Baluchistan

Strategic Provincial Investment Plan and Project Preparation for Rural Water Supply, Sanitation and Health.

Inception Report

March, 1989

Wardrop - Acres
Cowater International
NESPAK.

BALUCHISTAN

Strategic Provincial Investment Plan
and Project Preparation for
Rural Water Supply
Sanitation and Health.

- to refer to national and provincial workshop
- to refer to sector profile
- environmental issue
- distortion between problem analysis and synthesis/solutions/options.
- More info concerning union councils.

INCEPTION REPORT

- Union council as community motivators
- Technical capabilities to be developed in district councils

March, 1989

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EXECUTIVE SUMMARY

The goal is to develop strategic provincial investment plans and to identify project which are committed to the betterment of health and overall quality of life for the rural population. This will be achieved through more cost-effective, sustainable water supply, sanitation and hygiene education initiatives which maximize community involvement.

Before initiatives were developed in Baluchistan were identified key issues what influence development in the sector. Understanding the causes of these issues is the first step to finding workable solutions.

Key Issues

Water resources and population issues have proved to be the major constraints within which initiatives for the sector must be formulated. Population shifts can affect water demand but so can new water supplies affect settlement patterns.

Water supply schemes in Baluchistan are costly and trade-offs for technical or economic reasons usually result in comprises on quality. The emphasis has been to install conventional water supply systems without fully investigating the technology options and without involving the community.

The need for water supply, sanitation and hygiene education in Baluchistan is great, but full awareness of this need by rural people and decision-makers is lacking.

Several institutions play a role in the provision of services in the sector. The government line departments have been making progress in increasing the rural coverage of water supply, primarily the Public Health Engineering Department. Special agencies, with foreign donor assistance, have made some progress in meeting the water supply, sanitation and hygiene education needs of small rural villages.

The human resource capabilities in the sector are very limited and must be expanded to support progress in the sector.

Although cost recovery is an important policy for Pakistan the concept, must be applied carefully in Baluchistan because the peoples are poor and the cost of schemes is high.

Development of Initiatives

Initiatives were developed in seven areas:

- institutional;
- community participation;
- technical;
- health and hygiene;
- human resource development; and
- cost recovery.

For each initiatives, several options were identified which provide direction for further development of investment strategies in the next phase of this study. Ultimately, the projects selected will combine many of these initiatives.

Potential Initiatives

Institutional initiatives aim to strengthen capabilities, streamline procedures, increase interdepartmental coordination and increase the level of direct involvement with communities. Several options exist with line departments and local government bodies.

Community participation initiatives include improved interaction with line departments, community awareness, community participatory programmes and needs assessment.

Technical initiatives include small schemes implemented mainly by communities (latrines, handpumps, repairs), large schemes for

implementation by line departments, tubewell, water treatment, rehabilitation and investigative studies to assess needs and water resources.

Health and hygiene education requires the mobilisation of health workers through existing organizations and the extension of training to rural areas.

The human resource initiatives address areas that require support including technical skills, artisans, community development expertise, planning, and management. In Baluchistan, a major limitation is the number of qualified teachers to deliver the necessary educational requirements to the rural population.

Cost recovery initiatives include the promotion of community financing, the development of fair and effective mechanisms of collection, and the provision of funding and credit.

To increase private sector involvement, initiatives could include the privatisation of operation and maintenance of water schemes, upgrading the capability of the private sector, and provision of financial support.

These initiatives are only indicative of the types of initiatives which may work in Baluchistan. Numerous potential projects could be identified within each initiative; however, it is necessary to verify much of the data collected; to date, to determine which projects will work best in Baluchistan.

List of Indicative Projects

delivery of water supply to schools in villages with existing or proposed piped water supply;

provision of latrines in schools and other community centres;

development of water supply systems for small villages located close to identified water sources;

rehabilitation of existing water supply schemes (traditional and modern) and improvements to water tanks and distribution systems;

upgrading quality of surface water supply where rural population density is high and groundwater potential is poor, as occurs in Jafarabad and Tamboo Districts;

installation of deep handpumps for small villages in areas where groundwater potential is good;

improvement works for existing water sources that are unprotected and subject to contamination;

assessment of alternative water supply schemes in the brackish water zones of Lasbela and Chagai Districts; and

assessment of drainage problems in special areas, such as Nasirabad.

1. INTRODUCTION

The Government of Pakistan has embarked on an ambitious program to improve the country's rural infrastructure including water supply and sanitation. In 1987, a team of Pakistani and international consultants undertook a national review of the Sector. They presented a Sector Report to the Government in June, 1988.

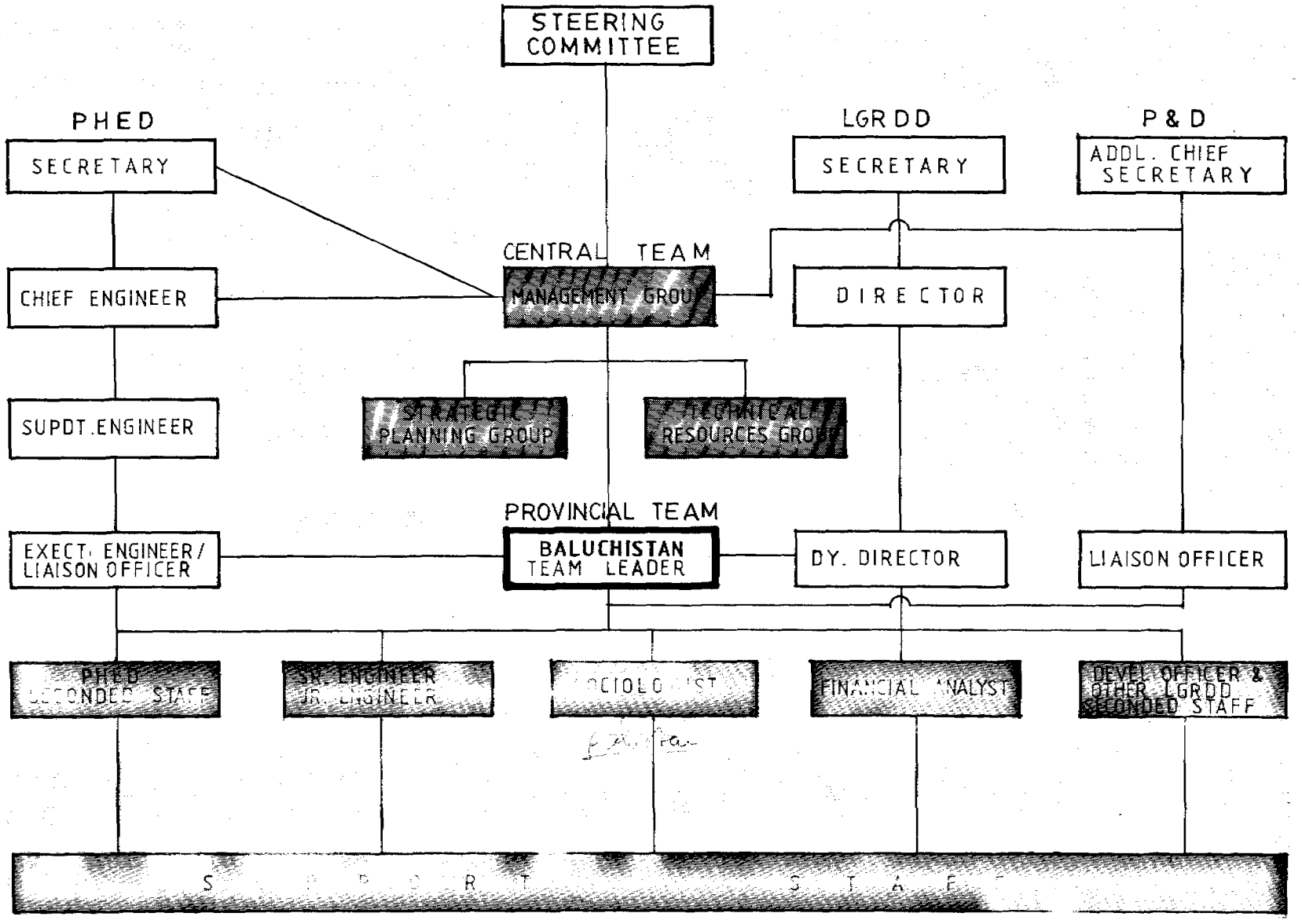
As a result of the Sector Review, the World Bank, initiated this Strategic Provincial Investment Planning and Project Preparation Process to assist the Provincial Government in the development of an investment strategy and identification of projects for implementation starting in 1990. The goal of the projects is to contribute to the betterment of health and overall quality of life of the rural populace through more cost effective and sustainable water supply, sanitation and hygiene education initiatives while maximising community involvement.

In late 1988, the World Bank, with the financial support of CIDA, engaged the project team of Wardrop-Acres in association with NESPAK, and Cowater International, as Consultants for the project.

The purpose of this report is to present the Project Team's approach to the work as a basis for discussion with the Government and the World Bank. An outline of the project organisation and methodology is presented and critical issues in the sector and their root causes are identified. A set of preliminary initiatives with implementation options are proposed as a preview of the likely direction of the investment plans.

As set out in the workplan in this report, the focus of the Team's activities in the next phase will be on refinement of the issues and initiatives through more detailed examination of existing data, some limited field checks and discussions with GOP staff. The preliminary initiatives will be reevaluated and additional initiatives will likely emerge. The specific initiatives that evolve will form the basis of the investment plan and the formulation of projects.

PROJECT ORGANISATION FOR BALUCHISTAN PROVINCE



2. PROJECT ORGANIZATION AND METHODOLOGY

2.1 Project Organization and Management

The Provincial Team is responsible for developing the investment plan and identifying projects for implementation. It is made up of Project staff (Team Leader, three engineers, a Sociologist and a Financial Analyst) and seconded Provincial staff as shown in Figure 2.1. The team reports to, and is guided by, the Provincial Steering Committee made up of:

- Chairman - Additional Chief Secretary, Planning and Development Department;
- Member - Secretary, Public Health Engineering Department;
- Member - Secretary, Local Government and Rural Development Department.
- Member - Secretary, Health Department; and
- Member - Chief Engineer, Public Health Engineering Department.

The Provincial Team is supported by the Central Team based in Islamabad. The Central Team takes the lead in developing methodologies for the project, establishes goals and their schedules, and provides technical support to the Provincial Team.

A detailed presentation of the project staffing and individual responsibilities is presented in Appendix I.

2.2 Methodology

The project utilizes a Strategic Planning approach to the work programme in which key issues are identified and are used to focus the activities for the duration of the project term. The process is designed to quickly lead to programmes and initiatives which can be implemented and which will have a reasonable likelihood of success.

The process is an ongoing one in which data is collected, analyzed and used to arrive at an understanding of the strengths which can be built on and the weaknesses which need to be overcome. Through analysis, interrelationships in the sector are identified and are used in the development of potential initiatives. Gaps in the data result in more collection and analysis.

The following activities will be undertaken in the time periods shown:

. Reconnaissance Survey	-	Dec. 1 - Feb. 15, 1989;
. Data Collection	-	February 15 - September 30;
. Data Analysis	-	March 1 - September 30;
. Synthesis of Information	-	March 15 - June 30;
. Formulation of Initiatives	-	March 1 - October 30; and
. Preparation of Outputs	-	June 1 - October 30, 1989.

The outputs of the project will be recommended Strategic Provincial Investment Plans and Project Identification documents in both draft and final form and a National Summary Investment Plan according to the following schedule:

. June 11, 1989	-	Draft Strategic Provincial Investment Plan;
. Sept. 10, 1989	-	Final Strategic Provincial Investment Plan;
	-	Draft Project Identification Report; and

Nov. 5, 1989 - Final Project Identification Report;
- National Summary Investment Plan.

A detailed discussion of the methodology is presented in Appendix II.

To discuss flow diagramme.

Figure 3.1

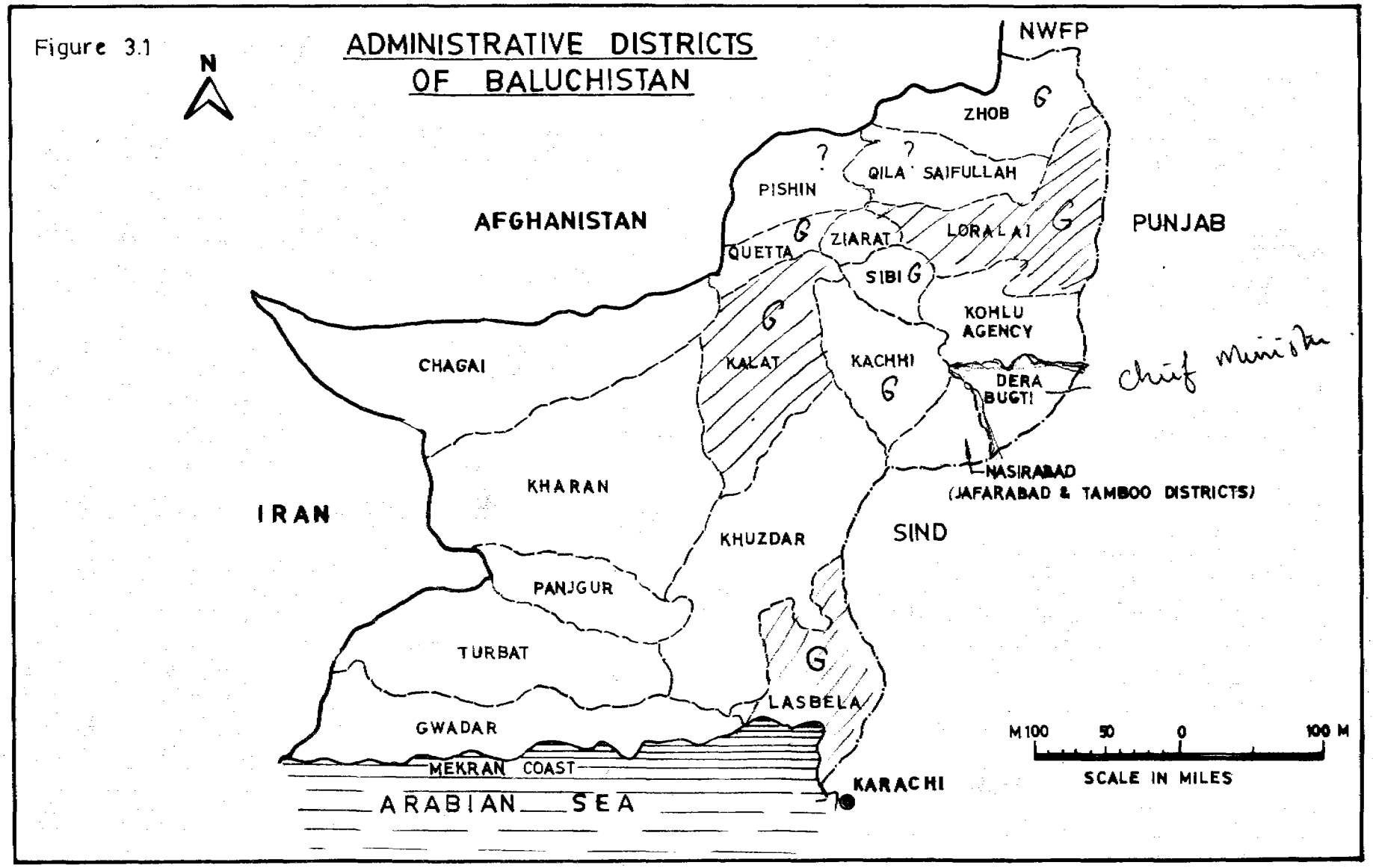


Figure 3.1

3. RURAL WATER SUPPLY, SANITATION AND HEALTH SECTOR

3.1 Overview of the Province

The following sections describe the physiographic divisions (as well as climatic characteristics), population, and water resources of Baluchistan. Figure 3.1 shows the Administrative Districts which are referred to often throughout the remainder of this report.

