, waste management, biological waste, noise and road safety), tuberculosis, occupational health and a possible poverty trap), resettlement related public health aspects (drinking-water and sanitation, water born/vector transmitted diseases, solid waste disposal, medical waste disposal, nutrition, houses and villages, psycho-social effects) and access to health services.

2.3 GENDER ASPECTS

Compared to other provinces in Pakistan, gender gaps are more acute in KPK except of Baluchistan. The GPI (Gender Parity Index)[6] at high school level in Kohistan was 0.03. The GPI for adult literacy was 0.44 for KPK, compared to the national average of 0.65, while in Kohistan it is as low as 0.06. Women are handicapped by cultural norms which are barriers to women working for a wage, low educational attainment and difficulty in accessing employment opportunities due to low mobility. Gender disparity is endemic in KPK, and is evident in the health and education sectors, in employment and political representation.[7] There are very serious problems of gender discrimination in the province, and little evidence that these are likely to improve in the short-term. There have been a number of steps taken to improve women's situation at the federal level, and these programmes have been implemented in KPK as well. These include the poverty alleviation programmes and micro-credit facilities, which offer cash transfers and small loans to women who might not otherwise have access to funds, as well as gender mainstreaming policies such as the Gender Reform Action Program (GRAP), meant to improve women's status in government institutions by introducing better hiring practices, amongst other reforms. However, little has been done to directly reduce gender inequality by the KPK government; most reforms have come in other sectors, with women gaining indirectly.

[4] SRMP Vol. 4 – Resettlement Framework
[5] SRMP Vol. 8 Management Plan for Construction-related Impacts
[6] Khyber Pakhtunkhwa; Millennium Development Goals; 2011, UNDP
[7] The gender issues are further discussed in SMP Vol. 6 Gender Action Plan.

Table 2.2: Gender Parity Index (GPI) for Primary Education

Gender Parity Index for Primary Education[8]							
Region	**2001/02**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**MDG Target (2015)**
Pakistan	0.82	0.85	0.85	0.81	0.85	0.84	1.0
KPK	41	47	49	49	49	52	80

Public health has always to be assessed in a strong inter-relation not only with above mentioned determinants but with gender roles and relationship as well as interaction of women and men. This is particularly week in Kohistan district. Therefore the PHAP has also be read and reviewed within the context of the SRMP Vol. 7 Gender Action Plan for improvement in the gender parity as well as community health and well-being. The GAP assesses the positive and negative impact of project activities and addresses gender issues associated with displacement, resettlement, livelihoods, education/training and skill development and community health.

2.4 PUBLIC HEALTH SECTOR

2.4.1 Public Sector Structure

The health facilities and services in a District are monitored and regulated by the District Health Officer (DHO). Like in other countries the public sector health services are provided through a three tier system. In Kohistan District primary and secondary health care are aimed to be provided through 43 health facilities. Of these four are located within the Project area and require relocation due to the project construction.

For various multiple reasons, the quality of the services provided in existing public health facilities is far below the expected standards in the rest of the country. Some of the reasons of this situation are as follows:

- In general, the health sector is affected by weak management and governance systems.
- Staff is poorly motivated and insufficiently compensated and supportive supervision is not adequate.
- In Kohistan, the health facilities face major shortages in drug supply and services. Patients have to buy their medicines from private pharmacies as well as to refer to private clinics in Dasu town for treatment.
- Access to services is less limited by physical accessibility, but rather women's level of education, exposure to media, and household income are factors of utilisations.
- Utilisation rate can usually be taken as one of the proxy indicators for the quality of the services provided. The utilisation rate in relation to catchment population of the public sector facility, in particular on RHC level, is low. This would speak for a substantial need for improvement. However, as stated above, the cultural norms appear as the main constraining factor for women utilising the available health services.

As noted earlier, available health data are incomplete. As a result, this situation has major implications for any health system and programme. In an effort to address and improve the unacceptable low quality of the public sector services in particular in remote and rural areas, the GOP in the past has embarked on a number of programmes in order to offer a holistic and uniform solution to address the gaps in the health sector. Most of these programmes have been implemented in KPK, however with the limitations due to the nature of vertical programmes. Vertical programmes tend to be not well coordinated which affects their effectiveness at the lowest and most basic level of service delivery, usually leaving a number of gaps. Also, reportedly, most of the vertical programmes

[8] Khyber Pakhtunkhwa; Millennium Development Goals; 2011, UNDP

have stronger focus on the diagnostic and treatment side of health care while essential supporting mechanism remain under-emphasised such as children targeting programmes which need to put weight on the provision of nutrition. The UNDP MDG Report quotes "The design and implementation of past nutrition initiatives have been fraught with weaknesses including a lack of ownership and responsibility, weak managerial and technical support to provinces and the absence of a national nutrition policy and strategic framework".

It must be pointed out that this PHAP does not present a developmental action plan but an action plan for mitigations of immediate project construction-related public health issues. This implies that health care activities are to safeguard the people in the project area from the direct and adverse impacts of the project. At present the public sector functions are considerably below the standard required for this purpose. At the same time, sustainability is a crucial criterion for the interventions beyond the end of project construction.

2.4.2 Health Facilities in Affected Area

Primary health care is provided through Basic Health Units (BHU) and Rural Health Centres (RHC). Available health data on Kohistan are rudimentary and/or missing; no figures can be traced on reproductive health, other data are only partially segregated by gender and age. Therefore data have to be read and utilised in this context. The absence of such essential data is informative about the status of the health information system in the District Kohistan.

The following Primary Health Care Units are located in the project affected area: BHU Jalkot; BHU Seo; BHU Kai Doga; BHU Thooti; RHC Dasu and RHC Shatial.

The District Hospital in Dasu town in the Tehsil Dasu is under construction. It is planned as a category B type with 208 beds in total, outpatients and the specialists include internal medicine, surgery, gynaecology and paediatrics.

2.5 EQUITY AND HEALTH[9]

The WHO guide points out that development and economic objectives of dams are often not fully compatible with an equitable distribution of the benefits between different stakeholder and community groups. In the case of dams for hydropower generation or drinking water supply, the beneficiaries, as in the case of the Dasu hydropower project, are hundreds of kilometres away in urban centres. The surrounding population expressed already in a number of consultation meetings that they might not benefit from the energy produced while at the same time they will suffer from the adverse health effects of environmental and social change. Of course improved health is inherent to the general poverty reduction objectives of dams, but the concerns are the equity gaps and their adverse health impacts.

For this reason, WHO emphasises that a simple health accounting is not satisfactory. In other words, it is not acceptable to simply balance out the health gains of one part of the population against the losses of another, to arrive at a net health benefit, as it might be done in economic or financial analysis. Rather, it is very important that this point is accepted by all partners involved in the dam planning and evaluation process. Benefits of dams, also for health, are not disputed. It is the risks to health, however, resulting from inequity, that need to be identified at an early stage and managed as an integral part of dam design, construction and operation.

2.6 DISEASE PATTERNS AND CONDITIONS

Table 2.3 lists the disease pattern and conditions in the Project area. In a nutshell, the key health issues show a typical picture as can be expected in the given socio-economic

[9] Human Health and Dams, The World Health Organization's submission to the World Commission on Dams; Geneva, January 1999

situation. But the data on reproductive, child health and malnutrition are not captured and the diagnostics capacities in the project area facilities are limited.

The child death rates are one of the highest in the world. Tuberculosis remains to be a major public health concern in the province and in Kohistan, as are respiratory tract infections and chronic pulmonary conditions. The incidence rates of malaria and dengue in Kohistan remain uncertain. The collected data do not appear accurate and the diagnostic skills and the available equipment do not sufficiently allow an assessment on the magnitude of the problem.

Table 2.3: District Health Data (Jan to June 2012)

Communicable Disease Top 5	Total	Non Communicable Disease	Total
Acute (Upper) Respiratory Infections	17 485	Urinary Tract Infections	3087
Diarrhoea/Dysentery in >5 yrs.	7 406	Peptic Ulcer Diseases	1782
Fever due to other causes	2344	Hypertension	1302
Scabies	2 295	Asthma	1171
Pneumonia >5 years	1 841	Otitis Media	713
Dermatitis	451	Dental Caries	651
Suspected Malaria	444	Depression	159
Worm Infestations	339	Burns	71
TB Suspects	279	Cirrhosis of Liver	48
Enteric / Typhoid Fever	258	Cataract	29
Chronic Obstructive Pulmonary Diseases	137	Glaucoma	20
Cutaneous Leishmaniasis	75	Diabetes Mellitus	19
Trachoma	18	Drug Dependence	16
Suspected Neo Natal Tetanus	10	Fractures	14
Suspected Meningitis	0	Road traffic accidents	9
		Dog bite	7
		Epilepsy	7
		Ischemic Heart Disease	6
		Snake bites (with signs/symptoms of poisoning)	2

2.7 EXTERNAL ASSISTANCE TO THE HEALTH SECTOR IN KOHISTAN

The WB has designed and commenced the implementation tender for the project "Revitalizing Health Services in KPK"[10]. The WB is managing a funding pool jointly with KPK Government. The project covers the entire District and foresees to source out the management of health services in the District (6 Districts in total) on behalf of the DHO.

The Pakistan Red Crescent Society (PRCS), with the support of the German Red Cross (GRC) is providing support to a selected number of facilities in Kohistan. This assistance was given in terms of management, logistic and technical support. The facilities belong to the public sector and the PRCS/GRC offered systematically support and guidance in

[10]Emergency project paper on a proposed grant in the amount of US $ 16 million under the multi donor trust fund for Khyber Pakhtunkhwa and federally administered tribal areas and Baluchistan to the Government of Pakistan for a Revitalising Health Services in Khyber Pakhtunkhwa Project; 30 June 2011; Human Development Unit; South Asia Region; The World Bank; Report No: 62125-PK

collaboration with the District Health Department. The PRCS/GRC recruited directly some staff members in addition to the public sector staff, such as social mobilizer, and has been paying top–ups to the staff. The approach aims at interacting with, engaging and involving the communities for health awareness, safe drinking water, hygiene promotion and proper waste disposal of the households. Other national and international NGOs, such as the “Malteser”, provided logistical assistance, including some supplies and smaller renovations of facilities in the project area.

3 HEALTH HAZARDS AND MITIGATION HEALTH PLAN

The plan outlined in this chapter has been based on the assessments available in the Appendices (Appendix F, G, H, I, J, K). Overriding in the plan is on the one side the requirement to apply a holistic, effectively coordinated and financially, technically and managerially sustainable approach; on the other side however, not to get absorbed in needs which are beyond those caused by the construction and/or which are born by cultural norms and require a long term social development approach. Therefore, the boundaries of PHAP were set at the issues which can be reasonably related to effects of the construction without replicating or reducing the responsibilities of the public District Departments. The plan aims at safeguarding health of the people in the project area and proposes enhancement of health infrastructure and facilities as well.

Mitigation is "the elimination, reduction, or control of a project's adverse environmental effects, including restitution for any damage to the environment caused by such effects through replacement, restoration, compensation, or any other means"[11].Due to the range of positive and negative elements, the mitigation measures will have a major influence on the balance between an improved or worsened quality of life for the affected population. The following sections highlight specific issues of importance in the mitigation plan:

3.1 SPECIFIC HEALTH ISSUES BEFORE, DURING AND AFTER THE CONSTRUCTION PERIOD

The population in the proximity of the construction site, the construction workers and people living in the resident colony will be exposed to a number of factors as listed below (see also more details in Appendices G-I).

(i) bio-physical health risk factors e.g. noise, dust, chemicals, construction material, solid waste, waste water and vector transmitted diseases,

(ii) risk factors resulting from human behaviour and

(iii) road accidents and impact of increased traffic.

As the majority of these factors relate to the construction phase, some of them will continue into the operation phase of the project also.

It is imperative that occupational health measures will be applied and monitored in order to ensure the safety and well-being of the existing population and the construction workers (7 - 9). The posed risks include

- Bio-physical health risk due to the construction
- Emissions to air (noise, dust and combustion gases)
- Emissions from soil and waste management
- Biological waste
- Emissions from reservoir water
- Noise
- (Road) Safety

3.1.1 STI and HIV/AIDS

The main part of the migrating workers will be male. Even though this fact usually involves a public health concern, the cultural or religious barriers, as mentioned in previous chapters, are strict in this area to such an extent, that it is unlikely that health related consequence might pose a public health risk.

[11] Canadian Handbook of Health Impact Assessment, volumes 1 to 4. Canada, Federal/Provincial/Territorial Committee on Environmental and Occupational Health, 2004.

3.1.2 Tuberculosis

Given the high incidence of tuberculosis in the country and in the district, there will be an increased infection risk in the construction workers camp and the resident colony. Also, the residing and the relocated population will face movements due to the resettlement and will be living in closer proximity. Naturally, infections can also be transmitted from the large construction workforce to the population and vice versa. This requires special emphasis on tuberculosis control measures, and the infection rate has to be monitored among the construction workers, in particular of the unskilled labourers who are more likely to be residents of poorer and probably higher infected populations.

3.1.3 Occupational Health

The introduction of occupational health measures will take into account the wide range of professions, jobs and tasks involved and have to be specific for each type of work, i.e. manual work at dam and road construction, truck and machinery drivers, various office based jobs as well as cooks, maids, cleaners, security etc. This includes control and management of work specific hazards, dust, combustion gases from construction machinery and vehicles, missions to soil, solid waste, biological waste, disposal of sludge, noise and road accidents etc. (For details, see Appendix I).

3.1.4 Poverty Trap

There is the general expectation that people in the neighbouring community will benefit directly through jobs or indirectly from the construction. However, any (temporary) migration of a large group of people causes some indirect effects which might impair the income/purchasing power of the residing population: market prices on accommodation and food are likely to rise and may drive “near-poor” families into poverty with subsequent consequences for their health status and ability to access health services. Close monitoring will be required of poverty level and its consequences.

3.1.5 Drinking Water and Sanitation

Factors to consider, as in any similar situation, next to the water quality, include the location and type of waste water disposal as well as the distance of latrines to groundwater or boreholes. Access to safe drinking-water is essential to health, a basic human right and a component for health protection. Therefore, the planned investment in safe drinking water (through accessing deep layers of ground water and/or piped water from clean springs) will be significant for the health of villages.

The resettled population will be motivated and encouraged to dig latrines in each household. The existence, and naturally also their usage, are pre-requisites for a healthy lifestyle. Village level hygiene, cleanness, functional drainage systems have to be integrated in the administrative management of the new resettlement villages, whereby the village population will be responsible for the fetching their household water, garbage disposal and infrastructure to reach the Dasu hospital.

3.1.6 Water born/ Vector transmitted Diseases

The incidence of malaria is low in the affected areas or is rather under-diagnosed. Therefore, conditions need to be created to ensure proper diagnosis and epidemiological surveillance. While preventative methods such as the use of mosquito nets have to be emphasised, health staff needs to be trained and/or their skills refreshed for proper diagnosis and treatment.

The resettlement and the construction process will be taken as an opportunity for boosting preventative measures: enforcement of the malaria strategy, including impregnated bed-nets and education on the use of the bed-nets, treatment of breeding sites, early detection etc. Similar, even though a case of dengue fever has not been reported in the district, applies: the process of establishing new villages will be accompanied by boosting preventative measures against dengue: IEC material; treatment of water passages and irrigation channels, if and where feasible regular, e.g. weekly, fortnightly or emptying the canals once in a month.

Even though no data could be traced, Leishmaniasis and Kala Azar appear to be endemic and it can be expected that the dam impacts on the breeding areas of the sand flies. Passive case detection followed by treatment and case reporting constitutes the basis of the majority of control programmes. The difficulty for such programmes is the complexity and diversity of the parasite, i.e. finding and identifying vectors; developing feasible vector control methods; establishing barriers between humans and vectors; identifying and reducing reservoir animal populations; early recognition and treatment of cases; adequate access to diagnostic techniques and chemotherapy for effective treatment of infected persons; strategies targeted at the health care delivery system of the very poor; education of the population and strengthening the reporting of Leishmania case.

Vector and reservoir host control measures are expensive, requiring good infrastructure and maintenance, often giving short-lived results. Spraying with residual insecticides can be effective where transmission occurs in and around the home. Evaluations of the effect of "blanket spraying" on sand fly populations are crucial for cost effective targeting of household spraying. While the elimination of reservoir animal populations should be included in a public health programme, the immense variety of reservoir species that may carry one or more forms of Leishmaniasis makes complete reservoir control virtually impossible. Public health officials could remove infected domesticated animals from the vicinity. However, this again is a costly type of control. Maintaining barriers between human populations and vectors is an important aspect of a control programme, such as insect repellent or insecticide and bed netting where sand flies are most active when people are asleep. However fly screens typically have openings of 1.3-1.5 mm, but against sandflies these openings should maximum to 0.9mm.

Given the complexity of the control programme, as well as of diagnoses and treatment, the PHAP foresees that district specific evidences will be included in the initial studies of the health care support project to the public sectors, which will be the base for a realistic public health programme and also design a feasible referral system for suspected cases.

3.1.7 Waste Disposal

In identifying the means and location of disposal of solid waste it has to be considered and should be ensured, that the population is protected against the odour and against access by people (like playing children) or by animals in search of food. Incinerators are to be provided in the health facilities for medical waste. Their systematic and regular use in short intervals need closer supervision and follow up.

3.1.8 Houses and Villages

The plans for accommodation of the resettling families depict that housing will be constructed by the people themselves at resettlement sites. Other civic amenities will be provided by the Project in each site as part of site development activities.[12] However, a few, health related details will be recommended to the builder of the houses in respect to public health, such as:

- Access to safe water is essential.
- Equally essential is the availability and utilisation of sanitation facilities.
- Close proximity between people is favouring TB infections. Regular monitoring and IEC material distribution in the community are required.
- Similar to the comments made for the physical infrastructure of health facilities, roofing with iron sheeting is heating up the rooms in the hot period and cannot keep heating in the cold period and should rather be avoided.
- Burned bricks are more able to keep temperature stable, are more stable and are the preferred construction material as opposed to mud bricks or stones.

[12] See, SRMP Vol. 5 Resettlement Action Plan..

- Ventilating windows and layers of ceilings of timber are essential to maximize cooling options while reducing smoke from heating during the cold periods.
- If feasible (in capital costs), solar panels could provide the (recurrent) low cost energy which could allow some energy driven cooling (e.g. ventilators etc.).
- Heating of the houses should ensure from the onset that the smoke does not remain inside the rooms and is directed safely to the open.
- Windows and doors should be outfitted with mosquito nets.
- Space inside the compound has to be sufficient to be able to enlarge the house in accommodating growing families.

3.1.9 Psycho-social Effects

It would have been useful to base the psycho-social assessment and possibly resulting plans on a study which assessed psycho-social effects on the resettling and not resettling populations. Social dynamics in the villages as well as in the resettling population are likely to change due to the construction. Changes are occurring in any society also under usual circumstances. However, the presence of the large construction workforce, their followers, at the proximity of people in a remote district, are likely to accelerate both type and speed of changing dynamics, as mentioned and elaborated in the RAP, GAP and management of associated project impacts at construction sites.[13]

Surely a number of these movements are entirely beneficial for the communities and families; others have some detrimental side effects or entirely cannot be considered beneficial. For example, elderly persons are more probable to face difficulties in adjusting to a fast changing environment or their new accommodation. As mentioned before, the noise and the construction work can cause also psychological stress; therefore, the affected elderly person might need support. Typical stress symptoms would be headaches, insomnia, feeling of stress and unhappiness, depression and increased numbers of miscarriages. Therefore, the psycho-social developments in the new villages and in the resident population require surveillance in particular among women, adolescence and elderly and psycho-social care is to be provided for individuals in distress and their families.

3.1.10 Perceived Health Risks of the Project

During group discussions and interviews it was conveyed that the “local” population perceives the risk that the “outsiders” would bring diseases not common at present in the area. However, during group discussions and interviews examples for such imported diseases were given which are not communicable or where the environment makes the transmission unlikely. This means that the fears of “imported” diseases are based on insufficient awareness of public health in general and nature of diseases. Underlying is a general adverse position against the project and the fear that the well-preserved cultural norms of the population might be endangered in particular in respect to position of women (during group discussion the phrase was frequently used “we want our women to be safe”).

3.2 POLICY AND STRATEGIC ISSUES

3.2.1 Sustainability and Alignment

The sustainability of the health services to be set up under the project are of particular concern since the GoP and/or project financiers will finance the setup of health facilities in the new locations and will hand them over to the public health sector while the services inside the WAPDA colony will be provided by WAPDA. There are previous experiences on how to establish or extend health services in WAPDA colonies, but the Dasu Project is the first site where a public health action plan has been developed for the “local” population.

[13] See SRMP Vol. 8 Management Plan for Construction-related Impacts.

It has to be acknowledged that it is the health sector which should be the body to lay out which type and level of health services are foreseen in the country. While, it is recognised that sustainability cannot be achieved entirely (and would not need to be for some parts of the interventions) the health services of the project should fit to the public health sector structure in order to be integrated into the country wide health care system after the project lifetime, considering the following:

- Efforts can and should be taken to start off with the required level of services identified by Ministry of Health (MoH) in respect to standard quality even for basic services. Therefore, interventions shall be aligned to the provincial health policies and strategies which also mark the minimum standard of quality.
- WAPDA colony facilities shall comply with WPADA policies and standards.
- Investments in capital costs can keep recurrent expenditures lower if appropriate techniques are applied. It is important to recognise skills and knowledge upgrading as capital expenditure.
- Therefore investments in human resources are building blocks for sustainability, more especially in view of the project site in the wider context of the country.
- Moreover, the experiences gained in respect to sustained services in other WAPDA dam sites would be captured through a comprehensive evaluation.
- Reporting style, frequency and content will ensure that the experiences gained at the Dasu Project are well recorded and presented as “lessons learned” for future similar constructions.
- In light of alignment during implementation, the public health action plan needs to be aligned to the provincial standards, but at the same time inter-linkages elaborated with the other safeguarding action plans, in particular the RAP and the Gender Action Plan. Hereby, the main purpose is not only to avoid contradicting aims, but to maximise benefits through complementary work within the safeguarding interventions, with WAPDA, the public sector and the NGO community.
- Since a private health care provider will be contracted to support the delivery of services on primary and secondary level, , independent of the Dasu HPP, sustainability is dependent on the design and strategy of this project. While this project is entering in a three- year commitment it is assumed that it will be followed up by a similar or alternative support mechanisms or handed over to the public sector if found that no further support is required.
- Consequently, the exit strategy starts at the very beginning in the sense that the “how” should give a clearer directions than the “what”, i.e. more relevant how a support, work and interventions are approached, and less so, which interventions in detail are being doing. This implies a close engagement and cooperation of the main stakeholders of health and especially the target groups and communities.

3.2.2 Network of Primary Health Care Facilities

The foreseen basic health units and rural health centres are consistent with national policies. The required quantities and operationalization of these facilities still depend on some additional factors as

- the present location;
- the location of the resettled families and villages;
- the ability to staff health facilities adequately and sustainably.

The last point implies that the current distribution of health facility is lower than the generally applied guidelines of maximum 5-10 km distance from residences and number in availability. The Dasu Project might, over time, assess and find a less distant network and higher number of facilities feasible. In such a case, the expansion of the PHC network would fall under the direct responsibility of the DHO.

WAPDA's medical services are in other, existing colonies limited to serve "WAPDA people" (construction workers, consultants and their nuclear families) and for emergencies of the "local population". While this differentiation does not appear to be equitable, WAPDA is flexible and willing to open the services for the "local" population provided the costs are covered. These costs are the direct costs of seeing and treating a patient, but are also costs for having staff and equipment on stand-by especially for obstetric care – consequently the additional recurrent costs would increase substantially beyond only the costs of treating a patient.

User fee-schemes in the facilities of "local" and resettled population will need to be observed closely and their effectiveness evaluated and possibly adjusted to prevent families falling into the poverty trap in case of a severe or expensive sickness of a family member.

The construction worker camp, under the responsibility of the contractor, will provide easy access for construction workers to a primary, first aid health service and, if required, can access the hospital in the WAPDA colony.

Cultural constraints in accessibility of health services by girls and women are a major concern and worry. While it can be expected that the mentioned project will be promoting women's right to freely access health care, the GAP is pointing out additional coping and mitigating mechanisms. A strong weight on IEC and link between the implementation of the GAP and of the PHAP will be of benefit in this aspect.

3.2.3 Facility and Village Health Management Systems

In the light of sustainability, it is crucial to promote the involvement, engagement and shared responsibility of the communities. At the same time it should be avoided to establish a system which cannot be maintained after WAPDA hands over the newly constructed facilities to the DHO. The formalised agreement between the WAPDA and the DHO needs to be specific on the scope and modalities of the responsibilities and needs to keep in mind sustainability in finance, established management and the service delivery system and availability/provision of human resources.

However, it has to be well understood that the given context is safeguarding people from risks of this mega-construction, which implies a distinct difference to a developmental approach to improve the Tehsil and District health systems and health services. Still, inevitably this difference might not be always clear and a line cannot be drawn in all instances, but rather effective coordination and cooperation have to be maintained. This requires:

(i) An agreement between WAPDA and DHO before start of the operationalization.
(ii) An on-going process of coordination and collaboration during operationalization.

3.2.4 Information, Education, Communication for Health Practices

The residing and the resettled population, as well as the construction workers need to get a comprehensive package of sensitisation and awareness raising and information before, during and after the resettlement and the construction phases. This "capacity building package" will include, but not be limited to;

- Utilisation of health services, in particular Antenatal Care, deliveries, vaccination and early detection of childhood illnesses
- Personal health practices, in particular handling of household solid and liquid waste, hand washing
- A "keep village clean" campaign, in particular in respect to waste and standing water
- Food and nutrition
- Prevention of malaria, in particular usage of mosquito nets

- In particular for construction workers STI/HIV/AIDS prevention, early detection and treatment shall be emphasised. A close link and cooperation shall be made with the GAP.
- Promotion of smoke free cooking with the help of environment friendly stoves to avoid lungs diseases

There might be a wider range of opportunities to address men than women: it is the men who would come to town and to the market. Flexibility, motivation and initiative are required to effectively reach men. Moreover and taking the momentum of moving into a new home and village, it is a good opportunity for the health staff to prepare and conduct a standard health messages with clear priorities depending on the village specific needs and local circumstances, even though only men can be talked to.

It can be expected that the implementing agency of the "Revitalising Health Services in Khyber Pakhtunkhwa Project", while this responsibility rests with the Department of Health through DHO, will explore village specific male youth reaching activities, however female youth will remain hard to reach and, aligned with the GAP, over the coming years possible upcoming opportunities will have to be used carefully and attentively. A close cooperation with the mosques and religious leaders will be essential. Therefore engagement and involvement with communities is essential for effective and most appropriate IEC material and commitment, hereby, as stated above, for enhancing opportunities of sustainability.

3.2.5 Quality of Services

Available and accessible health services will only have a positive impact on health of the catchment population if the preventative and curative services are provided and maintained at least on a minimum quality standard, which, at present, can largely not be met by the public sector.

In this light the implementing partner of the "Revitalising Health Services in Khyber Pakhtunkhwa Project" carries the responsibility to ensure this minimum quality of services. WAPDA, in cooperation with the DHO, needs to follow its own M&E system in health care provision.

In line of recommendations above, the creation and establishment of new facilities can and would be utilised for boosting health (facility and area) management.

3.2.6 Human Resources

Staffing in the District Kohistan in general faces several constraints:

- at present there is no female physician in the district;
- there is no female Kohistani health professional existing to be recruited;
- no female Kohistani health professional will be produced in the foreseeable future because of the extremely low/no enrolment of girls in school;
- all staff from neighbouring areas are considered "outsiders";
- being "outsiders", female staff are not allowed to enter villages, even less households;
- outside personnel is difficult to motive to work in Kohistan because of its remoteness, being isolated and because of the lifestyles with its restrictions which also apply to "outsiders";
- only few staff categories seem to be respond to additional monetary incentives, which includes LHVs;
- In addition to monetary incentives it is required to provide adequate accommodation and prospects of continuous and/or future further education.

Equally important as the number and type of staff, if not even more relevant, are the required competencies. Also in this respect the close coordination and harmonisation between the DHO, implementing partner WAPDA and the executing agencies is a pre-requisite in order to boost quality in management and service delivery specific trainings, HR system development and investments need to be planned for and organised. On the

other hand, training and skills upgrading can be considered as capital costs, even if staff might move out of the project area as long as they are not leaving the country. Their skills will be of benefit in other areas and this investment is building up capital nationwide.

3.2.7 Finance

The construction and procurement of the equipment of the new facilities are funded by the GOP and co-financier (WB). The implementing partner of the health project – who will be contracted by the Project for delivery of the Plan will be responsible, under the lead of the DHO, for the functioning of the health facilities and implementation of preventative, primitive and curative activities.

In the light of the context in Kohistan, the implementing partner need to and will identify a financing strategy if costs for health services are considerably higher than the current recurrent costs of the health facilities run by the DHO. The recurrent costs have to be kept on a level which allows continuation after the project period. If higher capital costs can contribute to lower recurrent costs, these investments (e.g. solar panels) are certainly well spent. Accompanying cost-saving mechanisms and systems should be put in place, as e.g. a preventative maintenance system of equipment and infrastructure.

The District Hospital in Dasu is reportedly completed in a few months. The implementing partner of the health project is expected to ensure health service delivery also on the secondary care level, which includes the District Hospital in Dasu.

The first aid/primary care post in the construction camp and the hospital in the colony are part of and financed through the larger contract between WAPDA and the contractor company.

3.2.8 Inter-linkages to other Safeguard Components

As elaborated in several chapters, public health cannot function as a separate entity by a health care provider. Close coordination and collaboration with the other actors in respect to public health have to be maintained throughout the project cycle.

3.2.9 Child Development

Children deserve special attention during any health impact assessment and action plan. They are more susceptible to health risks and because of the long term and profound effects that both noxious and beneficial exposures to the embryo and small child have potentially over the entire life of the individual.

Increased access to safe drinking-water will undoubtedly have a beneficial influence on the foetus and the small child through the reduced number of illness incidents of the pregnant women. Similarly, the use of safe drinking-water will lead to less diarrheal and other infectious experiences among children.

During the resettlement period, while the possibly temporary loss of agriculture land may result in less available food for some household, the financial benefits from construction jobs might possibly counterweight the negative impact. This requires of course that the local population is given priority during the recruitment of workers, especially as regards to unskilled and semi-skilled jobs. However, as mentioned above, inflation might lead to poverty aggravation of those families not benefitting from jobs.

Children are in general also more vulnerable to respiratory diseases. Consequently, the risks associated with deterioration in the air quality during the construction phase will have a greater negative impact on small children than on the adult. Therefore, the application of the recommended control measures of dust and combustion gases are consequently especially important for the children in DHP area.

3.3 TASKS AND ACTIVITIES

The overall objective, the purpose and expected results are identified in the introductory chapter. The tasks and activities required to achieve the objectives are briefly described below:

(i) Starting in Pre-construction phase:

Adequate attention to public health safeguards during relocation and resettlement for both the relocated and resident populations within the context, conditions and parameters prevailing in the concerned *Tehsil*s and the Kohistan District.

(ii) Construction phase:

Undertake appropriate measures to minimise adverse effects on the health of the population in the closer surrounding of the construction sites.

Measures to minimise adverse effects on the health of migrant and resident people are attracted by and interacting with the construction related workforce, including in respect to reproductive health and prevention of STIs and HIV/AIDS.

Ensure that the construction workforce is safe from occupational hazards, health risks of living jointly in compounds and to have easy access to clinical care assured.

(iii) Post-Construction Phase:

Establish measures and processes, which promote future beneficial and reduce adverse effects on health after completion of the dam, reservoir and the access roads.

3.4 INTERVENTIONS/ACTIVITIES/ACTIONS

3.4.1 Approach

In brief, the interventions, activities and actions are addressing the following:

(i) The Public Health Action Plan focuses on mitigation of the environmental and social impact of the mega – construction for the health of the public. It hereby distinguishes between developing the health systems and services (in the affected geographic areas) and mitigating interventions, activities or actions.

(ii) Therefore, the interventions are addressing the main target groups and the logical framework is structured along these lines: (i) the resettling and residing communities; (ii) population in the surrounding of the Bridge/Construction sites; iii) the construction workforce and (iv) people attracted by and interacting with the construction related workforce.

(iii) The health of the public is largely dependent on non-medical factors and actors. The related interventions are included and listed (see next chapters), however not implemented by a health actor, but by one of the partner sectors (as e.g. environmental team). The Public Health Action Plan foresees that the health actors concentrate on prevention and promotion (IEC), community work and primary curative care with some support to the secondary care level.

(iv) It is not feasible to safeguard public health through an entirely sustainable approach. However, from the very beginning of the operations, the approach is to link closely with the related governmental structure and system, to support the government public health capacity and infrastructure, while staying focussed on the project specific needs and to operate within DHO and WAPDA's policies and strategies. For those interventions which appear not to be sustainable after completion of the construction, an exit strategy shall be in-built. This implies that the non–public actors have to incorporate the medium and long perspectives of the interventions from the onset of the implementation.

(v) The standards of WAPDA have to be observed, respectively those of the DHO for physical infrastructure while adjusting the standards to the realities in the respective Tehsils.

(vi) Three implementing entities will be involved in providing health care as (i) a service provider for the residing and resettling families through the WB co-funded health sector project; (ii) the contractor for the construction workforce; and (iii) WAPDA for the colony,

(vii) Also, agreements have to be made by WAPDA with specified referral hospitals for secondary care beyond the capacity of the District Hospital in Dasu and tertiary care hospitals

(viii) The concerns about sustainability are less relevant for services offered to the construction workforce. Also their work, life and health circumstances differ and they present a temporary, specific target group. Therefore, the health services for the construction workforce are to be managed separate from those for the population. At the same time the health facility in the colony will serve as a referral facility for the construction worker camp.

(ix) In the same line, the contractor is bound to the arrangements for health care of the construction workers which must be included in the General Contract with the contractor.

3.4.2 Planned Activities/Actions

As explained in previous chapters and illustrated further in the Appendices (G-I), a number of the following activities target a wider range of the discussed target groups, many of the proposed actions will be carried out by the DHO and/or the implementing partner of the WB funded health project. (Explanatory notes on the planned activities are added and the agency responsible for implementation listed in italic and underlined).

Starting in Pre-construction Phase

Contributing to objective 1:

To accompany the resettlement process with adequate (public) healthsafeguarding for both, the relocated and the resident population while observing the context, conditions and parameters prevailing in the related tehsils and the Kohistan District.

- WAPDA will establish a forum for dialogue and collaboration with the implementing partners; the health service provider with DHO, police/law enforcement, civil society actors, representatives of the target communities (village committee members) and construction management. The forum will meet every two months throughout the construction phase. See further under the chapter on management
- It is essential that preventative and curative health activities and services are effectively coordinated to ensure timely, appropriate and complementary actions, maximise efficiency and comply with good governance and effective management. A cross-sectorial perspective has to be maintained, while a merger of a top-down and at the same time bottom-up management, priority setting and decision of resource allocation has to be aimed at.

DHO and WAPDA will be responsible for this task.

- Conduct epidemiological and health seeking baseline and follow up/evaluation studies, and operational research in tehsil/target groups. This activity assumes that cultural barriers can be overcome and meaningful studies can be carried out with appropriate quality.

  To be carried out by the DHO and implementing partner (i.e., healthcare contractor)to be selected by WAPDA following the approval of the Project. .
- Construct the following facilities of the affected area in the new location:
  - BHU: Seo, Jalkot, Doga, Thothi
  - RHC: Dasu, Shatial

  The physical infrastructure, furniture and medical equipment are required. Since the furniture and medical equipment are in a deplorable state, they have to be

replaced. Also for the period of resettlement (a few months), the facilities might need to run in parallel in the present and in the new location.