3.1.1 Physiographic Divisions

Baluchistan is an arid region with wide extremes in temperature, low precipitation, low humidity and high evaporation. The province can be divided into four distinct physiographic areas:

- plains;
- upper highlands;
- lower highlands; and
- deserts.

These areas are shown in Figure 3.2.

Plains

Baluchistan has relatively small areas of plains compared to its total land area. They include the Kachhi plain situated south of Sibi and extending into Nasirabad Division and the southern part of Dera Bugti District, and a narrow plain area along the Mekran coast stretching from Karachi to the Iranian border. The Kachhi plain is about 500 ft (150m) above mean sea level near Sibi and it decreases in elevation to 175 ft (50m) in Nasirabad.

The plain areas are very hot in summer with temperatures rising as high as 120 degrees F (50 degrees C). Winters are mild, never falling below the freezing point. The mean annual precipitation for the Dera Bugti, Kachhi and Nasirabad plains is 5 to 10 inches (125 to 250 mm). The

Figure 3.2

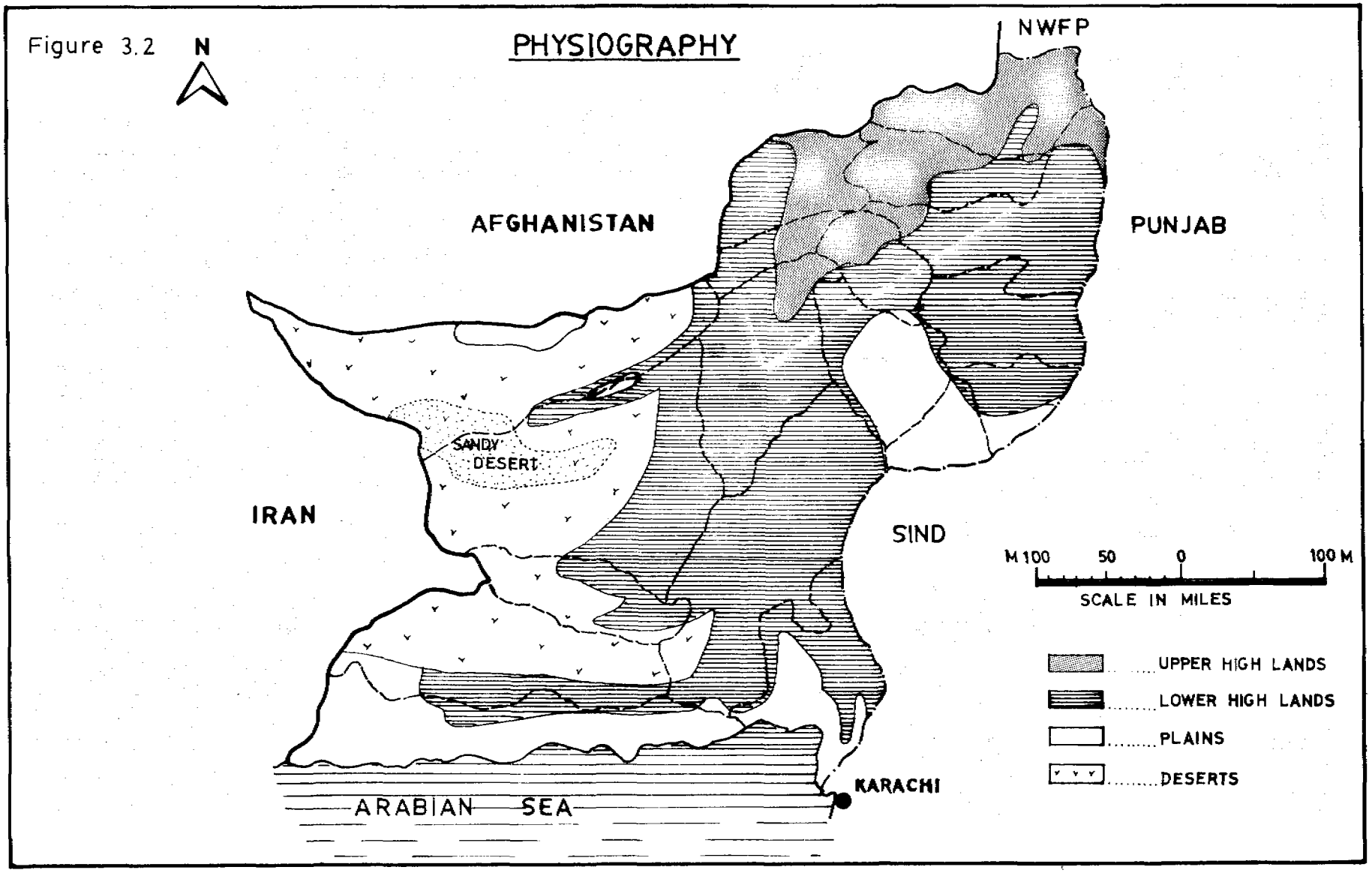


Figure 3.2

Mekran coastal plain is more humid but still receives less than 5 inches (125 mm) of rainfall per annum (see Figure 3.3).

Dams have been built on the Bolan and Nari Rivers to irrigate some small areas in Sibi and Kachhi Districts. In parts of Nasirabad and Kachhi Districts, major irrigation canals exist which are an extension of the Indus valley irrigation system. Important canals include the Pat Feeder, Desert and the Kirthar. Some irrigation dams have also been built on non-perennial nullahs (streams) such as Loralai Dam In Loralai District, Lohra Dam in District Chagai, and Hub River Dam in District Lasbela.

Upper Highlands

The northern half of Pishin District, the Districts of Zhob and Ziarat, and parts of Quetta District comprise the upper highland area of Baluchistan. In District Zhob lies the highest peak of the Koh-e-Sulaiman Range, known as Takt-e-Sulaiman which is 11,000 ft (3370 m) above mean sea level. The Sulaiman range serves as a natural boundary between Punjab and Baluchistan. South of District Zhob, lie the Quetta Valley Ranges including Murdar, Zargoon, Takatu and Chiltan.
The highest amongst these ranges is 11,600 ft (3580 m) above mean sea level. The Murdar range stretches between Quetta and Sibi and includes important passes such as Bolan and Khojak.

Some high mountain peaks exist in other Districts, for example Kalat, Kharan, Chagai, and Lasbela.

The climate of the upper highlands is temperate with very cold winters and warm summers. Annual precipitation ranges from 8 to 20 inches (200 to 500 mm) with most occurring in the winter season.

Lower Highlands

Lower highlands are situated in the Districts of Quetta, Pishin, Loralai, parts of Sibi, Kalat, Khuzdar Chagai, Kharan, Mekran, Dera Bugti, and Kohlu (see Figure 3.2). Winters of the lower highlands vary

Figure 3.3

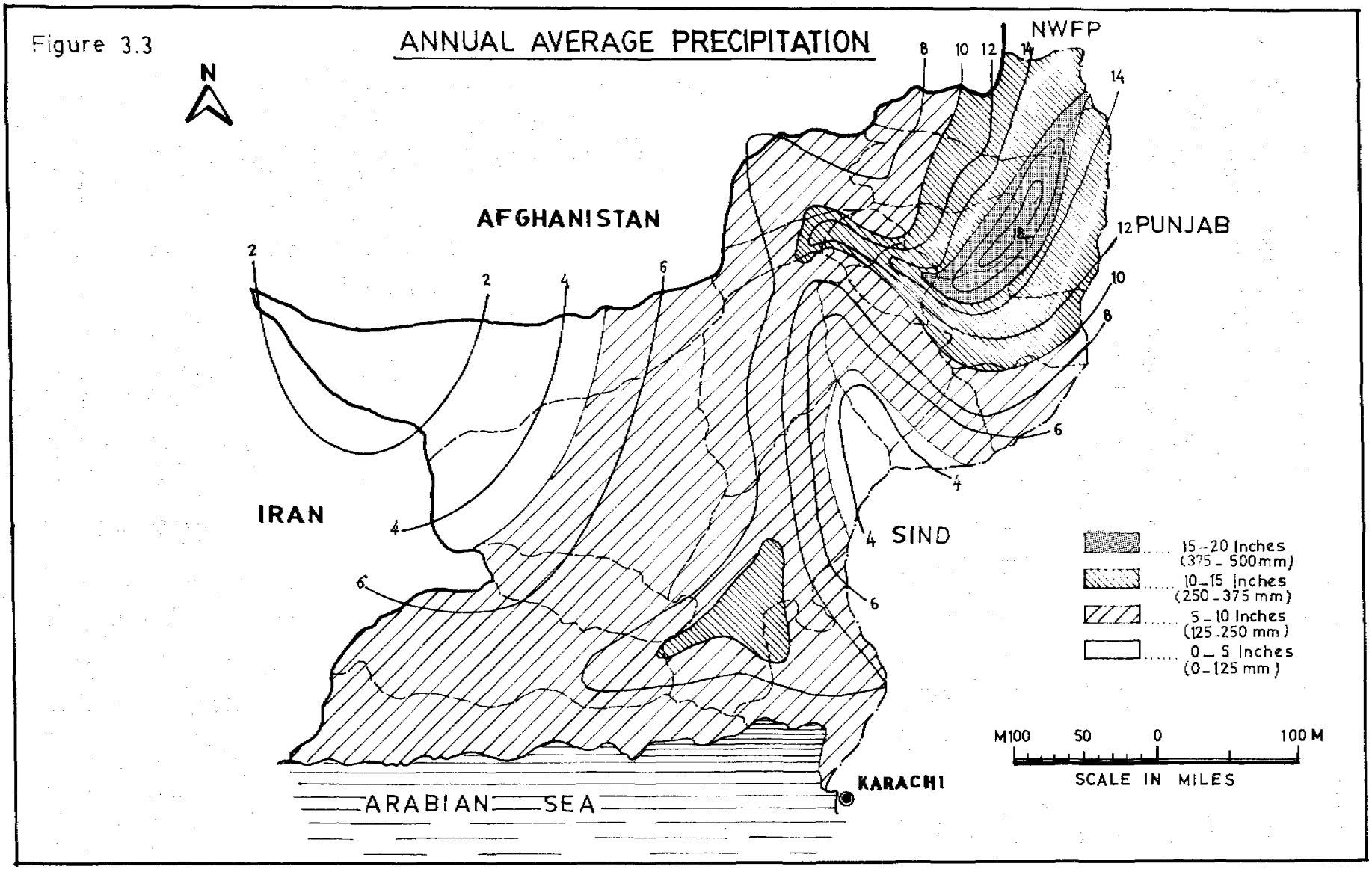


Figure 3.3

from extremely cold winters in the northern districts to mild conditions closer to the Mekran coast; summers are hot and dry. The arid zones of Chagai and Kharan Districts are extremely hot in summer.

Deserts

Chagai, Kharan plus the Mekran coast Districts of Panjgur, Turbat and Gwadar partly consist of sandy desert areas. These Districts are all situated in western Baluchistan (see Figure 3.2). The desert climate is characterized by hot and very arid conditions. Occasional strong wind storms make these areas very inhospitable..

3.1.2 Population

Baluchistan occupies more than 40% of Pakistan's land area but contains only five percent of the population. In 1981, the population of Baluchistan was 4.32 million, of which 84% (3.66 million) was classified as rural. Estimates of today's population are very uncertain due to unknown growth rates and shifting population patterns. These shifts include inter-provincial movements, rural to urban migration, nomadic or seasonal movements, and influx of Afghan refugees.

According to the 1981 census, there were 5587 mauzas (census unit containing several settlements) located in the 17 districts of Baluchistan. The precise number of villages is unknown, but would greatly exceed the number of mauzas. In general it may be assumed that each mauza contains 3 to 5 villages.

The overall rural population density of Baluchistan is 10.5 persons per square kilometre based on 1981 figures. The area of highest rural density is Nasirabad (63 persons per square kilometre) which is an extension of the heavily populated irrigated regions of the Indus plains. Even here the population density is considered low compared to rural areas of Punjab and Sind. Moderate rural population density, 16 to 30/km^2, is found in Districts with upland valleys or plateaus where climate is temperate and ecological conditions are more suited to an

Figure 3.4

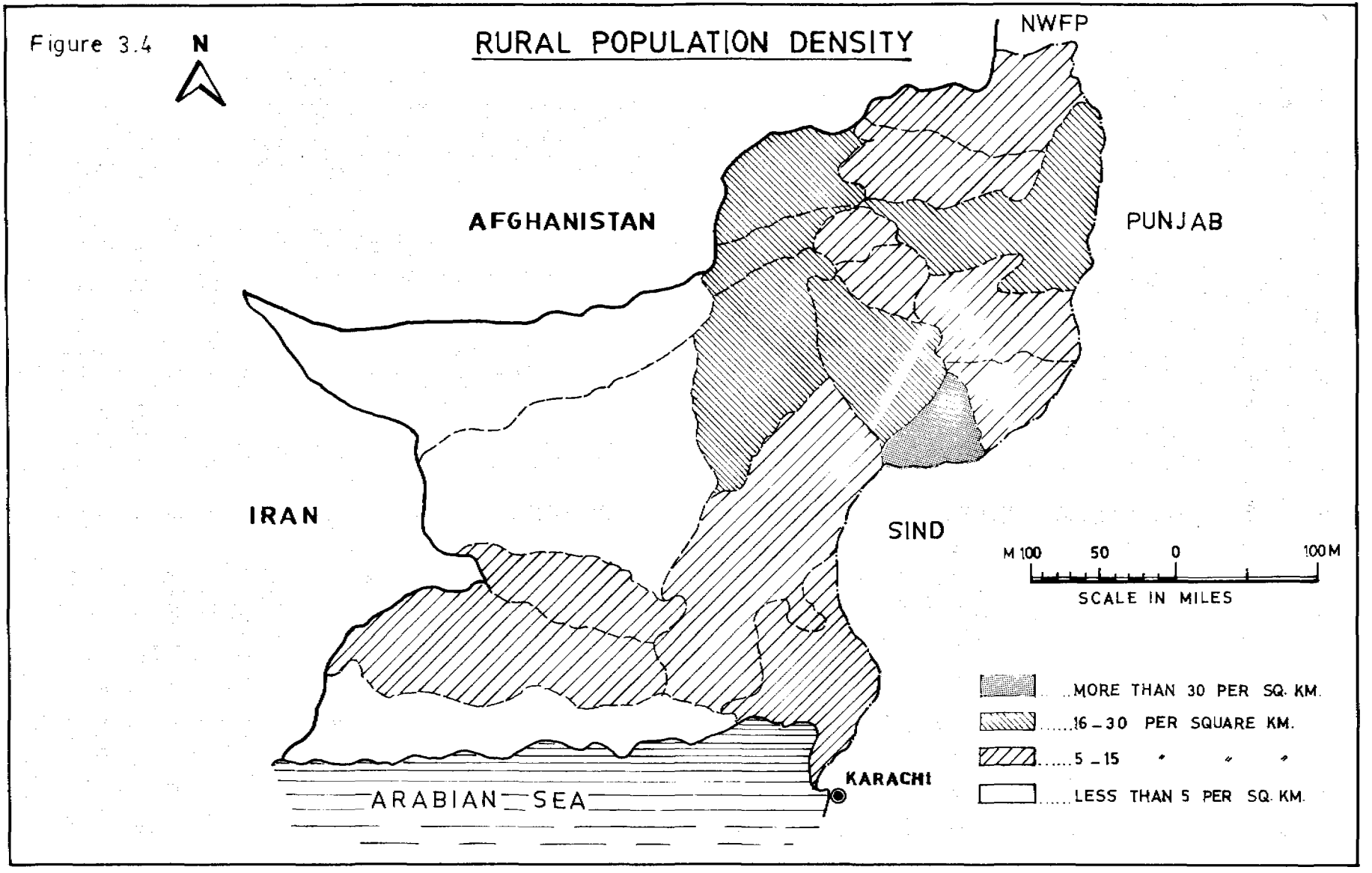


Figure 3.4

agrarian livelihood. These Districts include Quetta, Pishin, Kachhi, Kalat, and Loralai. Other areas that experience greater extremes in temperature (colder highlands or hotter lowlands) and correspondingly less suitable ecological conditions have low population density (5 to 15/km^2). These districts include Zhob, Sibi, Kohlu, Lasbela, Khuzdar, Turbat, and Panjgur. The remaining Districts, Chagai, Kharan and Gwadar, have desert climates and very low rural population density (less than 5/km^2). Figure 3.4 shows the distribution of rural population by District.

3.1.3 Water Resources

Surface Water

Surface water resources fluctuate greatly throughout the year owing to the variation in precipitation. Perennial rivers, springs and nullahs (streams) are most numerous in the northern and northeastern highland areas, where the precipitation is highest. Table 3.1 shows typical flows for some perennial rivers and nullahs in Baluchistan. Figure 3.5 shows the rivers and drainage patterns in the province.

In the southern and western parts of Baluchistan where precipitation is very low, many streams and rivers are ephemeral, remaining dry for long periods. Nevertheless, there are many nullahs with small flows (0.5 to 5.0 cusecs (0.015 to 0.15m^3/second) in every river basin. Hamur (Shallow lakes) form during the wet season but remain dry for most of the year.

In the Kachhi and Nasirabad plains, some rivers are perennial in the upper reaches but disappear downstream due to infiltration, evaporation and consumption (irrigation).

Groundwater

Groundwater of Baluchistan is found most frequently in unconsolidated piedmont and valley floor alluvium. Since valley floor deposits have a

Figure 3.5

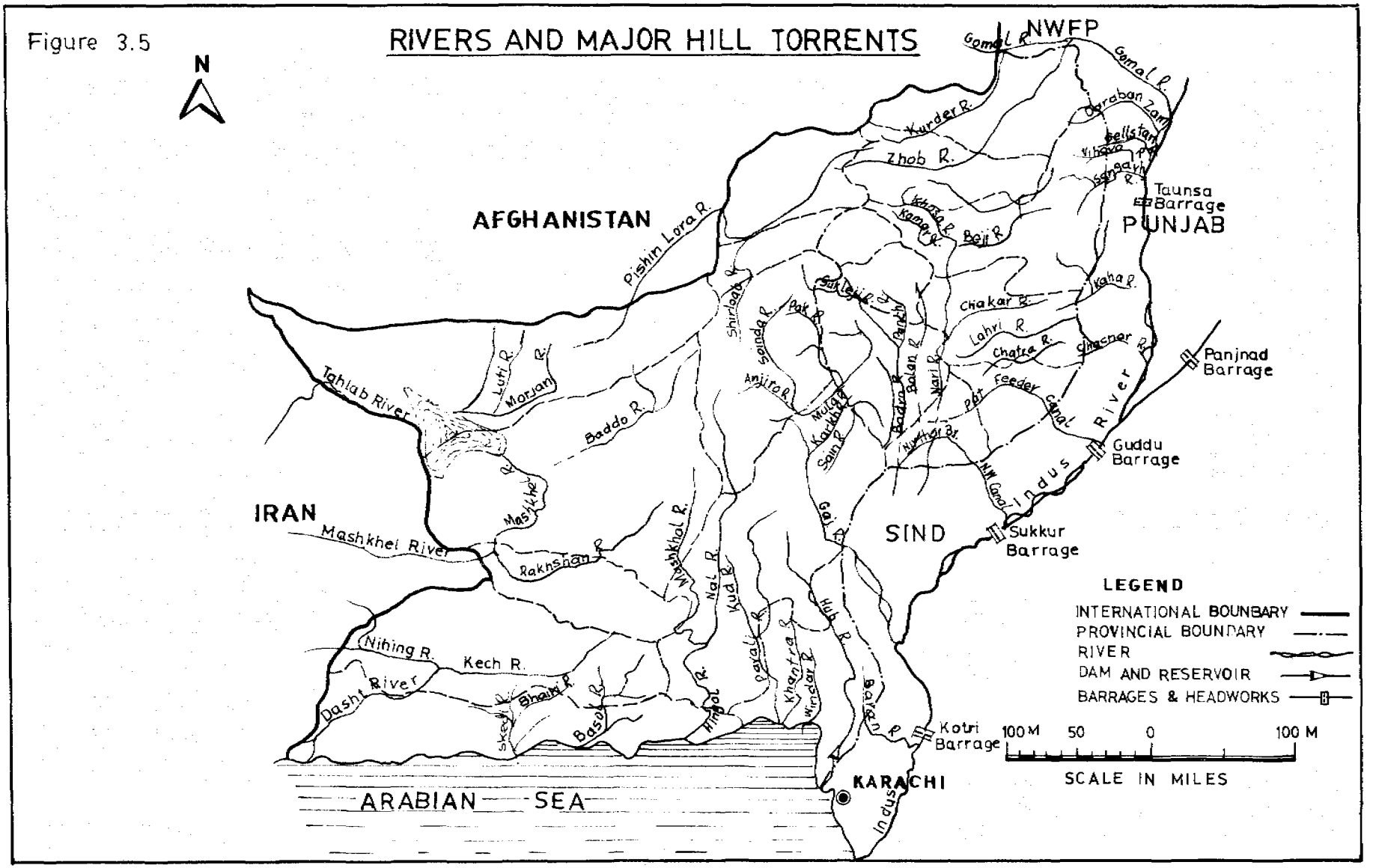


Figure 3.5

Table 3.1 PERENNIAL SUPPLIES OF SOME MAJOR RIVERS AND NULLAHS IN BALUCHISTAN

Name of River	Location	Discharge (Cusecs)
Nari River	Babar Kachh	115
Nari River	Nari Bank	50
Bolan River	Kundani Bridge	60
Zhob River	Badinzai	35- 40
Zhob River	Brunj Weir	45- 50
Mula River	Sundh	45
Anamber River	Headworks	20- 30
Anamber & Narachi	Catti Bridge	25- 30
Sukleji River	Tangi	20
Nakus River	Nakus Railway Station	15- 20
Gurmai Rud	Harnai Railway Bridge1	5- 20
Kapip Lora	Saliaza Weir	15- 20
Thal Rud	Thedari	10- 12
Kawas Lora	Kahan Tangi	10- 12
Kawas Lora	Kahan Banglow	3.5- 10
Kulachi River	D/s Ziddi Village	11
Khost River	Khost Railway Station	4- 5
Shahrig River	Railway Bridge	3- 6
Sawar Nullah	Downstream Mina Bazar Weir	3- 5
Karak Lora	Near Quetta	5
Mushkaf River	Gujjor	5
Mashkai River	Bedi Dhat	4
Porali River	Sinchi Bent	5
Sariab Lora	Kurram Levy Post	3- 4
Rukhshan River	Chitkan	3
Balali Nullah	Balali Road Bridge	2
Shora Rud	Muree Brewery Road Bridge	3- 4
Shirinab Dhora	Sheikh Wasil	2

Source: WAPDA, 1989.

Figure 3.6

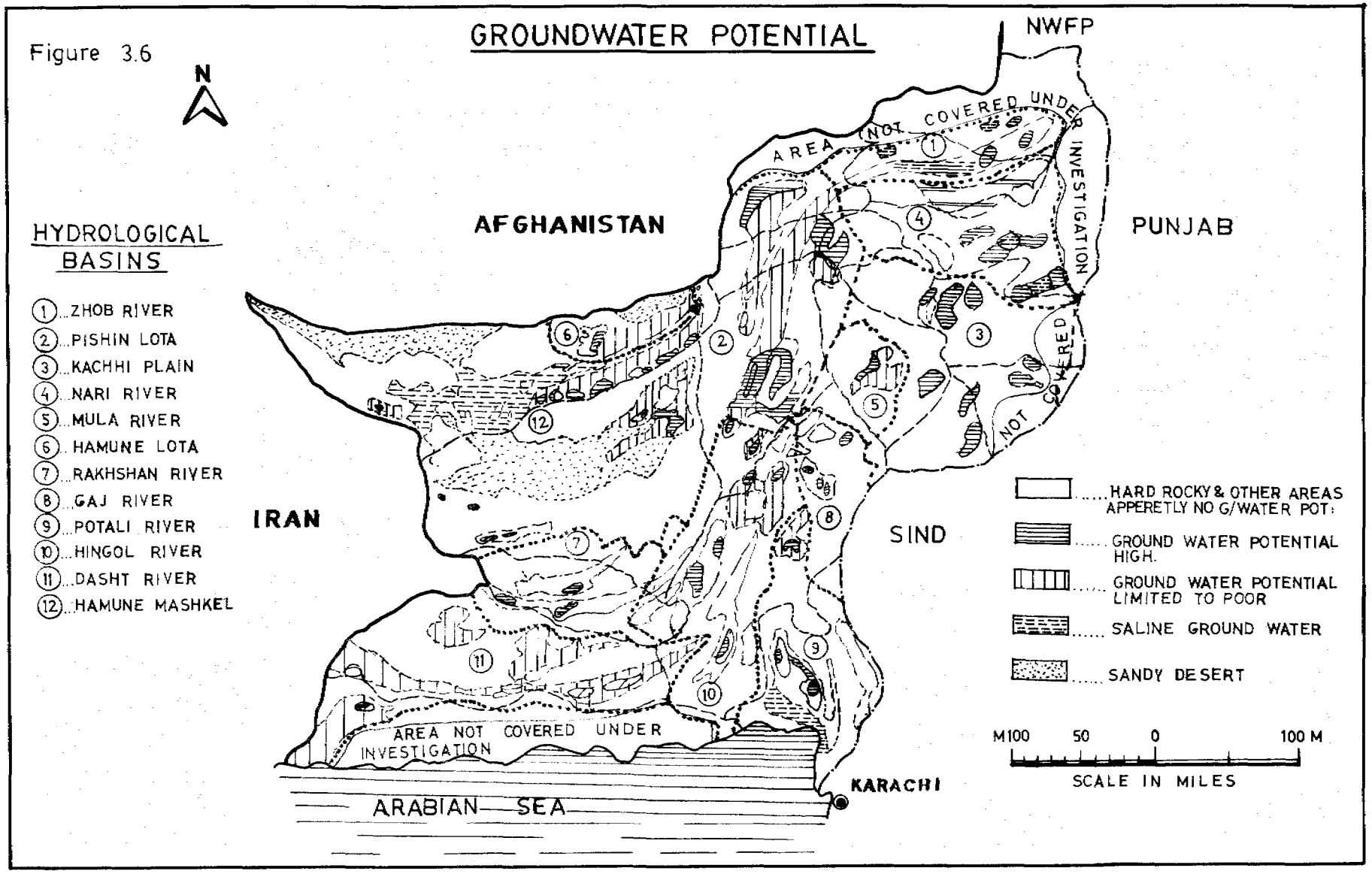


Figure 3.6

significant proportion of fine grained sediments, they are generally less productive than piedmont aquifers. The alluvial aquifers are unconfined or semi-confined, being recharged from surface water and fracture flow groundwater from the adjacent hills. The only known consolidated aquifers are fractured and karstic limestones, particularly near Quetta and Ziarat. Static water levels in Baluchistan vary from 3 to 325 ft (1 to 100m) but typically range from 16 to 160 ft (5 to 50m).