To be carried out by the contractor, but designed and supervised by WAPDA.

- Run the following health facilities and services in the affected areas
  - BHU: Seo, Jalkot, Doga, Thothi
  - RHU: Dasu, Shatial
  - District Hospital Dasu

  The preventative, primitive and curative health services will be carried out by the implementing partner of the WB managed Revitalising Health Services in Khyber Pakhtunkhwa Project and financed by the WB managed pool. While the DHP cannot influence an already launched tender, it is expected that the elements included will be: baseline, follow up studies and operational research in the target groups. However, any study involving women will be difficult to carry out, but attempts should be made and possibly alternatives be sought. The aim of the baseline study would be to provide deeper quantitative and qualitative information on the health status, health seeking behaviour, understanding and perceptions of health risks, as well as opportunities caused by the dam and roads construction.

  Given that this safeguarding PHAP is the first of its kind in the country, operational research will allow capturing experiences for future at other possible locations.
- Provide adequate diagnosis and treatment in secondary care in District Hospital Dasu.

  To be carried out by implementing partner or healthcare contractor. .
- Provide monitoring support to the DHO office, including the PHAP health care provisions

  To be carried out by the implementing partner or the healthcare contractor. .
- Provide easily accessible safe drinking water in sufficient quantity through deep wells (at least 300 meters) and/or clean springs for the residing and resettled population and the construction workforce, including
  - regular monitoring of the water quality,
  - Epidemiological surveillance.

  The epidemiological figures will be compiled as well as used by the health project implementing partner, while the activities are to be carried out by the contractor.
- Manage disposal of solid waste at the project operation, the villages and the colony/construction workforce camps.

  This should observe:
  - the provision of space and promotion of locally feasible options for recycling, leaving minimum amount of solid waste,
  - to protect the public from the odour,
  - the composition of the ground and the physical distance to water sources and agricultural sites,
  - To inhibit access by people (like playing children) and by animals in search of food.

  To be implemented by the contractor (project operation) in cooperation with village committees
- Carry out strong programme on Information, Education, Communication (IEC)

  This requires strong engagement with the communities and comprises a “resettlement capacity building package” to be provided in close cooperation with GAP focussing on rural health including the prevention of unwanted pregnancies, personal health practices (handling of household solid and liquid waste, hand

washing; balanced food intake, health seeking behaviour and proper utilisation of health services in particular; vaccination, ANC, early detection of childhood illnesses.

A “keep village clean” campaign, in particular in respect to waste, standing water, and safe environment especially for women. Health messages with clear priorities depending on the village specific needs and circumstances.

A strong weight of the interventions lies with health promotion and preventions on the mentioned priority area which will be carried out by the health project implementing partner in coordination with the DHO.

To be implemented by the health project implementing partner

- Keep population and health workers alert on malaria and dengue control on use of the mosquito nets, treatment of breeding sites, early detection and treatment and disseminate treated mosquito nets.

  To be implemented by the health project implementing partner

- Include the prevention, early detection and case management of specific diseases and conditions in the training of health staff in the facilities, conducted by the health project implementing partner.

  The focus lies on construction related health conditions and diseases,

  - possible conditions caused by biological contaminants of drinking-water,
  - dust,
  - combustion gases,
  - emissions to soil and water,
  - inadequately managed waste and biological waste,
  - noise

  To be carried out by the health project implementing partner

- Conduct training for health staff on rural health, diagnosis and treatment of STI and HIV.

  To be carried out by the health project implementing partner

- Conduct training of (public sector) health staff in emergency health care, traumatology and stabilisation of patients for referral.

  To be carried out by the health project implementing partner

- Provide adequate diagnose and treatment in emergency health care, traumatology and stabilisation of patients for referral.

  To different degree emergency cases will be managed through the primary care facilities and the Dasu District Hospital.

  To be carried out by the health project implementing partner

- Respond to possible psycho-social effects

  - psycho-social study in already operational dam sites in Pakistan, preferably the same province of KP,
  - Surveillance of the psycho-social evolution in the resettled villages/families in particular among women, adolescence and elderly, while it has to be acknowledged that the surveillance of problems among women will most likely be limited to those patients utilising the health facility.
  - Psycho-social care for individuals in distress and their families.

  As stated above, the experiences of other sites in Pakistan shall be captured and will provide a lead in the psycho-social response. Psycho-social and health effects can be expected also from other problems, as domestic and gender-based violence.

  To be carried out by the health project implementing partner

- Recommend in the design and construction plans for houses and resettlement villages:
  - safe drinking water and easy access to sanitation facilities,
  - ventilating windows and layers of timber ceilings (heat in hot and smoke in cold season),
  - if feasible solar panels for lower (recurrent) costs for energy,
  - windows and doors with mosquito nets,
  - sufficient space inside the compound to enlarge the house for accommodating growing families.

  Since the resettlement process does not build the houses for the relocated families but provides the funds and the families will construct themselves their accommodation, such recommendations can be given by the resettlement team to the families.

  To be carried out by the contractor and WAPDA.

During the Construction Phase

Contributing to objective 2:

To set operationalize, adequate and appropriate measures to minimise adverse effects on the health of the population in the closer surrounding of the construction sites.

The activities for objective 2 have to be read and implemented complementary to activities under objective 1.

- Conduct baseline and follow studies and operational research

  This baseline study equally aims to provide quantitative and qualitative information on the health status, health seeking behaviour (lifestyle and utilisation of health services) and perceptions of health risks, as well as opportunities, caused by the dam and accessroad construction. The baseline studies can be conducted simultaneously if this would be practically easier.

  These studies might face the same gender related constraints as mentioned above.

  For this activity a cooperative intervention between WAPDA medical services and the health sector implementing partner is aimed at.

- Introduce and implement mechanisms for preventing biological contaminants of drinking-water, including
  - physical maintenance of water distribution (prevent leakages and contamination of safe water),
  - on-going monitoring of physical characteristics of drinking-water, water concentration of chemicals and biological contaminants,
  - on-going monitoring of potential biological contaminants,and
  - Epidemiological surveillance.

  The epidemiological figures will be compiled as well as used by the health providers, while the activities are to be carried out by the contractor.

- Monitor adequate quantity of water for washing facilities and sanitation

  Equally, this will be monitored by the contractor.

- Introduce and implementdust minimising mechanisms at the construction sites and project roads such as frequent watering of access roads especially during dry seasons and respiratory protective equipment for workers etc.

  To be carried out by the contractor.

- Introduce and implement mechanisms minimising combustion gases from construction machinery and vehicles

Such as

- time limitation of work / exposure (circulation of trucks between 7h00 and 19h00 and no driving of trucks during weekends) ,
- control of CO2 emission,
- reduction of CO2 through lessening use of fossil fuels,
- utilisation of NOx: antipollution systems (catalytic reduction),
- usage of Volatile Organic Compounds (VOCs) to increase in combustion performance,
- Safeguarding combustion performance of machinery and vehicles.

To be carried out by the contractor.

- Introduce and maintain control of hygiene in food, meat and fish markets, public eating places/restaurants etc.

  To be carried out by the DHO office.
- Introduce and implement mechanisms to minimise emissions from soil and to manage waste through
  - recovery of waste materials, restoration of site,
  - regular and frequent cleaning of workplaces, with proper management of garbage disposal (liquid, solid and recyclable waste) according to health standards.

  To be carried out by the contractor
- Introduce and implement mechanisms to manage biological waste including
  - adequate sanitary facilities in workers accommodation,
  - introduce a system for frequent removal of solid waste and waste water with no contamination of water and the environment

  To be carried out by the contractor
- Introduce and implement mechanisms for disposal of sludge including
  - regulations with measures inhibiting sludge drying beds degenerating,
  - well managed and designed disposal including spreading of the sludge over croplands on where they could act as a fertiliser,
  - preparing sludge and used for filling or land application.

  To be carried out by the contractor

- Introduce and implement mechanisms for controlling noise observing;
  - distance from crushing sites to households at least 1000m,
  - hearing protection equipment for workers,
  - limitation of working hours and the circulation of trucks between 7h00 and 19h00 and no work during weekends ,
  - On-going monitoring standards or recommendations: Leq 45 dBA (night) and 55 dBA (day).

  To be carried out by the contractor

- Introduce and implement mechanisms for minimise road accidents including
  - restriction of speed limits depending on location and distance to villages and sites of frequent gathering of people,
  - strict control of adherence to speed limits,
  - installation of road signs,
  - restriction of heavy traffic to day-light periods,
  - driving with lights on,
  - bright colours of tracks and vehicles,
  - increased presence of traffic police,
  - Schooling for communities and children on upcoming traffic risks.

To be carried out by contractor and traffic police.

Contributing to objective 3:

To set and operationalize adequate and appropriate measures to minimise adverse effects on the health of migrating and resident people attracted by and interacting with the construction related workforce, including in respect to reproductive health and prevention of STI and HIV/AIDS.

- Validate the STI/HIV risks, vulnerability, capacity needs and estimated prevalence (baseline data and operational research).

  The number, type and composition of people, possibly temporarily migrating to the construction area, cannot be foreseen with sufficiently specific information. Similarly, it cannot be sufficiently precisely predicted which segment of the residing population and to which extend they will interact with the construction workforce. Repeated situation analyses to determine key criteria and characteristics of this target group will provide the starting point and for the design of the IEC

  To be carried out by WAPDA medical services.

- Design and carry out an education campaign and on-going IEC on STI, HIV/AIDS.

  The material shall be prepared in their respective languages and adjusted for illiterate, before the start and throughout the construction phase

  Voluntary Counselling and Testing is probably best integrated in the Medial and H&FW centre.

  To be carried out by WAPDA medical services

Contributing to objective 4:

To keep the construction workforce safe from occupational hazards, health risks of living jointly in compounds and to have easy access to clinical care assured.

- Set-up and run in the construction worker camp a health facility with primary and emergency/first aid capacity for the construction workforce.

  This includes a pre-identified referral system initially to the colony camp and, if required, further transport to pre-identified and pre-agreed referral to a secondary hospital of higher capacity or tertiary hospital.

  While this facility is limited to construction workers and their *immediate core family members* (if located at the project site), “local” population cannot access the facility except in emergency cases.

  To be carried by the contractor.

- Set-up and run a health facility with in-patient care in the WAPDA employee’s colony.

  The colony hospital is foreseen to serve also as a referral site for the health facility of the construction worker camp.

  In line with WAPDA general policies, only WAPDA related workers and the *immediate core family members* have access to this hospital unless in cases of emergencies.

  The remoteness of Dasu and the dam demand well-functioning transportation systems for referral patients.

  To be carried by WAPDA medical services.

- Introduce and oversee implementation of work and task specific occupational health measures

It covers the wide range of involved jobs from manual bridge and road construction work, truck and machinery drivers, to various office based work and cooks, maids, cleaners, security etc. This includes control and management of

- occupation specific measures
- work specific hazards,
- dust
- combustion gases from construction machinery and vehicles
- missions to soil and to manage waste
- biological waste including
- disposal of sludge
- noise
- road accidents

To be carried out by the contractor. WAPDA will oversee the compliance by the contractor

- Introduce and implement mechanisms for preventing biological contaminants of drinking-water, food supplies and prepared meals.

  This includes
  - physical maintenance of water distribution (prevent leakages and contamination of safe drinking water),
  - on-going monitoring of physical characteristics of drinking-water, water concentration of chemicals and biological contaminants (viruses, bacteria, protozoa, toxins),
  - Epidemiological surveillance.

  The epidemiological figures will be compiled as well as used by the DHO and the health care providers, while the activities are to be carried out by the contractor.

- Monitor adequate quantity of water for washing facilities and sanitation

  To be carried out by the contractor.

- On-going HIV/AIDS and STI education campaign

  Targeted are all workers hired, national and international, female (if any) and male, throughout all skilled, semi- and unskilled occupations, including the leading positions, at the time of recruitment and thereafter pursued throughout the construction phase on on-going and regular (weekly) basis. The material will be prepared in their respective languages and adjusted for illiterate through illustrations.

  To be carried out by the WAPDA medical services and contractor.

- Complement educational interventions with easy access to condoms and voluntary counselling and testing.

  "Easy access" shall be interpreted as availability and discreteness (e.g. at the workplace) to prevent that possible users are discouraged by their fear of being seen and blamed, and with sufficient quantity.

  To be carried out by the WAPDA medical services.

- Include recreation facilities in the accommodation areaslike sports ground, football fields, gym

  To be carried out by the contractor.

- As far as feasible secure housing for workers and encourage they live with their families on site, thereby also reducing the risky behaviour with multiple sex partners.

  To be carried out by the contractor.

In Preparation of the Post-construction Phase

Contributing to objective 5:

To set measures and processes that can promote future beneficial and reduce adverse effects on health after completion of the dam and the access roads.

- Conduct needs assessments 1.5 years and re-validates a quarter before closure. The needs assessment will capture a wider range of questions:
  - Possible epidemiological shifts and the resulting consequences for the health services.
  - Possible change in health needs and health seeking behaviour
  - Changes in HIV prevalence and prevention of the HIV transmission
  - Foreseeable effects of the opening of the KKH and access road (accidents; flow and return of workers to their place of permanent resident)
  - Possibly additional emerging issues

  To be carried out by WAPDA medical services and DHO.
- Prepare and advocate for response to emerging public health needs based on needs assessment.

  To be carried out by the health project implementing partner
- Assist MoH/DHO in monitoring and responding to epidemiological shifts

  A shift can be caused by the migration in and out the district due to the construction and movements within the district and by the long time period of the construction or external factors beyond the district and independent of the Dam, KHK and reservoir.

  To be carried out by WAPDA medical services.
- Assist possible redundant health staff in relocation to other work locations.

  To be carried out by WAPDA medical services.
- Accompany returning or re-migrating construction workers and attracted people with IEC

  The majority of migrated people and workers will be moving on to other business locations or to their permanent residents after close of construction. They have to be “accompanied” with strong IEC and health messages.

  To be carried out by WAPDA medical services.
- Advocate for strict speed limits and traffic control.

  To be carried out by Project Management Unit.

4 IMPLEMENTATION ARRANGEMENTS

In identifying implementing entities, the following principles will be observed:

- Effectiveness, efficiency, accountability and transparency, especially in financial management.
- The target groups and various communities have to participate in decision making.
- Gender balanced representation should be aimed, but in the context of Kohistan it is unrealistic to expect that a woman would be able to participate in the foreseeable future
- All interventions and procedures have to comply with GoP policies and strategies and respond to the framework of the WB.

4.1 CHOICE OF IMPLEMENTERS

In choosing an option for the implementation of the medical part of the PHAP it has to be considered that;

- the scope of responsibilities require capacities as listed above;
- it is managerially, logistically and for a coordinated approach more effective and cost efficient to address the interventions by only few bodies /organisations;
- all activities are complementary and have to be effectively coordinated;
- the health facilities of WAPDA are usually not accessible for the public and; referral systems need to be established, whereby effective areas of collaboration should be defined for efficient mutual benefit between the District Hospital in Dasu and the colony hospital;
- the public sector facilities require at present substantial boosting and support,
- the responsibilities include also an advocacy role towards the management of the construction company.

The following three health partners are foreseen:

(i) Primary and secondary care of the residing and resettled population:

The provision of primary and secondary care is expected to be systematically and sustained boosted through contracting a private care provider – i.e., implementing partner as a healthcare contractor. DHO will assist WAPDA is the selection of the implementing partner. .

(ii) Construction worker camp:

The contractor has the responsibility for its workers and the camp, the health facility included.

(iii) Colony:

The WAPDA medical services have large and long standing experience in providing health services in their colonies.

The figure graph below depicts graphically the areas of responsibilities and the relationship between the entities. The subsequent table below lists which entity will carry out the identified activities.

It remains the responsibility of WAPDA and of DHO to monitor the performance of the health care provider in order to assure the quality of delivery, technical and financial accountability. This implies a contractual relationship with WAPDA, a formalised four-partite understanding between the WAPDA, DHO, the construction company and the implementing partner of the Revitalising Health Services in Khyber Pakhtunkhwa Project, outlining the respective responsibilities and roles.

Figure 4.1: Division of Responsibilities and Tasks

Table 4.1: Division of Responsibilities and Tasks

Activities	Responsibility for implementation	in cooperation / liaison with
Starting in the Pre-construction Phase		
1. **Contributing to OBJECTIVE 1:** To accompany the resettlement process with adequate (public) health safeguarding for both, the **relocated and the resident population** while observing the context, conditions and parameters prevailing in the related Tehsils		
1.1. Create a **forum for dialogue and collaboration** with WAPDA, the implementing partner providing health services, MoH/EDO, police/law enforcement, civil society actors, representatives of the target communities (village committee members) and constructio	WAPDA	EDO
- Maintain forum with regular (two-monthly) meetings throughout the construction phase.	WAPDA	EDO
1.2. Conduct **baseline and follow up/evaluation studies, and operational research** in the tehsil/target groups	EDO IP	EDO
1.3. Set up **newly constructed facilities** in	Contractor	EDO
BHU:	Contractor	EDO
Maintenance/repair infrastructure		
RHC:	Contractor	EDO
Maintenance/repair infrastructure		
Furniture BHU	WAPDA MS	EDO
Maintenance/repair furniture		
Furniture RHC	WAPDA MS	EDO
Maintenance/repair furniture		
Equipment BHU	WAPDA MS	EDO
Maintenance/repair equipment		
Equipment RHC	WAPDA MS	EDO
Maintenance/repair equipment		
1.4. **Run health facilities and services** in the affected areas	EDO IP	EDO
1.5. Provide adequate diagnose and treatment in **secondary care** in Dasu District Hospital *The preventative, promotive and curative health services will be carried out by the implementing partner of the WB managed Revitalising Health Services in Khyber Pakhtunkhwa Project and financed by the WB managed pool.*	EDO IP	EDO
1.6. Provide **monitoring support to EDO health office**	WAPDA	EDO
Laptop	WAPDA MS	EDO
Desktop	WAPDA MS	EDO
Projector	WAPDA MS	EDO
Photocopier	WAPDA MS	EDO
Scanner	WAPDA MS	EDO
Color printer	WAPDA MS	EDO
TV	WAPDA MS	EDO
Furniture	WAPDA MS	EDO
4x4	WAPDA MS	EDO
Maintenance vehicles	WAPDA	EDO
1.7. Provide easily accessible **safe drinking water** in sufficient quantity	Contractor	
- regular monitoring of the water quality,	WAPDA	
- epidemiological surveillance.	EDO IP	EDO
1.8. Manage **disposal of solid waste** in villages with protection of the public	WAPDA	Contractor

1.9. Carry out strong programme on **information, education, communication**	EDO IP	EDO
- IEC material	EDO IP	EDO
- Billboards	EDO IP	EDO
- Awareness raising activities	EDO IP	EDO
1.9.1. " resettlement capacity building package" - covered under 1.9	EDO IP	EDO
- "keep village clean" campaign	EDO IP	EDO
- health messages with clear priorities, village specific	EDO IP	EDO
1.9.2. reproductive health and prevention of unwanted pregnancies - covered under 1.4	EDO IP	EDO
1.9.3. health seeking behaviour and proper utilisation of health services (in particular vaccination, ANC, early detection of childhood illnesses) - covered under 1.4	EDO IP	EDO
1.10. Keep population and health workers alert on **malaria and dengue control**	EDO IP	EDO
- IEC on use of the nets, treatment of breeding sites, early detection and treatment	EDO IP	EDO
- disseminate treated bed nets	EDO IP	EDO
1.11. Include the prevention, early detection and case management of **specific diseases** and **conditions** in the **training** of health staff in the facilities, conducted by the health project implementing partner.	EDO IP	EDO
1.12. Conduct **training** for health staff on **RH,** diagnosis and treatment of **STI** and **HIV.**	EDO IP	EDO
1.13. Conduct **training** of (public sector) health staff in **emergency health care, traumatology** and **stabilisation** of patients for referral.	EDO IP	EDO
1.14. Provide adequate diagnose and treatment in **emergency health care, traumatology** and **stabilisation of patients** for referral.	EDO IP	EDO
To different degree emergency cases will be managed through the primary care facilities and the Dasu District Hospital.		
1.15. Respond to possible **psycho-social effects**	EDO IP	EDO
- psycho-social study in already operational Dam sites in Pakistan, preferably the same province of KPK,	EDO IP	EDO
- surveillance of the psycho-social evolution in the resettled villages/families	EDO IP	EDO
- psycho-social care for individuals in distress and their families.	EDO IP	EDO
1.16. Recommend the inclusion in the design and construction plans for **houses** and **resettlement villages:**	WAPDA	WAPDA MS
- safe drinking water and easy access to sanitation facilities,		
- ventilating windows and layers of timber ceilings (heat in hot and smoke in cold season),		
- if feasible solar panels for lower (recurrent) costs for energy,		
- windows and doors with mosquito nets,		
- sufficient space inside the compound to enlarge the house for accommodating growing families.		
During the Construction Phase		
2. Contributing to **objective 2:**		
To set and operationalise adequate and appropriate measures to minimise adverse effects on the health risks of the **population in the closer surrounding of the construction sites.**		
Complementary to activities under objective 1		
2.1. Conduct **baseline and follow studies and operational research**	EDO IP	WAPDA MS
2.2. Introduce and implement mechanisms for preventing **biological contaminants of drinking-water,** including		
- physical maintenance of water distribution (prevent leakages and contamination of safe water),	WAPDA	EDO
- ongoing monitoring of physical characteristics of drinking-water, water concentration of chemicals and biological contaminants,	WAPDA	EDO
- ongoing monitoring of potential biological contaminants,	WAPDA	EDO
- epidemiological surveillance	EDO IP	WAPDA MS
2.3. Monitor adequate **quantity of water** for washing facilities and sanitation	BBA, Contractor	
2.4. Introduce and implement **dust minimising mechanisms**	Contractor	
2.5. Introduce and implement mechanisms minimising **combustion gases** from construction machinery and vehicles	Contractor	

2.6. Introduce/maintain control of hygiene in food, meat and fish **markets, public eating places/restaurants** etc	EDO	EDO
Food testing kits	EDO	EDO
Fish market - testing kits	EDO	EDO
IEC material for food hygiene	EDO IP	EDO
Education events	EDO IP	EDO
2.7. Introduce and implement mechanisms to minimise **missions to soil and to manage waste** through	Contractor	
2.8. Introduce and implement mechanisms to manage **biological waste** including	Contractor	
2.9. Introduce and implement mechanisms for **disposal of sludge** including	Contractor	
2.10. Introduce and implement mechanisms for controlling **noise**	Contractor	
2.11. Introduce and implement mechanisms for minimise **road accidents**		
- restriction of speed limits depending on location and distance to villages and sites of frequent	Traffic police and	Contractor
- strict control of adherence to speed limits,	Traffic police and	Contractor
- installation of road signs,	Traffic police and	Contractor
- restriction of heavy traffic to day-light periods,	Traffic police and	Contractor
- driving with lights on,	Traffic police and	Contractor
- bright colours of tracks and vehicles,	Traffic police and	Contractor
- increased presence of traffic police,	Traffic police and	Contractor
- schooling for communities and children on traffic risks.	EDO IP	EDO
3. Contributing to **OBJECTIVE 3**: To set and operationalise adequate and appropriate measures to minimise adverse effects on the health of migrating and resident **people attracted by and interacting with the construction related workforce**, including in respect to reproductive health and pr		
Complementary to activities under objective 1		
3.1. Validate the STI/HIV risks, vulnerability, capacity needs and estimated prevalence (**baseline data and operational research**).	WAPDA MS	EDO
3.2. Design and carry out an **education campaign and ongoing IEC** on **STI, HIV/AIDS and prevention of (unwanted) pregnancies.**	WAPDA MS	EDO
4. Contributing to **objective 4:** To keep the **construction workforce** safe from occupational hazards, health risks of living jointly in compounds and to have easy access to clinical care assured.		
4.1. Set- up and run in the construction worker camp a **health facility with primary and emergency/first aid capacity** for the construction workforce.	Contractor	
4.2. Set-up and run a **health facility** with in-patient care in the consultant colony.	WAPDA MS	WAPDA
4.2.1. Set up WAPDA medical services facility (outpatient, 20 inpatients/beds, office)	WAPDA MS	WAPDA
Physical structure	WAPDA MS	WAPDA
Furniture	WAPDA MS	WAPDA
Equipment	WAPDA MS	WAPDA
Ambulances	WAPDA MS	WAPDA
4x4	WAPDA MS	WAPDA
4.2.2. Set up WAPDA office (public activities, administration)	WAPDA MS	WAPDA
Laptop	WAPDA MS	WAPDA
Desktop	WAPDA MS	WAPDA
Projector	WAPDA MS	WAPDA
Photocopier	WAPDA MS	WAPDA
Scanner	WAPDA MS	WAPDA
Color printer	WAPDA MS	WAPDA
TV	WAPDA MS	WAPDA
Furniture	WAPDA MS	WAPDA
4.2.3. Staff costs	WAPDA MS	WAPDA

4.2.4. Running costs	WAPDA MS	WAPDA
Facility running costs, incl. drugs and medical supplies	WAPDA MS	WAPDA
Maintenance/repair infrastructure	WAPDA MS	WAPDA
Maintenance/repair furniture	WAPDA MS	WAPDA
Maintenance/repair equipment	WAPDA MS	WAPDA
Running and maintenance costs vehicles	WAPDA MS	WAPDA
Office running costs	WAPDA MS	WAPDA
4.2.5. Training of staff	WAPDA MS	WAPDA
4.2.6. IEC	WAPDA MS	WAPDA
4.3. Introduce and oversee implementation work- and task specific **occupational safety measures**		
- introduce occupational health measures	Contractor	
- oversee occupational health measures of contractor	WAPDA MS	WAPDA
4.4. Introduce and implement mechanisms for preventing **biological contaminants of drinking-water, food supplies and prepared meals.**		
- physical maintenance of water distribution (prevent leakages and contamination of safe	Contractor	
- ongoing monitoring of physical characteristics of drinking-water, water concentration of	Contractor	
- epidemiological surveillance.	WAPDA MS	EDO
4.5. Monitor adequate **quantity of water** for washing facilities and sanitation	Contractor	WAPDA
4.6. Ongoing **HIV/AIDS and STI education campaign**	WAPDA MS	EDO
4.7. Complement educational interventions with **easy access to condoms** and **voluntary counselling and testing.**	WAPDA MS	WAPDA
4.8. Include **recreation facilities** in the accommodation areas	Contractor	
4.9. As far as feasible secure housing for workers and encourage they **live with their families** on site,	Contractor	
In Preparation of the Post-construction Phase		
5. Contributing to objective 5:		
To set measures and processes, which can promote future beneficial and reduce adverse effects on health **after completion of the dam and the access roads.**		
5.1. Conduct **needs assessment** one and half year and re-validate a quarter before closure.	EDO IP	EDO
5.2. Prepare and advocate for **response** to emerging public health needs based on needs assessment.	EDO IP	EDO
5.3. Assist MoH/EDO in monitoring and responding to **epidemiological shifts**	EDO IP	EDO
5.4. Assist possible **redundant health staff** in relocation to other work locations.	WAPDA MS	EDO
5.5. Accompany **returning** or **re-migrating construction workers and attracted people**	WAPDA MS	WAPDA
5.6. Advocate for **strict speed limits and traffic control**.	WAPDA	EDO
Publications	WAPDA	EDO
IEC + meetings costs	WAPDA	EDO
Monitoring and Evaluation	WAPDA	WAPDA

5 QUALITY ASSURANCE AND MONITORING AND REPORTING FRAMEWORK

This monitoring framework does not replace the health information systems of the DHO and implementing partners, but is rather supposed to be utilised by several actors and stakeholders:

- Primary users:
  - The resettled and resident communities through their village committees for the village health decisions
  - The various health care providers for the own self-assessment, planning, and priority settings
  - DHO level for health management, disease surveillance and quality control
  - The construction company for managerial decisions
  - WAPDA medical services for quality control of the health care by the construction company
  - Co-financiers for their update and follow-up
  - The foreseen independent M&E process
- Secondary users:
  - The organisation engaged in gender issues
  - The organisation engaged in the livelihood restoration programme
  - Possibly other stakeholders, which might get involved during preparation and/or the construction.

The following table of indicators does not mean to, neither intends to substitute the health information system. The proposed indicators should assist in the follow up of the health related impact of the dam, KKH and access roads' construction

- For public health safeguarding (management decisions)
- For monitoring

Given the nature of the Public Health Plan no distinction is made between input, output, outcome and impact indicators at this stage.

Table 5.1: Monitoring Indicators for Public Health Safeguarding

MONITORING INDICATOR	TARGET	SOURCE OF VERIFICATION	FREQUENCY	MONITORED BY
For overall objective: Contribution to social developmental impact through minimising the risks and possible harmful effects				
Evolution of health and social key impact indicators	positive trend over time	Health Information System Quarterly Reports	quarterly	**WAPDA medical services**
Figures of morbidity and mortality information system	no significant increase over baseline	Health Information System Quarterly Reports	quarterly	**WAPDA medical services**
For purpose: Adequate public health actions in the overall safeguarding plan				
Number and type of health incidents related to the construction	no severe incident	Quarterly Reports	quarterly	**WAPDA medical services**
Type and quality of preventative and control programmes and mechanisms planned, in place and functioning	all functioning	Summary Safeguard Quarterly Reports	quarterly	**overall safeguard management**
Malnutrition, reproductive health data, communicable diseases and STD incidence and HIV incidence	at least no increase over baseline	Quarterly Reports	quarterly	**WAPDA medical services**
For objective 1:Public Health safeguarding of both, the relocated and the residing population				
Dialogue and collaboration forum	2 monthly meetings	Meeting Minutes, Quarterly Reports	two monthly	**WAPDA medical services**
Percentage of villages with resettled families with established health committees	100%	Quarterly Reports	quarterly	**Health Project Implementing Partner (IP)**
Percentage of health communities with participation of women	at least increasing trend	Quarterly Reports	quarterly	**Health Project IP**
Results of drinking water quality monitoring	acceptable content in at least 90%	Monthly Reports	on-going	**WAPDA, Contractor**
Results of waste disposal sites monitoring	acceptable in at least 80%	Monthly Reports	weekly	**WAPDA**
Incidence of diarrheal cases among children under five years of age seen at health facilities	at least no increase over baseline	Health Information System Monthly Reports	monthly	**Health Project IP**

Proportion of diarrheal cases among under-fives that arrive at the facility with signs of dehydration	at least no increase over baseline	Health Information System Monthly Reports	monthly	**Health Project IP**
Incidence of cases with acute respiratory infections by sex and age groups	at least no increase over baseline	Health Information System Monthly Reports	monthly	**Health Project IP**
Percentage of pregnant women complete at least 3 ANC visits	at least no decrease over baseline	Health Information System Quarterly Reports	quarterly	**Health Project IP**
Level of people's awareness of early signs of dehydration, respiratory infection, malnutrition among children and of causes of STI and HIV/AIDS, disaggregated by age and sex	significant positive tendency (over baseline)	Quarterly Reports, Surveys	twice yearly	**Health Project IP**
Number of new cases diagnosed with STD	at least no increase over baseline	Health Information System Quarterly Reports	quarterly	**Health Project IP**
Number of newly detected HIV sero-positive cases	no new case	Health Information System Quarterly Reports	quarterly	**Health Project IP**
Percentage of health staff in the affected area trained in prevention, early detection and case management of construction related risk diseases and conditions	at least 80% level of skills adequate 3 months after completion of training	Post-Training Evaluation Quarterly Reports	quarterly	**WAPDA medical services**
Percentage of health staff in the affected area trained in RH, child health and diagnosis and treatment of STI	at least 80% level of skills adequate 3 months after completion of training	Post-Training Evaluation Quarterly Reports	quarterly	**Health Project IP**
Percentage of referred patients who received adequate diagnose and treatment in the BHUs, RHC and District Hospital in Dasu	at least 80%	Information System Quarterly Reports	quarterly	**Health Project IP**
Percentage of health staff in the affected area trained in emergency health care, traumatology and stabilisation of patients for referral	at least 80% level of skills adequate 3 months after completion of training	Post-Training Evaluation Quarterly Reports	quarterly	**WAPDA medical services**
Percentage of emergency cases who received adequate diagnose and treatment in a health facility of the affected area	at least 80%	Post-Training Evaluation Quarterly Reports	quarterly	**WAPDA medical services**
Number of cases of growth-faltering under-fives seen at the facilities	at least no deterioration over baseline	Health Information System Quarterly Reports	monthly	**Health Project IP**
Rate of psycho-social cases and trauma receiving treatment-counselling/total cases	at least 80% of reported cases	Health Information System	quarterly	**Health Project IP**

	receive adequate attention	Quarterly Reports		
For objective 2:Public Health safeguarding of the population in the closer surrounding of constructions				
Results of drinking water quality monitoring	acceptable content in 100%	Monthly Reports	on-going	**Contractor**
Results of dust monitoring	100% within set limits	Monthly Reports	on-going	**Contractor**
Results of air pollution monitoring	100% within set limits	Monthly Reports	on-going	**Contractor**
Results of solid waste monitoring	acceptable in 100%	Monthly Reports	on-going	**Contractor**
Percentage of people using adequate latrine facilities	positive tendency over baseline	Survey Monthly Reports	on-going	**Health Project IP**
Results of sludge disposal monitoring	acceptable in 100%	Monthly Reports	on-going	**Contractor**
Results of noise monitoring / number of incidence with noise beyond the limit (standards or recommendations: Leq 45 dBA (night) and 55 dBA (day)	100% within set limits	Monthly Reports	on-going	**Contractor**
Results of monitoring of construction machinery and heavy transportation working hours	100% within set limits	Monthly Reports	on-going	**Contractor**
Number of diarrhoeal cases per age group, gender, occupation	no increase over baseline	Health Information System Monthly Reports	weekly	**Health Project IP**
Number of food poisoning per age group, gender, occupation	no increase over baseline	Health Information System Monthly Reports	weekly	**Health Project IP**
Number of cases with construction related health conditions	no increase over baseline	Health Information System Monthly Reports	weekly	**Health Project IP**
Number of road accidents cases disaggregated by sex, age groups, target group and type of accident s	no increase over baseline	Health Information System Monthly Reports	weekly	**Health Project IP**
For Objective 3:Public Health Safeguarding Of The People Attracted By And Interacting With The Construction Related Workforce				
Percentages and number of women and men with adequate knowledge of STD and HIV over baseline, disaggregated by target group and sex (can state at least 3 modes of transmission)	significant positive tendency over time	Surveys Quarterly Reports	twice yearly	**WAPDA medical services**
Incidence of STD disaggregated by target group and sex	no increase over baseline	Health Information System Quarterly Reports	monthly	**Health Project IP**
Number of newly detected HIV sero-positive cases disaggregated by target group and sex	no new case	Health Information System Quarterly Reports	monthly	**Health Project IP**
Percentage of women in reproductive age who can state at least three methods to prevent pregnancies	significant positive tendency over time	Surveys Quarterly Reports	twice yearly	**Health Project IP**

Number of unwanted pregnancies resulted from interaction with construction workforce, disaggregated by target group (including female construction workforce)	no case	Health Information System Quarterly Reports	monthly	**Health Project IP**
Percentages and number of mobile workers, sex workers, MSM, women, construction workers engaging in sexual relation with construction workers and resident population using condoms at all times of outside marriage sexual relations, disaggregated by target group and sex	significantly increasing tendency over time	Surveys Quarterly Reports	twice yearly	**WAPDA medical services; Health Project IP**
For objective 4:Public Health safeguarding of the construction workforce				
Number of occupation related/caused health condition and injury disaggregated by group of profession, sex, age group and type of accident/injury	no case to be considered severe	Health Information System	quarterly	**WAPDA medical services**
Number and type of cases of non-compliance with occupational health protective measures to be considered severe	none	Monthly Report	on-going	**WAPDA medical services**
Monitoring of quality of drinking water (number of e-coli)	acceptable content in 100%	Monthly Reports	on-going	**Contractor/consultant**
Monitoring of food chain hygiene and safety	considered safe to 100%	Monthly Reports	on-going	**Contractor/consultant**
Number of diarrheal diseases (disaggregated by group of profession and sex), which is likely caused by food or water intake in the colony or camp	no case	Health Information System Monthly Reports	on-going	**WAPDA medical services**
No case of food poisoning (disaggregated by group of profession and sex), which is likely caused by food or water intake in the camp or colony	no case	Health Information System Monthly Reports	on-going	**WAPDA medical services**
Percentage of pregnant (female) construction workers complete at least 3 ANC visits	at least no decrease over baseline	Health Information System Quarterly Reports	quarterly	**WAPDA medical services**
Level of construction workers' awareness of HIV/AIDS, STIs, disaggregated by occupation, age and sex (can state at least 3 modes of transmission)	significant positive tendency	Quarterly Reports, Surveys	twice yearly	**WAPDA medical services**
Number of new cases diagnosed with STD, disaggregated by occupation, age and sex	at least no increase over time	Health Information System Quarterly Reports	quarterly	**WAPDA medical services**
Number of VCTs disaggregated by disaggregated by occupation, age and sex	increasing tendency	Health Information System Quarterly Reports	quarterly	**WAPDA medical services**
Number of newly detected HIV sero-positive cases, disaggregated by occupation, age and sex	no new case	Health Information System Quarterly Reports	quarterly	**WAPDA medical services**
For objective 5:Public health safeguarding for the time after completion of the dam and the access roads				
Action plan based on needs assessment a year before closure with revalidation in last quarter	completed in time	Needs Assessment, Action Plan	once	**WAPDA medical services**

DHO monitoring system for early detection of epidemiological shift in place	system timely in place	Epidemiological Monitoring System	once	**Health Project IP**
Percentage of departing health staff with future posting opportunity	at least 80% of those interested	Survey	once	**WAPDA medical services**
Percentage departing workers and departing, previously migrated people exposed to verbal AND written IEC	100% of departing workers at least 50% of previously migrated people	Monitoring Sheets Survey	last two quarters	**WAPDA medical services**
Number of speed offences	at least not higher than average in country	Police Report	monthly	**Traffic Police**

5.1 ONGOING MONITORING BY WAPDA AND DISTRICT HEALTH OFFICER

WAPDA, as the overall managing body will ensure on-going monitoring of the implementation, in cooperation with DHO. The health action plan implementing partner will ensure – as far as the cultural barriers allow it happening - stakeholders participation and provide focussed technical assistance for the BHU, RHC and District Hospital in Dasu.