Figure 3.6 shows the hydrologic basins and groundwater potential of those areas of Baluchistan which have been investigated. The groundwater resources of 12 hydrologic basins have also been quantified by the Water and Power Development Authority (WAPDA) and are listed below:

Name of basin	Groundwater Potential	
	(Cusecs)	(M^3/S)
Porali	156	4.4
Hingol River	148	4.1
Pishin Lora	45	4.1
Zhob River	125	3.5
Nari River	120	3.4
Kachhi Plain	95	2.7
Hamun-e-Mashke	168	1.9
Dasht River	51	1.4
Gaj River	38	1.1
Rakhushan River	32	0.9
Hamun-e-Lora	28	0.8
Mula River	19	0.5

No comprehensive regular data observation in respect of these water sources of Baluchistan has been undertaken but some useful work has been produced since the early 1960's as listed below:

Irrigation Dept. West Pakistan, Quetta Zone, "Stream Flow and Rainfall Data", for the years 1960-66;

Table 3.2 PHED COVERAGE FOR RURAL WATER SUPPLY
(up to June 1988)

Name of District	Rural Coverage ('000) Up to June 1987	July'87 to June'88	Total	Projected Rural Population 1988 ('000)	Rural Coverage (%)
Quetta	78.2	22.0	110.0	117	85.5%
Pishin	81.2	47.8	128.3	408	31.6%
Chagai	55.7	6.0	61.7	133	46.3%
Loralai	80.0	11.5	91.5	450	20.3%
Zhob	54.4	11.1	65.5	403	16.3%
Sibi	57.6	3.0	60.6	94	64.2%
Ziarat	0.3	0.0	0.3	31	1.0%
Kohlu	13.5	0.0	13.5	} 214	12.3%
Dera Bugti	11.4	1.5	12.9	}	
Jafarabad	9.0	6.0	15.0	} 448	6.4%
Tamboo	13.8	0.0	13.8	}	
Kachhi	34.0	6.8	40.8	345	11.8%
Kalat	72.2	5.9	78.1	383	20.4%
Khuzdar	112.1	14.1	136.2	435	31.3%
Kharan	18.2	11.5	29.7	144	20.7%
Lasbela	36.7	0.0	36.7	192	19.2%
Qila Saifullah	- Covered under Zhob				
Turbat	} 97.5	52.5	} 150.0	400	} 26.0%
Panjgur	}	2.0	}	185	}
Gwadar	46.5	12.0	58.5	85	69.3%
TOTAL	882.2	213.6	1095.8	4465	25.5%

Source: PHED, 1989.

- WAPDA, "Annual Reports of River and Climatological Data of Pakistan", Vol I-III; and

- UNDP Project Te/Pk/73002/II, 1979 "Accumulation of Discharge Measurement of Rivers, Karezes and Springs Relating to North Baluchistan".

Problems of declining water levels due to indiscriminant extraction of water are being observed in Quetta, Mastung and Mangochut Valleys. With such a large dependence on groundwater, better inventories of resources are needed along with monitoring and proper management.

3.2 Status of the Sector

The provision of rural water supply and sanitation in the Province of Baluchistan is proceeding at a moderate pace but estimates indicate that the coverage is still very low. Some uncertainty arises over the question of coverage due to the lack of good data and the definitions used to measure coverage.

3.2.1 Water Supply

The Public Health Engineering Department (PHED) is the main government body responsible for water supply. It was created only in June, 1987; prior to that the Irrigation Department had the mandate for provision of all water supplies.

A review of PHED data has revealed that rural water supply coverage is 24.5% based on 366 completed schemes as of June 1988. Another 205 schemes are under construction which represents coverage for an additional 9.3% of the rural population. Table 3.2 shows PHED's estimates of water supply coverage by district.

The 1988 World Bank Sector Report reviewed water supply coverage based on information supplied by PHED which included schemes completed up to June 1987. Their results showed coverage was 18.6% of which virtually

Table 3.3 SOURCES OF WATER SUPPLY FOR RURAL HOUSEHOLDS

District	Water Sources - 1980 (%) A	B	C	D	E	Est. Coverage (%) 1980	1988	Percent Increase
Quetta	26	1	49	9	15	27.3	85.5	313%
Pishin	7	0	36	10	47	7.0	31.6	415%
Chagai	14	0	71	4	11	13.9	46.3	333%
Loralai	7	1	32	9	51	7.4	20.3	274%
Zhob	2	0	23	4	71	2.3	16.3	709%
Sibi / Ziarat	10	0	1	12	77	10.5	65.1	620%
Kohlu / DeraBugti	8	1	20	28	43	8.4	12.3	146%
Jafarabad / Tamboo	1	4	10	31	55	4.3	6.4	149%
Kachhi	5	0	25	30	40	5.2	11.8	227%
Kalat	2	0	59	10	29	2.1	20.4	971%
Khuzdar	1	0	48	5	46	1.0	31.3	3130%
Kharan	0	0	77	1	22	0.1	20.7	20700%
Lasbela	5	0	58	13	24	5.5	19.2	349%
Qila Saifullah	- Included in Zhob							
Turbat	1	0	44	1	54	0.8	37.5	4688%
Panjgur	0	0	69	0	31	0.3	1.1	367%
Gwadar	1	0	63	14	22	0.5	69.3	13860%
TOTAL	4	1	39	12	44	4.8	24.5	510%

Codes: A - Piped; B - Hand pump; C - Open well; D - Pond; and E - Spring or stream.

Source: 1980 Housing Census of Pakistan and PHED, 1989.

all was from piped water schemes. Water supply from wells of from ponds, rivers and canals was excluded since they constitute an inadequate water supply because the water can be contaminated easily. The World Bank estimates are also shown in Table 3.2. The comparison of the two estimates show that water coverage has increased from 18.6% to 24.5% within 1 year. From these figures it is evident that PHED is making good progress and increased funding for water supply schemes is showing positive results.

Data obtained from the 1980 Housing Census of Pakistan provide a more complete profile of the sector and verify that major strides have been made in water supply schemes. The census showed that 4.2% of rural households had access to piped water supplies of which one quarter were house connections. Less than 1% had water supplied by handpumps. By the World Bank's estimates, adequate water supply coverage was only 5% in 1980. For the remainder of the rural population, water was obtained from wells (39%), ponds (12%), or springs, rivers and canals (44%). Table 3.3 shows the 1980 Housing Census data by district and compares the change in total coverage between 1980 and 1988. Virtually all of the rural population (98.4%) obtained water from points outside the home.

The rapid increase in water supply coverage reflects new piped water schemes that serve many of the larger rural villages. It is uncertain whether these new schemes have displaced well, pond or other water sources. When discussing coverage for water supply the question of adequate and safe supply must be considered. A definition for adequate water supply includes:

- a protected source (e.g.tubewell);
- quality (WHO standards);
- minimum water supply (5 gallons/person/day); and
- access within 500 feet of dwelling.

The PHED estimates would generally meet the first and third criteria. The design standard in Baluchistan is 10 gallons(45 l)/person/day with a

Table 3.4 ANALYSIS OF COMPLETED SCHEMES UP TO JUNE 1987
(Taken over by PHED from Irrigation Department)

Name of District	Total No. of Schemes	No. of Rural Schemes	Water Sources %			
			A	B	C	D
Quetta	18	18	94.4	-	5.6	-
Pishin	28	26	96.4	-	3.6	-
Chagai	9	9	22.3	44.4	33.3	-
Loralai	38	36	63.2	7.9	28.9	-
Zhob	35	33	20.0	-	77.1	2.9
Sibi	9	8	44.4	-	-	55.6
Ziarat	2	1	-	50.0	50.0	-
Kohlu	18	18	66.7	33.3	-	-
Dera Bugti	9	9	33.3	-	66.7	-
Jafarabad	4	2	25.0	-	-	75.0
Tamboo	4	3	25.0	-	-	75.0
Kachhi	8	6	50.0	12.5	25.0	12.5
Kalat	21	19	100.0	-	-	-
Khuzdar	20	19	80.0	15.0	5.0	-
Kharan	10	9	91.0	9.0	-	-
Lasbela	7	6	71.4	14.3	14.3	-
Qila Saifullah	Covered in Zhob District					
Turbat) Panjgur	34	33	100.0	-	-	-
Gwadar	5	3	60.0	40.0	-	-
TOTAL	279	256				

Code: A - Tube well; B - Open well; C - Spring; and
D - River/Canal System

Source: PHED, 1988.

design period of 20 years to allow for population growth. Regarding the fourth criterion, PHED estimates would overstate coverage because the entire village population is assumed to be supplied when a village has a supply system, regardless of distance to the distribution point. PHED is also uncertain about the quality of water people use (criteria 2) but it is possible that less than half of the people covered have water that satisfy WHO standards. Consequently, PHED's estimates of coverage are higher than they would be if this definition was rigorously applied.

The technologies used for water supply schemes implemented by the Irrigation Department were mainly piped water schemes using water from a variety of sources, including tubewells, open wells, springs, and rivers/canal systems. Table 3.4 shows the number of schemes completed by District and by water source. Most schemes are supplied by tubewells but certain Districts use alternative supplies. The Districts of Chagai and Kohlu rely heavily on open well sources which are traditionally used in these tribal areas. In the mountainous parts of Zhob, Ziarat, Loralai, Dera Bugti and Chagai districts, water is available from springs. In the plains region of Sibi and Nasirabad, there is a greater reliance on river/canal systems as sources of water than in other areas.

Virtually all of the schemes have similar piping, storage and distribution systems, consisting of a storage reservoir, booster station, pipeline main, and community tanks. Few include extensive distribution systems within the village. For water obtained from river/canal systems, additional measures are taken for water treatment. For water supply schemes, the capital cost per capita ranges from Rs. 200 to Rs. 1500 with most costing between Rs. 600 to Rs. 800 (see Table 3.5). These capital costs are the value of existing projects adjusted to 1987-88 currency.

The operation and maintenance costs were calculated from actual expenditures in 1987-88. They range from Rs. 5 to Rs. 150 per household per month, but most were between Rs. 15 and Rs. 35.

Table 3.5 COST OF WATER SUPPLY SCHEMES IN BALUCHISTAN

District	Capital Cost of Schemes	Cost per Capita	Operations and Maintenance Cost per Household	Rural Income Levels
	(Rs. million)	(Rs.)	(Rs. per month)	
Quetta	excluded due to its urban bias			High
Pishin	280	600 - 800	5 - 10	High
Chagai	110	700 - 1200	17 - 35	Low
Loralai	430	600 - 1200	16 - 30	High
Zhob	440	500 - 1200	5 - 12	Low
Sibi	20	200 - 250	15 - 25	Medium
Kohlu	240	600 - 1300	80 -150	Low
Dera Bugti		600 - 1300	15 - 30	Low
Nasirabad	360	600 - 800	10 - 20	Medium
Kachhi	450	800 - 1500	25 -50	Low
Kalat	170	250 - 600	15 - 20	Medium
Khuzdar	270	350 - 700	20 - 30	Medium
Kharan	110	500 - 900	20 - 35	Low
Lasbela	95	300 - 700	15 - 40	Low
Turbat	340	600 - 1400	40 - 75	Low
Gwadar		600 - 1400	25 - 50	Low
Panjgur	85	500 - 600	20 - 26	Low

Notes:-
- Includes schemes constructed by Irrigation Department and PHED up to 1987-88.
- All costs have been converted to 1987-88 currency values.
- Operating and maintenance costs are based on actual expenditures for 1987-88 divided by population served.

Water schemes have also been implemented by other agencies including the Baluchistan Integrated Area Development programme (BIAD), the Local Government and Rural Development Department (LGRDD), the Water and Power Development Authority (WAPDA) and the Baluchistan Development Authority (BDA). A summary of their recent accomplishment is given below:

- BIAD - 13 Schemes covering 43,000 people;
- LGRDD - numerous small schemes but most do not have a protected source ;
- WAPDA-309 tubewells constructed for groundwater research; the population using these as a source of potable water is unknown;
- Pak-German Self-Help Project - 32 water related schemes have been completed and another 27 are ongoing or proposed; and
- BDA - several tubewell schemes (special projects).

These additional systems serve a small percentage of the rural population which in total is less than the error of estimation of coverage in PHED's figures. In general, PHED's estimates can be used for study purposes although it is recognized that the quality of water supplied is generally lower than WHO standards.

3.2.2 Disposal of Human Wastes

There are no reliable data for the percentage of rural population using latrines. The 1988 World Bank Sector Review quoted estimates of 25% and 35% coverage from survey conducted in 1973 and 1982/83, respectively but local officials feel these estimates are greatly overstated. These latrines would have all been privately constructed and their condition of operation is unknown today. PHED does not have any schemes for latrines. BIAD has implemented sanitation projects in 32 villages, including the installation of 1671 latrines. No other agency has been actively constructing sanitation facilities in rural Baluchistan, but

private initiative has likely lead to some increased coverage.

3.2.3 Sanitation and Drainage

PHED is not actively involved in rural sanitation and drainage schemes. Drainage canals primarily include crude ditches dug by local people to improve the natural drainage conditions. The low population density and small size of villages, combined with low precipitation, high evaporation, and hilly terrain alleviate the need for large civil works for drainage in most parts of Baluchistan. The only area where drainage is a concern is in Nasirabad (situated on the Indus Plain) and which is served by an extensive system of irrigation canals. PHED is not actively involved in rural drainage schemes and no estimates of coverage are available for the province.

3.2.4 Financial Allocations to the Sector

The capital expenditure on water supply and sanitation (drainage) schemes by the PHED and the LGRDD is financed as part of the Annual Development Programme (ADP) of the Province Expenditure on staff salaries and allowances and on operation and maintenance of schemes managed departmentally is met from the recurring provincial budget.

In Baluchistan, there is a significant dependence on funds from the federal government. Federal revenue assignments of divisible taxes (income and sales taxes) contributed 73 percent in 1986-87 while revenue generation by the province through taxes and user charges (largely the irrigation charge) accounted for only 7 percent. The deficit, 20 percent, is the recurring expenditure which has been met by federal grants and subventions. Although 93 percent of the provincial recurring budget has been financed by the Federal Government. The federal grants to cover the deficit have increased at the annual rate of 18 percent over the last ten years. Consequently, the resource position of the Federal Government has been increasingly strained by this burden.

The new government, in its revised budget for 1988-89 has indicated very clearly that it can not continue to finance the growing deficits of the provinces and has asked the latter to raise their fiscal effort and economise on their expenditures. It is likely, therefore, that the ability of the provincial departments, like PHED and LGRDD, to recruit additional staff, and enhance their implementation capacity, will be severely constrained for the next few years. In addition special efforts will have to be made to economise on outlays for operation and maintenance of infrastructure, including water supply and drainage schemes. Simultaneously, greater priority will have to be attached to cost recovery through user charges like water tariffs.

The entire ADP of the province is financed by the Federal Government. In view of the relative paucity of resources at the national level, it is unlikely that the provincial ADP, including the sectoral allocation for water supply and drainage, can be expanded rapidly from its present level in the next few years.

In Baluchistan it is difficult to measure precisely the annual funding provided for water supply, sanitation and drainage, and disposal of human wastes and no estimates are available for hygiene education. The reasons for the uncertainty include the large numbers of funding sources (departments), the presence of multi-purpose water and development schemes (irrigation and drinking water), and special funds that are unspecified. The main source of funding at present is channelled through PHED. Since this procedure was only established in fiscal year 1987-88, it is difficult to trace historical trends.

In 1987-88, the allocation of funds in the Annual Development Programme (ADP) were as follows:

Department	Allocation (Rs. million)	Comments
PHED	163	100% water supply
Water (Irrigation)	93	Some water supply and drainage
Physical Planning & Housing	63	Uncertain
Health	146	Uncertain
Rural Develop	65	25% water supply
BDA	32	Very few water schemes

In 1988-89, PHED's allocation is approximately Rs. 200 million.

3.3 Institutions

The roles of various institutions that are involved with the water supply, sanitation and health sector are reviewed in the following sections. These include the provincial line departments and special government agencies, the local governments (District and Union Councils), elected representatives, and non-governmental organizations (NGOs). These discussions are limited to an explanation of mandates related to the sector, extent of involvement in the sector and a review of successes and failures.

3.3.1 Government Departments and Agencies

The seven departments that have some degree of involvement in the water supply, sanitation and health sector are Planning & Development, Public Health Engineering (PHED), Local Government and Rural Development (LGRDD), Irrigation, Health, Education, and Social Welfare. There are also three separate agencies working in water and sanitation: the Baluchistan Integrated Area Development Programme (BIAD), the Baluchistan Development Authority (BDA), and the Water and Sanitation

Authority (WASA).

Planning & Development Department

The P&D is the counterpart of the Federal Planning and Development Division in the provinces. Its functions include the preparation of the ADP, acting as the secretariat of the Provincial Development Working Party, monitoring the execution and performance of all development activities undertaken by the Province and liaising with donor agencies.

All projects in the sector are processed through the Physical Planning and Housing (PP & H) Section or the Health Section of P&D Department. The PP & H Section is responsible for processing applications for projects in, amongst others, water supply and sanitation. The Health Section is engaged in projects or programmes dealing with health care and hygiene education. Both receive and process:

- PC I forms for actual project implementation;

- concept clearance forms for initial start-up of negotiations with international donor agencies; and

- PC II forms for undertaking feasibility studies or preparing sector development plans;

In essence, the Planning and Development Department coordinates the development activities of all other line departments.

Public Health Engineering Department

The PHED mandate is to design and construct safe water supply schemes in urban and rural areas and to provide drainage for sullage and storm water in the medium and small urban settlements. PHED also becomes involved in operating and maintaining these schemes because the local bodies have not taken on this responsibility.

Figure 3.7

ORGANIZATIONAL SETUP
PUBLIC HEALTH ENGINEERING DEPARTMENT
BALUCHISTAN

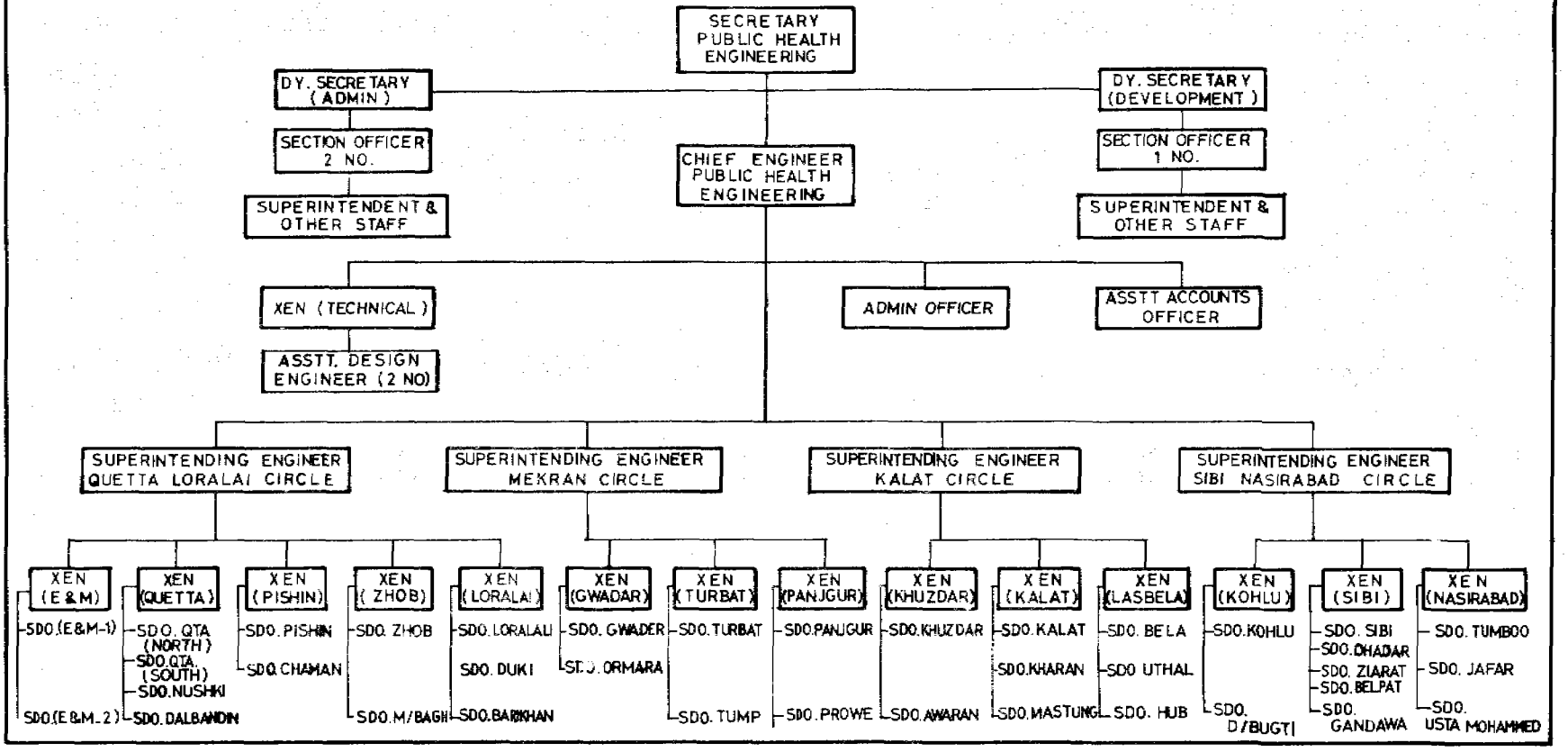


Figure 3.7

In Baluchistan, the PHED has been in existence for less than two years but has the full status of a line department, headed by a Secretary. This indicates the high priority attached to water supply in the province. Figure 3.7 shows the organizational structure of PHED in Baluchistan. PHED has very limited resources in terms of staffing, transportation and offices. At present there is no laboratory for water quality testing. To date, the priority has been given to hiring or securing essential staff, mainly civil engineers, and to investing in drilling rigs.

Since its inception, PHED has completed 80 projects, has 205 projects ongoing and another 160 schemes proposed, the majority of which are rural. It has been faced with the burden of operating and maintaining 285 existing projects implemented by the Irrigation Department and others such as LGRDD. This limits the availability of funding for new projects. PHED does receive a large share of funding for the sector, representing 15% to 20% of the total Provincial Annual Development Programme (ADP). in the 1988-89 and, amounting to Rs. 238 million. This excludes expenditures on operation and existing schemes, which are met from the recurring Provincial Budget.

Within the short time period and limited resources, PHED has done commendable work to meet the water needs in Baluchistan. Total water supply coverage in the Province (rural and urban) is now estimated to be 45%. However, PHED has so far concentrated on towns or larger villages and community involvement has not been included in their projects.

Local Government & Rural Development Department

The LGRDD has two wings. Through its Local Government wing it acts as the personnel department of local bodies by providing them with officers for supervision and coordination functioning. Through the Rural Development Wing, functions include the execution of the Rural Works Programme and the Special Development Programmes, such as the MNA/ MPA's Funds Programme which is now defunct. In the water supply, sanitation and health sector, LGRDD's policy is to provide safe drinking water

Figure 3.8

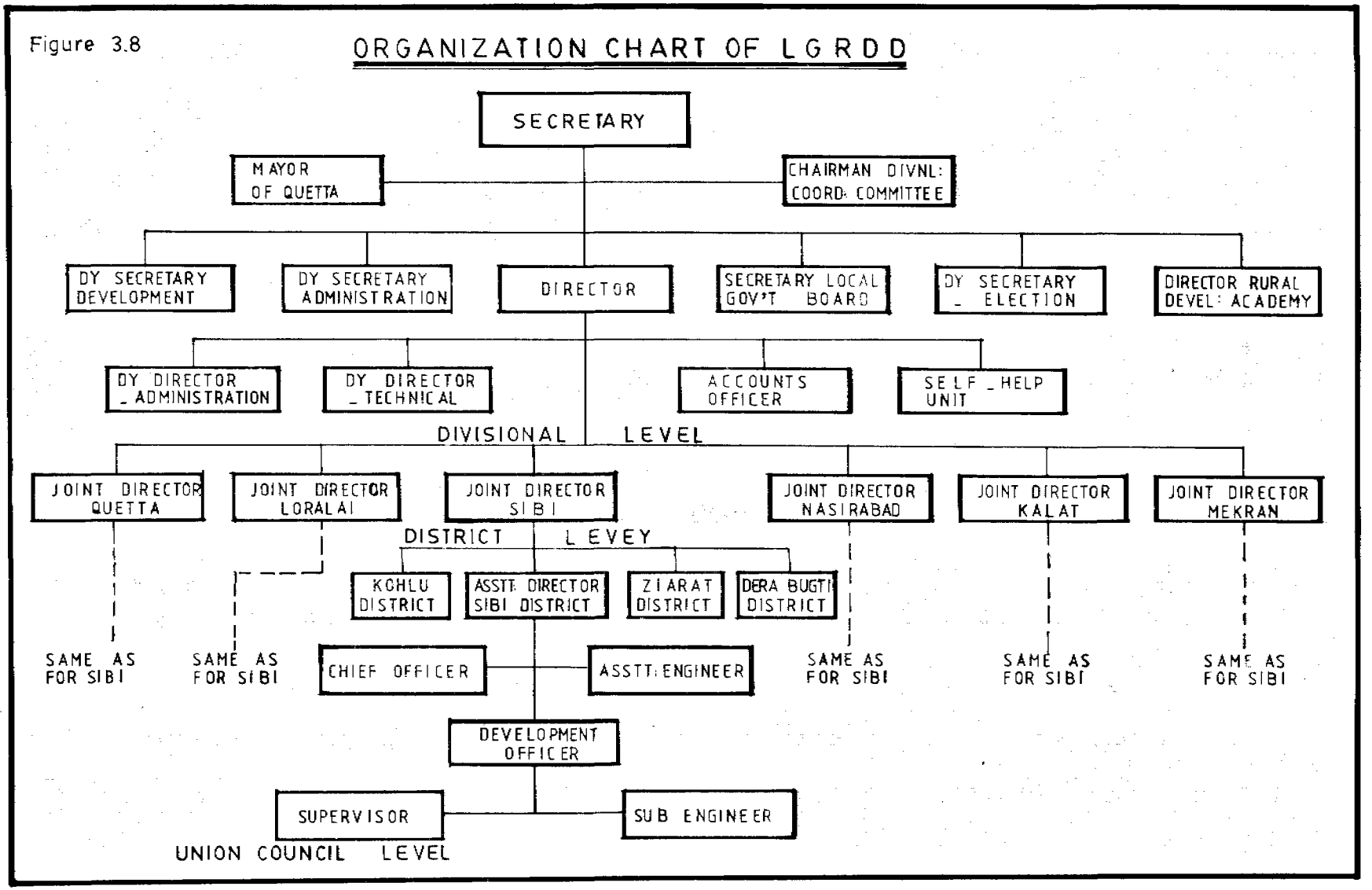


Figure 3.8

Table 3.6 EXPENDITURE ON WATER SUPPLY BY LOCAL GOVERNMENT AND RURAL DEVELOPMENT DEPARTMENT

YEAR	NUMBER OF SCHEMES	TOTAL ADP ALLOCATION	WATER SUPPLY EXPENDITURES	SHARE OF TOTAL ADP
		(Rs. million)	(Rs. million)	
1983-84	141	38.00	2.34	7%
1984-85	162	47.70	3.43	8%
1985-86	255	48.00	12.34	26%
1986-87	393	50.00	9.67	20%
1987-88	401	60.00	13.86	24%

Source: LGRDD, 1989.

facilities to the urban and rural population, to promote health and improve sanitation and to develop public works that, in general enhance living standards and increase economic development.

Traditionally the LGRDD does not possess strong technical skills, but the creation of a Technical Section has improved the design and execution of projects and has enabled the provision of technical assistance to District and Union Councils. LGRDD works closer to the grass roots level than any other department. It has engineers and supervisors down to the tehsil level who support a village worker within each Union Council (see Figure 3.8). However, lack of staffing and resources has reduced LGRDD's effectiveness in rural development.

LGRDD has placed top priority on water supply schemes which now represent roughly 25% of its ADP allocation. In 1987- 88, this allocation for water supply schemes amounted to nearly Rs. 14 million (see Table 3.6). This is smaller than PHED's programme and when spread out over 315 Union Councils and various Urban Councils, the impact is small.

Since funding is allocated through local bodies (see section 3.3.2), the funds are divided into very small segments that can only support small schemes. Typically, schemes include the installation or rehabilitation of water tanks, electric motor pumps, generators, and open wells.

A recent LGRDD undertaking is the Pak-German Self-Help Project. Under this project, village organizations have been formed to meet the following goals:

exploitation and mobilization of available local resources (including manpower) to achieve self-reliance and self-sustaining schemes;

strengthening the organizational capacity and financial viability of village organizations, Union Councils and the Local Government Department through community motivation and participation;

Table 3.7 PAK-GERMAN SELF-HELP PROJECT FOR RURAL DEVELOPMENT

SCHEMES	Not Started But Approved	Started	Completed	Total
Well - Animal Driven pump	0	0	2	2
Well - Electric Pump	1	1	0	2
Well - Hand Pump	4	7	9	20
Well Improvement	0	1	0	1
Drinking Water Pipeline	1	3	6	10
Lined Water Tank	1	7	3	11
Lining of Water Channel	0	0	1	1
Spring Improvement	0	1	0	1
Water Storage Dam	0	1	0	1
Non-Water Schemes	11	43	28	82
TOTAL	18	63	50	131

Source: Pak-German Self-Help Project, 1989.

- increasing internal lending and providing guarantees for bank loans used for income generating scheme; and

- providing training opportunities for members of the village organizations, Self-Help staff and staff in the line departments.

The project area includes 9 Union Councils, 489 villages (of which 172 are formally organized and another 180 have formed village organizations), and a total of 4439 members. Committed funds are Rs. 19 million plus an additional Rs. 1.7 million that has been generated by internal savings. As of December 1988, Rs. 11 million has been spent on 131 projects and training (socio-organizational, technical, health, etc). Table 3.7 shows the water related projects that have been approved, started or completed.