Monitoring is an integral part of the safeguarding process, hereby also of the PHAP. A three-tier monitoring system has been designed to monitor on-goingand evaluate progress. These 3-levels system comprise of:

a) Internal monitoring at health care provider level involving the health project implementing partner, the health provider of the construction company and of the consultant, the DHO and the WAPDA/DHP field offices;
b) Monitoring by project Construction Supervision Consultant (CSC) and,
c) Independent external monitoring.

5.1.1 Internal Monitoring

It is the responsibility of the health care providers, in close cooperation with the DHO, to ensure that the data are precisely and timely collected, compiled, analysed and used to guide in adequate management decisions and priority setting, overseeing progress, provision of required support and hereby assure quality and evidenced reporting. DHO will supervise the performance of the health project implementing partner following its own supervision and quality assuring procedure, but the health facilities have to submit reports as outlined below.

5.1.2 External Monitoring

WAPDA seeks to engage an independent External Monitoring Agency (EMA) to review the internal monitoring and undertake third party monitoring & evaluation of the implementation process for the Government of Pakistan and the co-financier. The primary objective for independent external monitoring is to review the efficacy of internal monitoring, design and conduct periodic third party monitoring and feedback to WAPDA and the co-financier on policy improvement and enhancement of implementation process. The independent external monitor will review implementation process as designed in the PHAP and assess the needs for modification and adjustments of the plan.

The monitoring of the PHAP implementation forms an integrated part in this process.

5.2 REPORTING

5.2.1 Reporting Responsibilities

The contractual relation between the implementing partner and the DHO beyond DHP and the tender will be launched in due course. Nevertheless, it is expected that the implementing partner will be cooperative in the adequate contribution to the reporting.

The responsibility to oversee adequate reporting by the various partners and to compile the reporting rests with the WAPDA medical services with adequate contribution by the health care providing actors.

Reporting will include, but not limited, as outlined further below.

5.2.2 Inception Report

This report shall be compiled six months after the commencement of implementation and includes the following points:

- A review of current PHAP
- (Re)validation of the identified activities and of the identified procurement needs

- Qualitative and quantitative baseline studies and proposal for additional studies, if existing data are not sufficient.
- Mapping of all health actors (except the profit making private sector) in the affected areas
- Time-bound operational plan for the remaining months to complete the running calendar year.
- Preliminary operational plan for the first full calendar year and financial year.
- A time-bound plan for the development of human resources (appropriate trainings).
- Summary of training and capacity building plans, based on assessments.
- Gender specific interventions.
- Arrangements and indicators for monitoring the progress in implementation, outputs and outcomes.
- Management arrangements including specific tasks and responsibilities for the PHAP, the contractor, consultant and the safeguarding teams and of the BHUs, RHCs and the District Hospital in Dasu.
- Specific coordinating arrangements for the health actors in the affected areas.
- Budget and Implementation Schedule for the remaining months to complete the running calendar year and first full calendar year (and the financial year).

5.2.3 Progress Reports

The following reports have to be submitted by the various actors and be complied by WAPDA medical services.

Monthly Activity Reports

- Narrative: Brief listing of commenced, on-going and planned activities
- Finance: financial statement

QuarterlyProgress Reports

The content will include progress based on operational plans, plans specified in previous quarterly report, arrangements and monitoring indicators as set out in the inception report (the first quarterly report refers to the PHAP and proposal of the PHAP). It will also include constraints encountered and resulting adjustments/actions and plans for the next quarter.

- Narrative: Analysis of the achievements in the past quarter, constraints encountered, modifications in work-plan, plans and targets for the following quarter
- Finance: financial report

Annual Reports

The annual report replaces the 4th quarterly report

- Narrative: annual, analytical summary of the achievements in the past quarter, constraints encountered, modifications in work-plan, plans and targets for the following year
- Finance: financial report of the 4th quarter and annual summary

5.2.4 Completion Report

It will include a concise history of the PHAP, evaluation of the implementation, including financial audit statements.

5.2.5 Recipients

The narrative reports will be submitted to the primary users, i.e. the Steering Committee members and on request to other stakeholders and users.

All financial statements and reports will be submitted to WAPDA, co-financiers and the Steering Committee members.

5.3 PERIODICAL MULTI YEAR

- Periodical multi-year reviews are foreseen to be conducted by WAPDA with the co-financier.
- The Financial Audits of the WAPDA medical services and the health facility of the contractor are aimed to be performed in joint audits of the construction.
- Post-Evaluation Report: It will include post-evaluation of the implementation, case studies, conclusion and lessons learned.

6 KEY ASSUMPTIONS/RISKS AND MITIGATION MEASURES

The following is limited to key assumptions related to each level in the logical framework and mitigating measures (added in *italic*).

6.1 LEVEL OF PURPOSE

- Progress in the construction according to the envision timeframe.

  Mitigation: As soon as a delay in the construction progress is noted and discussed with WAPDA, the plan will be reviewed and possibly additional financial requirement calculated.

- In case of a major epidemic or natural disaster in country, the public sector can cope with the demand without shifting resources from the Dasu HPP.

  Mitigation: In case such a situation occurs a cooperation plan for disaster management will be established in cooperation of DHO, the facilities, WAPDA, the implementing partner and the WB to ensure a well-coordinated strategy to cope with the disaster while preventing overly large gaps in the services of the project area.

- Political and donor commitment is maintained for a continuous progress in the *construction.*

  Mitigation: Close reporting with well evidenced data and information shall keep the GoP and the donor updated and aware of risks and consequences before a possible loss of commitment occurs. Advocacy will be enforced in due course and means if required.

6.2 LEVEL OF RESULT 1

- Progress in the health - public sector proceeds at least to the degree as experienced over the last years.

  Mitigation: in case the progress slows or ceases the PHAP, in particular in respect to the cooperation with the PHC units will be reviewed and amended to adjust with the possibly reducing capacity of the PHC units.

- National policies on family and reproductive health do not drastically change and reduce political weight.

  Mitigation: since the current national health policy from 2009 has a time frame up to 2015 and it is not likely that drastic changes will occur in the foreseeable future. If such event would nevertheless occur, the PHAP can be reviewed and plans and those aspects negotiated with DHO which are found not being in correspondence, but required for safeguarding public health.

- District specific human resource development in health continues, progresses and planned positions can be posted in the health facilities National Human Resource Development in health continues, progresses and planned positions can be posted in the health facilities.

  Mitigation: the PHAP foresees a needs assessment 1.5 years before the expected end of project which includes an update on Human Resources. Subsequently, a phased approach with partial prolongations in the handover can be designed to accommodate the shortcomings, provided a firm commitment and timed plan is assured by DHO to post the required staff.

- The HIV pandemic does not worsen drastically in the country.

  Mitigation: the plan will need to be revised in view of a focussed, stronger emphasis on HIV/AIDS.

- Possible epidemics in the area (e.g. cholera) can be addressed effectively at an early and small stage

  Mitigation: the plan will need to be revised to allow reallocation of resources to assist DHO in coping with the demand.

6.3 LEVEL OF RESULT 2

- Unforeseen (environmental) events will not exceed manageable coping actions with the planned resources.

  Mitigation: the plan will need to be revised to accommodate the higher and/or different needs and demands.

- Contractor will comply with requirements and obligations and stays responsive to the observation and recommendations of the health facilities, DHO and WADPA medical services and the health safeguarding steering committee

  Mitigation: the DHO shall, in case of unsuccessful direct negotiation, address these constraints to the PHAP steering committee and WAPDA for appropriate actions on their side.

6.4 LEVEL OF RESULT 3

- The people attracted by the construction (workers) come in "manageable" numbers and would not overburden services.
- The people attracted by the construction workers show no poorer health condition, disease pattern and conditions as the residing population.

  Mitigation for both assumptions/risks: the plan will need to be revised to accommodate the higher and/or different needs and demands.

- Societal hesitation can be overcome in reaching people with for IEC and preventative activities.

  Mitigation: the plan can be modified towards a stronger sociological approach and possibly including anthropological type of skills.

6.5 LEVEL OF RESULT 4

- Construction workforce shows no poorer health condition and conditions as the resident population.

  Mitigation: the plan will need to be revised to accommodate the higher and/or different needs and demands.

- Contractor will comply with requirements and obligations and stays responsive to the observation and recommendations of WAPDA medical services, DHO and the health safeguarding steering committee.

  Mitigation: the DHO shall, in case of unsuccessful direct negotiation, address these constraints to the PHAP Steering Committee and WAPDA for appropriate actions on their side.

- Contractor complies and facilitates access to the construction workforce during the recruitment process and on on-going basis for IEC and counselling

  Mitigation: the DHO shall, in case of unsuccessful direct negotiation, address these constraints to the PHAP Steering Committee and WAPDA for appropriate actions on their side.

6.6 LEVEL OF RESULT 5

- Contractor complies and facilitates access to the construction workforce before departure.

Mitigation: the DHO shall, in case of unsuccessful direct negotiation, address these constraints to the PHAP Steering Committee and WAPDA for appropriate actions on their side

- DHO wishes and requires support.
  Mitigation: validate that support is not required and if so, alternate the activity. If still deemed necessary support, offer the evidences to the DHO and seek support from WAPDA.
- Police is interested in cooperation.
  Mitigation: offer the evidences to the Ministry of Interior and seek support from WAPDA.

7 MANAGEMENT AND GOVERNANCE

Following the above elaborations, a managerial and governance structure for the PHAP is to be set up under the steering and governing oversight of the social and environmental safeguard, as depicted in the figure below. Under the guidance of the overall safeguard governance oversight, the public health safeguarding oversight comprises of WAPDA and DHO (Chair), the health project manager, the contractor health care service provider, WAPDA medical service, other health actors in Kohistan and, a gender action plan representative.

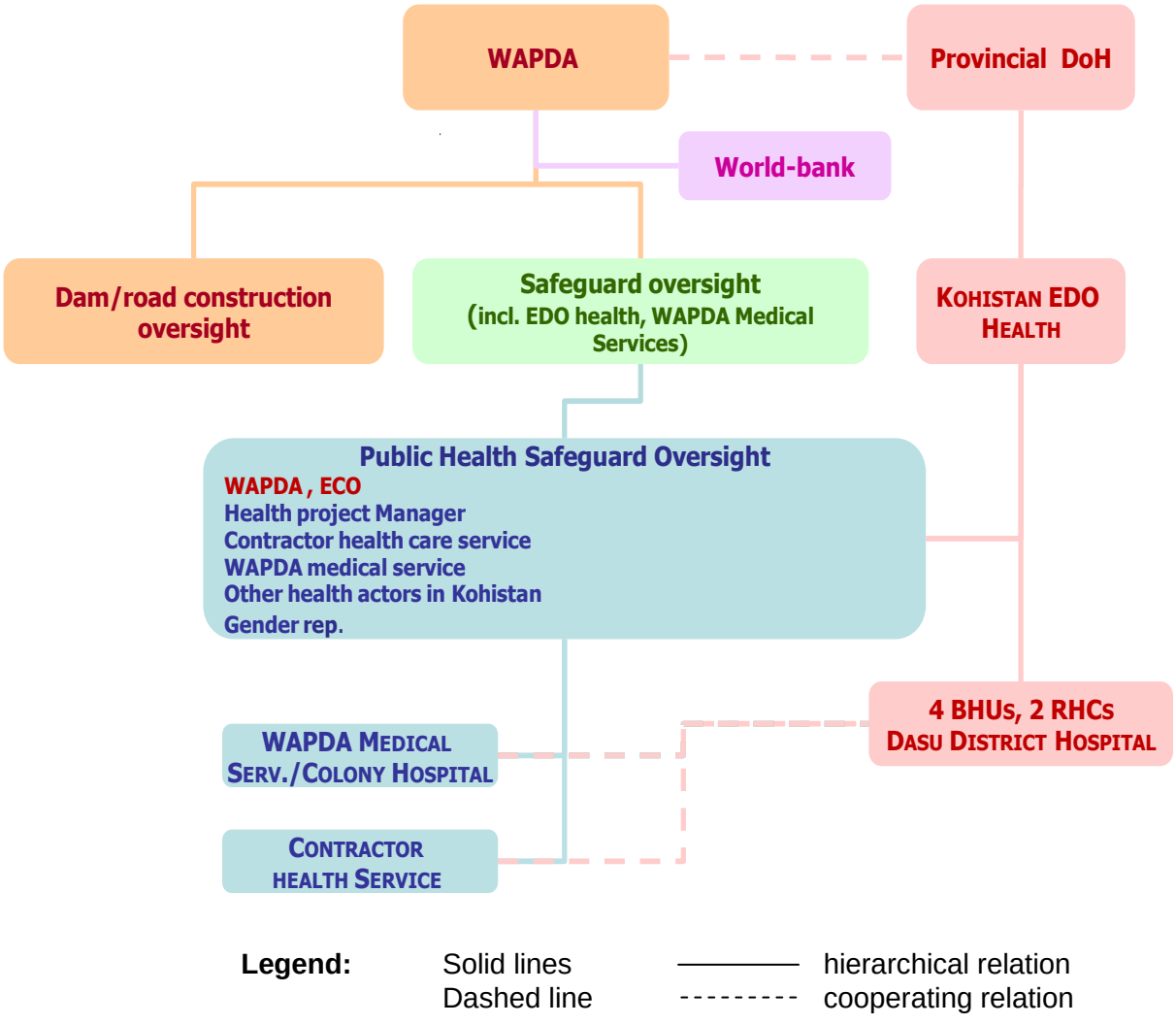

Figure 7.1: Governance and Management Structure

The Terms of Reference for the Steering Committee is attached as Appendix C.

7.1 FINANCIAL FLOW

Based on a contractual agreement funds will be provided by GoP and co-financier following the procedures and requirements laid out, respectively referred to in the agreements between the agreement between the GoP and the WB. This includes WAPDA medical services for investment and for recurrent costs.

The health services of the contractor are covered in the overall contract between WAPDA and the contractor.

The funding flow to the health project implementing partner is of course entirely independent of Dasu HPP.

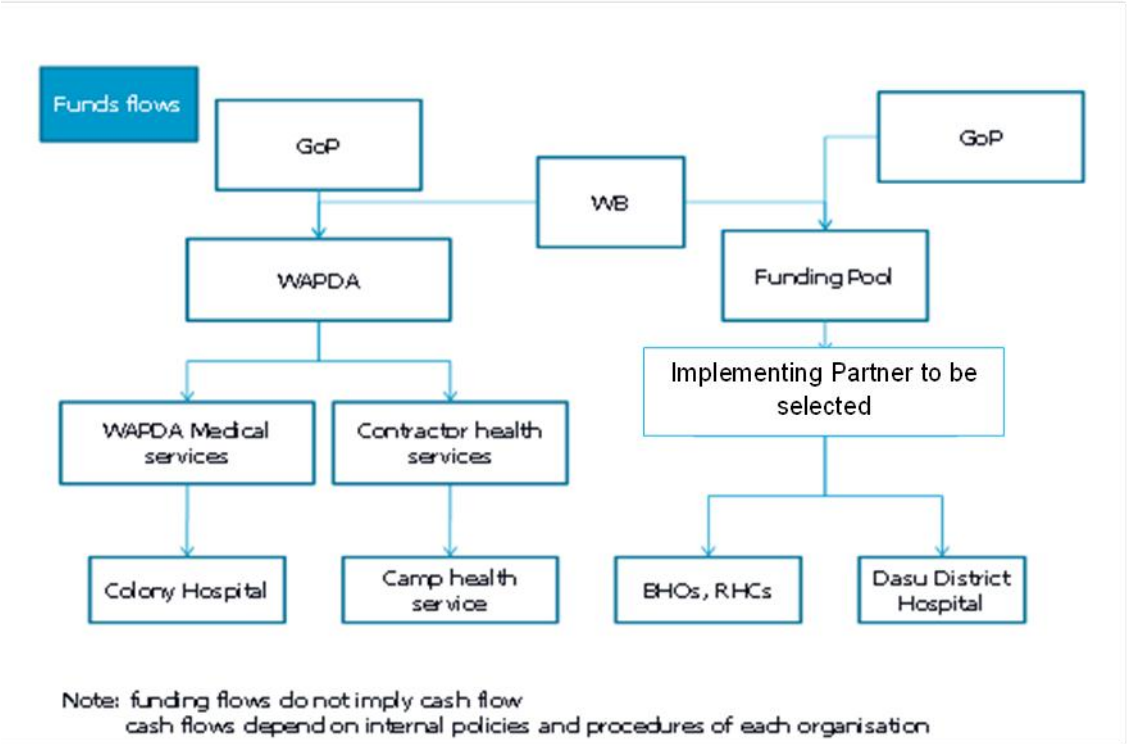

Figure 7.2: Funding and accounting flow

Funding flows do not imply cash flow. Cash flows depend on internal policies and procedures of each organisation. Equally, accounts will flow according to the procedures of each organisation and the funder (GoP and the WB).

8 ESTIMATED FUND REQUIREMENTS FOR 12 YEARS

Budget estimations were made based on the following key assumptions:

(i) It is assumed that the WB funded health project (3 years) will accept the outlined tasks.

(ii) It is assumed that there will be at least one subsequent funding period of this WB funded project, followed by continuous funding and/or the public sector of health can managerially, financially and technically take over.

(iii) It appears that the cost weight is biased towards curative care. It has to be taken into account that health facilities have to be newly built and then handed over to DHO. The activities however, will be carried by DHO, respectively the implementing partner of the health project. Therefore, these running costs do not appear in these budget estimations.

Also, preventative activities which are carried out by non-health actors, such as the contractor, are not included in this budget. In brief, only a relatively small portion of all prevention appears as cost items in this budget (see Table 8.1).

Table 8.1: Estimated required funds for 12 years

SUMMARY BUDGET FOR PUBLIC HEALTH ACTION PLAN(PHAP)														
Cost Head	**In Millions**	**Costs 1st year**	**Costs 2nd year**	**Costs 3rd year**	**Costs 4th year**	**Costs 5th year**	**Costs 6th year**	**Costs 7th year**	**Costs 8th year**	**Costs 9th year**	**Costs 10th year**	**Costs 11th year**	**Costs 12th year**	**Total**
Prevention and Promotion	Rupee	14.70	14.99	15.29	15.60	15.91	16.23	16.55	16.89	17.22	17.57	30.52	43.15	234.63
	USD	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.18	0.18	0.18	0.32	0.45	2.47
Curative Care	Rupee	16.79	17.12	17.47	17.82	18.17	18.54	18.91	19.29	19.67	20.06	20.47	20.47	220.76
	USD	0.17	0.18	0.18	0.18	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.22	2.32
Training and Skills Upgrading	Rupee	5.12	2.19	2.24	2.28	2.33	5.62	2.42	2.47	2.52	2.57	12.62	12.87	55.25
	USD	0.05	0.02	0.02	0.02	0.02	0.06	0.03	0.03	0.03	0.03	0.13	0.14	0.58
Personnel	Rupee	40.00	40.80	41.62	42.45	43.30	44.16	45.05	45.95	46.87	47.80	48.76	49.73	536.48
	USD	0.42	0.43	0.44	0.45	0.46	0.46	0.47	0.48	0.49	0.50	0.51	0.52	5.65
Capital Cost	Rupee	204.68	0.00	0.00	0.00	0.00	21.35	7.20	0.00	0.00	0.00	0.00	0.00	233.23
	USD	2.15	0.00	0.00	0.00	0.00	0.22	0.08	0.00	0.00	0.00	0.00	0.00	2.46
Management / Administration Cost	Rupee	0.30	0.31	0.31	0.32	0.32	0.33	0.34	0.34	0.35	0.36	0.37	0.37	4.02
	USD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Studies/ Operational Research	Rupee	1.40	0.82	1.04	0.85	1.08	0.88	1.13	0.92	1.17	0.96	1.82	2.52	14.58
	USD	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.15
M&E and Auditing	Rupee	10.00	10.20	10.40	10.61	10.82	11.04	11.26	11.49	11.72	11.95	12.19	12.43	134.12
	USD	0.11	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.13	0.13	0.13	1.41
Sub Total	**Rupee**	**292.98**	**86.43**	**88.37**	**89.93**	**91.94**	**118.16**	**102.86**	**97.34**	**99.52**	**101.27**	**126.74**	**141.55**	**1,433.08**
	USD	**3.08**	**0.91**	**0.93**	**0.94**	**0.96**	**1.24**	**1.08**	**1.02**	**1.04**	**1.06**	**1.33**	**1.49**	**15.09**
Contingencies @ 25%+9%	Rupee	99.61	29.39	30.05	30.58	31.26	40.17	34.97	33.10	33.84	34.43	43.09	48.13	488.61
	USD	1.05	0.31	0.32	0.32	0.33	0.42	0.37	0.35	0.35	0.36	0.45	0.51	5.13
Grand Total	**Rupee**	**392.59**	**115.82**	**118.42**	**120.51**	**123.20**	**158.33**	**137.83**	**130.44**	**133.36**	**135.70**	**169.83**	**189.68**	**1921.69**
	USD	**4.13**	**1.22**	**1.25**	**1.26**	**1.29**	**1.66**	**1.45**	**1.37**	**1.39**	**1.42**	**1.78**	**2.00**	**20.10**

APPENDICES

Appendix A: Operationalization of Public Health Action Plan

The Public Health Action Plan will be operationalized following a series of steps:

Phase 1:

1. Approval of the PH Action Plan by WAPDA and the WB
2. Agreement between WB, WAPDA, DHO Kohistan
3. Agreement between the implementing partner of the Revitalising Health Services in Khyber Pakhtunkhwa Project, DHO, the WB and WAPDA

Phase 2:

4. Public Health Governance/Steering Committee members to sign Code of Conduct
5. Terms of reference for on-going monitoring by WAPDA and the DHO – proposed public health component included in Appendix of the PHAP
6. Terms of reference of financial audits
7. Construction of facilities and new locations
8. Construction of camp health facility and colony hospital
9. Procurement of equipment
10. Recruitment of health staff

Phase 3:

11. Community meetings in the concerned villages
12. Baseline studies as far as feasible
13. Briefing and consultation meetings with other health actors in the Kohistan District
14. Commence provision of health services

Appendix B: Proposed to be included in Terms of Reference for External Monitoring Agency

Include in chapter on scope of work

- To review, verify progress and monitor the impact in delivering health promotion as well as preventative and curative activities with special emphasis on responsiveness to cultural norms and barriers for reproductive and child health and on risk groups (construction workers and the people interacting with the workers).
- To review the compliance with occupational health measures as well as capacity to and performance in responding to curative routine and emergency care both on primary and secondary care.
- To review the performance of overall health safeguard steering, management and priority setting in health management (both private and public sector).

Include in chapter on Stakeholders and their Responsibilities

The health care providers will assist and cooperate with the external monitor through providing free access to their database and the management information system. They will provide copies of the progress reports and other reports as requested by the external monitor.

The health care providers may have to carry out surveys in compliance with the requirements of the external monitoring, as far as feasible given the cultural norms and barriers.

Include in chapter of Team Composition of the External Monitoring Agency

Position/expertise and qualification and experience

Public Health Specialist: Masters in Public Health with at least 10 years working experience in public health management in remote and economically poor environment: planning, reviewing and first-hand experience in primary health care delivery (and ideally in emergency patient care); community and stakeholders' consultation; analyses of health impacts to identify mitigation measures in compliance with social safeguard policies of the international development financing institutions and national legislations.

Experience of preparing public health action plans and management of the public health plans/projects for externally financed projects is essential.

Include in chapter of under Time Frame and Reporting

The external monitors will provide monitoring and evaluation report covering the following aspects:

- The extent to which the overall objective, purpose and specific objectives of the Public Health Plan have been achieved, which constraints were encountered and the reasons for achievement and/or non-achievement.

Appendix C: Terms of Reference- Governance/ Steering Committee of Public Health Action Plan

TERMS OF REFERENCE - GOVERNANCE/STEERING COMMITTEE

The essence of the Public Health Plan is to link the complementing public health interventions to the demand and needs posed by the construction of the Dasu Hydropower Project. For on-going coordination and the effective incorporation of lessons learned in the public health priorities, strategic directions and interventions in close cooperation between partners and on-going adjustments have to be assured. Therefore, a joint steer and governance system, under the chair of WAPDA is foreseen. The interventions are implemented and monitored by several actors: DHO of Kohistan District with support of the Revitalising Health Services in Khyber Pakhtunkhwa Project, WAPDA and the WAPDA medical services, the construction contractor, the consultant/s and DHP social and environment safeguarding team.

Members

The composition reflects the implementers, overseeing and management bodies, the funders and the communities to be protected:

- Communities
- Social and Environment Safeguarding team
- Construction contractor
- Consultant representative
- DHO Kohistan (provincial DoH)
- Revitalising Health Services in Khyber Pakhtunkhwa Project
- WAPDA medical services
- World-bank
- WAPDA (chair of Steering Committee)

Additional committee members, like organisations acting in the concerned District, if considered beneficial for the purpose of the PHAP.

Responsibilities

- Provide overall strategic directions for safeguarding Public Health to:
  - Actively promote the work of the PHAP.
  - Oversee that the PHAP plans and works beyond routine and stays flexibly responsive to possibly changing environment and communities and to the values to the society at large.
  - Set the directives to ensure that the PHAP promotes working relationships between the staff of the different actors and participating communities that are based on mutual respect, fairness and openness.
  - Ensures that the PHAP implementers provide comprehensive and timely information to the public, the media, and all stakeholders as requested and is responsive in a timely manner to reasonable requests for information.
  - Ensure effective coordination between the PHAP implementers.
- Decide on governing and managerial policies of the PHAP (in writing, clearly articulated and officially adopted) and oversees adherence to the policies:
  - Oversee adherence to agreements found on the division of responsibilities and tasks between the actors.
  - Function as the reference in cases of disputes and disagreements.
  - Approve the narrative and financial reports and ensure that financial reports are factually accurate and complete in all material respects.
  - Ensure sound management of the implementers including human resource, finance and resource management and that the resources of the PHAP are responsibly and prudently used.

  - Oversee that the working conditions and environment of the implementers are enabling to perform effectively and efficiently.
  - Establish a conflict of interest policy that ensures that any conflicts of interest or the appearance thereof are avoided or appropriately managed through disclosure, recusal or other means.

- Oversee the installation of adequate quality assuring systems, tools and measures and adherence to the standards and protocols:
  - Ensure that the PHAP implementers have the capacity to carry out its activities effectively and are knowledgeable of and comply with all laws, regulations and applicable international conventions and best practices.
  - Initiate regular PHAP reviews by the independent consultants on relevance, effectiveness, efficiencies, complementarities and consistency in the implementation of the PHAP and review the provided recommendations.
  - Approve and ensure the implementation of those recommendations which are deemed applicable and incorporate appropriate lessons learned into future interventions.
  - Ensure that the PHAP implementers provided timely and comprehensive information so that the PHSC can effectively carry out its duties.
  - Ensures that the health actors conduct all transactions and dealings with integrity and honesty, and in line with the GOP and the WB's Regulations and Procedures and the Public Health Laws of Pakistan.
- Ensure adherence to the Code of Conduct of the PHSC (see below)
  - Regularly review own progress and performance.

Meetings

The scope of responsibilities demands a well-coordinated approach with regular, formal, quarterly meetings. The minutes of the meetings will serve for documentation and as a reference for follow up.

The relation between the key actors (WAPDA, WAPDA medical services, DHO Kohistan, the contractor, the consultant and the health project implementer) will be formalised in a Memorandum of Understanding. It should clarify the interdependency of the health actors and the communities. The members will commit themselves to their responsibilities through signing the Code of Conduct of the Steering Committee.

Code of Conduct for Steering Committee

The Public Health Steering Committee (PHSC) is the governing body of the PHAP. This code of conduct for PHSC members will inform and guide their actions ensuring competent and consistent governance of the PHAP.

The code of conduct is built on widely shared values. These values include:

- Commitment to the public good;
- Accountability to the public;
- Commitment beyond the law;
- Respect for the worth and dignity of individuals;
- Inclusiveness and social justice;
- Respect for pluralism and diversity
- Transparency, integrity and honesty;
- Responsible stewardship of resources; and
- Commitment to excellence and to maintaining the public trust.

The PHSC will be guided by the following:

(i) The PHSC members shall act with honesty, personal and professional integrity and openness in all their dealings as representatives of the PHAP. The PHSC promotes a working environment that values respect, fairness and integrity.

(ii) The PHSC shall ensure that the PHAP is responsive to the constituency and communities served and of value to the society at large.

(iii) The PHSC shall ensure that its members have the requisite skills and experience to carry out their duties and that all members understand and fulfil their governance duties acting for the benefit of the organisation and its public purpose.

(iv) The PHSC shall have a conflict of interest policy that ensures that any conflicts of interest or the appearance thereof are avoided or appropriately managed through disclosure, recusal or other means.

(v) The PHSC will be responsible for the regular review of the performance of the PHAP staff.

(vi) The PHSC shall ensure that the representatives of the health actors provide them with timely and comprehensive information so that the PHSC can effectively carry out its duties

(vii) The PHSC shall ensure that the health actors conduct all transactions and dealings with integrity and honesty, and in line with the GOP and WB's regulations and procedures and the laws of Pakistan.

(viii) The PHSC shallensure that the PHAP promotes working relationships with the staff of the different actors and participating communities that are based on mutual respect, fairness and openness.

(ix) The PHSC shall ensure that the implementation is fair and inclusive in its hiring and promotion policies and practices for all staff, volunteers or interns positions (if any).

(x) The PHSC shall ensure that policies of the PHAP are in writing, clearly articulated and officially adopted.

(xi) The PHSC shall ensure that the resources of the PHAP are responsibly and prudently managed.

(xii) The PHSC shall ensure that the PHAP has the capacity to carry out its activities effectively.

(xiii) The PHSC shall ensure that the PHAP implementers are knowledgeable of and complies with all laws, regulations and applicable international conventions and best practices.

(xiv) The PHSC shall ensure that all financial procedures and policies are fair, reasonable and appropriate to fulfil the tasks of the PHAP.

(xv) The PHSC shall ensure that financial reports are factually accurate and complete in all material respects.

(xvi) The PHSC shall ensure that the PHAP implementers provide comprehensive and timely information to the public, the media, and all stakeholders as requested and is responsive in a timely manner to reasonable requests for information.

(xvii) The PHSC shall ensure that the PHAP's effectiveness is regularly reviewed and has mechanisms to incorporate lessons learned into future interventions.

(xviii) The PHSC shall actively promote the work of the PHAP.

(xix) The PHSC shall serve as a court of appeal if there is any area of major disagreement or conflict between partners.

(xx) The PHSC shall regularly review own progress and performance.