Irrigation Department

The Irrigation Department was responsible for the supply of drinking water until June 1987, when PHED was formed. It still plays an important role in water supply schemes which provide a combined irrigation and drinking water supply. The Irrigation Department has qualified staff and good equipment to undertake larger scale projects such as irrigation dams and canals. Its financial allocations have been reduced since bifurcation with PHED but it still controls a sizeable budget of nearly Rs. 100 million in the 1987-88 ADP.

It should also be mentioned that WAPDA has provided much of the groundwater testing and evaluation in the province of Baluchistan. Although it works quite independently of the provincial departments, much of the research data acquired is eventually passed on to help formulate provincial development strategies for water supply.

Health Department

The Health Department is responsible for providing preventative and curative health care within the province. It operates a network of

hospitals, clinics, dispensaries, Rural Health Centres and Basic Health Units as part of the curative services. These services are discussed in more detail in Section 3.6.2. Preventative health care activities and hygiene education have been limited. Most success has been in the field of immunization which has received assistance from foreign donors and NGOs.

Mobile health teams are provided at the tehsil level. These teams consist of a Lady Health Visitor, a medical technician, a dispenser/vaccinator, an Ayah (nanny) and driver. In Baluchistan, the existing health facilities and staff are unable to adequately meet the needs of rural people in remote areas.

The Health Department, in collaboration with the Social Welfare Department also undertakes the training of Dais (Traditional Birth Attendants). Allocation of ADP funds to the Health Department was increased significantly in 1987-88 to nearly Rs. 150 million. Funds are also provided by foreign donor agencies. An estimate of expenditures in health and hygiene related to water supply and sanitation was not available, but it is known that the majority of funds are spent for curative health or immunization.

The Department of Health has tried to encourage more community involvement but has had limited success to date. It feels that more support is needed from the Union Councils.

Although the mandates of those organizations tend to overlap each has its own focal point and area of expertise. As a result there has been little integration of effort by the departments to date.

Education Department

Although the Education Department is not directly involved in the sector, nonetheless it has the potential for greater involvement. For instance, considerable benefit could be derived if primary school teachers would take up the challenge to educate children on the basics

of health and hygiene. Similarly, the adult literacy programme and the Mosque schools could be other effective means for the promotion of health and hygiene education. More details on education facilities are provided in Section 3.7.

Social Welfare Department

The functions of the Social Welfare Department in the context of this sector include the training of Dais and the registration and control of non-governmental organizations. Dais are trained initially for a period of two weeks and refresher training courses are held every quarter for a two or three day period.

The department's funds for day to day operations come from the provincial recurring budgets, but most of its prevention-oriented promotional expenditure is financed through grants from donor agencies or the Women's Division in Islamabad.

Baluchistan Integrated Area Development Programme (BIAD)

In 1980, a joint planning workshop between the Government of Baluchistan and UNICEF was held. As a result of workshop recommendations, the BIAD programme was evolved.

The overall goal of BIAD is to extend basic health and social welfare services to rural communities in each of the 17 Districts of Baluchistan. For this purpose, 8 clusters of approximately 5 villages each were selected in several districts. The specific goals included:

- provision of potable water systems;
- general village sanitation (individual household sanitary latrines);
- primary health care for mother and child through community volunteers and local TBAs;

- income generating activities and basic literacy training for women; and

- construction of multi-purpose community centres.

The provision of potable water was seen as a convenient and effective entry point into communities for developing other programmes. However BIAD has had significant problems in the implementation of schemes including:

- a lack of interaction between engineers and the community involvement wing of BIAD;

- the difficulty of promoting community involvement in tribal areas;

- the high cost of schemes resulting from over designing and increased maintenance costs due to design errors;

- low cost recovery;

- inappropriate design of latrines which resulted in technical problems and poor community acceptance;

- unrealistically high original targets;

- poor supervision of design and construction; and

- over-dominance of the donor agency (UNICEF) with regards to the executing agency.

The BIAD experience also brought into question the viability of the cluster concept for water supply. Where villages are widely scattered, the cost and technical complexities of centralized schemes rise. There can also be conflicts amongst the recipient villages regarding the allocation of water and responsibilities for operation and maintenance.

Better cooperation is necessary amongst the communities, or a central body (i.e. line department) should have overall responsibility for the scheme. However, the cluster approach should not be rejected outright because there may be cases where a single source can be developed more cost-effectively for several villages.

As of January 1989, BIAD has completed 23 water schemes in 6 districts, providing coverage to 43,000 people. Most schemes are deep tubewells with storage reservoirs and distribution systems to standposts or yard connections. The average capital cost is high at Rs. 2000 per capita. More recent designs have attempted to bring down costs to between Rs. 500 and Rs. 1000 per capita.

BIAD has also completed the installation of 1671 latrines between 1983 and 1988. These are largely located in the same clusters as the water supply schemes.

Baluchistan Development Authority (BDA)

Before the creation of PHED, the Baluchistan Development Authority exercised its uniquely, broad mandate to implement a number of water supply schemes. The BDA works parallel to the line departments and attempts to provide additional funding where the need is greatest or where needs are not being met by other departments. It has considerable flexibility but is limited by shortages of staff and resources. The BDA's advantage is that it can identify relatively large projects without having to spread its funds among a number of smaller ones, as in the case of other line departments.

Now that PHED has been formed, the Baluchistan Development Authority may continue its role of support where most needed by be able to focusing more attention on water quality, appropriate technologies, latrines and sanitation until PHED has the resources to address these concerns more effectively.

Water And Sanitation Authority (WASA)

WASA is essentially an urban agency dealing with the water and sanitation problems of Quetta. It is jointly funded by the Government of Pakistan and the Dutch Government.

The aims of the Authority are:

- to improve the overall sanitation conditions in the city of Quetta;
- to provide low-cost pour-flush latrines in those areas which cannot as yet be served by the sewerage system; and
- to re-use the waste water for irrigation purposes, after full treatment in the sewage treatment plant.

Although the work that WASA does is more sophisticated than is required for rural areas, good knowledge and experience is being gained in Kachi abadis (temporary settlements) which will be applicable to rural areas. WASA is currently involved with the drilling of 23 tubewells in addition to the 5 which are now serving Quetta. It is also constructing a laboratory for water quality testing, a facility which is greatly needed in Baluchistan. The success of WASA cannot as yet be assessed but it is further evidence of increasing concern and new priorities placed on water supply and sanitation in the province.

3.3.2 Local Government Bodies

The present structure of Local Government institutions in Baluchistan is based on the Baluchistan Local Government Ordinance of 1980. Its 166 sections and 7 schedules cover the development plans, non-development budgets, accounts and taxes of the Local Councils. The details of the Local Councils in Baluchistan are as follows:

. Rural Councils:

- Union Councils	-	315
- District Councils	-	20

. Urban Councils:

- Town Committees	-	18
- Municipal Committee	-	11
- Municipal Corporation	-	1

Union Councils

A Union Council has from 9 to 15 members for a population of 10,000 to 15,000 people living in a group of contiguous villages. Its area cannot exceed that of a tehsil. The members of a Union Council are elected on the basis of direct adult representation. The members then elect a chairman. Since the women in Baluchistan do not actively participate in the elections, two seats for women have been reserved on each Union Council. Similarly to ensure representation of the peasants, one seat has been reserved for them in each Union Council. The Union Councils are the elected bodies at the grass roots level, having representation from the villages in Baluchistan.

The main functions of the Union Councils are listed in the fifth Schedule of the Baluchistan Local Government Ordinance 1980. These include public health, education, water supply, sanitation, drainage and water conservancy, among others. A Union Council may sanction any such scheme when the cost does not exceed Rs. 50,000. Owing to the paucity of funds, Union Councils have not been effective in carrying out these functions.

The Union Council is felt to be too large of an administrative unit to permit the active involvement of the community in projects. The Federal government has proposed legislation to permit the establishments of Village Development Organizations (VDOs).

District Councils

In Baluchistan, the membership of a District Council includes:

- one member elected on the basis of adult representation, for every Union Council. (Thus it has as many elected members as the number of Union Councils within a District);

- all elected chairmen of Town Committees within the District;

- members representing peasants, tenants, workers and women, (the number of these members is specified by the government); and

- all members of line departments in the District, who will have no right to vote.

The District Councils in Baluchistan consist of both voting and non-voting official members. Unlike other provinces no Coordination Committee has been set up at the District level; this only exists at the Divisional level. This committee coordinates the activities in the development plans of all local councils and all live departments in the Division.

The functions of the District Council, in addition to those enumerated in the Schedule (see Appendix B) include the project related functions of the Union Councils where the cost exceeds Rs. 50,000 each, of the Town Committees for projects costing more than Rs. 100,000 and the of the Municipal Committees for projects costing more than Rs. 200,000.

Funds of the District Councils accrue from taxation, income generated, subventions and grants given by the Provincial Government. Most Districts do not generate enough revenue to meet their day-to-day expenditures. The only Districts with good tax bases are Lasbela (industrial) and Jafarabad and Tamboo (agricultural).

3.3.3 Elected Representatives

Elected members of the National and Provincial Assemblies and Senators have a direct effect on the water supply, sanitation and health sector. They influence decision making regarding the identification and selection of projects in the ADP, and they can divert special funds to specific projects.

All of the funds are eventually directed through the line departments, with most of the special funds being routed through Local Government bodies. Many projects evolve in this manner, but sometimes they are ineffective because they are not integrated with other plans.

3.3.4 Non-Governmental Organizations (NGOs)

There are numerous NGOs operating throughout the province but only a small number are working in the sector. The International Committee for Red Crescent (Red Cross) is by far the largest international organization.

The more important local NGOs in Baluchistan include APWA (All Pakistan Women's Association), the Helper's Association and the Children's Academy. NGOs can provide an alternative means to reach the communities without involving line departments directly.

3.4 Economy

Baluchistan has an underdeveloped economic base. The economy of rural Baluchistan is based on agricultural crops, livestock, mining and to a lesser extent fishing and cottage industries.

Historically, population pressure was minor because the region was arid and lacked potential for an agrarian economy in contrast to the Indus plains. Today, Baluchistan has a very small population density compared with other provinces. For the foreseeable future, it would appear that Baluchistan's economy will continue to develop as a resource base for

Figure 3.9

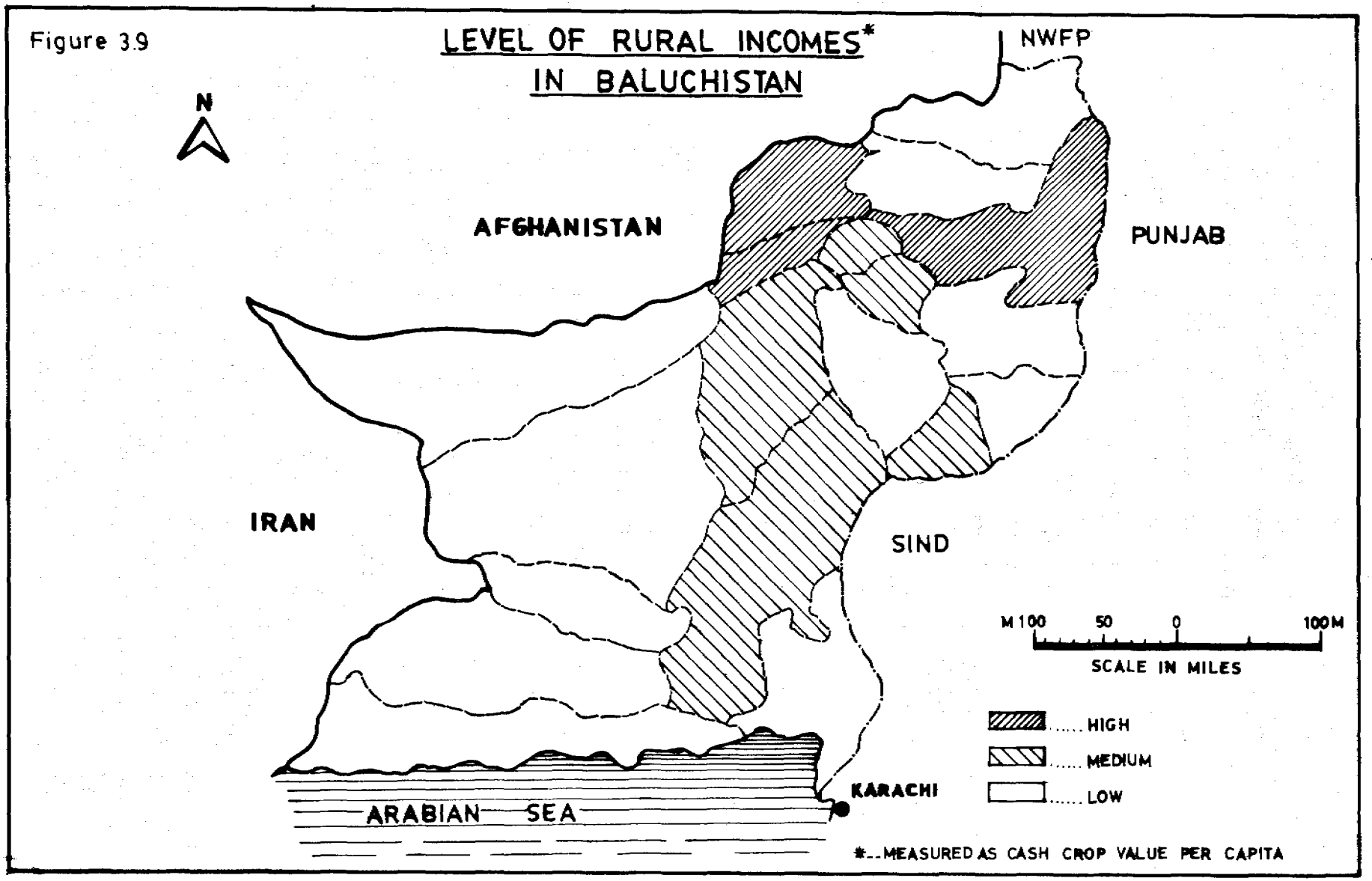


Figure 3.9

the rest of Pakistan. For example, energy exploration and development is a major activity, whose objective is to supply gas to other parts of the country. Similarly, Baluchistan possesses iron ore and fisheries which have a high demand in the large urban, industrial centres of Pakistan. Even in agriculture, the emphasis is on speciality crops including apples, apricots, peaches, grapes, pomegranates and almonds for markets outside the province.

There is little secondary industry in Baluchistan. Outside Quetta, the main activities include construction materials, primary food processing, weaving, and cottage industries including clothing, shoe repair, baskets, and furniture. One exception is the industrial area around Hub in Lasbela District, which benefits from close proximity to Karachi. Unfortunately, most of the spinoff benefits of industrial activities in Hub go to Karachi rather than Baluchistan.

3.4.1 Regional Economies and Income Levels

Baluchistan may be divided into four distinct areas that display economic patterns. The areas are similar to the geophysical regions described in Section 3.1.

The first region includes the lowland areas of the Indus plains, comprising the districts of Kachhi, Dera Bugti and Nasirabad Division. These areas are characterized by a hot, dry climate but they also include irrigated areas that were originally established under the British authority. Today the irrigated zone of Nasirabad accounts for 99% of rice production and 56% of wheat production in the province; therefore, it provides medium levels of income to the rural population. Areas that are not irrigated have very poor economies and low rural incomes (i.e. Kachhi and Dera Bugti).

The second region is the central area of mountains and valleys that include the Districts of Pishin, Quetta, Sibi, Ziarat, Loralai, Kalat and Khuzdar. The upland plateau and valleys of this region have a more temperate climate. This corresponds to the limits of the former British

Table 3.8 INCOME DISTRIBUTION IN RURAL BALUCHISTAN
1984 - 85

HOUSEHOLD INCOME (Rs. Per Month)	PERCENTAGE OF HOUSEHOLDS	
	BALUCHISTAN	PAKISTAN
Less than 600	13%	9%
601 - 1000	34%	26%
1001 - 1500	27%	29%
1501 - 2000	12%	17%
2001 - 3000	8%	12%
3001 - 4500	3%	4%
More than 4500	3%	3%
Average Monthly Income	Rs. 1406	Rs. 1638
Index of Monthly Income (Pakistan = 100)	91	100
Share of Households Below Poverty Line of Rs. 1000 per month	47%	35%

Source: Household Income and Expenditure Survey, 1984-85.

controlled area and consequently most of the largest urban centres and the best developed infrastructure is found there. The combination of temperate climate and availability of water in various valleys has led to the development of cash crops including fruit (apples, apricots, peaches, pomegranates), vegetables (potatoes, onions) and other speciality crops (grapes, almonds). Consequently, the rural incomes in this region range from medium to high, the wealthiest being Pishin, Quetta and Loralai.

The third region is the northern mountainous area which comprises the districts of Zhob and Qila Saifullah. This area also possesses a temperate climate but has remained underdeveloped due to the persistence of tribal control. The resulting opposition to new infrastructure and interference from outside bodies combined with limited resource potential has left this area isolated and the cash crop economy poorly developed. Therefore, rural incomes are very low.

The fourth region comprises roughly half the province in the southern and western extremities. The region is hot and very arid and as such has the lowest potential for agriculture, except where small pockets of irrigation exist. Nomadic existence is common in this region. On the whole, the rural income levels are very low.

Given the limited agricultural and industrial development in Baluchistan, one would anticipate low rural incomes. Table 3.8 shows the income distribution on groups in rural Baluchistan. Based on the National Household Income and Expenditure Survey of 1984-85, the average income for rural households was Rs. 1400 per month and 47% of rural households were below the national poverty line (Rs. 1000 per month). The average rural incomes in Baluchistan are 91% of the national average; this figure would be lower except that a significant number of wealthy landowners and tribal leaders skew the average values.

Table 3.9 LINGUISTIC AND SOCIO-POLITICAL PATTERNS

District	Primary Language Spoken					Dominant Socio-Political System
	Pushto	Baluchi	Brahui	Sindi	Others	
	%	%	%	%	%	
Quetta	52	-	39	-	9	Tribal/religious
Pishin	98	-	-	-	2	Tribal/religious
Loralai	74	-	-	-	26	Tribal/religious
Zhob	99	-	-	-	1	Tribal/religious
Q. Saifullah	99	-	-	-	1	Tribal/religious
Chagai	-	58	36	-	6	Tribal
Sibi	60	14	8	18	-	Tribal
Jafarabad	-	44	18	25	13	Tribal/religious
Kachhi	1	41	11	26	21	Tribal/religious
Kohlu	96	-	-	3	1	Tribal
Kalat	3	7	88	-	2	Tribal/religious
Khuzdar	-	36	61	3	-	Tribal
Kharan	-	68	31	-	1	Tribal
Lasbela	-	20	10	63	7	Feudal
Turbat	-	99	-	-	1	Feudal
Gwadar	-	99	-	-	1	Feudal
Panjgur	-	99	-	-	1	Feudal
Dera Bugti	-	99	-	-	1	Tribal
Tamboo	-	40	18	25	7	Feudal
Ziarat	100	-	-	-	-	Tribal/religious

Source: 1987 - 88 Statistical Yearbook.
Note: Other languages include Punjabi and Persian.

3.5 Socio-cultural and Community Organisational Patterns

3.5.1 Ethnic and Linguistic Patterns

The population of Baluchistan consists of a mixture of various social, linguistic and ethnic groups. There are six main language groups into which the rural population can be classified.

- Baluchi are predominantly in the south-western part of the province and also in the eastern tribal agencies of Kohlu and Dera Bugti;

- Brahui are found in the central part of the province;

- Pushtu are predominantly in the northern mountainous districts;

- Sindhi are found in large proportions in Lasbela and Sibi Districts and Nasirabad Division, areas adjacent and easily accessible to Sind Province; and

- Others primarily include Punjabi located in Districts bordering on Punjab Province, and Persian, primarily in Chagai District;

Table 3.9 shows the percentage split of linguistic groups (by mother tongue) for each District. Figure 3.10 shows the spatial patterns of ethnic/linguistic groups. It should be noted that ethnicity (race) does not correspond completely to language, but general patterns are best understood by ignoring these minor exceptions.

3.5.2 Tribal and Socio-Political Systems

There are three main tribal groups in Baluchistan called Pushtoon, Baluch and Brahuis. They are all organized into tribes, each having a multitude of subdivisions, clans, and lineages.

Figure 3.10

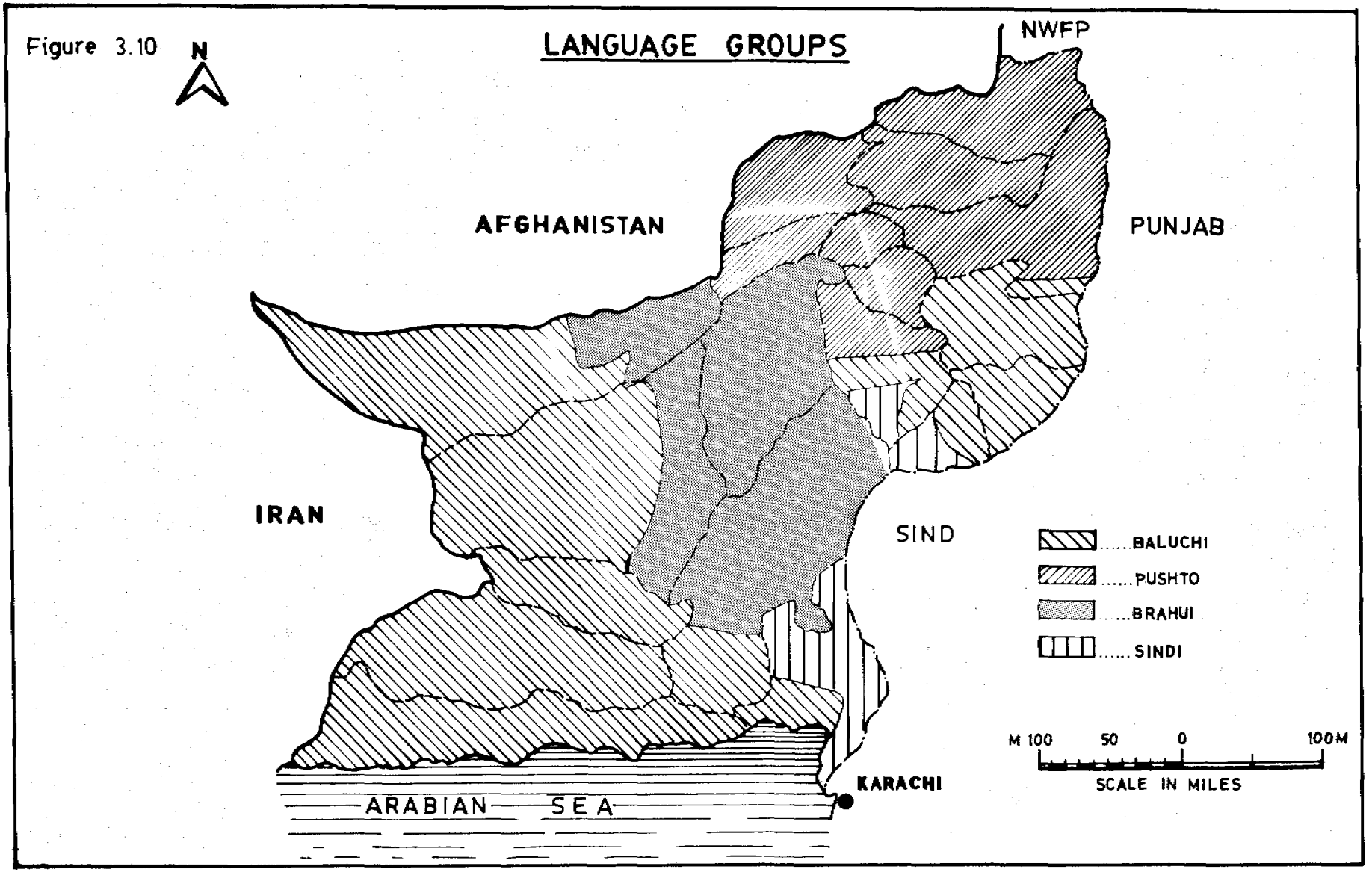


Figure 3.10

"There is a distinction however, between the constitution of a Pushtoon tribe and that of Baluch or Brahui tribe. Among the former the feeling of kinship is a bond of union far stronger than among the latter, with whom common blood-feud forms the connecting link". (Imperial Gazetteer India -- Baluchistan, 1984). The Pushtoon people were traditionally settled in permanent communities whereas the Baluch and Brahui tribes were more nomadic moving and living in minimal lineage groups. The Brahui and Baluch tribes are socio-political entities organized under leaders or chieftains (Sardars).

In Dera Bugti, Khuzdar, Jafarabad, Kachhi, Tamboo, and Lasbela the tribal system is very strong and the tribal chiefs are very powerful. But in Zhob, Quetta, Loralai, Ziarat, Qila Saifullah, and Pishin, where the population consists primarily of Pushtoons, the tribal system is not as effective and the tribal chiefs are not as powerful.

In Mekran Division, the Baluch society is more democratic and the tribal system is almost non-existent.

At present, the political groups can be classified into three categories of Nationalist, Religious, and Moderate. In Pushtoon areas, the religious political groups are very powerful. On the other hand the Nationalist political parties were in majority from Baluch and Brahui areas, while Moderates were elected in the urban cities. Briefly, wherever the tribal system is strong in Baluch areas the Nationalist political groups are active. Moderates are mostly found in irrigated farm areas and in urban centres, although in parts of Nasirabad the tribal or feudal system is also strong. Figure 3.11 shows the socio-political groups in Baluchistan.

3.5.3 Community Involvement

Historically and traditionally the communities in different areas of Baluchistan were involved in water supply schemes. They used to consider it as their own responsibility and they constructed wells and Karezes. Karezes are underground tunnels for carrying water from the mountain

Figure 3.11

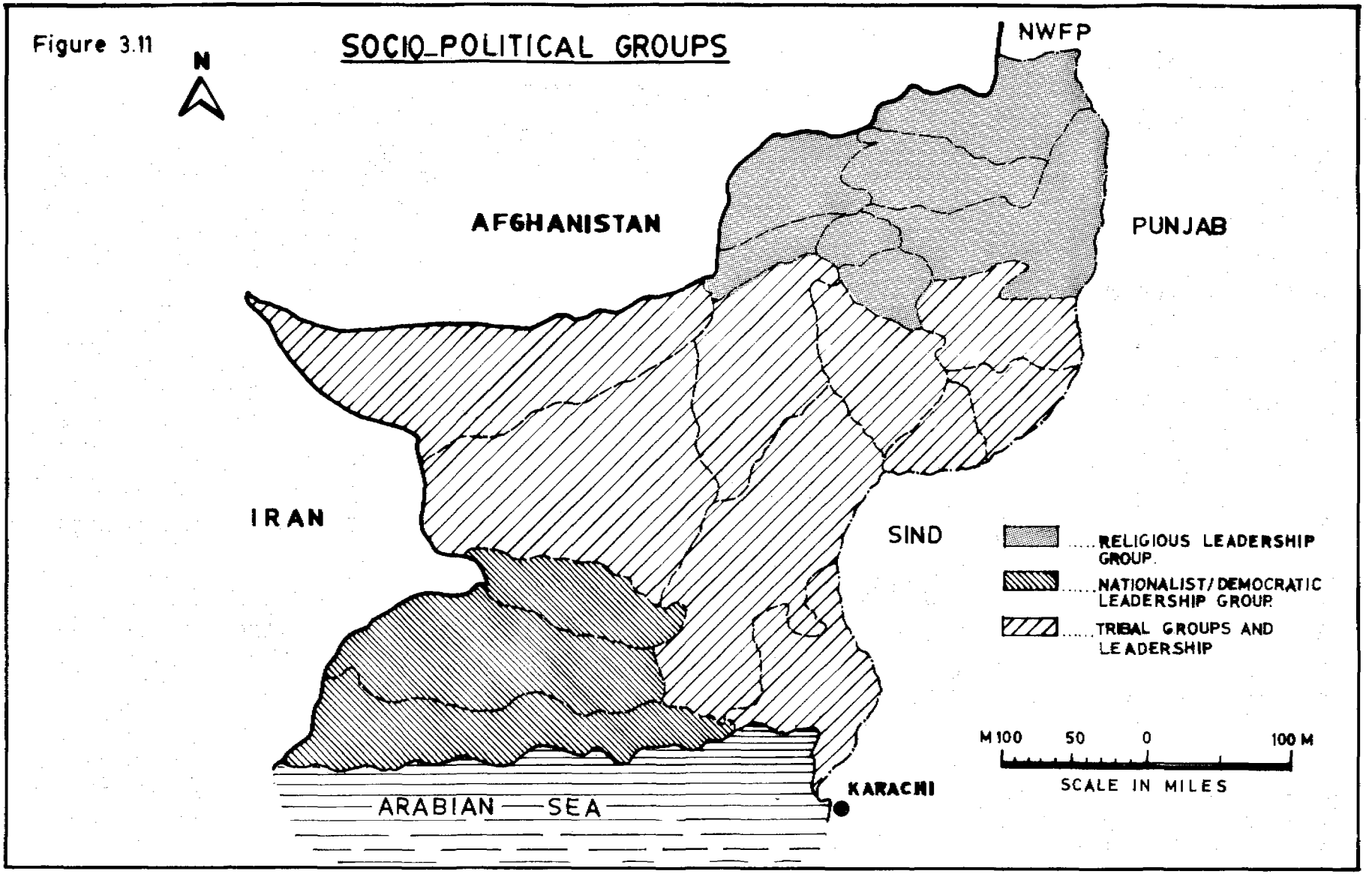


Figure 3.11

sources down into the valleys. There were about 800 Karezes in Baluchistan but now due to lack of maintenance and overuse of some water sources, there are only about 100 Karezes operating today.