Chair - Name / Signature:

PHSC Member: Organisation: Date: Signature:	PHSC Member: Organisation: Date: Signature:	PHSC Member: Organisation: Date: Signature:
PHSC Member: Organisation: Date: Signature:	PHSC Member: Organisation: Date: Signature:	PHSC Member: Organisation: Date: Signature:
PHSC Member: Organisation: Date: Signature:	PHSC Member: Organisation: Date: Signature:	PHSC Member: Organisation: Date: Signature:
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Appendix D: Logical Framework

OBJECTIVE	INDICATORS	SOURCE OF VERIFICATION	ASSUMPTIONS
To contribute to the social developmental impact expected from the construction of and operating the Dasu Hydropower Project through **minimising risks and possible harmful effect on public health**.	• Evolution of health and social key impact indicators (positive trend over time)	DHO Information System Quarterly Reports	NA
	• Figures of morbidity and mortality information system (no significant increase over baseline)	DHO Information System Quarterly reports	NA
PURPOSE			
The **inclusion of adequate public health actions** in the overall safeguarding plan of the Dasu Hydropower Project.	• Number and type of health incidents related to the construction (no severe incidence)	Quarterly reports	Progress in the construction according to the envision timeframe.
	• Type and quality of preventative and control programmes and mechanisms planned, in place and functional (all functional).	Summary safeguard Quarterly reports	In case of a major epidemic or natural disaster in country, the public sector can cope with the demand without shifting resources from the Dasu HPP.
	• At least no increase over baseline in malnutrition, reproductive health data, communicable diseases and STD incidence and HIV prevalence.	Quarterly reports	Political and donor commitment is maintained for continuous progress in the construction.
OBJECTIVES			
Starting in Pre-construction Phase			
1. To accompany the resettlement process with adequate **(public) healthsafeguarding for both, the relocated and the resident population** while observing the context, conditions and parameters prevailing in the related Tehsils and the Kohistan District.	• Dialogue and collaboration forum created and functional (2 monthly meetings)	Meeting minutes Quarterly reports	Progress in the health - public sector proceeds at least to the degree as experienced over the last years.
	• Percentage of villages with resettled families with established health committees (100%)	Quarterly reports	
	• Percentage of health communities with participation of women (at least increasing trend)	Quarterly reports	National policies on family and reproductive health do not drastically change and reduce political weight.
	• Quality of drinking water (acceptable content in at least 90%)	Monthly reports	
	• Quality of waste disposal sites (acceptable in at least 80%)	Monthly reports	
	• At least no increase over baseline in incidence of diarrheal cases among children under five years of age seen at health facilities	Health information system Monthly reports	District specific human resource development in health continues, progresses and planned positions can be posted in the health facilities.
	• At least no increase over baseline in proportion of diarrheal cases among under-fives that arrive at the facility with signs of dehydration	Health information system Monthly reports	
	• At least no increase over baseline in incidence of cases with acute respiratory infections by sex and age groups	Health information system Monthly reports	The HIV pandemic does not worsen drastically in the country.
	• At least no decrease over baseline in percentage of pregnant women completing at least 3 ANC visits	Health information system Quarterly reports	Possible epidemics in the area (e.g. cholera) can be addressed effectively at an early and small stage
	• Significant positive tendency over baseline in level of people's awareness of early signs of dehydration, respiratory infection, malnutrition among children and of causes of STI and	Quarterly reports Surveys	

	HIV/AIDS, disaggregated by age and sex		
	• At least no increase over baseline in number of new cases diagnosed with STD	Health information system Quarterly reports	
	• No newly detected HIV sero-positive case	Health information system Quarterly reports	
	• At least 80% of health staff in the affected area trained in prevention, early detection and case management of construction related risk diseases and conditions show adequate level of skills after 3 months of completion of training	Post-training evaluation Quarterly reports	
	• At least 80% of health staff in the affected area trained in RH, child health and diagnosis and treatment of STI show adequate level of skills 3 months after completion of training	Post training evaluation Quarterly reports	
	• At least 80% of referred patients received adequate diagnose and treatment in the BHUs, RHC and District Hospital in Dasu	Health information system Quarterly reports	
	• At least 80%P of health staff in the affected area trained in emergency health care, traumatology and stabilisation of patients for referral show adequate level of skills 3 months after completion of training	Post training evaluations reports Quarterly reports	
	• At least 80% of emergency cases received adequate diagnose and treatment in the health facility of the affected area	Post-training evaluation Quarterly reports	
	• At least no deterioration over baseline number of cases of growth-faltering under-fives seen at the facilities	Health information system Quarterly reports	
	• At least 80% of reported psycho-social cases receive adequate attention	Health information system Quarterly reports	
• **During the Construction Phase**			
2. To set and operationalize adequate and appropriate measures to minimise effects on the health of the **population in the closer surrounding** of the construction sites.	• Acceptable quality in 100% of drinking water	DPHE monthly reports	Unforeseen (environmental) events will not exceed manageable coping actions with the planned resources. Contractor will comply with requirements and obligations and stays responsive to the observation and recommendations of the health facilities, DHO and WADPA medical services and the health safeguarding steering committee.
	• Dust emissions to 100% within set limits.	Contractor monthly reports	
	• Emission to air to 100% within set limits	Contractor monthly reports	
	• Solid waste disposal acceptable to 100%	Contractor monthly reports	
	• Positive tendency over baseline in percentage of people using adequate latrine facilities	Survey Monthly reports	
	• Sludge disposal acceptable to 100%	Monthly reports	
	• Noise level to 100% within set limits	Contractor monthly reports	
	• Working hours of construction machinery and heavy transportation to 100% within set limits	Monthly reports	
	• At least no increase over baseline in number of diarrhoeal cases per age group, gender, occupation	Health information system Monthly reports	
	• At least no increase over baseline in number of food poisoning per age group, gender, occupation	Health information system Monthly reports	
	• At least no increase over baseline in number of cases with construction related health conditions	Monthly reports	
	• At least no increase over baseline in number of road accidents cases disaggregated by sex, age groups, target	Health information system Monthly reports	

	group and type of accident s		
3. To set and operationalize adequate and appropriate measures to minimise adverse effects on the health of migrating and resident people attracted by and interacting with the construction related workforce, including in respect to reproductive health and prevention of sexually transmitted infections and HIV/AIDS.	• Significant positive tendency in percentages and number of women and men with knowledge of STD and HIV over baseline (disaggregated by target group and sex (can state at least 3 modes of transmission)	Surveys Quarterly reports	The people attracted by the construction (workers) come in ”manageable” amounts and would not overburden services.
	• At least no increase over baseline in incidence of STD disaggregated by target group and sex	Health information system Quarterly reports	The people attracted by the construction (workers) show no poorer health condition, disease pattern and conditions as the residing population. Societal hesitation can be overcome in reaching people with IEC and preventative activities.
	• At least no newly detected HIV sero-positive case	Health information system Quarterly reports	
	• Significant positive tendency in the percentage of women in reproductive age who can state at least three methods to prevent pregnancies	Surveys Quarterly reports	
	• No case of unwanted pregnancies resulted from interaction with construction workforce, disaggregated by target group (including possible female construction workforce	Health information system Quarterly reports	
	• Significantly increasing tendency overt time in percentages and number of mobile workers, sex workers, MSM, women, construction workers engaging in sexual relation with construction workers and resident population using condoms at all times of extra marital sexual relations, disaggregated by target group and sex	Surveys Quarterly reports	
4. To keep the construction workforce safe from occupational hazards, health risks of living jointly in compounds and to have easy access to clinical care assured.	• Number of occupation related/caused health condition and injury disaggregated by group of profession, sex, age group and type of accident/injury (no case of severe injury)	Health information system	Construction workforce shows no poorer health condition and conditions as the resident population. Contractor will comply with requirements and obligations and stays responsive to the observation and recommendations of WAPDA medical services, ECO and the health safeguarding steering committee. Contractor complies and facilitates access to the construction workforce during the recruitment process and on on-going basis for IEC and counselling
	• No case to be considered severe in number and type of non-compliance with occupational health protective measures (none)	Monthly reports	
	• Quality of drinking water acceptable in 100% of the tests	Monthly reports	
	• 100 % of food chain hygiene tests are considered safe	Monthly reports	
	• No case of diarrheal diseases (disaggregated by group of profession and sex), which is likely caused by food or water intake in camp and colony	Health information system Monthly reports	
	• No case of food poisoning (disaggregated by group of profession and sex), which is likely caused by food or water intake in camp and colony	Health information system Monthly reports	
	• All pregnant (female) construction workers (or partners) completing at least 3 ANC visits	Health information system Quarterly reports	
	• Significant increasing tendency on level of construction workers’ awareness of HIV/AIDS, STIs, disaggregated by occupation, age and sex (can state at least 3 modes of transmission)	Quarterly reports, Surveys	
	• At least no increase over time in numbers of new cases diagnosed with STD, disaggregated by occupation, age and sex	Health information system Quarterly reports	

	• Increasing tendency over time in numbers of VCTs disaggregated by disaggregated by occupation, age and sex	Health information system Quarterly reports	
	• No newly detected HIV sero-positive case	Health information system Quarterly reports	
• **In Preparation of the Post-construction Phase**			
5. To set measures and processes, which promote future beneficial and reduce adverse effects on health after completion of the dam, reservoir and the access roads?	• Action plan completed in time based on needs assessment a year before closure with revalidation in last quarter	Needs assessment, Action plan	Contractor complies and facilitates access to the construction workforce before departure. /DHO wishes and requires support. Police is interested in cooperation.
	• /DHO monitoring system timely in place for early detection of epidemiological shift in place	Epidemiological monitoring system	
	• At least 80% of departing and interested health staff with future posting opportunity	Survey	
	• 100% of departing workers and at least 50% of previously migrated people exposed to verbal AND paper based IEC	Monitoring sheets Survey	
	• At least not higher numbers of speed offences than average in the province	Police report	

Appendix E: Estimated Fund Requirements

(i) It is assumed that the WB funded and managed health project (3 years) will accept the outlined tasks.

(ii) It is assumed that there will be at least one subsequent funding period of this project, followed by continuous funding and/or the public sector of health can managerially, financially and technically take over.

(iii) It appears that the cost weight is biased towards curative care. It has to be taken into account that health facilities have to be newly built and then handed over to DHO. The activities however will be carried by DHO, respectively the implementing partner of the WB co-funded health project. Therefore these running costs do not appear in this budget estimation.

a. Also, preventative activities which are carried out by non-health actors, such as the contractor, are not included in this budget.
b. In brief, only a relatively small portion of all prevention appears as cost items in this budget.

Budget estimations were made based on assumptions and sum to the following:

SUMMARY BUDGET FOR PUBLIC HEALTH ACTION PLAN(PHAP)														
Cost Head	**In Millions**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Costs**	**Total**
		1st year	**2nd year**	**3rd year**	**4th year**	**5th year**	**6th year**	**7th year**	**8th year**	**9th year**	**10th year**	**11th year**	**12th year**	
Prevention and Promotion	Rupee	14.70	14.99	15.29	15.60	15.91	16.23	16.55	16.89	17.22	17.57	30.52	43.15	234.63
	USD	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.18	0.18	0.18	0.32	0.45	2.47
Curative Care	Rupee	16.79	17.12	17.47	17.82	18.17	18.54	18.91	19.29	19.67	20.06	20.47	20.47	220.76
	USD	0.17	0.18	0.18	0.18	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.22	2.32
Training and Skills Upgrading	Rupee	5.12	2.19	2.24	2.28	2.33	5.62	2.42	2.47	2.52	2.57	12.62	12.87	55.25
	USD	0.05	0.02	0.02	0.02	0.02	0.06	0.03	0.03	0.03	0.03	0.13	0.14	0.58
Personnel	Rupee	40.00	40.80	41.62	42.45	43.30	44.16	45.05	45.95	46.87	47.80	48.76	49.73	536.48
	USD	0.42	0.43	0.44	0.45	0.46	0.46	0.47	0.48	0.49	0.50	0.51	0.52	5.65
Capital Cost	Rupee	204.68	0.00	0.00	0.00	0.00	21.35	7.20	0.00	0.00	0.00	0.00	0.00	233.23
	USD	2.15	0.00	0.00	0.00	0.00	0.22	0.08	0.00	0.00	0.00	0.00	0.00	2.46
Management / Administration Cost	Rupee	0.30	0.31	0.31	0.32	0.32	0.33	0.34	0.34	0.35	0.36	0.37	0.37	4.02
	USD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Studies/ Operational Research	Rupee	1.40	0.82	1.04	0.85	1.08	0.88	1.13	0.92	1.17	0.96	1.82	2.52	14.58
	USD	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.15
M&E and Auditing	Rupee	10.00	10.20	10.40	10.61	10.82	11.04	11.26	11.49	11.72	11.95	12.19	12.43	134.12
	USD	0.11	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.13	0.13	0.13	1.41
Sub Total	**Rupee**	**292.98**	**86.43**	**88.37**	**89.93**	**91.94**	**118.16**	**102.86**	**97.34**	**99.52**	**101.27**	**126.74**	**141.55**	**1,433.08**
	USD	**3.08**	**0.91**	**0.93**	**0.94**	**0.96**	**1.24**	**1.08**	**1.02**	**1.04**	**1.06**	**1.33**	**1.49**	**15.09**
Contingencies @ 25%+9%	Rupee	99.61	29.39	30.05	30.58	31.26	40.17	34.97	33.10	33.84	34.43	43.09	48.13	488.61
	USD	1.05	0.31	0.32	0.32	0.33	0.42	0.37	0.35	0.35	0.36	0.45	0.51	5.13
Grand Total	**Rupee**	**392.59**	**115.82**	**118.42**	**120.51**	**123.20**	**158.33**	**137.83**	**130.44**	**133.36**	**135.70**	**169.83**	**189.68**	**1921.69**
	USD	**4.13**	**1.22**	**1.25**	**1.26**	**1.29**	**1.66**	**1.45**	**1.37**	**1.39**	**1.42**	**1.78**	**2.00**	**20.10**

Appendix F: Pakistan Health Indicators

Source: Hand Book of Statistics on Pakistan Economy. Economic Survey of Pakistan:

Pakistan Health Indicators (2009-10)*

Heath Service Facilities (2009-10)			Registered Human Resources (2009-10)		
Facility	**Qty.**	**Population/Facility**	**Human Resource**	**Qty.**	**Population/HR**
Hospitals	968	182,955/Hosp.	Doctors	139,555	1,269/Doctor
Dispensaries	4,813	36,796/Disp.	Specialists	19,623	9,025/Specialist Doctor
Basic Health Units	5,345	33,134/BHU	Dentists	9,822	18,031/Dentist
Maternity Child Health Centre	906	195,475/MCHC	Dental Specialist	433	399,774/Specialist Doctor
TB Centres	293	604,437/TBC	Nurses	69,313	2,555/Nurse
First Aid Centres	1,080	16,398/FAC	Midwives	26,225	6,753/MW
Beds in Hospitals	103,708	1,708/Bed	Lady Health Visitors	10,731	16,504/LHV
Lady Heath Workers		95,000		1,864/LHW	

* Source: Hand Book of Statistics on Pakistan Economy. Economic Survey of Pakistan

Health Profile of Pakistan*

Details	**Figures**
Population	177.10 Million (Male:91.59;Female:85.51)
Population Density per Square Kilometre	
Health Indicators □ Crude birth rate □ Crude death rate □ Infant Mortality Rate □ Health Expenditure as % of GDP	 28.00 % 7.40 % 73.50 % 0.56 % Rs.455.95

*Source: Hand Book of Statistics on Pakistan Economy. Economic Survey of Pakistan

Appendix G: PHAP Parameters

Target Groups

Several populations and sub-population have to be considered in light of health effects during and after the construction period:

The major villages in the project area are: Siglo, Logro, Barseen, Kai Doga, Maliyar, Kai Doga, Gul-e-Bagh Maidan, Kaigah, Pani Bah, Seer Gayal, Doondar, Gummo, Sazin, Shatial, Khalik Abad, and; Seglo, Seo, Kamila, Dasu and Jalkot villages are in the Low Riparian Area.

The last census dates back to 1998. These data were used to calculate the projected population and extrapolated for the current year 2012, using the formula:

Projected Population = Pop (1+GR/100) ^ No. of Years,

Where: Pop = Population of the Base Year

GR = Growth Rate

Table: Population Kohistan According to Census 1998[14]

COUNTRY	KHYBER PAKHTUNKHWA	KOHISTANDISTRICT
132 352 279 63 478 000 female	17 736 00 8 651 000 female	472 570 219 628 females

Sex Ratio (males per 100 females) 124.4

Table: Project Tehsil Population Figures

TEHSIL	POPULATION IN 1998	GROWTH RATE*	ESTIMATED POPULATION IN 2013
Tehsil Dasu	137519	0.15	140435
Tehsil Kandia	47227	0.15	48228
Tehsil Pattan	122211	-1.62	124803
Tehsil Palas	165613	1.73	169125
Total of District Kohistan	**472570**	**0.09**	**482591**

Resident Population in Surrounding of Construction Sites

Due to the anticipated resettlement of families as well as due to the “followers” of the construction the number of families and people living in the closer surrounding of the construction site is likely to fluctuate and undergo over time larger changes.

Families to be Resettled and Existing Population

In many resettlement areas the families move to newly created villages. This is not the case in Dasu They rather follow, even though many are resettling involuntarily, the already established seasonal pattern which carries the families during the hot summer months to higher altitudes to which areas they intend to resettle. A Resettlement Action Plan (RAP) has been prepared for mitigation of resettlement related impacts of the project. The RAP provides a comprehensive assessment of the project resettlement impacts and plans for relocation.

[14]Source: District Census Report of Kohistan 1998; Census Publication No. 45; Population Census Organisation Statistics Division; Government of Pakistan, Islamabad; October 1999

For the PHAP the entire catchment population of the existing health facilities have to be considered. Four Basic Health Units (BHUs) and two Rural Health Centres (RHCs) are providing primary health care in the affected area. The tables below list the catchment population and hamlets for each facility. The same source of data and projection calculations as mentioned above were applied.

Table: RHC Dasu Hamlets and its Projected Population in 2012

VILLAGES/HAMLETS	TOTAL POPULATION	MALE	FEMALE	WOMEN IN REPRODUCTIVE AGE (15 TO 49)
Dasu	1602	867	735	275
Bar Chuchang	908	540	368	122
Kuz Chuchang	375	202	173	81
Kamila	5538	2963	2575	1114
Tail	2199	1299	900	381
Barseen	383	176	207	104
Zaidkhar	1047	627	420	139
Masht(Jain)	640	382	258	136
Colony	233	143	90	192
Sosak	4513	2136	2376	1239
Total	**17437**	**9335**	**8102**	**3782**

Table: BHU Jalkot Hamlets and its Projected Catchment Population in 2012

HAMLETS	TOTAL POPULATION	MALE	FEMALE	WOMEN IN REPRODUCTIVE AGE (19 TO 49)
Choorto Bar	500	274	227	91
Choorto Kuz	451	243	208	44
Danat	102	62	40	29
Jandar	303	156	147	28
Jolo	253	112	141	43
Kuz Jalkot	3055	1592	1463	328
Total	4666	2440	2226	562

Table: BHU Doga Hamlets and its Projected Catchment Population in 2012

HAMLETS	TOTAL POPULATION	MALE	FEMALE	WOMEN IN REPRODUCTIVE AGE (15 TO 49)
Kanda	646	404	242	86
Kuz seer	193	121	73	29
Kuz serto	307	213	94	46
Malar	346	202	144	37
Oach	177	97	80	30
Ropan Beer	144	79	65	14
Zodal	453	281	173	74
Total	**2267**	**1397**	**870**	**315**

Table: BHU Seo Hamlets and its Projected Catchment Population in 2012

HAMLETS	TOTAL POPULATION	MALE	FEMALE	WOMEN IN REPRODUCTIVE AGE (15-49)
Daloon	218	111	106	39
Dhaar	488	255	233	92
Gadeer	323	167	155	57
Guider	1253	767	486	101
Jake boon	178	86	92	21
Kass	314	176	138	55
Razaka	729	392	337	132
Sluch	286	181	105	42
Seo Village	2670	1504	1166	420
Shamal	579	314	207	44
Inla	315	179	136	66
Seglo	439	245	194	67
Total	7791	4377	3356	1137

Table: RHC Shatial Hamlets and its Projected Catchment Population in 2012

HAMLETS	TOTAL POPULATION	MALE	FEMALE	WOMEN IN REPRODUCTIVE AGE (15 TO 49)
Dasu	560	271	289	117
Lochi Nallah	822	445	377	78
Sazeen Banda	231	101	130	27
Sazeen camp	101	52	49	22
Sazeen Village	1034	507	528	156
Shatial Bazar	285	148	137	64
Shatial Village	518	256	261	131
Shori Nallah	1753	1034	719	253
Summar Nallah	3140	1959	1182	478
Total	**8444**	**4773**	**3671**	**1327**

Construction Workforce

Around an average of 2000- 3000 workers will be present at any point of time during the construction. This figure might vary substantially depending on the needs during the different construction phases. No estimations are available which percentage and in which profession would rather be females. It is likely however that only few women will be recruited. The following figures present the current estimations of the number of workers involved in the project activities on contract basis including contractor and consultants:

Table: Estimated number of Construction Workers and Consultants

ESTIMATED NUMBER OF CONSTRUCTION WORKERS AND CONSULTANTS	
YEAR	**PERSONS**
2014	1,100
2015	1,800
2016	1,700
2017	2,400
2018	2,700
2019	2,400
2020 onwards	1500
• These numbers will increase with additional required staff as cleaners, janitors, shopping centre staff, teachers, health staff etc. • Since the site is located in an isolated area, most people are probably coming with single status except WAPDA consultants who might get a family status	

Followers

Followers' refer to families and people temporarily or permanently migrating to the area, attracted by commercial considerations by the large construction workforce.It cannot be estimated how many families or individuals will move to the project area. It might appear

inviting for traders, food sellers and transportation workers to offer their services close to the construction workers camp and the consultant colony. However, the very restrictive lifestyle and hostility towards "outsiders" of the host population and restrictions on the movements of the workers outside their camp and colony, could lead to low business opportunities for "followers". Possibly their business could emerge only gradually after a number of years during which the population get adjusted to the presence of the "outside" workers.

Potentially these "followers" might include a variety of people, possibly from everywhere in the country: the most likely group are traders, grocery and food sellers, restaurant-owners and others might follow. Even though it would be a generally observed (and therefore also a concern of co-financers) phenomena, in this context it is very unlikely that sex workers or people dealing with sex would be even unofficially tolerated or could operate unobserved including people from outside country.

DETERMINANTS OF HEALTH IN AFFECTED TEHSILS

Income and Poverty

It is worth mentioning that Kohistan specific required data on health are not available. Therefore provincial information is referred to. According to the UNDP reportKhyberPakhtunkhwa; Millennium Development Goals; 2011, poverty in KP was estimated at close to 29 percent in 2005/06, 7 percentage points higher than the national average. The Government of KhyberPakhtunkhwa's (GoKP's) own estimate for 2009/10, as reported in the Chor Nala Hydel Development Conceptual Study is far higher at 39 percent.The Social Policy Development Centre (SPDC), an independent research institution based in Karachi, estimated that the overall poverty incidence in the province, or proportion of population falling below the poverty line, was estimated at 29 percent, as opposed to an estimated national average of 33 percent.

According to the SPDC's estimates, there was little difference in rural and overall poverty incidence in the province, but when urban poverty was estimated for only small towns and cities (which for KP were assumed to include all cities other than the provincial capital), it was found to be 14 percentage points higher than the estimated rural poverty. In addition, the poverty incidence of 28 percent estimated for Peshawar was the highest for all four provincial capitals in the country.

The UNDP report[15] refers also to the Planning Commission's Centre for Research[16] of which looked at trends in the headcount measure of poverty incidence across all the provinces from 1992-93 to 2001-02. It estimated significantly differently from those of the Social Policy Development Centre, and showed that KPK had the highest incidence of poverty of all the provinces in Pakistan in 2001/02 at 41.5 percent. Reference was made to the Pakistan Microfinance Network[17] (PMN) report which assessed the depth of poverty in rural areas, by constructing "poverty bands", classifying households on the basis of their stated monthly expenditure, relative to the expenditure commensurate with the poverty line. Six percent of the population of KPK was classified as "ultra-poor," a category which covered people whose income was between 50 to 75 percent of the poverty line, while 23 percent were classified as "vulnerable".

The overall labour force participation rates (the proportion of the population ages 15 and older that is economically active) were estimated at 27.65 percent of the total population

[15]KhyberPakhtunkhwa; Millennium Development Goals; 2011, UNDP

[16]Cheema, IftikharAhmed. 2005. AProfile of Poverty in Pakistan. Center for Research on Poverty Reduction and Income Distribution (CRPRID), Planning Commission, Islamabad

[17]Pakistan Micro-finance Network 2010. Profiling Pakistan's Rural Economy for Microfinance

in the Labour Force Survey of 2008-09[18]. The main observation is the stark disparity in male and female participation rates – for males, it was estimated at 43.3 percent, while for females at 11.91 percent. Construction alone employed a little over a tenth of the labour force, much of which is probably employed as daily wage labourer. Manufacturing employed only 7.5 percent of the labour force overall, and a little over 12 percent of the total labour force in urban areas. The proportion of the population employed in agriculture in the rural areas was about 50 percent, while over 30 percent of the rural employed population worked in the service sector. In urban areas, the service sector dominated, employing about 60 percent of the urban workforce.

The UNDP MDG report also states that poverty reduction in KPK is likely to be linked to growth in services as well as business and employment opportunities in other provinces. This explains why poverty seems to be on the increase over the last few years since Pakistan's economy as a whole has slowed down from 2008 onwards with average national GDP growth rates falling from a range of 5 to 7 percent to barely 1.7 percent in FY2009, recovering to 3.8 percent in FY2010. The latest estimate indicates that GDP growth during FY2011 was 2.4 percent. The level of dependence on remittances, by both poor and non-poor households, was found to be higher in KP than in Pakistan as a whole, with the difference being particularly significant for domestic remittances. This underlines KPK's unique status within provinces in Pakistan as a provincial economy which depends strongly on migrant labour, supplying labour both overseas (primarily in the Gulf) and to other provinces in Pakistan. Anecdotal evidence suggests that some sectorsin Pakistan are in fact characterized by the presence of Pashtu labour and management – transport and construction are obvious examples, but migrant labour from KPK can even be found in the fisheries sectornowin Sindh and Baluchistan, although deep sea fishing is not a sector in which Pashtu's traditionally have expertise, given that the province is land-locked.
According to the UNDP report the income from agriculture and livestock collectively amounts to only 15 percent of average household monthly income in KP[19]. In contrast, income from remittances and non-agricultural wage labour collectively amounts to over26percent. The latest data on average monthly income for KPK show a gap in rural and urban income. While the average monthly income is PKR 14043.5 in KP, in rural areas the average is only PKR 13231.6, as compared to the average of PKR 17895.72 in urban areas, a difference of over Rs.4000. For the province as a whole, wages and salaries constitute about a third of monthly income. The 2007-08 data corroborates the analysis of the PMN report, in that income from foreign remittances is shown to constitute an average of 10 percent of monthly household income for KPK as a whole, while domestic remittances were found to constitute about 8 percent. Agriculture is not a dominant force in the KPK economy. Income from crop agriculture and livestock collectively amounted to only about 15 percent of monthly income. Income from non-agriculture activities (which include daily wage labour and casual labour in service establishments) amounted to almost 16 percent, indicating a relatively high dependence on the strength of the informal economy. For rural households income from crops and livestock constitutes less than 20 percent of total monthly income (foreign and domestic remittances combined form almost 20 percent). There is little variation across districts, and dependency ratios[20] don not seem to correlate to literacy levels or levels of urbanisation as such. The lowest ratios were in the mountainous areas of Abbotabad, Haripur, Kohistan and Batagram.

[18]Labour Force Survey 2008 – 2009; Government of Pakistan; Statistics Division; Federal Bureau of Statistics; December, 2009
[19]KhyberPakhtunkhwa; Millennium Development Goals; 2011, UNDP
[20]In economics and geography the dependency ratio is an age-population ratio of those typically not in the labour force (the dependent part) and those typically in the labour force (the productive part). It is used to measure the pressure on productive population.

Education

Kohistan with a literacy rate[21] of 30 percent and a female literacy of 3 percent ranks amongst the lowest for any region in the world. In KPK urban net enrolment was 61 percent in 2008/09, compared to 50 percent for rural net enrolment. Female net enrolment was only 45 percent in 2008-09, compared to 56 percent for males. The lowest net enrolment in the dataset was found for rural females in Kohistan, estimated at 11 percent.

Table: Literacy Rate[22]

LITERACY RATE[23]									
	URBAN			RURAL			TOTAL		
REGION	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Kohistan	0	0	0	49	3	30	49	3	30

The gap[24] is especially pronounced for female literacy and it's estimated at 31 percent for KPK, as compared to a national average of 45percent[25].

Table: Net school Enrolment (percentage)

NET PRIMARY ENROLMENT							
Region	**2001/02**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**MDG Target(2015)**
Pakistan	42	52	53	56	55	57	
KP	41	47	49	49	49	52	80
Source: Khyber Pakhtunkhwa; Millennium Development Goals; 2011, UNDP							

Table: Kohistan Net Primary Enrolment Rate[26]

NET PRIMARY ENROLMENT RATE									
	URBAN			RURAL			TOTAL		
REGION	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Kohistan	0	0	0	57	11	37	57	11	37
Source: Khyber Pakhtunkhwa; Millennium Development Goals; 2011, UNDP									

[21] KhyberPakhtunkhwa; Millennium Development Goals; 2011, UNDP
[22] KhyberPakhtunkhwa; Millennium Development Goals; 2011, UNDP
[23] Literacy is defined as the ability to read a newspaper and write a simple letter
[24] KhyberPakhtunkhwa; Millennium Development Goals; 2011, UNDP
[25] KhyberPakhtunkhwa; Millennium Development Goals; 2011, UNDP
[26] PSLM 2008/09; KhyberPakhtunkhwa; Millennium Development Goals; 2011, UNDP

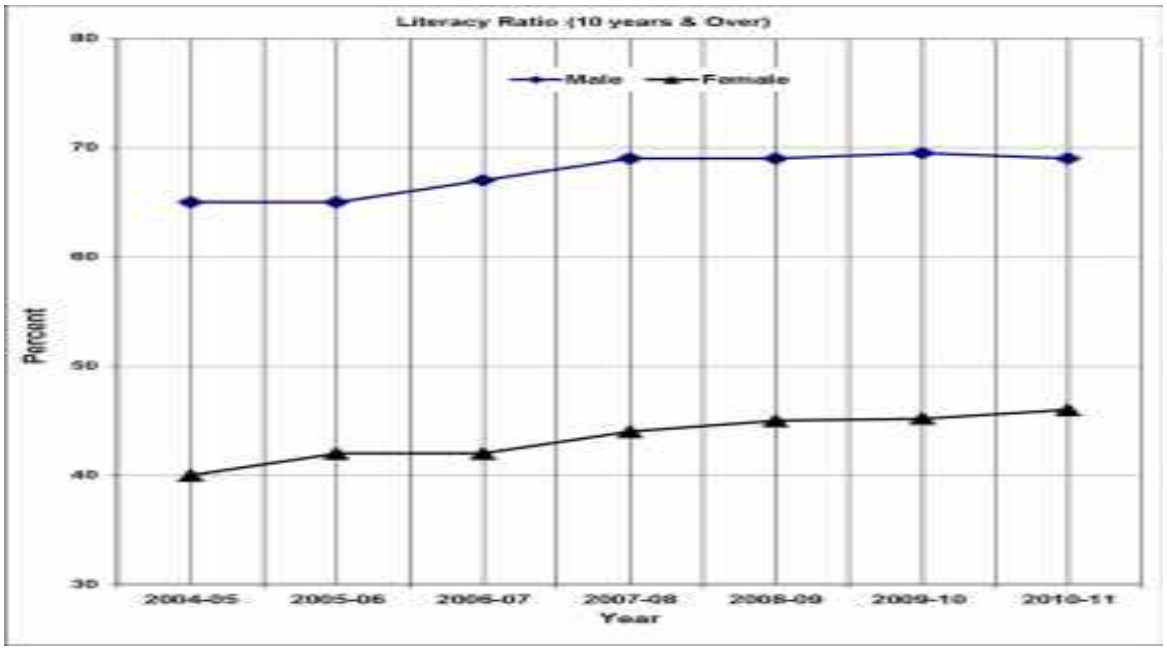


Figure: Literacy Ratio (10 Years and Over) by Sex[27]

ThePakistan Demographic and Health Survey 2006-07 shows, however, that Pakistan is making steady progress educating its young people, especially young girls. As Pakistan's population swells - with 41 percent younger than age 15 - the links among education, health outcomes, and population size become increasingly important. Worldwide, studies after studyshows educated mothers have smaller, healthier families.

The percentage of the population that has completed primary level also varies greatly by district, the lowest in Kohistan (15 percent) with only 1 percent females completing primary schooling. Of the total teachers employed, about 61 percent on average were primary school teachers, and this proportion remained roughly constant across districts except in Kohistan where 76 percent of all teachers are employed in primary schools.

The poor quality or rather non-functionality of public schools has been a big issue in the education sector. , The presence of "ghost schools" is being alleged by different stakeholders who maintain that a number of public schools exist only on paper, although there are teachers on the pay rolls who draw salaries for work at such non-functional entities. Many of the non-functional schools in KPK are located in districts where the security situation has been bad. The highest number of non-functional schools occurred in Swat, Bannu and Kohistan.

The detrimental effect of the extremely low education level on public health is obvious, but it makes also the recruitment of female staff from the District impossible because they are essentially not existent and given the low enrolment of girls in school no female student can attend medical and nursing schools.

Water Source for Households and Sanitation

The Indus river is fast flowing with a high turbidity and not used as a water source by the population. However, Feeder Rivers from the side valley have a low turbidity and are used, as well as springs. Still, while quantity of water is ensured, the access to proven clean and safe water for households is limited. Once again Kohistan falls far below the average access to clean water in the country:

Table: Access to Improved Sources of Drinking Water[28]

[27]Social Indicators of Pakistan 2011 (FBS) 6th Edition; Statistics Division; Federal Bureau of Statistics; Government of Pakistan

ACCESS TO IMPROVED SOURCES OF DRINKING WATER			
REGION	**TOTAL**	**URBAN**	**RURAL**
Pakistan	88	95	85
Kohistan	9	0	9

About 51 percent of the population of KPK had access to proper sanitation facilities in 2006-07 and only 44 percent of rural residents had access to sanitation facilities.

Food

In Kohistan low calorie intake continues to result in malnutrition, particularly in women and children (see chapter below) due to constrained access to quantity and balanced food. Staple food being rice, protein in the diet is mainly pulses and some chicken and occasionally goat, mutton and beef. Some vegetables, mushrooms and forest fruits contribute micronutrients andvitamins. Reportedly the high malnutrition rate has multi-factorial reasons, but is mainly caused by insufficient access to food due to poverty, combined with lack of knowledge on how to maximise benefits from food items.

Gender Aspects

Gender disparities in almost all social indicators that can be divided by gender are a major problem in KP, more acute than every other province in Pakistan except for Baluchistan.

Table: Gender Parity Index (GPI) for primary education

GENDER PARITY INDEX FOR PRIMARY EDUCATION							
Region	**2001/02**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**MDG Target(2015)**
Pakistan	0.82	0.85	0.85	0.81	0.85	0.84	1.0
KP	41	47	49	49	49	52	80
Source: Khyber Pakhtunkhwa; Millennium Development Goals; 2011, UNDP							

The GPI[29] at high school level in Batagram and Shangla was just 0.11, while in Kohistan it was 0.03. Even in districts like Abbotabad, Mansehra, Haripur and Chitral, where female enrolment rates are relatively high, the GPI did not cross 0.7 for high school level enrolment. The GPI for adult literacy was 0.44 for KPK, compared to the national average of 0.65, while in Kohistan it is as low as 0.06.

The UNDP Khyber Pakhtunkhwa; Millennium Development Goals; 2011, report also points out that, in spite of a series of commitments over time to ensure equal opportunity for women in education, access to services and employment, gender disparity in educational attainment and in employment remains a prominent feature of the socio-economic profile of KPK. This is reflected most obviously in education, with a sizable gender gap in literacy rates and enrolment rates in the province. Literatures point at factors being responsible for the low literacy rate, such as poverty, domestic and farming responsibilities, and low access to schools, early marriages and other socio-cultural practices.

Another major gap in gender parity is identified in the report to be women's participation in the economy. Women are handicapped by cultural norms which are opposed to women working for a wage, low educational attainment and difficulty in accessing

[28] Human Health and Dams, The World Health Organization's submission to the World Commission on Dams; Geneva, January 1999

[29] Khyber Pakhtunkhwa; Millennium Development Goals; 2011, UNDP

employment opportunities due to low mobility. Gender disparity is endemic in KPK, and is evident in the health and education sectors, in employment and political representation. There are very serious problems of gender discrimination in the province, and little evidence that these are likely to improve in the short-term. There have been a number of steps taken to improve women's situation at the federal level, and these programmes have been implemented in KPK, as well. These include the poverty alleviation programmes and microcredit facilities, which offer cash transfers and small loans to women who might not otherwise have access to funds, as well as gender mainstreaming policies such as the Gender Reform Action Program (GRAP), meant to improve women's status in government institutions by introducing better hiring practices, amongst otherreforms. However, little has been done to directly reduce gender inequality by the KPK government; most reforms have come in other sectors, with women gaining indirectly.

The strong interrelation between gender roles and equity and public health is widely and generally well accepted and acknowledged The PHAP has largely to refer to the Gender Action Plan (GAP) and only health related, specific aspects emphasised in this report. This GAP addresses gender issues likely to arise due to the construction activities of the proposed project.

The GAP examines existing conditions of women in the project area, assesses the positive and negative impacts of project activities on the relationship between the men and the women and devises mitigation measures accordingly. The GAP also describes the mechanism to raise the educational and health standards of women and also to enhance their skills.

The objectives of the GAP, while being restricted within the boundaries of the cultural and tribal setup are:

- to conduct an analysis of men and women's access to resources and services e.g. education, skill development/ enhancement and health facilities;
- to conduct an analysis of women roles in decision making, division of labour, development priorities and other variables that will impact on their participation in the project;
- to design mechanisms that will promote women's access to project benefits;
- to promote women's utilisation of reproductive health services and reverse the spread of communicable diseases among women and girls;
- to search and possibly identify options of women's participation in the planning, design and implementation of the project; and
- to identify employment opportunities for women of project area, (even on a very low scale.

The GAP survey was conducted to identify options for the proposed DHP. As stated above the UNDP MDG Report 2011 emphasises the low involvement of women in some gainful employment. At the same time, women carry the main workload of the agricultural work, however are not allowed by their husbands to sell or shop in the market. Indeed no women can be seen in the commercial market of Dasu.

Social vulnerability in the context of this project includes less vulnerability to sexually transmitted infections (STIs) including HIV. The very strict cultural norms make extra-marital sexual exchange, commercial and non-commercial, very unlikely. Persons who would possibly be interested in a sexual engagement would risk to be killed without legal process. It is speculative whether after years of presence of the large workforce the environment might loosen its strictness. It may be rather an option, although still risky for the involved persons, if "brokers" would organise for construction workers contacts in other areas. Therefore, the public health risk by STIs appears rather low.

The GAP outlines options and pragmatic measures for the promotion of women, even though the scope remains small. Still, the main public health effect for women is more

likely to be achieved through the GAP then through a health programme. Especially reproductive health (antenatal care (ANC), deliveries with trained assistance and Postnatal Care (PNC) and child health are expected to be promoted by the GAP. However it has to be emphasised that expectations for a quick effect shall be kept on a realistic level and opportunities used without provoking adverse and counterproductive reactions.

The provision of new accommodations for health staff offer an opportunity to address health related issues. But sensitive topics such gender based violence can only be carefully approached over time when implementing partners are better known and have gained some confidence by the communities. Prevention, legal, medical and psychosocial care of domestic violence can and should be considered over time. The construction workers' camp and theconsultant colony offer the opportunity, to address gender and health related concepts, messages and awareness, even though they might apply more in their homes than in the camps.

Equity and Health[30]

The WHO guide "Human Health and Dams, The World Health Organisation's submission to the World Commission on Dams; Geneva, January 1999" points out that development and economic objectives of dams are often not fully compatible with an equitable distribution of the benefits between different stakeholder and community groups. In the case of dams for hydropower generation or drinking water supply, the beneficiaries, as in the case of the DHP, are hundreds of kilometres away in urban Centres. The surrounding population expressed already in a number of consultation meetings that they might not benefit from the energy produced while at the same time will suffer from the adverse health effects of environmental and societal change. Of course improved health is inherent to the general poverty reduction objectives of dams, but the concerns are the equity gaps which are the actual root of the adverse health impacts of dams.

For this reason, WHO emphasises that a simple health accounting is not satisfactory. In other words, it is not acceptable to simply balance out the health gains of one part of the population against the losses of another, to arrive at a net health benefit, as one might do in economic or financial analysis. Rather, it is very important that this point is accepted by all involved in the dam planning and evaluation process. Benefits of dams, also for health, are not disputed. It is the risks to health, however, resulting from inequity, that need to be identified at an early stage and managed as an integral part of dam design, construction and operation.

DISEASE PATTERN AND CONDITION

In absence of Tehsil specific morbidity and mortality data, larger scale, district, province and country wide information is used, under the assumption that the disease pattern in similar in level and type. Similar applies for age groups and gender segregated patterns. Attempts were made to present indicators on health facility level in comparison to district, province and country level. However, due to lack of district specific data provincial information has to use on most cases, keeping in perspective that the Kohistan district has its own, strong particularities and referring only to provincial level data might be misleading.

The disease pattern shows a typical picture as can be expected in the given socio-economic, climatic and geographical situation, as the list of diagnoses from January to June, 2012 presents. However, the data on reproductive health and malnutrition are not captured due to unavailability and, given the limited diagnostics capacities in the facilities; the accuracy of the diagnosis is questionable. Nevertheless the data allow for a rough impression, even though no for a deeper analysis.

[30] Human Health and Dams, The World Health Organization's submission to the World Commission on Dams; Geneva, January 1999

Table: District Health Data January to June 2012

DISTRICT KOHISTAN			
DISTRICT HEALTH DATA JANUARY TO JUNE 2012			
COMMUNICABLE DISEASE TOP 5	**TOTAL**	**NON COMMUNICABLE DISEASE**	**TOTAL**
Acute (Upper) Respiratory Infections	17485	Urinary Tract Infections	3087
Diarrhoea/Dysentery in >5 yrs.	7406	Peptic Ulcer Diseases	1782
Fever due to other causes	2344	Hypertension	1302
Scabies	2295	Asthma	1171
Pneumonia >5 years	1841	Otitis Media	713
Dermatitis	451	Dental Caries	651
Suspected Malaria	444	Depression	159
Worm Infestations	339	Burns	71
TB Suspects	279	Cirrhosis of Liver	48
Enteric / Typhoid Fever	258	Cataract	29
Chronic Obstructive Pulmonary Diseases	137	Glaucoma	20
Cutaneous Leishmaniasis	75	Diabetes Mellitus	19
Trachoma	18	Drug Dependence	16
Suspected Neo Natal Tetanus	10	Fractures	14
Suspected Meningitis	0	Road traffic accidents	9
		Dog bite	7
		Epilepsy	7
		Ischemic Heart Disease	6
		Snake bites (with signs/symptoms of poisoning)	2
		Benign Enlargement of Prostrate	0
Source: Executive Office of Health; District Health Information System			

i. Reproductive Health (RH)

According to the Pakistan DPDHS 2006-07, in Pakistan, one in 89 women will die of maternal causes, while the maternal mortality rate for KPK was 275 deaths per 100,000 live births for that year. This remains an unacceptably high rate in the entire province. Countrywide among women ages 12 to 49, complications of pregnancy and childbirth are the leading cause of death, accounting for twenty present of all deaths for women of childbearing age. Women ages 25 to 29 are especially at risk for maternal death. Nearly 2 out of 5 maternal deaths for this age group are from pregnancy-related causes.

Postpartum haemorrhage is the leading direct cause of maternal deaths, followed by puerperal sepsis and eclampsia. Obstetric bleeding (postpartum and antepartum) is responsible for one-third of all maternal deaths. Very few deaths follow abortion or miscarriage.

Antenatal health care coverage serves as a proxy indicator for causes of maternal health. The PDHS for 2006/07 recorded it at 51.3 present for the province. However the data sources vary widely in their estimation. The Pakistan Social and Living Standards Measurement Survey (PSLM) 2008-09 (Provincial / District; Federal Bureau of Statistics;

Government of Pakistan) PSLM 2004-05 estimated ante-natal coverage at just 38 percent. The UNDP MDG report states that in the country there has been a very slight decline, from 5.5 to 4.3 in the mean number of children born per adult female, in the last 16 years.

Key determinants of women utilising or rather not utilising reproductive health services was not so much physical access. All the "three delays" (1) delay in deciding to seek medical care, 2) delay in reaching appropriate care, and 3) delay in receiving care at health facilities) are very problematic in the area due to lack of awareness, the absence of skilled birth attendants, poor access to healthcare facilities, and inadequate services in the facilities in the area. Facilities typically do not have sufficient adequately trained personnel, face shortage in medicine supplies and functional equipment while budgetary allocations to health remain far below the needs.

Since the 1960s, the Government of Pakistan has implemented a variety of programmes and policies to slow population growth. The 2006-07 Pakistan Demographic and Health Survey (PDHS) shows success in reducing Pakistan's overall fertility rate. In Pakistan, the average birth interval is 29 months, but one-third of babies are born less than two years after the previous birth. The infant mortality rate for these children is twice as high as for children born three years after a previous birth. The data on Contraceptive Prevalence Rates (CPR) is more encouraging, but differs by data source. The CPR was recorded at 25 present in the PDHS 2006/07, and at 38.6 present in the MICS 2007/08.

Table: Contraceptive Prevalence Rate

CONTRACEPTIVE PREVALENCE RATE			
REGION	ANY MODERN METHOD USED	ANY TRADITIONAL METHOD	ANY METHOD
Kohistan	0.9	15.9	16.8
Source: Multiple Indicator Survey (MICS) Punjab 2007/8; UNICEF			

Fertility has decreased steadily since 1984, when the average number of children per woman, was 6.0, to 4.1 children, on average. Fertility varies by residence and by region. Urban women have 3.3 children, on average, compared to 4.5 children per rural woman. Despite the decline in fertility, Pakistani women have more children than women in neighbouring countries (India 2.7 children, Bangladesh 3.0 and Nepal 3.1). As in other countries, fertility also varies by the mother's level of education. Women with no education have 4.8 children compared to women with secondary education, who have 3.1 children. Similarly, women in the poorest households have far more children than women in the wealthiest households, 5.8 versus 3.0.

The earlier she marries, the longer a woman is exposed to the risk of pregnancy and to having many children. The Demographic and Health Survey defines marriage as the time of Rukhsati [31]or when the bride and bridegroom start living together. The results of the PDHS suggest that the median age of first marriage is increasing slowly over time. The median age of marriage is now 19.1 years, that is, half of women marry before 19.1 year and half marry later. For women age 25-29, the median age at first marriage is 20.3 years compared to 18.5 years among women age 45-49. Despite the increasing age among younger women, 40 present of all women in Pakistan marry before the age of 18 and 13 percentages marry before age 15. Women with higher levels of education are much more likely to delay marriage than women with no education. Women with more than secondary education get married at a median age of 24.5 years, as opposed to women with no education (18.2).

In Pakistan, the median age at which a woman first gives birth is 21.8 years, an increase of half a year from the 1990-91 PDHS. Thus, more than half of women have their first

[31]The Rukhsati (Urdu: رخصتی) (sending off) takes place, when the groom and his family will leave together with the bride.

baby before the age of 22. Among these women, some have their first birth when they are still teen-agers (ages 15-19). The proportion of teenagers who have given birth has decreased from 12 percentages in 1990-91 to 7 percentages, down.

Kohistan specific data cannot be traced, but a large gap is quite likely between the overall trends in Pakistan, the KP province and Kohistan. Most women are deprived from any type of news media and even, if they would, it would still depend on the understanding of the husbands, father and brothers, because it is the men in the household who have to give their permission to a woman to visit a health facility and accompany the woman.

Key informants of the PHAP design convey a rather confusing situation in the definition of midwifery with various staff categories referring to pregnancy and delivery attendance while the competencies in these categories are not clear and it is uncertain to which degree the trained personnel attending deliveries can be considered adequately trained for taking care of delivery safely.Most of women deliver at home and are assisted by a woman who has experience in deliveries like the mother in law or a neighbour. However traditional birth attendants do not exist. There seems to be more women attend antenatal care then giving births in health facilities. This was explained by key informants as being caused by the inability to access the facility in time when labour starts at night or by the fact that women and their men might be rather attracted by an incentive (such as abag, net and hygiene articles).

The most frequently mentioned staff category taking care of antenatal care and assisting in deliveries are the Lady Health Visitors (LHV). Half of the province has access to a LHV or a Lady Health Worker (LHW), but with significant variations across districts. Coverage was practically non-existent in Kohistan at barely 2 percentages, due to the fact that there are hardly any educated local women who can be trained as LHWs. In the affected area women were sent as LHVs from other districts. But, they explained not to be able to make outreach work and house visits, and are confined to their facilities and are largely de-motivated due to the difficult socio-cultural traditions of the area.

ii. Child Health

Child death rates decline[32], but remain high. Compared to other South Asian countries, however, children in Pakistan are more likely to die in the first year of life. Pakistan's infant mortality rate is higher than the rates in Nepal (48), India (57), and Bangladesh (65). One in every eleven children in Pakistan dies before reaching his or her fifth birthday. More than half of these deaths occur during the first month of life. The Infant Mortality Rate (IMR) for KPK in 2007-8 was 76 deaths per 1000 births, a decline since 1990-91 when it was at 91. Evidence from different sources suggests a rise in the IMR overtime, but the MICS of 2001-02 gave a figure of 79 deaths per 1000 live births. The trend in the under-5mortality rate is uncertain. It was estimated at 97.6 deaths per 1000 live births in 1994, 75 deaths in 2006-07, but at 100 deaths per live births in 2007-08.

In Pakistan the leading causes of death in Pakistan children under five are birth asphyxia (22 percentage), sepsis (14 percentage), pneumonia (13 percentage), diarrhoea (11 recent), and prematurity (9 percentage). Neither malaria nor tetanus account for any significant proportion of childhood deaths. Many of these deaths could be avoided if women delivered in health care facilities and with the assistance of trained providers. Causes of death are closely related to the age, and even the sex, of the child. Deaths during the first month are almost entirely due to birth asphyxia, sepsis or prematurity. Boys are more likely than girls to die during this neonatal period. Child deaths are most likely caused by diarrhoea, pneumonia, injuries, measles, and meningitis. Girl children are more likely than boys to die from pneumonia and diarrhoea.

[32]Pakistan Demographic and Health Survey 2006-07

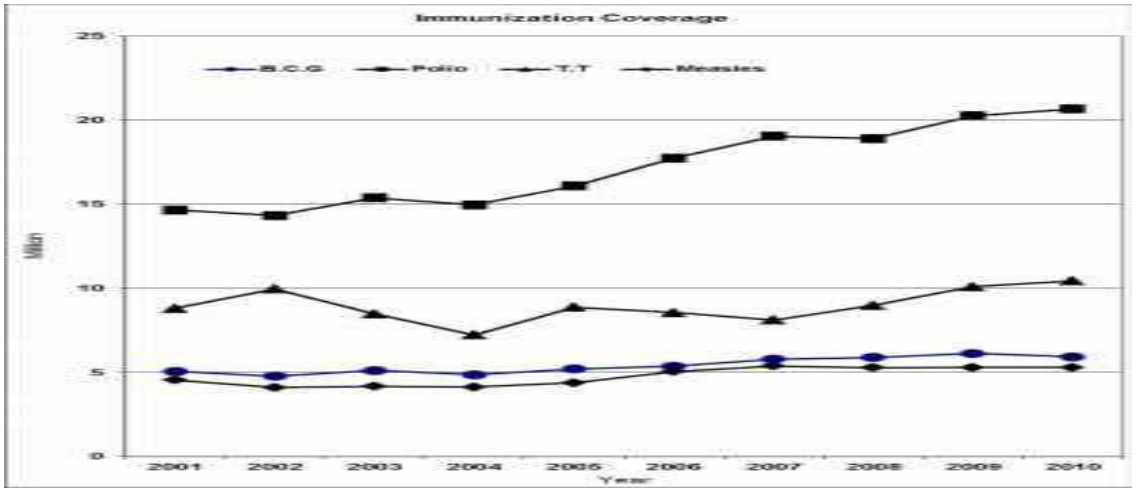


Figure: Immunization Coverage[33]

The latest estimates suggest that 73 percentages of children from 12 to 23 months of age in KPK province had been fully immunised, whereby the lowest immunisation rate was in the rural areas of Kohistan and Lakki Marwat Districts, standing at 33 percentages only. This stands in contraction to the overall improving trend on a much higher level in the country[34].

However, the PDHS suggests that nearly half (47 percentage) of Pakistani children ages 12-23 months have received all the recommended vaccines; 6 percentage of children did not receive any vaccines. Children are least likely to get their third DPT vaccine, their Polio 0 vaccine (given at birth), their third hepatitis vaccine and their measles vaccine.

Compared to children in other South Asian countries, Pakistani children are less likely to be fully vaccinated. In Nepal, 83 percentages of children have all their vaccines and in Bangladesh 73 percentage of children are fully vaccinated. In India, by contrast, 44 percentages of children are full vaccinated.

Although the figures of Kohistan, even though low, might not directly go in line with the previous section on RH, the extension of immunisation services up to village level and community support seem to have a significantly contributing role. Malnutrition remains a major problem in KPK and in Kohistan. The UNDP MDG report points out that it has been difficult to ascertain the percentage of underweight children in KPK; the most recent figures available date to 2001. In that year, 38 percent of all children under the age of five were underweight – a figure that was a little higher than the 37.5 percent of children who were underweight in 1995.

The nutritional status of children is a main concern and worry in the country and in the Tehsil affected by the Dasu HPP. Though no specific data are available, key informants confirm that the dominating reasons for the malnutrition is poverty, i.e. access to food, knowledge of mothers on food items and how to use and balance food intake. Moreover the cultural habit of the distribution of food within the household disadvantage, especially the girls: the father would get served first, then the male children, followed by the female family members by age. This leaves the girls at the end of the chain. By district, the highest percentage of underweight children occurred in Kohistan (52 percent), a district that has consistently shown the poorest record of socioeconomic growth

iii. Tuberculosis (TB)

[33]Social Indicators of Pakistan 2011 (FBS)6th Edition; Statistics Division; Federal Bureau of Statistics; Government of Pakistan

[34]Social Indicators of Pakistan 2011 (FBS)6th Edition; Statistics Division; Federal Bureau of Statistics; Government of Pakistan

Tuberculosis remains to be a major public health concern in the province and in Kohistan. Data from the National TB Control Programme indicates a case detection rate of about 73 percentage and treatment success rates of about 93 percentages in KPK in 2008. Treatment is provided through the Directly Observed Treatment Short Course (DOTS). Case detection rates were low in Kohistan with 51 percentages. In general, the proportion of cases cured after detection was higher than 90 percent in most districts, including Kohistan with 95percent.

iv. Respiratory Tract Infection and chronic pulmonary conditions

Next to the common, poverty related causes of Acute Respiratory Tract Infections (ARI); chronic pulmonary conditions are also very common in Kohistan because people use wood in their home for cooking. Often people live in households with joint families, which lead to overcrowded use of space and related risk of person to person's infections.

v. Malaria and Dengue

The incidence rates of malaria and dengue in Kohistan remain uncertain. Data collection does not appear accurate and the diagnostic skills and equipment do not allow an accurate conclusion on the magnitude of the problem. Dengue seems not to be prevalent in Kohistan, but again, diagnosis data might not reflect well incidences. However community members expressed their fear that malaria, next to other diseases, would be imported by the large group of construction workers who would come from "outside".

Community compliance in protection against mosquitoes is extremely low. The UNDP MDG report quotes a survey in three target districts which showed that 0.7 percentof households had a mosquito net, while 0.1 percent had an insecticide treated net. According to an earlier survey, 3.3 percent of households in KPK had a mosquito net, and 0.7 percent had a treated net. The Pakistan DHS also reported that 0.1 percent of children fewer than 5 in KP slept under a net.

vi. STD, HIV/AIDS and Hepatitis B and C

Only during the 12th SAARC Summit in 2004, the South Asian Association for Regional Cooperation (SAARC) signed a Memorandum of Understanding with UNAIDS to improve HIV prevention and ensure care and support for those affected by HIV in SAARC member states. SAARC launched its regional HIV strategy in 2006 when SAARC has also actively advocated an end to gender disparities in Asia[35]. The 2005 Islamabad Declaration[36] included a commitment by SAARC to address HIV as well as to give priority to efforts and actions on violence against women, economic empowerment of women, political empowerment of women, disaster preparedness and management, health and education.

Information on STD incidence and HIV prevalence is scattered and data are hard to come by. The latest survey on HIV prevalence in Pakistan is the HIV Second Generation Surveillance in 2008. Also, data are only available for eight districts from throughout Pakistan, including only one district in KPK. According to the survey, HIV prevalence amongst IDUs in Peshawar district was 12.8 percentages, while amongst HSWs it was 1.2 percent.

According to key informants of the PHAP designing team, sexually transmitted diseases were not diagnosed in the District. However due to assumption that STD do not occur in the district, the health worker might have low knowledge about diagnosing STDs and it is uncertain whether the incidence of STD is at zero or the disease is overlooked. The data

[35]South Asian Association for Regional Cooperation (SAARC) 2006SAARC Regional Strategy on HIV and AIDS 2006–2010.
[36]SAARC 2005.Islamabad declaration: review and future action celebrating Beijing plus ten, 2005. Fifth South Asia Ministerial Conference 3–5 May 2005

is from a small survey of 7500 households over the whole of Pakistan, with a sample size of 1100 households in KPK and showed 1 percentage for HIV.

Sex work is illegal in Pakistan and no estimations could be traced on the number of female sex workers. Even more so, in remote areas like Kohistan any type of extramarital sex is a very high risk undertaking and if at all existing, it must be on very low scale. In Pakistan, less than half of ever-married women (44 percent) know about AIDS[37]. Teenage women have the lowest awareness; only 30 percentages have heard of AIDS. Consequently, few women know how to protect themselves against contracting HIV. Only 20 percent know that HIV can be prevented by using condoms, 31 percent know that it can be prevented by having sex with only one uninfected partner, and 24 percent know that abstaining from sexual intercourse will prevent HIV transmission.

Prevention knowledge is twice as high in urban areas as in rural areas, and increases dramatically with women's education. Half of women with higher education, for example, know that using condoms and limiting sex to one uninfected partner prevents HIV, compared to only 8 percent of women with no education. Only about one quarter (28 percent) of women know that HIV can be transmitted by breastfeeding. There are many myths about HIV/AIDS in Pakistan. Only 18 percentages of ever-married women know that HIV cannot be transmitted by mosquito bites and only 28 percentages know that a healthy-looking person can have HIV. Only one in five women know that it is not possible to get HIV by sharing food with someone who has AIDS.

vii. Other diseases

In Kohistan the non-communicable diseases are probably underdiagnosed due to limited knowledge of health workers. Also due to absence of lady physician and the socio-cultural restrictions gynaecological illnesses will hardly be detected. Also the more wealthy patients who can afford longer distance travel to health facilities in other districts or cities would not be captured by routine data collection.

Health Education and Promotion

The national standard of health staff foresees health promoters in the team of BHUs and RHCs. While health education sessions are conducted within the primary health care facilities, outreach work is carried out by the health promoters. But these are only men and are strictly restricted to talk only to men, when visiting villages and households. In Kohistan female health promoters do not exist and the "Lady Health Visitors" (LHV) are neither allowed to visit homes, nor villages. The literacy rate among Kohistani women is so low that an adequate training would not be possible and even if, they would be allowed to work. All LHVs in the affected area are "outsiders" from other ethnic groups who come from areas in a distance of about 150 km up to Peshawar. Even originating from relatively near locations as, they are considered "outsiders".

In consequence some health educative messages can be transmitted only during the visit of women at the health facility. Although no related studies could be traced, it is fair to assume that only a small portion, if at all, of the health education messages given to men would be transmitted by them to their wives. At the same time women are not permitted to watch TV which is placed in a type of guestroom outside the common living quarters and women are not allowed in these guestrooms. Same applies to radios. Girls are not attending schools and therefore cannot be captured by school health programmes. In short women and girls can hardly be reached through health services and health promotion or through alternative means (mass-media, other sectors and programmes etc.). Religious events might be an option provided that the religious leaders would be committed to health concerns of the females in their society, which currently does not seem to be the case.

[37] Pakistan Demographic and Health Survey 2006-07

Facility based health education and promotion is of course limited to those couples who actually come to the facility. But surely these facility based health activities are offering an option and could and should be optimised as much as possible. Techniques and methodologies could be refined and more adjusted to the population: for example, pamphlets are available in the BHUs, but the text is in Urdu, not in a “local” language and even if it would be, the women would not be able to read, because they are illiterate. On the other side the pictures are not sufficiently clear to pass their message. In conclusion health promotion has a very limited space and especially women and girls can hardly be reached.

PUBLIC HEALTH SECTOR

Structure of the Public Sector

The health facilities and services in a district are monitored and regulated by an Executive District Officer (DHO).

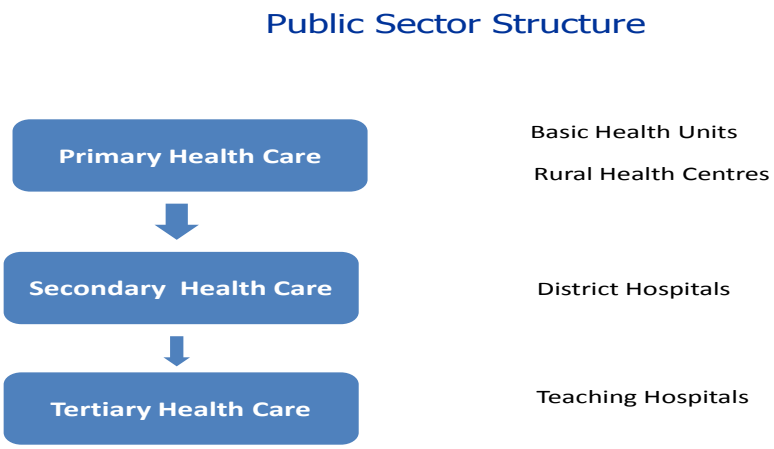


Figure: Structure of the Public Health Sector

Like in other countries, the public sector health services in Pakistan are provided through a three tier system. In Kohistan District primary and secondary health care are aimed to be provided through 43 health facilities as percentages in the table below:

As stated above, all these health facilities are managed and supervised by the District Health Authority, the Executive District Officer of Health but only four are located in the areas affected by the DHP and need to be relocated.

For various, reasons the quality of the services provided in public health facilities is far below standards (even among low economic countries), as explained below:

- In general the health sector is affected by weak management and governance systems, including insufficient evidence-based planning and decision making, low public sector expenditures and inequitable distribution. Logistics and supply systems are only partially functional, including transportation and communication.
- Staff is poorly motivated and inadequately compensated and supportive supervision is not adequate. Among other causes the remoteness and life style of the population in the district it is difficult to find staff willing to accept a post in Kohistan, especially, but not only, female physicians. However, the NGO supported BHUs either recruit additional staff on their salary scale or pay incentives to public sector staff like technicians, laboratory staff and LHV. These staff members come from outside Kohistan and acceptttheir posts largely due to

the income. Public sector staff has the permission and works also in the profit making private sector in urban areas like in Dasu.

- In Kohistan the health facilities face major shortages in drug supply and patients have to buy their medicines from private pharmacies.
- Access to services is less limited by physical accessibility, but rather by women's level of education, exposure to media, and household income are factors of utilisations
- Utilisation rate can usually be taken as one of the proxy indicators for the quality of the services provided. The utilisation ratio in relation to catchment population of the public sector facility, in particular on primary health care level, is low. This would speak for a substantial need for improvement. However, as stated above, the cultural norms appear as the main constraining factor for women utilising the services.
- As pointed out above, health information is incomplete. The tables in this report portraying health data contain a number of inconsistencies and have to be read with care. The quality of services can only be estimated with a number of unknowns and without adequate data.

Consequently, this situation has major implications for any health care system: In an effort to address and improve the unacceptable low quality of the public sector services in particular in remote and rural areas, the GoP has been initiating a number of programmes in order to offer a holistic and uniform solution to address the gaps in the health sector in Pakistan. All of these programmes have been implemented also in KP, however with the limitations due to the nature of vertical programmes, which tend to be not well coordinated and thus affecting their effectiveness at the lowest and most basic level of service delivery, usually leaving a number of gaps. Also, reportedly, most of the vertical programmes have stronger focus on the diagnostic and treatment side of healthcare while essential supporting mechanism remain under-emphasised; for example children targeting programmes need to put some weight on the provision of nutrition. The UNDP MDG report quotes "The design and implementation of past nutrition initiatives have been fraught with weaknesses including a lack of ownership and responsibility, weak managerial and technical support to provinces and the absence of a national nutrition policy and strategic framework."

It must be pointed out that this PHAP does not present a developmental action plan but a public health safeguarding plan for a mega-construction. This implies that health care activities have to be established and running up to a level which meets the minimum requirement for public health safeguarding measures. At present the public sector functions considerably below the standard required for this purpose. At the same time sustainability is a crucial criterion for the interventions beyond the end of construction.

Health Facilities in Affected Area

Primary health care is provided through Basic Health Units (BHU) and Rural Health Centres (RHC).

- BHUs are situated on union council level and meant to provide basic curative and preventative services with no inpatient facilities and no laboratory. In Kohistan the main activities in the BHUs are offering limited basic curative services due to lack of staff and due to cultural restrictions only minimal preventive health care is feasible. The Expanded Programme of Immunisation (EPI) is foreseen to be carried out in each BHU, playing also an active role in the polio eradication programme.
- Each BHU is supposed to be staffed with at least one Lady Health Visitor (LHV). Their presence is even more essential since the District Kohistan there is no lady doctor available. LHVs are expected to provide both antenatal and postnatal care patients and also assist in deliveries in the health facility. Social mobiliser would

have the responsibility for social/outreach health primitive activities such as health education in the community, school health education, and awareness rising about malnutrition.

- Some facilities are equipped with social mobilisers/health promoters. They interact with the community (only men) for issues on health awareness such as safe drinking water, hygiene promotion and proper waste disposal of the houses.
- Even though a BHU should have one Medical Officer (MO) posted, in Kohistan most of BHUs are run by medical technicians or dispensers due to unavailability of doctors.
- There are thirty three BHUs in the whole district. The project area includes two Tehsil i.e. Tehsil Dasu and Tehsil Kandia. There are eight BHUs in Dasu Tehsil (3 in the affected area) and four BHUs are in Kandia Tehsil (1 in affected areas).
- The Followings BHUs are in the project affected area:
  - BHU Jalkot
  - BHU Seo
  - BHU Kai Doga
  - BHU Thooti

Available health data on Kohistan are rudimentary and/or missing; for example no figures can be traced on reproductive health, other data are only partially segregated by gender and age. Therefore, data have to be read and utilised in this context. The absence of essential data is itself informing on the status of the health information system in the District Kohistan.

Table: Health Facilities in Kohistan

TYPE OF HEALTH FACILITY	NUMBERS	IN DASU HPP AFFECTED AREA	REMARKS
District Hospital	1	Yes, but does not need to be relocated	This hospital is under construction; it is planned a category B type hospital (208 beds)
Tehsil Pattan Hospital	1	no	Under construction
Rural Health Centre	4	2: Dasu, Shatyal	Ranolia, Pattan in non-affected area
Basic Health Unit	33	4: Jalkot, Seo, Kai Doga, Thooti in Dasu Tehsil)	Pattan 11 BHU; Palas 10, Khandia 4
		Kandia in Kandia Tehsil	
Leprosy Centre	2	1 (Dasu)	Pattan in non-affected area
T.B Centre	1	1 (Dasu)	
Civil Dispensary	1		

District Headquarter Hospitals

The District Hospital in Dasu town in the Tehsil Dasu is under construction. It is planned as a category B type: 208 beds in total; outpatients; specialists include internal medicine, surgery, gynaecology and paediatrics.

i. RHC Dasu:

- This RHC is located in Dasu town left bank of Indus River downstream of the reservoir area.

- It is perceived as a comparatively a better health facility in the whole district, even though it is in a deplorable state.
- No basic surgical facilities are present currently. Patients requiring surgical treatment receive first aid and referred to Batagram, Mansehra or to the Ayub Teaching Hospital in Abbottabad.
- Only RHC Dasu has a laboratory for basic investigations.
- This RHC is also hosting the Tuberculosis Centre where diagnoses are made and patients put on DOTS treatment if required.
- The delivery room is equipped with a delivery table, delivery kits, oxygen cylinder and emergency drugs like oxytocin, methergine, dexamethasone and some analgesics.
- There is an incinerator, established water supply, electricity and an ambulance for the referral patients.
- Those patients, who need secondary care, are referred to DHQ Hospital Mansehra/Ayub Teaching Hospital Abbottabad.

Table: Key Data on RHC Dasu

KEY DATA ON RHC DASU						
CATCHMENT POPULATION	STAFF	NO.	BEDS	DELIVERY ROOM	LAB	OTHER UNITS
52000	Lady doctor	0	8	1	yes	OPD Unit
	Medical Officer	2				T.B Centre
	LHV	1				Eye Unit
	Dai	1				Dental Unit
	Senior Medical Technician					Leprosy Centre X-ray
	Dental Surgeon	1				Facility
	Medical Technician					Ultrasound
	Male Nurse	1				
	EPI technician					
	JCT Pharmacy	2				
	PHC technician (MP)	2				
	JCT Pathology	1				
	JCT Radiology	1				
	Dental attendant	1				
	X ray attendant	1				
	Social mobilise/ Health promoter					
	Mali	1				
	Ward Orderly	2				
	Sweeper	2				
	Guard	1				

Table: RHC Dasu: Number of Patients during the Months January - June 2012

RHC DASU NUMBER OF PATIENTS DURING JANUARY-JUNE, 2012					
MONTHS	TOTAL OPD	ADULT MALE	ADULT FEMALE	MALE CHILDREN	FEMALE CHILDREN
Jan	2692	685	1190	435	382
Feb	2267	530	1064	374	299
March	2560	1032	1183	319	326
April	2860	1008	1218	316	318
May	1838	588	768	250	232
June	1050	260	220	340	230
Total	13267	4103	5643	2034	1787

Table: RHC Dasu Most common Diagnosis during the Months January - June 2012

RHC DASU MOST COMMON DIAGNOSIS DURING THE MONTHS JANUARY - JUNE 201										
MONTHS	ARI	PNEUMONIA	DIARRHOEA	SCABIES	PUO	HTN	Asthma	UTI	PUD	RTA
Jan	940	350	170	00	45	14	12	08	06	04
Feb	740	35o	180	O0	37	16	12	09	05	06
March	740	008	154	80	17	60	13	280	00	00
April	723	012	123	00	52	57	00	300	00	09
May	430	005	140	30	50	40	09	120	08	14
June	300	005	093	10	19	15	13	40	05	05

Table: Cases managed in TB Centre of the RHC Dasu during the first two Quarters 2012

CASES MANAGED IN TB CENTRE OF THE RHC DASU DURING THE FIRST TWO QUARTERS 2012						
QUARTER	SUSPECTED CASES	SUSPECTED MALE	SUSPECTED FEMALE	POSITIVE CASES	POSITIVE MALE CASES	POSITIVE FEMALE CASES
1st Quarter	78	22	56	28	7	21
2nd Quarter	61	24	37	20	4	16
Total	139	46	93	48	11	37

ii. RHC Shatial

- RHC Shatial is located on the left bank of Indus River upstream of reservoir area in Union Council Sazin.
- It is managed by the DHO
- The International NGO Malteser assisted in some repair and renovation of the structure.
- The RHC has a dental doctor, but no dental unit
- There is no method of sterilization (autoclave) while there is a delivery room with a delivery table, delivery kits and oxygen cylinder.
- An incinerator is under construction with the assistance of the NGO Malteser.

Table: Key Data on RHC Shatial

KEY DATA ON RHC SHATIAL				
CATCHMENT POPULATION	STAFF	NO.	BEDS	DELIVERY ROOM
20 000	Lady doctor	0	10	1
Shatyal, Das, Koat, Pargi, Basha, Sazin, Summar Nala, ShoriNala, Dariel and Tangeer (Gilgit Baltistan)	Medical Officer	1		
	LHV	2		
	Dai			
	Dental Doctor	1		
	Medical Technician	1		
	EPI technician	1		
	Social mobilise/ Health promoter			
	Dispenser	1		
	Sweeper	1		
	Ward Orderly	1		
	Guard	1		

Table: RHC Shatial: Number of Patients during the Months January - June 2012

RHC SHATIAL NUMBER OF PATIENTS DURING JANUARY-JUNE, 2012					
MONTHS	TOTAL OPD	ADULT MALE	ADULT FEMALE	MALE CHILDREN	FEMALE CHILDREN
Jan	954	225	246	265	218
Feb	840	245	290	165	140
March	871	285	301	180	105
April	893	310	298	190	95
May	722	181	195	203	143
June	529	163	101	136	129
Total	4809	1409	1431	1139	830

Table: RHC Shatial: Most common Diagnosis during the Months January - June 2012

RHC SHATIAL: MOST COMMON DIAGNOSIS DURING THE MONTHS JANUARY - JUNE 201										
MONTHS	ARI	PNEUMONIA	DIARRHOEA	SCABIES	WORMS	HTN	ASTHMA	UTI	PUD	FUO
Jan	300	45	77	21	23	07	19	36	33	117
Feb	245	67	61	17	20	03	17	30	23	73
March	207	17	53	19	14	09	23	27	18	210
April	151	21	116	10	11	04	20	36	10	104
May	210	18	72	20	21	00	10	16	35	90
June	050	23	50	03	07	13	05	15	00	09

iii. BHU Seo

- Located on the right bank downstream of the Indus River.
- Supervision by the Pakistan Red Crescent Society (PRCS) and German Red Cross (GRC).
- The delivery room is equipped with a delivery table, delivery kits, oxygen cylinder and emergency drugs like oxytocin, dexamethasone, ergotamine and analgesics.
- This BHU has an EPI centre which has two sub centres one is in such health facility and second is outreach. In the fixed centre, the technician vaccinate once a week while in outreach, the EPI technician visits the related areas according to his monthly schedule. They also conduct National Immunisation Days (NID).

Table: Key Data on BHU Seo

KEY DATA ON BHU SEO								
CATCHMENT POPULATION	STAFF		BEDS	DELIVERY ROOM	EPI	LAB	AFB TEST	REFERRAL CENTRES
14000	Lady doctor	0	0	1	1 fixed Centre 1 outreach	0	Used to rule out TB in a patient	RHC Dasu or Ayub Teaching Hospital Abbottabad.
Seo, Dabar, Poarana Gao, Sigloo, Colony, Parwa, Chuchang, Khushi, Chechar, Kogi, Sair and Dhar	Medical Officer	1						
	LHV	3						
	Dai	1						
	Senior Medical Technician	1						
	Medical Technician	1						
	EPI technician	1						
	Social mobilise/ Health promoter	1						
	Ward Orderly	1						
	Guard	1						

Table: BHU Seo: Number of Patients during the Months January - June 2012

BHO SEO NUMBER OF PATIENTS DURING JANUARY-JUNE, 2012					
MONTHS	TOTAL OPD	ADULT MALE	ADULT FEMALE	MALE CHILDREN	FEMALE CHILDREN
Jan	1098	271	359	252	169
Feb	1054	293	268	264	182
March	1310	310	393	277	231
April	1476	386	409	318	253
May	1033	280	265	214	200
June	694	153	178	165	138
Total	6185	1693	1872	1490	1173

Table: BHU Seo: Most common Diagnosis during the Months January - June 2012

BHU SEO: MOST COMMON DIAGNOSIS DURING THE MONTHS JANUARY - JUNE 2012										
MONTHS	RTI	AWD	MAL NUTRITION	ANAEMIA	UTI	HTN	EYE INFECTION	EAR INFECTION	SKIN INFECTIONS	WORMS INFESTATION
Jan	459	74	24	41	57	25	20	27	32	20
Feb	519	87	08	34	44	24	11	14	18	14
March	443	141	32	42	64	47	31	40	43	41
April	388	231	48	42	66	44	42	49	51	42
May	188	198	20	25	77	23	40	31	46	33
June	208	109	08	34	34	15	23	26	42	9

Abbreviations: RTI (Respiratory Tract Infection); AWD (Acute Watery Diarrhoea); UTI (Urinary Tract Infection); HTN (Hypertension); OPD (Out Door Patient)

iv. BHU Doga

- Located in Doga Valley Union Council Kuz Purwa at distance of 16 Km from Dasu. It is situated on the right bank of Indus River and upstream of Dasu Hydropower Project.
- Supervision by the Pakistan Red Crescent Society (PRCS) and German Red Cross (GRC)
- Same facilities as BHU Seo, including a delivery room, incinerator, EPI Centre and social mobilisers

Table: Key Data on BHU Doga

KEY DATA ON BHU DOGA							
CATCHMENT POPULATION	STAFF		BEDS	DELIVERY ROOM	EPI	LAB	REFERRAL CENTRES
9875	Lady doctor	0	0	1	1 fixed Centre 1 outreach	0	RHC Dasu or Ayub Teaching Hospital Abbottabad.
Millar, Kai, Kuz Purwa, Bar Purwa, Kuz Doga, Bar Doga, Chapro, Ropan Bair, Beesh Bair , Dawabanda, Soorbanda, Gayal, Galtoo, Anzair, Barseer Gayal, Dewar, Kundal, Kanda, Kaiga , Barseen, Pani Bah	Medical Officer	0					
	LHV	1					
	Dai	1					
	Senior Medical Technician						
	Medical Technician	1					
	EPI technician	2					
	Social mobilise/ Health promoter	1					
	Ward Orderly	1					
	Guard	1					

Table: BHU Doga: Number of Patients during the Months January - June 2012

BHO DOGA NUMBER OF PATIENTS DURING JANUARY-JUNE, 2012					
MONTHS	TOTAL OPD	ADULT MALE	ADULT FEMALE	MALE CHILDREN	FEMALE CHILDREN
Jan	808	175	208	241	184
Feb	875	230	190	264	191
March	743	145	207	188	203
April	807	235	185	207	180
May	807	185	240	195	187
June	824	203	216	204	201
Total	4864	1173	1246	1299	1146

Table: BHU Doga: Most common Diagnosis during the Months January - June 2012

BHU DOGA: MOST COMMON DIAGNOSIS DURING THE MONTHS JANUARY - JUNE 2012										
MONTHS	RTI	AWD	GASTRITIS	ARTHRITIS	ANAEMIA	UTI	EYE INFECTION	EAR INFECTION	WORMS INFESTATION	SKIN INFECTION
Jan	300	59	25	59	4	08	16	06	27	17
Feb	336	7o	40	45	4	16	24	20	14	05
March	266	83	39	51	13	36	27	22	27	28
April	240	77	32	38	12	14	03	10	13	17
May	211	76	16	25	09	15	09	04	07	16
June	113	98	25	23	02	05	06	07	05	06

v. BHU Jalkot

- Located on the left bank of Indus River downstream of the reservoir area in union council Kuz Jalkot.
- The BHU is running directly under the DHO however, its new structure is funded by the International NGO “Malteser International”.
- There is a delivery room which contains a delivery table and delivery kits.
- The incinerator was provided by the NGO Malteser International.

Table: Key Data on BHU Jalkot

CATCHMENT POPULATION	STAFF		BEDS	DELIVERY ROOM	EPI	LAB
25000	Lady doctor	0	0	1	yes	0
Abadshah Abad, Jameel Abad, Meeran Abad, Sakander Abad, Usai, Jhool, Choorto;Hajmera	Medical Officer	1				
	LHV	2				
	Dai	1				
	Senior Medical Technician					
	Medical Technician	3				
	EPI technician	2				
	Social mobilise/ Health promoter					
	Ward Orderly	1				
	Sweeper	1				
	Guard	1				

Table: BHU Jalkot: Number of Patients during the Months January - June 2012

BHO JALKOT NUMBER OF PATIENTS DURING JANUARY-JUNE, 2012					
MONTHS	TOTAL OPD	ADULT MALE	ADULT FEMALE	MALE CHILDREN	FEMALE CHILDREN
Jan	476	128	158	108	82
Feb	700	129	258	151	162
March	750	143	275	187	155
April	713	136	253	146	178
May	250	52	86	54	58
June	305	101	85	71	48
Total	3194	689	1115	717	683

Table: BHU Doga: Most common Diagnosis during the Months January - June 2012

BHU DOGA: MOST COMMON DIAGNOSIS DURING THE MONTHS JANUARY - JUNE 2012										
Months	ARI	Pneumonia	Diarrhoea	Scabies	Worms	HTN	UTI	PUD	RTA	FUO
Jan	22	07	18	04	09	05	14	04	00	00
Feb	16	0	13	12	11	04	04	17	00	00
March	20	03	36	04	08	00	13	12	00	00
April	18	0	21	07	00	00	10	07	00	110
May	4	0	04	02	00	02	08	08	00	20
June	5	04	06	02	03	02	10	11	00	20

i. BHU Thooti

Because of inaccessibility of the BHU, no data could be traced and collected and no community or staff meeting could be held.

Appendix H: Health Issues Before, During and After the Construction Period

Presence of Large Construction Workforce ina Remote Environment

STI and HIV/AIDS

The main part of the migrating workers will be male. Usually this attracts the business of sex workers and is therefore usually high on the priority lists. However as already mentioned in previous chapters, the cultural or religious barriers are strict in this area to such an extent, that a public health risk is very unlikely. .

Nevertheless, given the significance of this topic, some more background information shall be provided on the policies and strategies co-financiers usually would apply in a PHAP as follows:

- Construction sites have proven to be ideal settings to carry out effective education of construction workers and affected communities targeting behaviour change.
- Moreover, since 2006, the International Federation of Consulting Engineers (FIDIC) Conditions of Contract for Construction[38] specify that contractors for major infrastructure projects must offer HIV-awareness programming, including STI and HIV information, education, and communication, for all workers and for community members on regular basis. The FIDIC conditions also require that condoms, STI and HIV screening, diagnosis, counselling, and referrals be provided for all site staff and labourers.
- The obligation to address HIV and STI is encouraged by main donors stating that the donor "has a responsibility to encourage contractors to provide appropriate HIV education to all the construction workers and the villagers in the corridors of influence[39]." Recommendations are formulated, some of which also offer opportunities to address gender based differences through a multi-sector approach and to "adopt a holistic "settings" approach rather than focus on specific target groups, and ensure women at risk are able to participate fully; and to ensure male and female condom availability during and after construction". Usually, but not applicable, respectively in the nearer future not feasible in the given context, an interactive, participatory nature of the education sessions is suggested to move beyond awareness-raising and achieve behaviour change. Messages to mobile populations need to be intense and frequent to ensure that new populations receive them.
- Therefore, mitigation for this increased risk of Sexual Transmitted Infection (STI) and HIV during the construction phase of a project would include: i) The implementation of an HIV/AIDS and STI education campaign among the local population; ii) The implementation of an on-going HIV/AIDS and STI education campaign targeting all workers hired; iii) the implementation of an effective HIV/AIDS and STI education campaign among sex-workers before the arrival of the workers; iv) well designed and strategized education campaigns and programmes including peer educators. Advices should be given for the youth in broader life skills, gender norms discussed, as well as attitudes and issues of self-confidence and sexual negotiation. The core content of basic HIV training must integrate discussion of gender roles, women's and children's rights, sexual and domestic violence, and sexual coercion, assault, and trafficking.
- In similar settings of a construction related PHAP, the upgrading of the health facilities serving the population in terms of training/refreshing the staff would

[38] International Federation of Consulting Engineers 2006Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer.Oxford University Press

[39] A project road's corridor of influence is defined as a 5-kilometer-wide area on both sides of the road plus half circle with a 15-kilometer radius on both ends of the road. ADB 2007.Socially Inclusive and Gender-Responsive Transport Projects: A Case Study of the Timor Leste Road Sector Improvement Project.

specifically include also the diagnosis and treatment of STI and HIV/AIDS, the uninterrupted availability of rapid HIV testing and of AIDS counsellors, the increased accessibility to complementary laboratory tests (provided by central laboratories), as well as the availability of periodical consultations by qualified physicians. These measures would encompass both the public and private health sector.

- In higher prevalent environments, the development of HIV-positive networks and groups would be recommended, especially for the needs of women and children, sex workers and men who have sex with men, also the inclusion of HIV sero-positive persons in the design and implementation of interventions aiming at HIV prevention and counselling. In absence or among only few HIV positives these approaches cannot be applied, but possible positive cases that might not even be aware that their status would cause spreading, need to understand the consequences for themselves and for others whom they might infect. Therefore HIV preventative activities have been carried out with even more emphasis to avoid HIV entering the community.

Tuberculosis

Given the high incidence of tuberculosis in the country and in the district there is an increased infection risk in the construction workers camp and the resident colony. Also, the residing and the relocated population are facing movements due to the resettlement and living in these villages in closer proximity. Naturally infections can also be transmitted from the large construction workforce to the population and vice versa. This requires special emphasis on tuberculosis control measures, and the infection rate has to be monitored among the construction workers, in particular of the unskilled labourer who are more likely to reside in poorer and probably higher infected populations.

Occupational Health

The introduction of occupational health measures have to take into account the wide range of professions, jobs and tasks involved and have to be specific for each type of work, i.e. manual work at dam and road construction, truck and machinery drivers, various office based jobs as well as cooks, maids, cleaners, security etc. This includes control and management of work specific hazards, dust, combustion gases from construction machinery and vehicles, missions to soil and to manage waste, biological waste including, disposal of sludge, noise, road accidents etc. See further details in the Appendices of the PHAP.

Poverty Trap

There is the general expectation that people in the neighbouring community will benefit directly through jobs or indirectly from the construction. However, any (temporary) migrating large group of people , causes some indirect effects which might impair the income/purchasing power of the residing population: market prices on accommodation and food are likely to rise and may drive “near poor” families into poverty with subsequent consequences for their health status and ability to access health services. Close monitoring will be required of poverty level and its consequences.

PERCEIVED HEALTH RISKS OF THE PROJECT

During group discussions and interviews it was conveyed that the “local” population perceives the risk that the “outsiders” would bring diseases not common at present in the area. However during group discussions and interviews examples for such imported diseases were given which are not communicable or where the environment makes the transmission unlikely. This means that the fears of “imported” diseases are based on insufficient awareness of public health in general and nature of diseases. Underlying is a general adverse position against the project and the fear that the well-preserved cultural norms of the population might be endangered in particular in respect to role of women

(during group discussion the phrase was frequently used “we want our women to be safe”).

DRINKING WATER AND SANITATION

Factors to consider, as in any similar situation, next to the water quality, include the location and type of waste water disposal, distance of latrines to groundwater or boreholes. Access to safe drinking-water is essential to health, a basic human right and a component for health protection. Therefore, the planned investment in safe drinking water (through accessing deep layers of ground water and/or piped water from clean springs) will be significant for the health of villages.

The resettled population will be encouraged to dig latrines in each household. The existence, and naturally also their usage, are pre-requisites for a healthy lifestyle (See also further below comments on household and individual hygiene, as well as village level hygiene.) Village level hygiene, cleanness, functional drainage systems have to be integrated in the administrative management of the new villages.

WATER BORN/ VECTOR TRANSMITTED DISEASES

It is unclear whether the incidence of malaria is low in the affected areas or whether malaria is rather under-diagnosed. Therefore conditions need to be created to ensure proper diagnosis and epidemiological surveillance. While preventative methods such as the use of bed nets have to be emphasised, health staff needs to be trained and/or their skills refreshed for proper diagnosis and treatment.

The resettlement and the construction process should be taken as an opportunity for boosting preventative measures: enforcement of the malaria strategy, including impregnated bed-nets and education on the use of the nets, treatment of breeding sites, early detection etc. Similar, even though a case of dengue fever has not been reported in the district, applies: the opportunity of the process in establishing new villages could and should be taken for boosting preventative measures against dengue: IEC; treatment of water reservoirs and irrigation canals, if and where feasible regular, e.g. twice weekly, emptying the canals.

WASTE DISPOSAL

In identifying the means and location of disposal of solid waste it has to be considered and should be ensured, that the population is protected against the odour and against access by people (like playing children) or by animals in search of food.

Incinerators are provided in the health facilities for medical waste. Their systematic and regular use in short intervals need closer supervision and follow up.

HOUSES AND VILLAGE

The plans for accommodation of the resettling families depict that housing will be constructed by the people themselves. Dynamics and animosities between families might lead to the wish in the new villages to keep wider distance between the houses and compounds. A few, health related details shall be mentioned, which should be recommended to the builder of the houses in respect to public health:

- Access to safe water is essential.
- Equally essential is the availability and utilisation of sanitation facilities.
- Close proximity between people is favouring TB infections. Regular monitoring and IEC are required.
- Similar to the comments made for the physical infrastructure of health facilities, roofing with iron sheeting is heating up the rooms in the hot period and cannot keep heating in the cold period and should rather be avoided.
- Burned bricks are more able to keep temperature stable, are more stable and are the preferred construction material as opposed to mud bricks or stones.

- Ventilating windows and layers of ceilings of timber are essential to maximize cooling options while reducing smoke from heating during the cold periods.
- If feasible (in capital costs), solar panels could provide the (recurrent) low cost energy which could allow some energy driven cooling (e.g. ventilators etc.).
- Heating of the houses should from the onset ensure that the smoke does not remain inside the rooms and is directed safely to the outside.
- Windows and doors should be outfitted with mosquito nets.
- Space inside the compound has to be sufficient to be able to enlarge the house in accommodating growing families.

PSYCHO-SOCIAL EFFECTS

It would have been useful to base the psycho-social assessment and possibly resulting plans on a study which assessed psycho-social effects on the resettled and not resettled populations. Social dynamics in the villages as well as in the resettling population are likely to change due to the construction. Changes are occurring in any society also under usual circumstances. However, the presence of the large construction workforce, their followers , at the proximity of people in a remote district, are likely to accelerate both type and speed of changing dynamics, as mentioned and elaborated in the RAP and GAP. Surely a number of these movements are entirely beneficial for the communities and families; others have some detrimental side effects or cannot be considered beneficial entirely. A complete analysis would go beyond a public health action plan and would require a baseline and follow up studies from social development point of view.

The gender related elements are captured and addressed in the GAP specifically for girls and women in the sexual active and reproductive age group. Elderly are more probable to face difficulties to adjust to a fast changing environment or their new accommodation. As mentioned before, the noise and the construction work can cause also psychological stress and the affected person might need support.

Typical stress symptoms would be headaches, insomnia, feeling of stress and unhappiness, depression and increased numbers of miscarriages. Therefore the psycho-social developments in the new villages and in the resident population require surveillance in particular among women, adolescence and elderly and psycho-social care is to be provided for individuals in distress and their families.

Appendix I: Biophysical Health Risk Factors during Construction

Emissions to Air

Dust

Dust and sand can be expected to be the main emission to air during the construction phase of the project, caused by the heavy traffic, excavation, blasting, crushing activities etc.

Nature:
- Dust from excavation machinery, vehicles, blasting and crushing

On risk:
- Communities and workers in proximity to dirt road and construction sites
- Construction workers and the drivers

Effects on health:
- Various respiratory problems, some with high risk (silicosis), which can result in increased hospitalization and mortality

Prevention/mitigation:
- Frequent watering of access roads
- Respiratory protective equipment for workers

Box 1: Key Health Risks during Construction - Dust

Combustion Gases

The construction machinery, tracks, vehicles etc. will produce substantial amounts of gas Combustion

Nature:
- Combustion gases from construction machinery and vehicles

On risk:
- Construction workers and the drivers
- Communities and workers in proximity to road, construction and mining sites
- Global effects

Effects on health:
- Individual:
  - CO: increase percentage of carboxyhemoglobin
  - NO_x: irritation of respiratory tract
- Global:
  - CO_2: climate change

Prevention/mitigation:
- Time limitation of work / exposure
- CO: combustion control
- CO_2: reduction of use of fossil fuels
- NO_x: antipollution systems (catalytic reduction)
- VOCs: increase in combustion performance

Box 2: Key Health Risks during Construction – Combustion Gases

Emissions to Soil and Waste Management

Emissions to soil are caused mostly by disposal of oils, chemicals, solid waste and waste water. During the construction phase the machinery and vehicles will use large amount of gasoline, diesel oil, oils and other petroleum products and chemicals which need to be disposed safely, preventing abuse and emissions into the soil, possibly also contaminating the ground water and water courses.

Nature:

- Non-biological liquid and solid wastes
- Oils, petroleum products
- Chemicals and construction debris

On risk:

- Impact on the environment
- Communities and workers in proximity to construction sites and roads
- Workers manipulating the petroleum products and other chemicals.

Effects on health:

- Depending nature of specific pollutant

Prevention/mitigation:

- Recovery of waste materials, restoration of site

Effects on health:

- Skin diseases/conditions (dermatitis, eczema, etc.) on contact
- Multi-organ damages after ingestion

Box 3: Key Health Risks during Construction – Emissions to soil

Biological Waste

The presence of large amounts of direct and indirect construction workers on site will generate biological waste (solid waste and waste water). Adequate sanitary facilities have to be established, and the solid waste and waste water be removed with no contamination of water and the environment:

WHO recommends the following measures to ensure basic hygiene and sanitary workplace conditions[40].

- Sufficient toilets for both men and women with complete sanitary fixtures;
- Safe and clean potable water for drinking and hand washing, with sanitary detergents;
- Adequate amount of water for washing facilities and sanitation;
- Workplaces regularly cleaned, with proper management of garbage disposal (liquid, solid and recyclable waste) according to health standards.

Emissions to and Contaminations of Water

Emissions to water during the construction phase will mostly involve the potential pollution of the underground and river waters through emissions to soils. The factors more likely to be affecting water quality are animal and human wastes and sediment inputs. It is unlikely that there will be other significant chemical inputs during the construction phase unless fertilizers[41] or pesticides are used on the agricultural land and

[40]Regional guidelines for the development of healthy workplaces, World Health Organisation, Regional Office for the Western Pacific, 1999

[41] Phosphates form part of the chemical fertilizers used in agriculture which can be of concern as phosphorus can be a key nutrient for algal blooms like cyanobacteria. Their toxins (i.e. cyano toxins) may

potentially phosphorus might be elevated by the use of detergents for washing clothes but the overall quantities will be small.

The risk for water-borne infectious diseases due to consuming the water untreated would be probably not different than at present. The quality of the water downstream of the construction site is likely to be of a better quality than the water before, because it is likely to be lower in sediment and lower in coliform counts, temperatures will be roughly similar and nutrients will probably also be low at most times.

Monitoring of total coliforms and E. coli should be able to show when they rise above acceptable norms, which would indicate a risk of water-borne infectious diseases, should the water protection and treatment be ineffective. These infectious diseases can be numerous and include: bacterial and viral gastroenteritis from various agents including E. coli and rotaviruses, salmonellosis (typhoid), shigellosis, hepatitis A and E, amoebiasis, giardiasis, etc. While many bacteria are sensitive to standard chlorine disinfection, viruses tend to be moderately resistant, and protozoa highly resistant though coagulation, flocculation, sedimentation and filtration processes can also remove some of these microorganisms. Therefore surveillance is recommended as the situation may evolve over time.

Access to safe drinking-water is essential to health, a basic human right and a component of effective policy for health protection. Those at greatest risk of waterborne diseases, and who will consequently benefit most of a regular supply of safe drinking-water, include infants and young children, people who are debilitated or living in unsanitary conditions and the elderly.

Some of the benefits of the provision of safe drinking-water include improved health, direct expenditures to the health sector and to the individuals avoided due to less illness, income gained due to days lost from work avoided, days of school absenteeism avoided, productive parent days lost avoided due to less child illness, value of loss-of-life avoided, productivity effect of improved health, costs avoided due to reduced reliance on expensive water sources (such as vendors) or on unsafe water purification methods, due to increased availability of cheaper water and phasing out of hazardous methods of water purification such as boiling, increased property value etc.

Therefore the planned investment in safe drinking water through accessing deep layers of ground water will be significant for the health of villages. Factors to consider, as in any similar situation, next to the water quality, include the location and type of waste water disposal, distance of latrines to groundwater or boreholes. Latrines are foreseen in each household. The existence, and naturally also their usage, are re-requisites for a healthy lifestyle.

In addition, as a side-effect of construction material collection (gravel etc material) the possible water points could be new and additional sites for breeding and should be regularly / daily removed.

affect the liver (heapto toxins), the nervous system (neurotoxins) or may act as irritants or inflammatory agents.

Nature:

- Biological / fecal contaminants of drinking-water (viruses, bacteria, protozoa, toxins)
- Arsenide, iron and other minerals, chemicals and products used for water treatment
- Chemicals used for fertilization

On risk:

- Impact on the environment
- Water distribution network
- All consumers
  - Residing communities
  - Resettled communities
  - Host population
  - Construction workers

Effects on health:

- Diarrheal diseases
- Risk of infectious disease transmission
- Fecal coliform: risk of infectious disease transmission (viral infections; gastroenteritis, hepatitis, poliomyelitis and respiratory illness)
- Microcystin: risk of gastroenteritis, hepatopathology
- Chlorine: objectionable taste, nausea and vomiting (at very high concentrations)
- Arsenide: Multi-organ damage

Prevention/mitigation:

- Intensify GoP policy and strategy to education communities on use of safe water and general hygiene
- Physical maintenance of water distribution (prevent leakages and recontamination of treated water)
- Intensify GoB policy and strategy to provide safe water through deep bore holes (at least 300 meters)
- Regular / ongoing monitoring of physical characteristics of drinking-water
- Regular / ongoing monitoring of water concentration of biological contaminants using recommended standards:
  - Total coliforms: 0-5/100ML
  - Fecal coliform: 0/100ML
  - Coliphages: 0-1/100ML
- Regular / ongoing monitoring of water concentration of chemicals using recommended standards:
  - Microcystin: 0-0.8µg/l
  - Iron: 0-0.1mg/l
  - Chlorine: max. 100mg/l. For effective disinfection, there should be a residual concentration of free chlorine of 0.5mg/l after at least 30 minute contact time at pH<8.0.
- Epidemiological surveillance

Box 4: Key Health Risks during Construction – Contaminated Drinking Water

In the context of creating a new water reservoir the effect of standing water has to be observed. In this line the following box provides the relevant background. It is an excerpt

of the WHOs publication: The World Health Organisation's submission to the World Commission on Dams; Geneva, January 1999.

In tropical, sub-tropical and arid regions of the world it is inevitable that new dams will become eutrophied (nutrient enriched) rather quickly, often within the first few years of filling and operation. Eutrophication brings with it problems of excessive aquatic weed growth or 'blooms' of toxic cyanobacteria (cyanobacteria are a type of microscopic algae). Arid zones of the world are particularly at risk, where the artificial impoundment of water in the hot climate creates the perfect ecological environment for the growth of toxic cyanobacteria. Added to this natural climatic effect is the enhanced rate of nutrient input that accompanies the growth of towns and the development of agriculture in the catchment around a dam, often with inadequate effluent collection and treatment facilities.

Blooms of freshwater algae and cyanobacteria have always occurred in eutrophied waterways, but the toxicity of these organisms has only been elucidated in recent years. There are several types of cyanobacterial toxins found throughout the world, all of which are potentially lethal to humans and animals if consumed in sufficient quantities. Additionally, some cyanobacterial toxins can promote live cancer during chronic low level exposure, and most cyanobacteria can cause a range of gastrointestinal and allergenic illnesses in humans exposed to toxins in drinking water, food or during swimming (Chorus and Bartram, 1999). A norm for drinking water concentrations for the common cyanobacterial toxin microcystin has recently been developed by the WHO.

The most severe and well documented case of human poisoning due to cyanobacterial toxins occurred in the Brazilian city of Curaru in 1996. Inadequately treated water from a local reservoir was used for patients in a local kidney dialysis clinic. As a consequence, more than 50 people died due to direct exposure of the cyanobacterial toxin to their blood stream during dialysis. Elsewhere in South America, in 1988, more than 80 deaths and 2,000 illnesses due to severe gastroenteritis have also been directly linked with toxic cyanobacteria in a newly constructed dam. In China, a high incidence of primary liver cancer has been linked to the presence of cyanobacterial toxins in drinking water (Chorus and Bartram, 1999).

Box 5: Freshwater cyanobacteria toxins – an emerging dam related health issue[42]

Fluorosis

Large reservoirs and the irrigation they bring in command areas elevate sub-soil water, changing the levels of calcium and trace metals, and can increase fluorosis. The Nagar Junasagar dam in South Indian Andhra Pradesh triggered a crippling syndrome of knock-knees Genu valgum) among villagers in the command area. According to Hyderabad's National Institute of Nutrition, seepage from the reservoir and canals increased the level of sub-soil water. This in turn elevated the molybdenum uptake of sorghum plants, andaugmented soil alkalinity. Genu valgum has been found in villages in Coimbatore district, situated within a radius of 30 km from the Parambikulam-Aliyar dam, and from villages

Near Karnataka's Hospet dam (Anon. 1982).

Box 6: Fluorosis[43]

[42]The World Health Organization's submission to the World Commission on Dams; Geneva, January 1999

Noise

This category includes primarily the noise generated through three main sources for high level of noise, the crusher site, construction of dam and approach road sites and traffic. The crushers might generate up to around 120 dB(A)[44]. For the public, excessive exposure to noise can lead to sleep interference, communication difficulties, effects on the performance and behaviour of students and a feeling of annoyance that undermines quality of life.

Traffic produces two source of noise:

- Source A: engines, particularly from heavy traffic (low frequencies); depends on engine (not vehicle) speed
- Source B: tyres and road surface – primary noise when traffic is flowing – high frequency noise – vehicle speed, road surface and wet or dry surface

Light cars cause at 60 km/h at 7 meters distance 70 db and a heavy diesel truck at 40 km/h at 7 meters 86 db. WHO recommends an outdoor noise limit of 55 dBA Leq during the day and 45 dBA Leq during the night. In industrial areas or work environments, a level of 75 dBA Leq for 8 hours is considered acceptable.

Moreover, vibration will be high due to e.g. pile driving. Post construction: noise level due to high traffic in future has to be considered as well.

Nature:

- Noise

On risk:

- Communities in proximity of construction sites and roads
- Construction workers

Effects on health:

- Loss of quality of life and sleep
- Stress
- Headache
- Hearing impairment and loss

Prevention/mitigation:

- Distance from crushing sites to households at least 1000m
- Hearing protection equipment for workers
- Limitation of working hours and the circulation of trucks between 7h00 and 19h00 and no work during weekends
- Ongoing monitoring:
  - Standards or recommendations: Leq 45 dBA (night) and 55 dBA (day).*

Box 7: Key Health Risks during Construction – Noise

[43]The World Health Organization's submission to the World Commission on Dams; Geneva, January 1999

[44] The measurement most often used is the average equivalent sound pressure level (Leq) per unit time (e.g. 24 hours) using a logarithmic decibel scale (the noise intensity doubles with any increase of 3 decibels (dB)). For example, the noise level produced by construction work: breaking concrete pavement with a pneumatic drill in excess of 100 decibels (dB) - levels which, unprotected, should not exceed more than a few minutes (or less) per day. Prolonged engine noise of high amplitude (>80 dBA) and/or low frequency can result in early (severe headache) or delayed (e.g., hearing loss) detrimental effects (truck drivers).

Road Safety

The constructions will require heavy traffic both with tracks and vehicles. The subsequence increase of traffic will likely cause accidents for reasons:

- Higher traffic causes higher rate of incidences.
- A significant part of the population, in particular at the approach roads, is not used to heavy traffic and will have to learn adjusting to new conditions.
- Dust producing traffic impairs visibility for the drivers as well as for people and animals.
- Machinery and tracks attract children, who however are not used to play with these “toys”.
- It is consequently also recommended that the project contributes to the improvement of the local police services in the area both in terms of personnel and equipment.

Nature:

- High, heavy traffic

On risk:

- Communities in proximity of construction sites and roads
- Playing children
- Domesticated and transporting animals

Effects on health:

- Injury, trauma and death

Prevention/mitigation:

- Speed limits depending on location and distance to village
- Strict control of adherence to speed limits
- Road signs in place
- Heavy traffic restricted to day period
- Schooling for communities and children on upcoming traffic risks
- Driving with lights on

- **Box 8: Key Health Risks During Construction – Road (Un)safety**

Appendix J: Public Sector Health Standards

National Standard of BHU (Physical Structure)

A. Category –III facility

I. Block consists of 4 rooms (one room for the medical officer, one each for LHV & EPI technician and one room for medicine store), two waiting rooms (one male and one for female) and two bath rooms.
II. Residential Block, consist of four residential quarters i.e. one for medical officer, one for LHV , one for Dai and one quarter for watchman)

National Standard of RHC (Physical Structure)

B. Category-III type health facility

I. Block: consists of two rooms for male medical officers, one room for female medical officer, one room for LHV, one room for female medical technician, one small operation theatre, one kitchen, one for dental unit, one for x-ray unit, one for laboratory, one for medicine store, 4 bedded ward each for male and female, two waiting room each for male and female
II. Residential block: three quarters; one each for medical officer and residential quarter for each dental surgeon, medical technician, female medical technician, LHV, watchman, Dai, driver.

National /Provincial standard for BHU/RHC Staff:

I. BHU Staff:

Sr. No.	Staff	Number
1.	Medical Officer	1
2.	Dispenser	1
3.	Female Medical Technician	1
4.	LHV	1
5.	Dai	1
6.	Ward orderly	1
7.	Beheshty	1
8.	Watchman	1
9.	EPI technician	1

II. RHC Staff:

Sr. No.	Staff	Number
1.	Senior Medical Officer(Male)	1
2.	Junior Medical Officer (Male)	1
3.	Woman Medical officer	1
4.	Dental Surgeon	1
5.	Medical Technician	1
6.	Dental Technician	1
7.	Lab Technician	1
8.	EPI technician	1
9.	X-Ray Radio Grapher	1
10.	Dental assistant	1
11.	Female Medical Technician	1
12.	LHV	1
13.	Dai	1
14.	Ward orderly	1
15.	Beheshty	1
16.	Watchman	1
17.	Driver	1
18.	Cook	1

Appendix K: Standard List of Medical Equipment in Public Sector Health Facilities

BHU

- Stitching kits
- Scissor
- Forceps (Plan and tooth)
- Weight Machine
- Thermometer
- Stethoscope
- BP apparatus
- ENT diagnostic set
- NG Tubes
- Catheters
- Oxygen cylinder
- Mask and ambo bag
- Couch for examining patients
- I/v cannulas
- Drip sets and different infusions
- Emergency drugs kits
- Dressing kits

RHC

In addition to the list for a BHU:

- Admission facility (indoor)
- Minor operation theatre
- X-ray unit
- Ultra-sonography
- Dental unit
- Ambulance with driver

Appendix L: WAPDA Medical Services- Standards, References, and Yard Sticks

<700

PAKISTAN WATER & POWER DEVELOPMENT AUTHORITY
(COORDINATION WING)

STATEMENT FOR REVISED BUDGET ESTIMATES 2011-2012 AND BUDGET EST: 2012-2013 IN RESPECT OF WAPDA DISPENSARY KARACHI

A/c Codes	Heads/Sub Heads	R.B.E 2011-12	B.E 2012-13
PAY & ALLOWANCES			(Amount in Rs.)
510	OFFICERS (TECHNICAL)	2,153,300	2,190,500
5100	Basic Pay	1,232,500	1,269,700
5102	Conveyance Allowance	59,500	59,500
5109	Other Allowances	861,300	861,300
512	CLERICAL & ADMN. INCLUDING SUPERVISORY & OTHER GENERAL SERVICES STAFF	377,000	0
5120	Basic Pay	284,100	----
5122	Conveyance Allowance	13,800	----
5129	Other Allowances	79,100	----
514	PARA-MEDICAL STAFF	493,200	500,200
5140	Basic Pay	315,900	322,900
5141	House Rent	13,400	13,400
5142	Conveyance Allowance	27,600	27,600
5149	Other Allowances	136,300	136,300
517	TRANSPORT STAFF	247,500	251,300
5170	Basic Pay	164,000	167,800
5172	Conveyance Allowance	13,800	13,800
5179	Other Allowances	69,700	69,700
519	OTHER STAFF	341,100	345,200
5190	Basic Pay	201,600	205,700
5191	House Rent	27,300	27,300
5192	Conveyance Allowance	20,400	20,400
5199	Other Allowances	91,800	91,800
	Total Salaries:-	3,612,100	3,287,200
540	RENT, RATES & TAXES	120,000	120,000
5404	Non-Residential	120,000	120,000
541	LIGHT, HEAT, POWER & WATER	64,000	64,000
5410	Electricity	64,000	64,000
543	REPAIR & MAINT: (ELECTRICAL EQUIP:)	16,000	16,000
5431	Non-Residential Buildings	16,000	16,000
550	PRINTING & STATIONERY	32,000	32,000
5500	External	12,000	12,000
5501	Wapda Press	20,000	20,000
551	TELEPHONES, POSTAGE & TELEGRAMS	40,000	40,000
5510	Telephone Non-Residential (External)	20,000	20,000
5516	Postage & Telegrams	20,000	20,000
552	OFFICE MACHINES & EQUIPMENT	47,000	47,000
5520	Purchase of office Machines & Equipment	35,000	35,000
5529	Repair & Maint: of office Machines & Equip:	12,000	12,000
556	SUNDRY EXPENDITURE	24,000	24,000
5561	Newspapers & Periodicals	4,000	4,000
5569	Other Items	20,000	20,000
560	EDUCATION & TRAINING	10,000	10,000
5605	Allowances for Inland Training	10,000	10,000
561	STAFF COSTS	766,300	748,100
5611	Liveries	10,000	10,000
5613	Free Electricity to in service employees	218,900	218,900
5615	House Acquisition (Pay Scale 1-15)	173,800	173,800
5617	House Acquisition (Pay Scale 16 & Above)	358,600	340,400
5618	Funeral Expenses	5,000	5,000

Contd P/2

PAKISTAN WATER & POWER DEVELOPMENT AUTHORITY
(COORDINATION WING)

STATEMENT FOR REVISED BUDGET ESTIMATES 2011-2012 AND BUDGET EST: 2012-2013 IN RESPECT OF WAPDA DISPENSARY KARACHI

A/c Codes	Heads/Sub Heads	R.B.E 2011-12	B.E 2012-13
562	**EMPLOYER CHARGES**		
5621	Pension Fund	**876,300**	**876,300**
5623	Group Life Premiums	873,000	873,000
563	**MEDICAL EXPENSES**	3,300	3,300
5631	Practitioners Fee	**199,000**	**199,000**
5632	Medicines, Drugs & Dressing	25,000	25,000
5633	Hospitalization	50,000	50,000
5634	Maternity Payment	80,000	80,000
5635	Pruchase of Blood	7,000	7,000
5636	X-Ray, Ultra-Sound, ECGs & Lab: Tests	2,000	2,000
5639	Other Charges	30,000	30,000
564	**WAPDA HOSPITAL**	5,000	5,000
5641	Drugs & Dressings	**5,148,000**	**5,148,000**
5645	Wapda Hospital Ambulance	4,818,000	4,818,000
570	**BANK CHARGES**	330,000	330,000
5704	Other Charges	**2,000**	**2,000**
580	**TRAVELING**	2,000	2,000
5800	TA/DA Officers	**38,000**	**38,000**
5801	TA/DA Other Staff	8,000	8,000
5802	Transfer Grants	20,000	20,000
581	**TRANSPORT EXPENSES**	10,000	10,000
5812	**VANS, PICK-UPS, JEEPS**	**142,600**	**202,600**
58121	Petrol, Oil, Lubes	**142,600**	**202,600**
58122	Routine Service	90,000	150,000
58123	Tyres, Minor Repairs	1,600	1,600
58124	Major Repair- Mechnical	16,000	16,000
58126	Major Repair- Body Works	16,000	16,000
58129	Other Charges	16,000	16,000
585	**MISC. FURNITURE AND FITTINGS**	3,000	3,000
5859	Repairs	**8,000**	**8,000**
		8,000	8,000
	TOTAL :-	**11,145,300**	**10,862,200**

WAPDA Budget Estimates for WAPDA Fortified Dispensary Tabela

1900 - 2000

PAKISTAN WATER & POWER DEVELOPMENT AUTHORITY
(COORDINATION WING)

STATEMENT FOR REVISED BUDGET ESTIMATES 2011-2012 AND BUDGET EST: 2012-2013 IN RESPECT OF WAPDA FORTIFIED DISP. TARBELA

A/c Codes	Heads/Sub Heads	R.B.E 2011-12	B.E 2012-13
PAY & ALLOWANCES			(Amount in Rs.)
510	OFFICERS (TECHNICAL)	2,489,000	2,540,600
5100	Basic Pay	1,477,300	1,528,900 ✓
5103	Enterainment Allowance	6,000	6,000
5107	Special Pay & Allowance	360,000	360,000
5109	Other Allowances	645,700	645,700
512	CLERICAL & ADMN. INCLUDING SUPERVISORY & OTHER GENERAL SERVICES STAFF	910,000	928,100
5120	Basic Pay	557,800	575,900 ✓
5121	House Rent	17,700	17,700
5122	Conveyance Allowance	61,800	61,800
5129	Other Allowances	272,700	272,700
514	PARA-MEDICAL STAFF	3,199,700	3,267,300
5140	Basic Pay	2,009,600	2,077,200 ✓
5141	House Rent	34,900	34,900
5142	Conveyance Allowance	218,200	218,200
5149	Other Allowances	937,000	937,000
519	OTHER STAFF	907,600	917,800
5190	Basic Pay	563,100	573,300 ✓
5191	House Rent	10,900	10,900
5192	Conveyance Allowance	51,000	51,000
5199	Other Allowances	282,600	282,600
	Total Salaries:-	**7,506,300**	**7,653,800**
550	PRINTING & STATIONERY	82,000	82,000
5500	External	12,000	12,000
5501	Wapda Press	70,000	70,000
551	TELEPHONES, POSTAGE & TELEGRAMS	33,000	33,000
5510	Telephone Non-Residential (External)	8,000	8,000
5516	Postage & Telegrams	25,000	25,000
552	OFFICE MACHINES & EQUIPMENT	100,000	100,000
5520	Purchase of office Machines & Equipment	100,000	100,000
556	SUNDRY EXPENDITURE	12,000	12,000
5561	Newspapers & Periodicals	5,000	5,000
5569	Other Items	7,000	7,000
561	STAFF COSTS	620,000	620,000
5611	Liveries	100,000	100,000
5613	Free Electricity to in service employees	500,000	500,000
5616	Honoraria, Reward & Ex-gratia	10,000	10,000
5618	Funeral Expenses	10,000	10,000
562	EMPLOYER CHARGES	3,000,000	3,000,000
5621	Pension Fund	2,982,000	2,982,000
5623	Group Life Premiums	18,000	18,000

Contd P/2

PAKISTAN WATER & POWER DEVELOPMENT AUTHORITY
(COORDINATION WING)

STATEMENT FOR REVISED BUDGET ESTIMATES 2011-2012 AND BUDGET EST: 2012-2013 IN RESPECT OF WAPDA FORTIFIED DISP. TARBELA

A/c Codes	Heads/Sub Heads	R.B.E 2011-12	B.E 2012-13
563	**MEDICAL EXPENSES**	**243,000**	**243,000**
5630	Cash Medical Allowance	48,000	48,000
5631	Practitioners Fee	20,000	20,000
5632	Medicines, Drugs & Dressing	50,000	50,000
5633	Hospitalization	100,000	100,000
5634	Maternity Payment	5,000	5,000
5636	X-Ray, Ultra-Sound, ECGs & Lab: Tests	20,000	20,000
564	**WAPDA HOSPITAL**	**6,583,000**	**6,483,000**
5640	Wards & Theatres	10,000	10,000
5641	Drugs & Dressings	6,228,000	6,228,000
5642	X-Rays	30,000	30,000
5643	Medical/Surgical Equip:	300,000	200,000
5646	Laboratories	10,000	10,000
5648	Other Charges	5,000	5,000
570	**BANK CHARGES**	**12,000**	**12,000**
5704	Other Charges	12,000	12,000
580	**TRAVELING**	**70,000**	**70,000**
5800	TA/DA Officers	20,000	20,000
5801	TA/DA Other Staff	20,000	20,000
5802	Transfer Grants	30,000	30,000
585	**MISC. FURNITURE AND FITTINGS**	**15,600**	**15,600**
5851	Purchase out of Revenue (Non Resi: Equi:)	10,000	10,000
5859	Repairs	5,600	5,600
	TOTAL :-	**18,276,900**	**18,324,400**

WAPDA Budget Estimates for WAPDA Hospital Mangla

-: 2 :-

PAKISTAN WATER & POWER DEVELOPMENT AUTHORITY
(COORDINATION WING)

STATEMENT FOR REVISED BUDGET ESTIMATES 2011-2012 AND BUDGET ESTIMATES 2012-2013 IN RESPECT OF WAPDA HOSPITAL MANGLA

A/c Codes	Heads/Sub Heads	R.B.E 2011-12	B.E 2012-13
554	**COMPUTER CHARGES**	**3,000**	**3,000**
5549	Other Work W.C.C	3,000	3,000
556	**SUNDRY EXPENDITURE**	**19,000**	**26,000**
5561	Newspapers & Periodicals	4,000	6,000
5569	Other Items	15,000	20,000
560	**EDUCATION & TRAINING**	**31,000**	**31,000**
5605	Allowances for Inland Training	31,000	31,000
561	**STAFF COSTS**	**220,000**	**320,000**
5611	Liveries	----	100,000
5613	Free Electricity to in service employees	200,000	200,000
5616	Honoraria, Reward & Ex-gratia	10,000	10,000
5618	Funeral Expenses	10,000	10,000
562	**EMPLOYER CHARGES**	**2,649,300**	**2,649,300**
5621	Pension Fund	2,628,000	2,628,000
5623	Group Life Premiums	21,300	21,300
563	**MEDICAL EXPENSES**	**307,000**	**307,000**
5630	Cash Medical Allowance	72,000	72,000
5631	Practitioners Fee	30,000	30,000
5632	Medicines, Drugs & Dressing	80,000	80,000
5633	Hospitalization	50,000	50,000
5634	Maternity Payment	10,000	10,000
5636	X-Ray, Ultra-Sound, ECGs & Lab: Tests	60,000	60,000
5639	Other Charges	5,000	5,000
564	**WAPDA HOSPITAL**	**16,060,000**	**16,060,000**
5640	Wards & Theatres	80,000	80,000
5641	Drugs & Dressings	12,460,000	12,460,000
5642	X-Rays	125,000	125,000
5643	Medical/Surgical Equip:	2,500,000	2,500,000
5645	Wapda Hospital Ambulance	800,000	800,000
5646	Laboratories	25,000	25,000
5648	Other Charges	70,000	70,000
570	**BANK CHARGES**	**25,000**	**25,000**
5704	Other Charges	25,000	25,000
578	**OTHER CHARGES**	**1,200,000**	**1,200,000**
5784	Charges for Common Services	1,200,000	1,200,000
580	**TRAVELING**	**226,000**	**226,000**
5800	TA/DA Officers	56,000	56,000
5801	TA/DA Other Staff	120,000	120,000
5802	Transfer Grants	50,000	50,000
581	**TRANSPORT EXPENSES**	**145,000**	**153,000**
5812	**VANS, PICK-UPS, JEEPS**	**145,000**	**153,000**
58121	Petrol, Oil, Lubes	100,000	100,000
58122	Routine Service	4,000	4,000
58123	Tyres, Minor Repairs	30,000	13,000
58124	Major Repair- Mechnical	8,000	33,000
58129	Other Charges	3,000	3,000
585	**MISC. FURNITURE AND FITTINGS**	**28,000**	**208,000**
5851	Purchase out of Revenue (Non Resdl: Equip:)	20,000	200,000
5859	Repairs	8,000	8,000
589	**CAPITAL WORKS FINANCED FROM REVENUE**	**0**	**1,000,000**
5891	Transport	----	1,000,000
	TOTAL :-	**37,465,200**	**40,262,100**

WAPDA yardstick of Equipment for WAPDA fortified Dispensaries

Yard stick of equipment/instrument for WAPDA **Fortified Dispensaries** 20 Bed Hospital

Sr.No	Item Name	Qty
	Emergency Room	
1.	ECG Machine	1
2	Gluco meter	2
3	Cardiac Monitor	1
4	Suction Unit	1
5	Stethoscope (Littman Type)	5
6	B.P. Apparatus Mercury Column Type	4
7	Nebulizer	1
8	Examination Torch 2-cells Japan/China	6
9	Tongue depressor (S/S) Different size	8
10	Percussion Hammer (S/S)	4
11	Examination Couch	4
12	Weighing Machine with Height Measure	1
13	Hospital Bed	2
14	Bed Side Cabinet	2
15	Over Bed Trolley	2
16	Foot Step (Double Step)	2
17	Screen 4-Folds with curtain)	4
18	Wheel Chair (Non-Folding	2
19.	Stretcher Folding Canvas	1
20	Revolving Stool (S/S)	6
21	Dressing Drum S/S of different sizes	6
22	Drip Stand	2
23	Spirit Swab Container (S/S)	6
24	Instrument Tray with cover (S/S) 10"x12"	4
25	Instrument Tray with cover (S/S) 08"x10"	4
26	Bowls (S/S) 06"	6
27	Bowls (S/S) 04"	2
28	Scissors Pointed (Straight size 06")	4
29	Scissors Blunt Curved 06"	4
30	Scissors Blunt Straight 06"	4
31.	Cheatles Forceps with Jar	2
32.	Dressing Forceps Toothed 06"	4
33.	Dressing Forceps Non-Toothed	4
34.	Instruments Trolley	2
35.	Emergency Trolley	1
36	Examination light single bulb on stand	1
37.	Sponge holding/Forceps	2
38.	Kidney trays 8"	6
39.	Kidney trays 6"	6
40.	Needle Holder	2
41.	Artery forceps	2
42.	Scalpel Handel	2
43	ENT diagnostic set	
44	Refrigerator	2
	Radiology Department	
45	X-Ray plant 300mA with aceessories	1
46.	X-Ray Illuminator (Single Film)	3
47	Dark Room Accessories	1
	Pathalogy Department	
48	Chemistry Analyzer	1
49	Heamatology Analyzer	1
50	Binocular microscope	1
51	Hot air oven	1
52	water bath	1
53	water distillation plant	1
54	Centrifuge machine	1
55	Glass ware	
56	Electric Sterilizer S/S Medium Size 9" x 18"	2
57	Refrigerator	1
58	Auto-Clave (Electric) Medium Size	1

WAPDA Yardstick of Equipment/ Instrument for WAPDA 50 Bed Hospitals

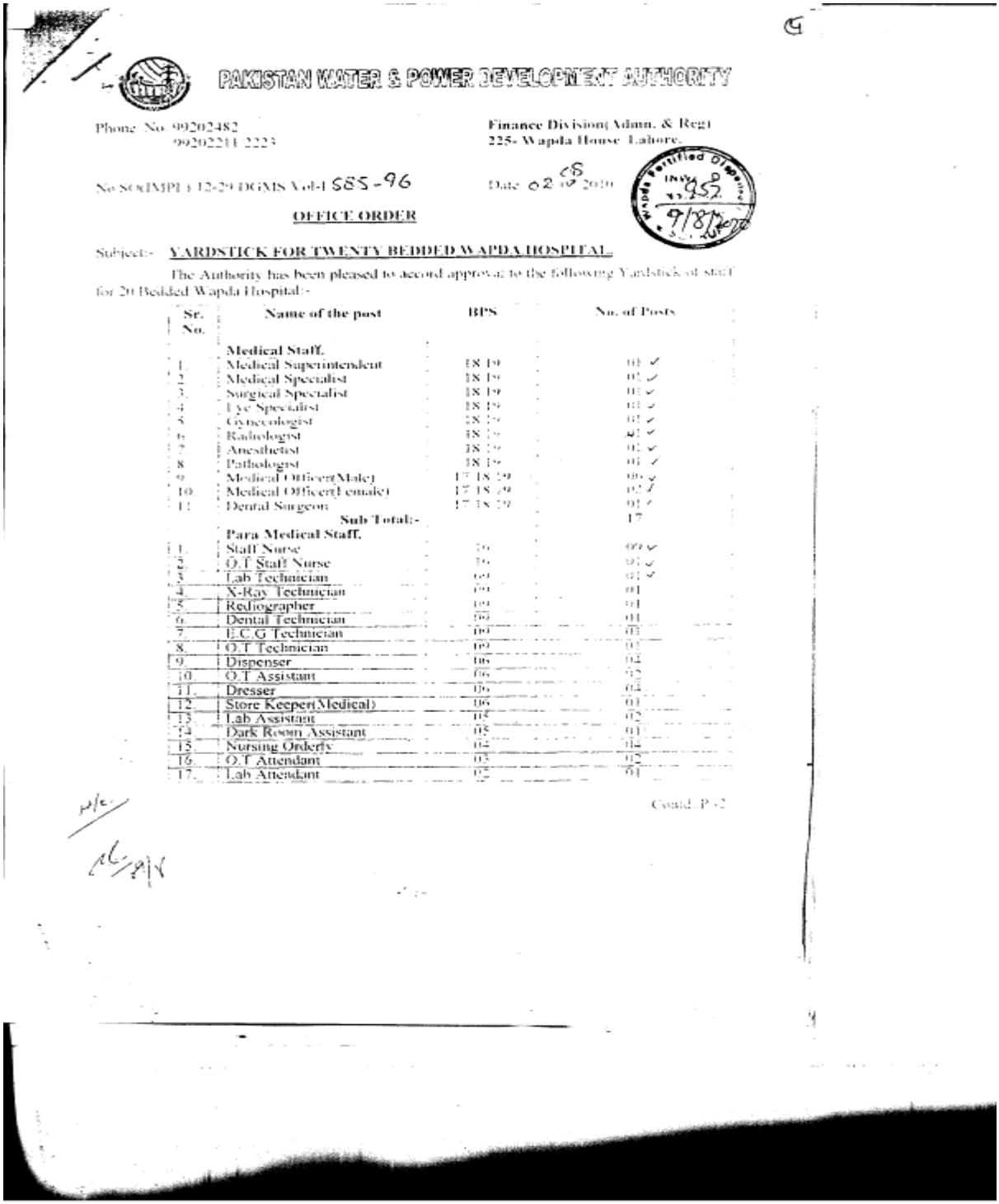
Yard Stick of Equipment/Instrument for WAPDA 50 Bed Hospitals

Sr.No.	Item Name
Pathology Department	
1.	Chemistry Analyser
2.	Electrolyte Analyser
3.	Haematology Analyser
4.	Binocular Microscope
5.	Centrifuge Machine
6.	Water Bath
7.	Water Distillation Plant
8.	Hot Air Oven
9.	Incubator
10.	Differential Cell Counter
11.	Refrigerator
12.	Electric Balance
13.	Glass ware
14.	Glucometer
Radiology Department	
15.	Ultrasound Machine
16.	X Ray Plant with accessories
17.	Dark room accessories
DentalDepartment	
18.	Dental unit complete with standard accessories
19.	Dental X Ray
20.	Sterilizer
21.	Autoclave
22.	Instruments
Ophthalmology Department	
23.	Rechargeable Ophthalmoscope
24.	Rechargeable Retinoscope
25.	Slit Lamp
26.	Applanation Tonometer
27.	Keratometer
28.	Trial Box with Frame
29.	Sneellen Chart
30.	Ishihara Colour vision Plates
31.	Gonioscope
32.	Tripple Mirror
33.	60D & 90D Lenses
34.	Triple Mirror

35.	Indirect Ophthalmoscope
36.	Operation Microscope
37.	Phacoemulsification system
38.	Instruments
39.	Lens Meter
40.	Bipolar Cautry
41.	Suction Unit
42.	Operation Table
Medical Department	
43.	Suction Machine
44.	Cardiac monitor
45.	Defibrillator
46.	ECG Machine
47.	Pulse oximeter
48.	Nebulizer
49.	Glucometer
50.	BP Apparatus
51.	Stethoscope
52.	O2 cylinders
53.	Resuscitation Trolley
54.	Wheel chairs
55.	Weigh scale with height measure
56.	Stretcher
57.	Diagnostic set
58.	X Ray illuminator
59.	Examination couch
60.	Minor procedure instruments
61.	Refrigerator
Operation Theatre	
62.	Operation Table
63.	Steel Buckets
64.	Jar Set
65.	Refrigerator
66.	X Ray Illuminator
67.	Ceiling Operation Theatre light
68.	Portable Light

69.	General Surgery Sets
70.	Cholecystectomy Set
71.	Laparatomy sets
72.	Intestinal set
73.	Thyroid Set
74.	Prostectomy Set
75.	Pylolithotomy Set
76.	Amputation set
77.	D&C set
78.	Hot air oven
79.	Cautry
80.	Suction unit
81.	Autoclave
82.	Anaesthesia Machine with ventilators
83.	Pulse oximeter and cardiac monitors
84.	Fiber optic sigmoidoscope
85.	Cystoscope
86.	Instrument trolley Drums, Boiler

WAPDA Yard Stick for Twenty Bedded WAPDA Hospital



PAKISTAN WATER & POWER DEVELOPMENT AUTHORITY

Phone No. 99202482
99202211-2223

Finance Division(Admn. & Reg)
225- Wapda House Lahore.

No.SO(EMPL)12-29/DGMS Vol-I 585-96 Date 02-08-2010

OFFICE ORDER

Subject:- YARDSTICK FOR TWENTY BEDDED WAPDA HOSPITAL.

The Authority has been pleased to accord approval to the following Yardstick of staff for 20 Bedded Wapda Hospital:-

Sr. No.	Name of the post	BPS	No. of Posts
	Medical Staff.		
1.	Medical Superintendent	18-19	01
2.	Medical Specialist	18-19	01
3.	Surgical Specialist	18-19	01
4.	Eye Specialist	18-19	01
5.	Gynecologist	18-19	01
6.	Radiologist	18-19	01
7.	Anesthetist	18-19	01
8.	Pathologist	18-19	01
9.	Medical Officer(Male)	17-18-19	06
10.	Medical Officer(Female)	17-18-19	02
11.	Dental Surgeon	17-18-19	01
	Sub Total:-		17
	Para Medical Staff.		
1.	Staff Nurse	09	09
2.	O.T Staff Nurse	09	01
3.	Lab Technician	09	01
4.	X-Ray Technician	09	01
5.	Radiographer	09	01
6.	Dental Technician	09	01
7.	E.C.G Technician	09	01
8.	O.T Technician	09	01
9.	Dispenser	06	04
10.	O.T Assistant	06	02
11.	Dresser	06	04
12.	Store Keeper(Medical)	06	01
13.	Lab Assistant	04	02
14.	Dark Room Assistant	05	01
15.	Nursing Orderly	04	04
16.	O.T Attendant	03	02
17.	Lab Attendant	02	01

Contd: P-2

(2)

18.	Dental Attendant	12	01
19	Aya/Dia	11	04
20.	Ward Bearer-Boy	02	08
21.	Sanitary Worker	01	06
	Sub Total:-		56
	Establishment Staff:		
1.	Assistant	14	01
2.	Sr. Clerk	09	01
3.	Jr. Clerk/Typist	07	02
4	Store Keeper	06	02
5.	*Driver	06 07	03
6.	Receptionist	05	02
7.	Chowkidar/Security Guard	01 06	04
8.	Naib Qasid	01	08
9.	Mali	01	02
	Sub Total:-		25
	Accounts Staff:		
1.	B&AO	17	01
2.	Accounts Assistant	14	03
3.	Jr.Clerk/Typist	07	01
4.	Naib Qasid	01	01
	Sub Total:-		**06**
	G.Total:-		**104**

* As per road worthy vehicles/Ambulances.

(Pervez Ahmed)
Dy. Director Finance(Reg.)
For Director Finance (Admn & Reg.)

Distributions:-

1. Managing Director(Admn) Wapda.
2. General Managers Finance(Power).
3. Chief Auditor, Wapda, Al-jannat Building, Nila Gumbad, Lahore.
4. Secretary Wapda w.r. to his No.S/AD(Coord) 03003 MTG 2006-08 dated 19.07.2010 and Corrigendum No.2101-10 dated 27.07.2010.
5. Director General Finance(B&C), Wapda.
6. Director General(Medical Services), Wapda Hospital, Lahore.
7. Medical Superintendent Wapda Hospital, Sukkur.
8. Director General Wapda Audit, Sunny View, Lahore.
9. P.A/SO to Chairman, Members(Finance)/(Water) (Power)

WAPDA FORMULARY 2009

GENERIC NAME	BRAND NAME	FIRM's NAME
Section 1:DRUGS ACTING ON GASTRO INTESTINAL SYSTEM		
ANTACIDS		
$Al(OH)_2$+ $Mg(OH)_2$+ Simethecon	Siam Tab. & Siam Syp.	Efroze
ANTI ULCERANTS		
Cimetidine	Cimet Tab. 400mg	F.Sons
Ranitidine	Ranax Tab.150mg & inj. 50mg	StandPharm
	Ranulcid Tab. 150mg	Merck
Famotidine	H2F Tab. 20mg	F.sons
	Famron Tab. 20mg & Famron Susp.	PDH
	Placid Tab. 40mg	LCPW
Sucralfate	Ulcocid Tab. 500mg.	DonValley
	Sucfate Tab 500mg &1000mg	Siza
	Dyfate Syp.	Dyson
Omeprazole	Cisec cap. 20mg	StandPharm
	Omega cap.20mg & Infusion.	F.sons
	Risek infusion.	Getz
Esomeprazole	Nexum Cap. 20mg & 40mg	Getz.
	Omeplus Cap. 20mg	Standpharm
Lansoprazole	Laprazole Cap. 30mg	Nova Med
	Selanz SR. Cap. 30mg	Searle
ANTISPASMODICS,ANTICHOLINERGICS		
Propyphenazone&Adephenine	Spasmo-Cibalgin Tab.	Novartis
Drotaverine	Nospa Tab 40mg, Forte Tab & Inj:	Sanofi aventis
	Relispa Tab.& Forte Tab.	Searle
Otilonium Bromide	Spasmomen Tab 40mg	pharmatec
ClidiniumBromide,chlordiazepoxide	Librax Tab.	Roche
Mebevarine	Colospas. Tab	Nabiqasim
ANTIDIARROHEALS, ANTIAMOEBICS,ANTI-TRICHOMONALS:		

Attapulgite	Entox-P Tab.	Wyeth
Metronidazole	Flagyl 200 & 400mg Tab, Sus. & inf	Sanofi aventis
	Metrozine syp.	Searle
	Metrozil Vial	Siza
Diloxanide & Metronidazole.	Entamizole SS & DS Tab & Susp.	Abbott
Metronidazole & Furazolidone	Dependal-M Tab. & Suspension	GSK
Loperamide	Emod cap.2mg	Efroze.
Secnidazole	Pronil Tab.1g	Standpharm
	Dysen Forte Tab	Nabiqasim
Sulfasalazine	Salazopyrine Tab.	Pharmacia.
Mesalazine	Asacol Tab. 400mg	Getz.
	Mesazine Tab.	Adamjee
ANTI-EMETICS		
Dimenhydramine	Gravinate Tab.Syrup & inj	Searle
Metoclopramide	Maxolon Tab. 10mg	GSK
Prochlorperazine	Stemetil Tab.& Injection	Sanofi aventis
Meclizine.	Navidoxine	AG&C
Domperidone	Motillium Tab.	Janssen
	Peridone Tab. & Suspension	Sami.
	Vomilux Tab	Atco
LAXATIVES,ANTI HAEMMORRHOIDAL PREPARATIONS		
Lactulose.	EZ-Flow Syp.	Efroze
	Gastrilax Syp.	CSH
Sulfolax	Laxolax drops.	DonValley
	Laxoberon Tab.	Merck
Sod. biphosphate, sod. Phosphate	Kleen Enema	Nabiqasim
Paramoxine HCl	Tronolane cream	Abbott
ANTHELMINTICS:		
Pyrantel pamoate	Combantrin 250mg Tab. & Susp.	Pfizer.
Albendazole	Zentel Tab.200ng & syrup	GSK
Mebendazole	Vermox Tab. 100mg & 500mg	Janssen
	Erizole Tab. 500mg & syrup	Efroze
Niclosamide	Yomesan Tab.	Bayer
Levamisol	Ketress SYP.	ICI
Section 2: DRUGS ACTING ON MUSCULO SKELETAL SYSTEM		
ANALGESICS,ANTIPYRETICS,ANTI-INFLAMMATORY DRUGS		
Paracetamol	Panadol Tab. 500mg & Drops	GSK

	Febrol Tab.500mg	B.H
	Paracetamol Tab 500mg	Tread
	Supamol Susp. 120mg & 250mg	Nova Med
	Paramac susp.	Macter
	Provas Inj. 300mg	Sami
PCM+ Caffeine.	Tylol Extra Tab.	DonValley
	Febrol Extra Tab.	B.H
PCM+Dextropropoxyphene	Femidol Tab.	Pacific
PCM+Orphenadrine citrate	Duragesic Tab.	Tabros
	Nuberol Forte Tab.	Searle
Pyridostigmine bromide.	Amygra Tab. 60mg	Tabros
Tizanidine	Redeem Tab. 2mg	Pulse
	D-Tone Tab. 2mg	Standpharm
Mefenamic acid	Ponstan Tab, Forte Tab & Susp.	Parke Davis
	Mefnac Syrup.	Efroze
Ibuprofen	Brufen Tab.200, 400,600mg & Syp.	Abbott
	Bludol Tab. 200mg,400mg& Syrup	Standpharm
Flurbiprofen	Ansaid Tab.	Pharmacia
Diclofenac Sodium	Artifen Tab.50mg	Abbott
	Arnil Tab: 50mg	Brookes
	Doloflam 50mg Tab. & 75mg inj.	LCPW
	Ziclofen-S Cap. 50mg & Gel	Novins
	Forgenac inj.	Tread
	Rheumatin Inj. 75mg/3ml	Siza
	Klic Emulgel 1%	Tabros
Diclofenac Potasium.	Rheumatin-K Tab. 50mg	Siza
Nimesulide	Nise Tab. 100mg	Pharmevo
	Narcogen Tab.100mg	Himont
	Osteosoft Tab. 100mg	Mega
Piroxicam	P-cam Tab/Cap.10mg & 20mg	Merck.
	Exican Tab. 20mg	Nova Med
	Rumolon inj.20mg & Gel	Tabros
Piroxicam β cyclodextrin	Cyclodex. Tab. 20mg	Platinum
	Betacare Tab. 20mg	CSH
Indomethacine	Liometacen Inj.	Chiesi
Naproxen	Neoprox Tab.250mg	Merck.
Naproxen Sodium	Dephlog Tab. 275mg & 550mg	StandPharm
Meloxicam	Movera Tab. 7.5mg & 15mg	Mega
Celecoxib.	Artiflex Cap.200mg	Standpharm

	Dorsiflex Cap: 200 mg	Nex Pharma
Compound analgesic	Wintogeno balm	Merck
Narcotic Analgesics		
Pentazocine	Sosegon Inj. 30mg	Searle
Buprenorphine	Prenor Inj. 0.3mg/ml	Amson
Nalbuphine	Aknal inj 10mg & 20mg	Akhai
	Loricin Inj 10mg/ml	Siza
	Kinz inj 10mg/ml	Sami
Tramadol	Tramal Cap: 50mg & 100mg Inj	Searle
Naloxone	Nalox Inj.	**Rotex Medica**
URICOSURIC DRUGS:		
Allupurinol	Zyloric Tab. 100mg, 300mg	GSK
Section 3: DRUGS ACTING ON CENTRAL NERVOUS SYSTEM		
SEDATIVES,TRANQUILLIZERS:		
Lorazepam	Ativan Tab.2mg	Wyeth
	Tenzil Tab. 1mg & 2mg	Atco
Diazepam	Relaxipam Tab: 5mg	Epla
	Valium Tab. 5mg & injection	Roche
Bromazepam	Lexotanil Tab.3mg	Roche
	Anxit Tab 3mg	Atco
	Anxolite Tab. 3mg	Epla
Clobazam	Frisium Tab.	Sanofi Aventis
Alprazolam	Zenith Tab.0.5mg	F.Sons
	Neuxam Tab.0.5mg	Standpharm
Midazolam	Midazom Inj	Akhai
Temazepam	Restoril cap.15mg & 30mg	Novartis.
ANTI PSYCHOTICS		
Resperidone	Risp Tab: 1mg,2mg & 3mg	Adamjee
	Benzisox Tab. 1mg,2mg & 3mg	Highnoon.
Haloperidol	Dosik Tab. 1.5mg, 5mg & Liquid	Adamjee
	Serenace Tab. 5mg	Searle
Olanzapine	Zapsel Tab. 5mg,7.5mg &10mg	Hansel
	Nirvanol Tab.5mg &10mg	Standpharm
Lamotrigine	Lamnet Tab. 100mg	Searle
	Lamonil 50mg & 100mg	Platinum
ANTICONVULSANTS.		
Valproic acid	Epival 250 & 500mg Tab. Syrup	Abbott
	Epilium Tab. & liquid	Sanofi aventis
	Dapakan 250 & 500mg Tab.	Platinum.

	&Syp.	
Carbamazepin	Tegral Tab. 200mg	Novartis
	Seizunil Tab: 200mg,Syrup	Platinum
Topiramate	Topmate Tab. 25mg,50mg	Maple
	Topirama Tab.100mg	Platinum
Procyclidine	Kempro Tab: 5mg	Adamjee
	Kemadrin Tab.	GSK
Levodopa & carbidopa	Sinemet Tab. 250mg/25mg	MSD
	Neudopa Tab. 250mg/25mg	Platinum
Clonazepam	Rivotril Tab.0.5mg,2mg & Drops	Roche
ANTI DEPRESSANTS		
Amitryptaline	Tryptanol Tab. 25mg	MSD
Imipramine	Tofranil Tab.	Novartis.
Clomipramine	Clomfranil Tab.10mg & 25mg	Novartis.
Dothiepin	Prothiaden Tab.25mg & 75mg	Abbott
Fluoxetine	Depricap cap.20mg	Nabiqasim
	Vonder cap. 20mg	Standpharm
	Azene Susp.	Razee
Paroxetine	Rozitin Tab. 20mg	Pulse
	Paraxyl Tab. 20mg	CCL
Trazodone	Deprel Tab. 50mg & 100mg	Adamjee
Citalopram	Winpram Tab 20mg	Dyson
	PramtecTab.	Pharmatec
Es-Citalopram	Escadep Tab 10mg	Platinum
	Morcet Tab.10mg & 20mg	Searle
Levosulpride	Levopraid Tab. 25mg & 50mg	Pacific
ANTI-ALLERGICS		
ChlorPhenramine Maleate	Piriton Tab.	GSK
Pheniramine Maleate	Avil 25mg & 50mg Tab, Syp. & inj	Sanofi aventis
Hydroxizine HCl	Atarax Tab10mg & 25mg	AG&C
Promethazine	Phenergan Tab 25mg & elixir	Sanofi aventis
Cetrizine	Zeatin Tab. 10mg	Stiefel
	Baydal Tab. & Syrup	Bayer
Levocetrizine	T-Day Tab.	Novartis
Loratadine.	HistadineTab. 10mg	Epla
	Texcol Allergy Tab. 10mg	Razee
Fexofenadine	Megafast Tab. 60, 120 & 180mg	Mega
	Fexofast Tab 60mg & 120mg	Platinum
Betahistine	Serc Tab. 8mg	Highnoon.
	Vetinil Tab 8mg	Standpharm

VASOTHERAPEUTICS & NEUROTROPICS		
Cinnarizine	Stugeron Tab.	Janssen
Co-dergocrine	Hydergine amp.	Novartis
Almitrine & Raubasine	Duxil Tab.	Servier
Flavanoid, Diosmin &Hesperidin	Daflon Tab.500mg	Servier
Trimetazidine	Vastarel Tab. 20 mg.& MR Tab	Servier
	Dinemic Tab. 20mg	Maple
	Trimez Tab.	Atco
Piracetam	Pethil Tab. 800mg	Razee

Gabapentin	Gabix Cap. 100mg,300mg & 400mg	Getz
	Dougab Cap. 100mg &300mg	Searle
	Glorex cap 100mg,300mg &400mg	Dyson
Pregablin	Zeegab Tab. 50,75,100,150mg	Hilton
Section 4: DRUGS ACTING ON CARDIOVASCULAR SYSTEM		
ANTI-ARRYTHMICS,CARDIAC FAILURE DRUGS		
Glyceryl Trinitrate	Deponit 5 Patch	Atco
	Cardnit Tab. 2.6mg & 6.4mg	Atco
	Angiocard-SR Cap. 2.5mg& 6.5mg	Biogenics
	Angised Tab.	GSK
Isosorbid Dinitrate	Isdin Tab. 10mg	Maple
	Isoket inj.	Atco
Isosorbid Mononitrate	Monis Tab. 20mg.	Maple
	Ismo 20 Tab.	Roche
Amiodarone	Cordarone Tab.100mg& 200mg	Sanofi aventis
Digoxin	Digox Tab.	Platinum.
	Lanoxin Tab. & inj	GSK
Dopamine.	Dopamine inj.200mg/5ml	Abbott
Dobutamie	Dobutamie inj	**Rotex Medica**
β – BLOCKERS		
Bisoprolol	Corbis Tab: 5mg	Efroze
Atenolol	Tenormin Tab. 25, 50 & 100mg	ICI
	Blokium Tab. 25 mg & 100mg	Highnoon
	Caten Tab.100mg	Atco
Propanolol	Inderal Tab. 10 mg & 40mg	ICI
Metoprolol	Mepressor Tab.	Novartis
	Merol Tab.100mg	Atco

	Meprol Tab. 100mg	Obsons
Carvedilol	Vadil Tab. 3.12mg, 12.5mg & 25mg	Tabros
	Carveda Tab. 6.25mg & 25mg	F.Sons
CALCIUM CHANNEL BLOCKERS		
Nifedipine	Adalat Retard Tab 20mg	Bayer
	Anifed Rtd.	Tread
	Nifine CC Tab. 30mg	Tread
Diltiazem	Dilzem Tab. 30mg & 60mg	Parke Davis
	Etizem Tab.30mg & 60mg	ICI
Amlodipine	Norvasc Tab.5mg & 10mg	Pfizer.
	Ampress Tab.5 mg.	B.H
	Adoptin Tab. 5mg	Tread
Leracanidipine	Leradip Tab. 10mg	Squares
Verapamil	Calan Tab. 40mg & SR Tab	Searle
	Isoptin SR 240mg Tab.	Abbott
ACE INHIBITORS		
Captopril	Capril Tab. 25mg	Maple
Lisinopril	Zestril Tab.5mg & 10mg	ICI
	Lotide Tab: 5mg & 10mg	Pharmatec
Perindopril	Coversyl Tab. 2mg & 4mg	Servier
Enalapril	Hipril Tab 5mg & 10mg	Razee
	Renitec Tab: 5mg	MSD
Ramipril	Normipil Tab. 5mg	Standpharm
ARBs		
Losartan	Xavor Tab: 50mg	F.Sons
	Zostat Tab. 50mg	Squares
	Lossan Tab.50 mg	Maple
Losartan & Hydrochlorthiazide	Xavor DIU Tab:	F.Sons
	Lossan-H.Tab	Maple
Candesartan	Advant Tab. 8mg & 16mg	Getz
OTHER ANTIHYPERTENSIVES		
α- Methyl DOPA	Aldomet Tab. 250mg	MSD
Indapamide	Natrilax SR Tab:	Servier
HYPOLIPIDAEMICS		
Gemfibrozil	Gempid Tab. 600mg	Atco
Fenofiberate	Fenoget Cap. 67mg & 200mg	Getz
Benzafibrate	Lipocor Tab.	Efroze.
Simvastatin	Simva Tab. 10 mg & 20mg	Nabiqasim
Atorvastatin	Lipitor Tab.10mg	Parke Davis
	Lipiget Tab. 10mg & 20mg	Getz
	Lipotrim Tab. 10mg & 20mg	Maple

	Stator Tab. 20mg	Tread
Rosuvastatin	Vaptor Tab. 5, 10 & 20mg	Searle
DIURETICS		
Spironolactone	Aldactone & Aldactone A Tab	Searle
Frusemide	Lasix 40 mg Tab. & Inj.	Sanofi aventis
Frusemide & Amiloride	Lasoride Tab.	MSD
Frusemide & Spironolactone	Spiromide Tab. 20 & 40mg	Searle
Acetazolamide.	AZM Tab 250mg.	Ethical
COAGULANTS, ANTI COAGULANTS,PLATELET AGGREGATION INHIBITORS		
Clopidogrel	Noclot Tab: 75mg	CCL
	Lowplat Tab. 75mg	Pharmevo
	Loclog Tab. 75mg	Maple
Heparin	Heparin inj.5000i.u/ml	Rotex
	Heparinol Inj. 5000 I.U/ML	Bio Medics
Enoxaprine	Clexane inj.20, 40, 60 & 80mg	Sanofi Aventis
Daltaparin Sodium	Fragmin Inj 5000IU & 7500IU	Pharmacia
Warfarin	Werifrin Tab 5mg	Werrick
Streptokinase	Akinase 1.5MIU	Akhai
Asprin	Disprin Tab & Disprin CV	R.B
	Loprin Tab 75mg	HighNoon
	ASA Tab 75mg & 150mg	Don Vally
Tranexamic acid	Transamin 250 & 500mg Cap. & inj.	Hilton
	Transcam DS 250 & 500mg cap. & inj	C.Mendoza
Section 5: DRUGS FOR INFECTION		
PENICILLINS:		
Ampicillin	Penbritin 500mg cap., susp. & inj.	GSK
Amoxicillin	Amoxil cap.250mg, Susp. & Drops	GSK
	Ospamox Cap. 250mg, Tab. 500mg	Novartis
	Ospamox Susp 125mg & 250mg	Novartis
Ampicillin & cloxacillin.	Ampiclox 250 & 500mg. cap. Syp. 250mg & Inj 500mg	GSK
Cloxacillin	Orbenin cap: 250mg	GSK
Amoxicillin & clavulanic acid.	Augmentin 375 & 625mg Tab. & Syp.	GSK
	Augmentin Inj.600mg & 1.2gm	GSK
	Amoxi-Clav 375 & 625mg Tab & susp	Novartis

	Amoxi-Clav inj 0.6gm & 1.2gm	Novartis
TETRA CYCLINES		
Oxytetracycline	Teramycin Cap: 250	Pfizer
Doxycycline	Doxyn cap.	Atco
	Declocine cap 100mg	Nova med
CEPHALOSPORINS		
Cephradine.	Valodin 250,500mg cap & inj	Hilton
	Infexin inj.250mg,500mg & 1gm inj	Merck
Cefixime	Maxima Cap: 400mg & susp.	Macter
Cefazoline	Kavelin inj. 500mg & 1gm	Don Vally
Cefoperazone.	Cefobid inj. 500mg & 1gm	Pfizer
Cefoperazone & sulbactam	Sulzone Inj 1gm & 2gm	Biocare
Cefotaxime	Sefoban Inj. 500mg & 1gm	Squares
	Claforan inj.500mg & 1gm	Sanofi aventis.
Ceftriaxone.	Titan inj.500 mg & 1gm I.m/I.v	Macter.
	Inocef inj 500mg & 1gm	B.H
	Sporax inj 1 g	Razee
Cefuroxime	Zinacef inj. 750mg, 1.5gm	GSK
Ceftazidime	Cefcom inj 500mg & 1gm	B.H.
Cefepime	Cefstar inj.500mg & 1gm	B.H
QUINOLONES		
Ofloxacin	Curitol Tab. 200mg & infusion	Standpharm
	Quinox Tab. 200mg	Brookes
Ciprofloxacin	Florocin 250 & 500mg Tab.& inf	LCPW
	Ciprojan Tab 250 & 500mg	Nova Med
	Cyrocin Tab. 250mg & 500mg	High Noon
	Novidat inj. 200mg	Sami
	Inoquin inf. 200mg	B.H
Levofloxacin	Levoson 250mg & 500mg	Dyson
	Leflox Tab 250mg & Inf:500mg	Getz
Sparfloxacine	Sparsel Tab. 100mg	Hansel
TRIMETHOPRIM & SULPHONAMIDES		
Sulphamethoxazole & trimethoprim.	Nicotrim Tab.	R.B
	Sulforin DS Tab.& Syp	DonValley
	Septran DS Tab & susp.	GSK.
AMINO GLYCOSIDES		
Gentamicin	Genticyn inj. 20mg,40mg & 80mg	R.B
Amikacin	Grasil inj. 250mg & 500mg	Sami
Fosomycin	Focin susp.	Tabros

Lincomycin.	Lincocin Inj. 600mg & cap 500mg	Pharmacia
MACROLIDES		
Erythromycin	D-mycin Tab. 250mg & 500mg	DonValley
Clarithromycin	Ultima Tab. 250mg	Macter
	Neo klar Tab. 500mg & Syp.	CCL
	Claritek Tab. 250mg	Getz
	Clamont Tab.500mg	Squares
	Klaricid Susp & Inj	Abbott
Azithromycin	Resque cap. & suspension	Standpharm
	Azrocin Cap. 250mg & susp	Obsons
SYSTEMIC ANTIFUNGALS		
Grisofulvin	Gryso Tab: 500mg	Platinum
	Grivin Susp.	Stiefel.
Nystatin	Nilstat drops	Wyeth.
Terbinafine HCL	Terbiderm Tab. 125mg & cream	Atco
Ketoconozole	Conaz Tab.	Atco
Fluconazole	Zolanix caps 150mg.	Stiefel.
	Diflucan Cap. 50mg & infusion	Pfizer
ANTI VIRALS		
Acyclovir	Acylex Tab. 400mg, oint. & syrup	F.sons
	Acyclovir inj. 10ml	Abbott
ANTI TUBERCULAR DRUGS		
Rifampicin	Rimactal Cap. 300 & 450mg & syp.	Novartis
Rifampicin + INH	Rimactal INH Tab. 300 & 450mg	Novartis
Ethambutol	Myambutol Tab. 400mg	Wyeth.
Pyrazinamide(PZA)	Pyrazinamide Tab. 500mg	Wyeth.
	PZA Ciba Syp.	Novartis
Ethambutol, INH+ rifampicin.	Myrin Tab.	Wyeth.
Rifampicin + PZA +INH	Rimcure Tab.	Novartis
Rifampicin+INH+ PZA &Ethambutal	Myrin P Tab & Myrin P Forte Tab	Wyeth.
	Rimstar Tab.	Novartis
ANTI MALARIALS		
Chloroquin	Nivaquin P. Tab. & Syp	Sanofi aventis
Sulfadoxine+ Pyrimethamine	Maladar Tab. & susp.	Efroze
Artemether + Lumefantrine	Alar Tab	Searle
	Xomal PlusTab	Razee
Section 6: GYNAECOLOGICAL & HORMONAL PREPARATIONS		

Clotrimazole	Clotrima Tab. 500mg	Siza
	Canesten 1 Vag. Tab. & Vag cream	Bayer
	Gynosporin Cream.2% & 10%	Nabiqasim
Sulphanilamide	Sulphakream N cream.	Nabiqasim
Methyl erogotamine	Methergin Tab & inj.	Novartis
Oxytocin	Syntocinone inj.	Novartis
Ethinyl Estradiol & Cyproterone Acetate.	Dian-35 Tab.	Bayer
Oestradiol valarate & Cyproterone Acetate	Climen Tab.	Bayer
Tibolone	Livial Tab.2.5mg	Akzo.
	Lobion HRT Tab. 2.5mg	Platinum
Oestradiol	Progynova Tab.	Bayer
Dydrogesterone	Duphastone Tab.	Highnoon
Norethisterone	Primolute-N Tab;	Bayer
Lisuride	Dopergin Tab.	Bayer
Bromocriptine	Parlodel Tab.	Novartis
Clomiphene	Clomitab Tab.50 mg.	Nabiqasim.
Section 7: DRUGS ACTING ON GENITO URINARY SYSTEM		
DRUGS FOR BPH		
Terazosin	Hytrin Tab. 1 mg & 2mg	Abbott
	Lopros Tab. 1mg, 2mg & 5mg	Standpharm
Doxazocin	Cardura Tab.2mg	Pfizer.
	Uripas Tab. 2mg	Searle
Prazocine	Minipress Tab 2mg	Pfizer
Tolteridine	Detrusitol 2mg	Pharmacia
Oxybutanine	Taivor Tab 3mg	Razee
URINARY ANTISEPTICS		
Pipemidic acid	Urixin Tab. 400mg	Abbott
Naladixic acid	Nalacid 500mg Tab & susp.250mg	Pharmatec
	Negram Tab 500mg & Susp.	Searle
URINARY ALKALIZERS		
Disodium hydrogen citrate	Citralka Liquid	Parke Davis
Sodium acid citrate	Alkacitron syp.	PDH
URINARY TRACT ANTISPASMODICS AND ANALGESICS		
Flavoxate.	Genurin Forte Tab.	Pacific
Section 8: DRUGS ACTING ON RESPIRATORY SYSTEM		
ANTI TUSSIVES		
Dextromethorphan	Pulmox-DM Syp.	Dyson
	Denol DM Syp.	Nova Med

EXPECTORANTS		
Salbutamol & Guaiphenesin	Ventoline expectorant	GSK
	Pulmox-E Syp.	Dyson
CPM, Ammonium Chloride etc	Pulmonal Syp.	CCL
Acephylline	Texcol Ex Syp.	Razee
DECONGESTANTS,COLD PREPARATIONS		
Triprolidine HCl	Actidil Elixir	GSK
Triprolidine, Pseudoephedrine & PCM	Actifed P Tab.	GSK.
PCM, Pseudoephedrine &Chlorphenaramine	Panadol CF Tab:	GSK
	Flueze Tab.	Werrick
BRONCHODILATORS		
Salbutamol	Bronchilate Tab.2mg & 4mg	R.B
	Ventoline Tab.2mg , 4mg & SR Tab	GSK
	Ventoline respiratory.soln. & Inj.	GSK
Theophylline	Theograd Gradumet Tab.	Abbott
	Respro-SR Cap:200mg	Searle
Terbutaline	Britanyl Tab. 2.5mg & syp	B.H
Aminophylline	Amphyll Inj.	GSK
Tulobuterol	Bremax Syp:	Abbott
Bambuterol	Pulmitac Tab. 10mg & 20mg	Platinum
Ketotifen	Proasma Tab: 1mg	Platinum
	Zatofen Tab	Novartis
Montelukast Sod.	Bronkeez Tab. 4mg & 10mg	Standpharm
	Ventek Tab. 10mg	Searle
INHALERS.		
Salbutamol	Ventoline Inhaler	GSK
	Salbo 100 µg Inhaler	Getz
Salbutamol & Beclomethasone	Salnon Inhaler	Macter
	Ventide Inhaler	GSK
	Xaltide 50/100 µg Inhaler	Getz
Beclomethasone	Bekson 50µg & Bekson forte250 µg	Getz
	Macticort250 µg Inhaler	Macter
	Clenil nebulising solution.	Chiesi.
Salmitrol & Fluticasone	Salmicort 50µg, 125µg & 250µg	Macter
Ipratropium Bromide	Optra 40 µg Inhaler	Getz
	Atem 0.025% Nebulising Solution.	Chiesi.
Section 9: DRUGS AFFECTING NUTRITION AND METABOLISM		
HYPOGLYCEMIC AGENTS		

Glibenclamide	Daonil Tab.	Sanofi aventis.
	Euglucon Tab.	Roche
Metformin	Glucophage Tab. 500mg & 1gm	Merck.
	Neophage Tab: 500mg & 850mg	Abbott.
Acarbose	Glucobay Tab. 50mg	Bayer
Gliclazide	Diamicron Tab. 80mg & MR Tab	Servier
	Nodibet Tab.	StandPharm
Glipizide	Minidab Tab.	Pharmacia.
Glimepride	Getryl Tab: 1mg,2mg,3mg & 4mg	Getz
	Diabold Tab 1mg,2mg,3mg & 4mg	B.H
	Pamaryl Tab. 2mg,3mg & 4mg	Squares
Pioglitazone	Zolid Tab. 15mg,30mg & 45mg	Getz
	Piozer Tab. 15mg,30mg & 45mg	Hilton
	Piozone Tab. 15mg,30mg & 45mg	Pulse
Insulin	Humulin N, R & 70/30	Eli lilly
	Mixtard 70/30	Novo Nordisk
	Actrapid HM & Insulatard HM.	Novo Nordisk
THYROIDAL PREPARATIONS		
Thyroxin.	Thyro Tab: 50mcg	Platinum
	Thyroxin Tab.	GSK
VITAMINS & MINERAL PREPARATIONS		
Calcium preparation.	Qalsan Tab.	Novartis
	Calcium sandoz + vit C inj.	Novartis
	Calcium P syp.	PDH
Calcitriol	Rocaltrol Cap. 0.25mcg & 0.5mcg	Roche
α. Calcidol	Searle-a Tab. 0.25mcg & 0.5mcg	Searle
	Alfa-D Tab.0.5mcg &1 mcg.	Platinum.
Alendronate sod.	Bongard Tab 10mg & 70mg	Pharmevo
	Osteopor Tab 10mg & 70mg	Werrick
Leflunomide.	Rhulef Tab. 10mg & 20 mg	Searle
Ossein Mineral Complex	Ossogin Tab.800mg	Platinum
Vit. B Complex	Neurobion inj.	Merck
	Vita-6 Tab. 50mg	C.Mendoza
	Camoplex Super Inj.	C.Mendoza
Multi vitamin	Camovit M Cap.	C.Mendoza
	Werifit With Lysine syp	Werrick

Pizotifen	Cestonil Tab. 5mg	Razee
Mecobalamin	Cobalmin 500ug Tab. & inj.	Macter
	Mecobal Tab. & Inj. 500mcg	Nabiqasim
Vitamin E	Evion Cap: 400mg	Merck
Follic Acid	Folic acid Tab.	C.Mendoza
IRON PREPARATION		
Ferrous sulphate & Follic acid	Ferrocap TR cap.	CCL
Iron, Bcomplex & minerals	Sangobion cap.	Merck.
Sodium Iron Edetate	Sytron liquid.	Parke Davis
Vit B Complex & iron	Incremin syp.	Wyeth.
Iron Polymaltose Complex	Fer- P Syp.	Nova Med
ANABOLICS, HEPATO TONICS, DIGESTIVE ENZYMES		
L. Ornithin, L. Aspartate	Hepa-Merz Syp	Brookes
	Aminocid Syp.	Razee
	Levijon Inj	Sami
Pancreatic Enzyme	Trizymal Tab.	Efroze
Trypsin & Chymotrypsin	Chymotrip forte	Sami
Silymarin.	Silynord Cap. 200mg	Tread
	Silymarin. Tab. 200mg	Amson.
Sibutramine	Nobese Cap. 10mg & 15mg	Getz
Section 10: STEROIDAL PREPARATIONS		
Dexamethasone	Oradexon inj.5mg/ml, 20mg /4ml	Akzo
Betamethasone	Betnelan Tab.	GSK
	Betnesol Tab & inj.	GSK
Prednisolone	Deltacortril Tab. 5mg	Pfizer
Methyl prednisolone Acetate.	Depo medrol Inj.40mg/ml	Pharmacia
Triamcinolone acetonide	Tricort Inj 40mg.	Akhai.
Hydrocortisone	Solucortef inj. 100, 250 & 500mg.	Pharmacia
	Hyzonate inj. 100, 250 & 500mg.	Amson.
Section 11: DRUGS FOR OPTHALMOLOGY		
ANTI GLAUCOMA DRUGS		
Levobunolol	Betagan Opth. Soln.	B.H.
	Levoptic eye drops 5%	Vega
Timolol.	Betalol eye Drops.	Sante.
	Nyolol 0.5% eye drops	Novartis
Betoxolol	Betaxol eye drops	Atco
Pilocarpine	Pilocar. 2%	Ethical
ANTIBIOTICS		
Chloramphenicol	Vasochlor eye drops	Ethical

	Vegachlor Eye Drops 0.5%	Vega
Sulphacetamide	Cemid Eye Drops 10%	Vega
Tobramycin	Obrex 0.3% eye drops	Vega
Moxifloxacin	Megamox Eye Drops	Sante
	Eyemox Eye Drops	Vega
Ciprofloxacin.	Quinocip Eye Drops	Vega
Gentamycin	Genticyn Eye/Ear Drops	R.B
Steriodal preparatoions		
Dexamethasone	Ocudex eye drops	Ethical
Prednisolone Acetate	Predforte eye drops.	B.H.
Flouromethalone	FML opth.soln.	B.H
	Floroptic 0.1% eye drops	Vega
ANTIBIOTIC & STEROIDAL COMBINATIONS		
Tobramycin + Dexamethasone	Cindex Eye Drops	Ethical
Chloramphenicol & Dexamethasone	Spersadex Eye Drops00.1%	Novartis
	Dexachlor eye drops	Ethical
Betamethasone & Neomycin	Betnesol N eye drops.	GSK
Ofloxacin & Dexamethasone	Dexaflox opthalmic solution	Sante
Prednisolone, Sulphacetamide & phenyl epherine	Blephapred eye drops	Sante
	Blephamide eye drops	B.H
Flouromethalone & Neomycin.	FML Neo eye drops	BH
Polymyxin, Neomycin Bacitracin & Hydrocortisone	Cortisporin Eye oint.	GSK
Polymyxin B & Bacitracin	Polyfax Eye Oint.	GSK
ANTI ALLERGICS		
Nephazolin & $ZnSO_4$	Oculosan Eye Drops	Novartis
Nafazoline+phenramine	Nafamine eye drops	Ethical
$ZnSO_4$ & Phenylephrine.	Fresh eyes drops	Ethical
Cromoglycate & Tetrahydozolin	Vegachrome	Vega
ANTI INFLAMATORY		
Diclofenac Sodium	Naclof eye drops.	Novartis.
	Diclon eye drops	Atco
	Difsome eye drops	Vega
ARTIFICIAL TEARS		
Polyacrylic acid 0.2%	Tear Gel.	Vega.
Dextran & HPMC	Optitears Eye Drops	Ethical
Polyvinyl alcohol, Povidone	Tears plus eye drops	B.H
MISCELLANEOUS		

Tropicamide	Mydolate drops.	Ethical
	Tropic eye drops.	Sante
Cyclopentolate	Cyclopen eye Drops	Ethical
Phenyepherine	Ethifrin drops	Ethical
Phenyepherine & Pyrilamine	Prefrin A opth.sol	B.H
Section 12: DRUGS FOR DERMATOLOGY		
Benzoyl Peroxide	Brevoxyl Cream	Stiefel.
TOPICAL ANTIFUNGALS		
Tioconazole	Trosyd cream.	Pfizer
Clotrimazole	Dermosporin solution	Nabiqasim
	Stiemazol Cream	Stiefel.
TOPICAL ANTI BACTERIALS, ANTISEPTICS		
Polymyxin B & Bacitracin	Polyfax skin oint	GSK
Neomycin, Bacitracin, Polymyxin & Lidocain	Healit cream.	Atco
Sodiunm Fusidate	Fusil cream/oint.	Tabros
TOPICAL CORTICOSTEROIDS & COMBINATIONS		
Betamethasone	Betnovate Oint/cream	GSK
	Betaderm Cream/Oint.	Atco
Betamethasone + Neomycin	Betnovate N Cream & Oint.	GSK
	Betaderm N oint/cream.	Atco
Clobetasol Propionate	Dermovate oint.	GSK
	Clobederm Oint.cream ,lotion & NN oint	Atco
	Clobevate oint & cream.	Stiefel.
Methyl Prednesolone	Advantan Cream/Oint/Fatty Oint	Bayer
Difluocortolone	Nerisone cream./oint/Fatty oint.	Bayer
Betamethasone & Salicylic Acid	Betasalic Oint	Atco
Betamethasone & Gentamycin	Betagenic Cream	Atco
Betamethasone, Neomycine & Miconazole	BetadermNM cream.	Atco
Clobetasol, Neomycine & Nystatin	Dermovate NN oint	GSK
Lactic Acid & Salicylic Acid	Duofilm gel.	Stiefel.
Neomycin, Bacitracin, l.Cysteine, Glycine & dl. Threonine	Cicatrin Powder	GSK
ANTI PRURITIC, SCABESIDALS		
Silver Sulphadiazine	Quench cream 1% 15, 50 & 250gm	F.Sons
	Dermazine cream 25gm & 250gm	Novartis

Hydroquinone 4 %	Clariderm DS	Stiefel.
Lindane	Scabene Cream & Lotion	Stiefel.
Crotamiton, Sulphur	Scabion Cream	Atco
Flucinolone acetonide, Hydroquinone & Tretinoin	Retrieve Cream	**Pharmahealth**
Flucinolone acetonide.	Synalar cream/ ointment	**Pharmahealth**
Flucinolone acetonide & cloquinol	Synalar C cream/ ointment	**Pharmahealth**
Section 13: ENT PREPARATIONS		
Polymyxin, Lignocaine & Propylene Glycol	Lidosporin Ear Drops	GSK
Polymyxin, Neomycin & Hydrocortisone	Otosporin Ear Drops	GSK
Flunisolide 0.025%	Tarisin Nasal Spray.	Sante
Xylometazoline	Xolisan Nasal Spray	Sante
Ofloxacine 0.3%	Otoflox ear drops	Sante
Section 14: ANAESTHETIC AGENTS		
Bupivacane	Abocain Spinal Inj	Abbott
Sevoflorane.	Sevorane	Abbott
Isoflorane	Forane	Abbott
Ketamine	Ketamax. inj.500mg/10ml	Rotex
Lignocaine	Xylocaine2% Jelly & topical sol. 4%	B.H
	Xylocaine with adrenalin 2% & xylocain	B.H
Pancuronium Bromide	Pavulon inj.2mg	Akzo
Atracurium	Tracrium inj. 2.5ml & 5ml	GSK
	Atrelax Inj:2.5ml & 5ml	Abbott
	Acuron inj.30mg/3ml & 50 mg/5 ml	Brookes.
Neostigmine	Neocholine inj.2.5mg/5ml	Brookes.
	Neostig inj.2.5 mg/ml	Siza.
	Neostigmine 2.5mg/ml	Rotex
Propofol	Diprivan inj.	ICI
	Pofol inj	Akhai.
Vecuronium Bromide	Norcuron Inj: 4mg & 10mg	Akzo
Atropine	Atropine inj.	PDH
Glycopyrrolate	Pyrolate inj.	Brookes
Glycopyrrolate + Neostigmine	Neo Pyrolate inj. 5ml	Brookes
Section 15: ANTISEPTICS, DISINFECTANTS		
Povidone iodine	Pyodine Soln.	Brookes
	Pyodine Surgical Scrub	Brookes
Antiseptics & Disinfectants	Sterillium	Akhai Gal.

	Oxoferin Soln.	Brookes
	Kohrsolin F.F.	Akhai Gal.
	Korsolex Basic	Akhai Gal.
Section 16: MISCELANEOUS.		
Polygaline	Haemacel	**Sanofi Aventis**
Anti-Snake Venom	Anti-Snake Venom Sera 10ml Inj.	Amson
Adsorbed Tetanus Vaccine	Imatet Inj. 0.5ml	Amson
Erythropoietin	Eperex 2000,4000 & 10000 P.F.S.	Janssen
Tamoxifen	Nolvadex Tab. 10mg	ICI
Sod. Amidotrozoate & Mg. Adidotrizoate	Urografin 76% 20ml,50ml & 100ml	Bayer
Inteferon α -2b & Ribavarin	Uniferon 3 & 5 MIU & cap. Ribazole 400 & 600mg	Getz
	Heberon inj. 3MIU&cap. Viron 400mg	Mactor
	Green alfa inj 3MIU & Virol 300mg	Genesis
stomatologicals.	Somogel tube	Abbott.
I.V Fluids, Vitamin C, Calcium lactate, INH Tab. Vitamin K. Formalin, spirit, Phenobarbitone Tab, Adrenaline, Hydrogen peroxide, liquid paraffin, Distilled water amp, Glycerine, Vaseline White, Calamine Lotion, ATS injection, ORS, Sulphur ointment. Bleaching Powder, Formaldehyde, Bandages & Dressing materials etc.		

Appendix M: List of Persons/ Organizations Met/ Consulted

List of People/Organisations Met/Consulted

Name	Position	Contacts	Purpose	Date
WAPDA				
Abdul Qayyum	Deputy Project Director	+92 331 4484213; dasuhpp@yahoo.com	Project site visit; WAPA Medical Services	6.-11.; 16. 25., 28.8.
Haji M. Farooq Ahmad	Project Director/CE	+92 3004305595; farooqhaji@yahoo.com	WAPA Medical Services	16.11.8.
Zaheer-ul-Islam	Medical Services; Director General		WAPA Medical Services	16. 25.8.
Nasir Abbas Awan	Medical Services Director	+92 336 7806375	WAPDA Med. Serv. Standards and price list	25.8.
Iftikhar Ahmed	Medical Superintendent	+92 (0)300 4636441	WAPA Medical Services	28.8.
KOHISTAN HEALTH				
Taj Mohammed	District Coordinator Health; acting Executive District Officer Kohistan		Interview	7.-10.8.
Gulbar	Executive District Officer Kohistan		Interview	10.8.
Azeez Ahmad	Kohistan District TB Centre in charge		Interview	10.8.
Anayatullah	Kohistan D. TB Centre; Sen. Med. Officer		Interview	10.8.
Mumtaz Ali	Rural H. C Dasu.; Med. Officer; in charge		Consultation; visit and interview	7.8.
Kouser Yousuf	Rural H. C Dasu.; Lady Health Visitor o		Consultation; visit and interview	7.8.
Hazrat Noman	BHU Dugah; Medical Technician		Consultation; visit and interview	8.8.
Shahida Naz	BHU Doga Dai		Visit and interview	8.8.
Sabreen Saleem	BHU Doga; LHV		Consultation; visit and interview	8.8.
Muhammad Ameeb	BHU Doga; health educator		Visit and interview	8.8.
Habib – us-Rahman	BHU Doga; EPI technician		Visit and interview	8.8.
Muhammad Abid	BHU Doga; EPI technician		Consultation; visit and interview	8.8.
Fazal Akbar	RHC Shatial; Medical Officer		Consultation; visit and interview	8.8.

Abdul Rasheed	RHC Shatial; Medical Technician		Consultation; visit and interview	8.8.
Bibi Alia	RHC Shatial; LHV		Visit and interview	8.8.
Munaza Gul	RHC Shatial; LHV		Consultation; visit and interview	8.8.
Saeed Ahmad	BHU Seo; Senior Medical Technician		Consultation; Visit and interview	9.8.
Jahangir	BHU Seo; doctor in charge		Consultation; Visit and interview	9.8.
Ayaz Mohammed	BHU Seo; EPI Technician		Visit and interview	9.8.
Amiz Khan	BHU Seo; Medical Technician		Consultation; Visit and interview	9.8.
Faqir Mohammed	BHU Seo; EPI Technician		Visit and interview	9.8.
Sher Ahmad	BHU Seo; Health Promoter		Visit and interview	9.8.
Shahida	BHU Seo; Lady Health Visitor		Consultation; Visit and interview	9.8.
Rukhsana	BHU Seo; Lady Health Visitor		Consultation	
Fauzia	BHU Seo; Lady Health Visitor		Consultation; Visit and interview	9.8.
Mutahira	BHU Seo; Dai		Consultation; Visit and interview	9.8.
Taghabuni	BHU Seo; ward orderly		Consultation	
Bostani	BHU Seo; Behistir		Consultation	
Gulab	BHU Seo; guard		Consultation	
Nosherwan	BHU Jalkot; Medical Officer		Consultation	
Sherzada	BHU Jalkot; Medical Technician		Consultation; Visit and interview	9.8.
Shazia Gul	BHU Jalkot; Lady Health Visitor		Consultation; Visit and interview	9.8.
Ilyas	BHU Jalkot; Ward orderly		Consultation; Visit and interview	9.8.
Mukdar	BHU Jalkot; Chokidar		Consultation	
COMMUNITY MEETINGS				
Muhammad Misueen	Sazeen Camp community member		Group discussion	8.8.

Shah Alam	Sazeen Camp community member		Group discussion	8.8.
Shee Afzal	Sazeen Camp community member		Group discussion	8.8.
Khan Afzal	Sazeen Camp community member		Group discussion	8.8.
Abdul Haneem	Sazeen Camp community member		Group discussion	8.8.
Ghani-us-Rahman	Sazeen Camp community member		Group discussion	8.8.
Birades	Sazeen Camp community member		Group discussion	8.8.
Mohakam Shah	Seo community member		Group discussion	9.8.
Saeed Shah	Seo community member		Group discussion	9.8.
Mohammed Shah	Seo community member		Group discussion	9.8.
Anwar Shah	Seo community member		Group discussion	9.8.
Roshan Khan	Seo community member		Group discussion	9.8.
Akhtar Shah	Seo community member		Group discussion	9.8.
Abdullah Shah	Seo community member		Group discussion	9.8.
Yasin Khan	Seo community member		Group discussion	9.8.
Umer Khan	Seo community member		Group discussion	9.8.
Mohammed Khan	Seo community member		Group discussion	9.8.
PARTNERS				
Ahmed Taj Khan	Pakistan Red Crescent; District Disaster Management Officer (DDMO)		Interview	10.8.
DASU HYDROPOWER CONSULTANTS				
Motohiko Iijima	Project Manager/Team leader	+92 304 456 9583; iijma-mt@n-koei.jp		
Mohammad Zaman	Team Leader, Social & Environmental Safeguards	mqzaman.bc@gmail.com		
Sunil Goonetilleke	Social resettlement specialist	+92 305460 8342; preethi_goonetilleke@yahoo.com.au		
Haimin Wang	Social resettlement specialist; Ass. Prof. College of Humanities and Dev't Stud.	15201169258; Wanghm@caueducn		
Ujala Saleem	Environmentalist	+92 300 481 4584 ujala_apollo@yahoo.com		
Zafar Iqbal Chaudry	Environment Expert	+92 300 946 0132; zic42@msn.com	Briefing	
William George	Fishery expert (Forman Christian College)	+92 320 4629699; dr_williamgeorge@hotmail.com	Introduction	
Irshad Ahmed Soomro	Chemist; Government of Punjab; Dept. of Archaeology & Museum	+92 333 4366988; princesoomro1@yahoo.com	Briefing Project site visit	
Kazuo Iiyama	Environmental Science & Engineering Dept.	Iiyama-kz@n-koei.co.jp	On-going	

	Overseas Consulting Administrator.			
Zia –ul-Hasan	Deputy Project Manager	+92 333 469 1464; dhp@dasu-dhc.com	Introduction	
M. Kamran Khan	Office Manager	+92 301 843 4466; kamran.khan@dasu-dhc.com	Introduction	
Maqsood Ahmad	Deputy Team-leader; Social & Resettlement	+92 3oo 842 4752; maksood67@gmail.com		
Samia Raoof	Gender expert	samia raoof [samia_raoof@hotmail.com]		
Ihsan Nadiem	Archaeology Expert (former Director of Archaeology Pakistan	+92 42 37312080; inadiem@yahoo.com	Project site visit	
Anwar Fazal	Dasu Social and Environment office field team-leader	anwar973@hotmail.com	Project site visit	
Muhammad Ramzan Chaudry	Resettlement Expert	+92 3004765856; ch_ramzan1946@yahoo.com	Project site visit	
Awais Hassan	Sociologist	Awais_sble@yahoo.com	Project site visit	
Noor-ul Hadi	Livelihood specialist	noornrm06@gmail.com	Project site visit	
Ilyas	Public health expert	dmiq80@yahoo.commilyasqureshi@yahoo.com	Project site visit	
Assalan Tariq	Resettlement expert		Project site visit	
Abdul Rauf	Dasu Manager Field Operations	+ 92 998 407245; georauf@yahoo.com	Intr.to Dasu Field office	

Appendix N: List of References

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