Karezes were used for drinking and irrigation purposes. After the creation of Pakistan, the Government took over the responsibility for many of these systems. Today, PHED is responsible for water supply from the traditional Karezes.

Government departments with the exception of LGRDD have not worked closely with the communities in their schemes and projects. The result is that people and communities think that it is solely the government's responsibility to provide these facilities to them.

In certain agricultural areas, the people and communities are still digging large diameter wells, maintaining their Karezes and using new technology (tubewells) for their water needs.

The political condition of Baluchistan has resulted in some negative attitudes and behaviours regarding water supply schemes. Influential people and pressure groups have been successful in convincing the people that water supply schemes are the government's responsibility.

Also, the receipt of loans from different agricultural and cooperative banks have contributed to changing attitudes. For example after getting a loan for maintenance a Kareze, the people believed that the person who got the loan was now responsible and not the community.

3.5.4 Informal Community Organizations

There are several informal community based organizations which can be used for the water and sanitation projects in Baluchistan.

Firstly, in almost every village there is a Mosque. The size and the construction of the mosque is an indicator of the socio-economic structure and status of the people.

Secondly, the Dais, or Traditional Birth Attendants (TBAs) are active in communities. Considerable benefits could be derived if they provided teaching in sanitation, health and hygiene education.

Thirdly, there are" Ziarat Gah" in almost every District in Baluchistan. Ziarat Gas are shrines of holy saints, very popular mystics or "Pirs". They spread Islam throughout the continent and in rural areas; this religion spreads by their advocated mysticism than orthodox Islam. Women and children visit these places frequently to pray and to ask for spiritual support for curing various diseases, and for solving problems. The potential also exists for them to be used for the health and hygiene education, water and sanitation schemes.

Fourthly, in Baluchistan the informal organizations can be seen and observed when there is a death or marriage. It is part of the social responsibility of villagers to participate in every death and marriage. These informal organizations could possibly be used in association with the water and sanitation schemes.

Lastly, Hakeems (Greco-Indian medicine healers) are individually very important. They are people (often elders) with little formal training but with long experience who advise the sick patients of the village. The houses or shops of Hakeems act as a type of community centre.

Although they are not community based, the students' organizations are very active in some areas of Baluchistan like Turbat, Panjgur, Gwadar, Khuzdar and Kalat Districts. They are primarily involved with the student community and work as a pressure group for free education, scholarships and loans for students. In Mekran Division, some women are working with these kinds of student organizations.

In rural areas of District Pishin, Loralai, Zhob, Ziarat, Qila Saifullah and Quetta, the religious institutions are very active in politics and work as pressure groups for community development. Labour organizations are mostly based in Quetta and most of them are working as pressure groups for the welfare of labourers.

Figure 3.12

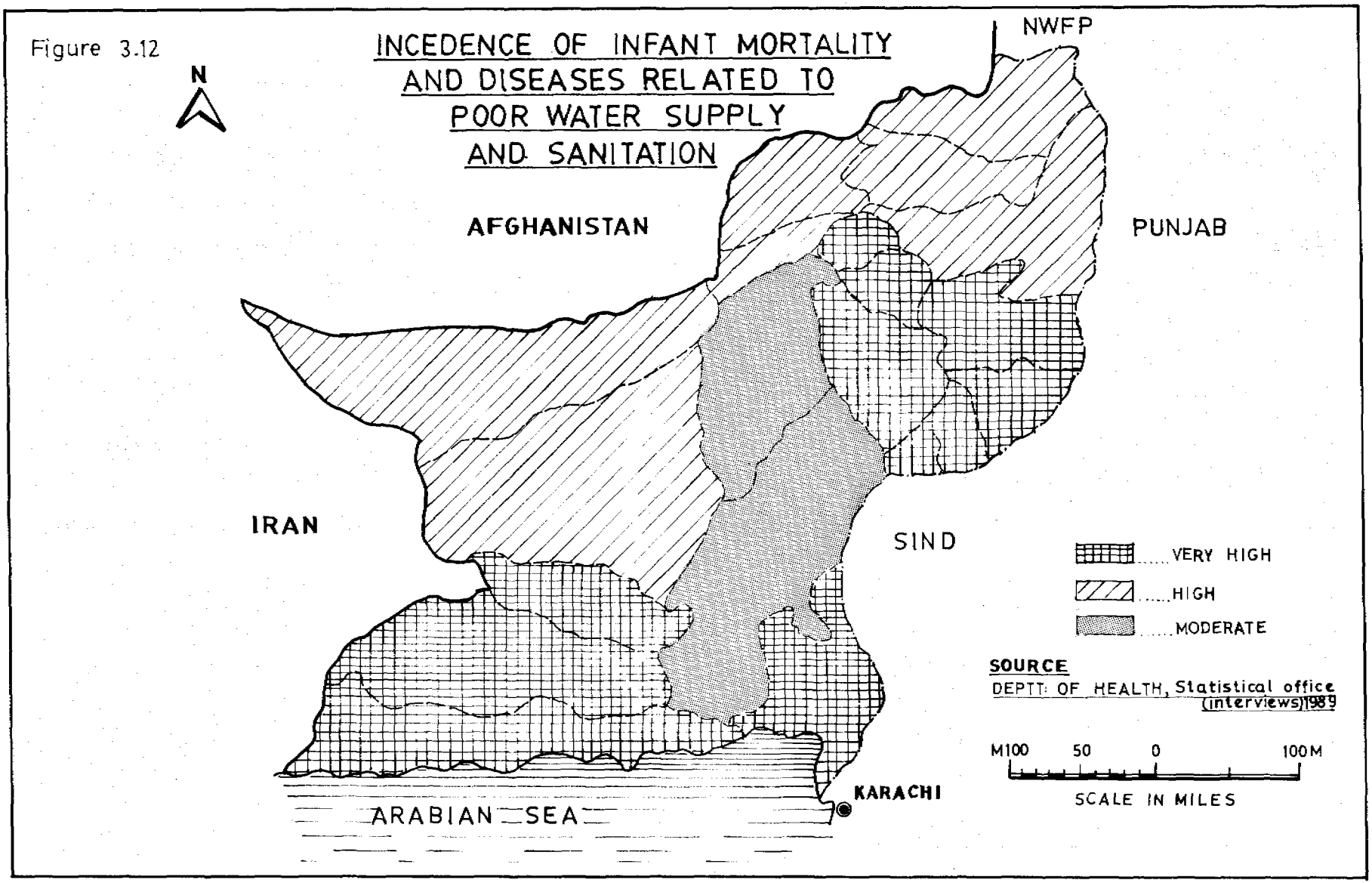


Figure 3.12

It appears from initial investigations that informal organizations of Baluchistan generally lack experience with community water supply, health and hygiene education.

BIAD and the Pak-German Self-Help programmes are community based. They tried to establish some organizations and committees for water and sanitation purposes. Village Organizations were created when no formal organization existed. WASA is another organization, working on formulating new organizations in the poorer suburbs of Quetta.

3.6 Health and Hygiene Education

The low quantity and quality of water supply and sanitation facilities, combined with people's water use, human waste disposal and hygiene habits are fundamental determinants of health. It is within this context that health concerns are considered, rather than focusing on all health issues.

The primary water and sanitation related diseases include diarrhoea, worm infections, poliomyelitis, hepatitis A, malaria, and skin and eye infections. The improvement of water availability, water quality, and disposal of human excreta drainage of waste water can contribute to improved health standards.

In rural Baluchistan, all of the above diseases are prevalent and widespread. However, it is difficult to measure the present health status accurately because data are lacking and the quality of measurements that are available are very crude. Figure 3.12 shows rural districts that have higher incidence of infant mortality and diseases related to poor water supply and sanitation. This was based on interviews with the Department of Health. Even when good indicators are available, it is difficult to determine the degree of impact for each possible cause. As a result, it is also hard to assess the health benefits once water and sanitation programmes are implemented. Proper use of water and hygiene education are essential before major improvements in health can be realized. Most of the rural population

lacks the knowledge or awareness of the link between hygiene and disease. Micro-organisms move from person to person in water, in food, on the hands, or on other objects that become contaminated with faeces which in turn get passed into the mouth, completing the faecal-oral route. Breaking this chain is a requirement for reducing the occurrence of these diseases.

3.6.1 Health Status

Diarrhoea is by far the most important cause of illness and death (particularly of children) that stems from inadequate water and sanitation. The incidence of diarrhoea is therefore used as the primary indicator of water and sanitation related health status. Diarrhoea is defined as three or more watery stools per day. Almost all diarrhoea is caused by ingestion of one of three kinds of micro-organisms - bacteria, viruses, or protozoa - of which bacteria is the main cause in Pakistan. Viral causes tend to be important in colder areas, such as the northern, mountainous parts of Baluchistan.

In a 120 bed paediatric ward in Quetta, Dr. M. Rafique has recorded the relative number of gastrointestinal track diseases (virtually all diarrhoea) as a proportion of all admissions and deaths of children over a 12 year period. Diarrhoea related deaths accounted for were 45% of all deaths, and diarrhoea as a proportion of all admissions has risen from 44% to 54% in the last few years. These figures have an urban bias, but they are useful to confirm the importance of diarrhoea in Baluchistan.

A study conducted for UNICEF in 1981 looked at infant and child mortality in three districts of Baluchistan - Gwadar, Kalat, and Loralai. (Nutritional Status of Infants and Children, prepared for UNICEF by the Investment Advisory Centre of Pakistan, April 1981). Forty villages were surveyed in each district and data were collected from 178 pregnant women, 522 lactating mothers, and 1007 infants and children. The combined infant and child mortality rates ranged from 165/1000 in Loralai to 330/1000 in Gwadar. The most common causes of

death were:

- respiratory - 59%;
- diarrhoea - 51%;
- cholera - 44%; and
- malaria - 26%

In 1984 the Pakistan Demographic Survey was conducted by the Federal Bureau of Statistics. Sample surveys were made of urban and rural clusters. In Baluchistan, the survey included 15 urban clusters, of which 553 households were surveyed, and 22 rural clusters, of which 817 households were sampled. The results are presented as follows:

	Occurrence per thousand		
Mortality	Pakistan	Rural Pakistan	Baluchistan
Crude death rate	11.8	13.1	16.6
Infant mortality	126.7	135.2	219.4
Neo-natal mortality	70.0	78.3	85.7
Post neo-natal mortality (2nd-12th months)	56.7	56.9	133.7

Although the sample sizes are small, these figures clearly indicate that health conditions in Baluchistan are significantly worse than the rest of Pakistan, even rural Pakistan. Infant mortality is 70 to 80% higher in Baluchistan than in the rest of the country. It is interesting to note that neo-natal mortality is only slightly higher than national figures but that post neo-natal mortality is 2.5 times higher. This may be due to breast-feeding habits, the harsh conditions experienced by a poor population which has a greater impact on infants, or the lower quality of facilities and poor access to them. Since this survey, other estimates of the infant mortality rate for Pakistan have been made:

Table 3.10 NUMBER OF HEALTH FACILITIES BY TYPE AND DISTRICT

District	Hospital	Dispensary	R.H.C.	B.H.U.	Other	Total
Quetta	12	4	-	22	16	68
Pishin	4	16	3	23	12	58
Loralai	2	29	3	20	8	62
Zhob	4	27	4	16	7	58
Chagai	1	15	2	19	5	42
Sibi	5	17	3	18	9	52
Kachhi	3	21	4	17	4	49
Nasirabad	3	13	2	23	4	45
Kohlu	4	6	-	15	3	28
Dera Bugti	-	2	2	14	3	20
Kalat	3	23	2	15	3	46
Khuzdar	1	19	4	18	8	50
Kharan	1	17	1	10	5	34
Lasbela	1	12	3	31	5	52
Turbat	1	25	4	19	2	51
Gwadar	1	4	3	10	3	21
Panjgur	-	2	1	13	3	19
TOTAL	46	266	41	303	99	755

Source: Health Department, 1988.

- World Bank (1987) 105/ 1000;
- UNICEF (1987) 115/ 1000; and
- Government of Pakistan (1988) 80/ 1000.

Other water related diseases were investigated but data for Baluchistan were not available.

3.6.2 Health Services

The Provincial Department of Health operates an organized system of hospitals, Rural Health Centres, Basic Health Units, and Maternal and Child Health Centres. In the past, urban areas have received a disproportionately high percentage of health funding, particularly for hospitals. More recently, greater attention has been placed on rural health services through the establishment of at least one Basic Health Unit in every Union Council. At present, approximately 245 out of 315 Union Councils in Baluchistan have Basic Health Units. These units are usually staffed by qualified doctors, nurses and assistants to serve a population of 10000 to 15000 peoples. Management and staffing problems combined with shortages of supplies and equipment have limited their effectiveness.

Throughout Baluchistan, there are 46 hospitals (2725 beds), 266 dispensaries (135 beds), 41 Rural Health Centres (410) beds), 303 Basic Health Units, 16 T.B. Centres, 27 sub-health centres, and 56 Maternity and Child Health Centres. The total number of beds is 3270 or roughly one bed for every 1750 people. Table 3.10 shows the number of health facilities by type and by district.

Good effort has been made to provide a basic level of health service to the vast majority of the rural population. However lack of qualified staff and shortages of supplies and equipment have limited the effectiveness of these facilities both for preventative and curative programmes. The number of medical staff (doctors and nurses) that come from Baluchistan is small compared to the needs. It is hard to attract the best doctors and even more difficult for rural areas. Medical staff

from other parts of the country tend to lack an understanding for the people of Baluchistan, and rural health problems. Another major shortcoming is the lack of well-qualified female staff who are essential for the provision of appropriate at preventive health care in remote rural areas.

3.6.3 Hygiene Education

Hygiene education aims to maximise health benefits of water supplies through the proper use of water and sanitation facilities. It usually promotes individual behaviours and community efforts related to:

- better personal hygiene;
- correct usage of latrines;
- preservation of water quality in the collection, storage use of water; and
- the need for drainage of waste water.

It may also include food hygiene, breast-feeding, environmental sanitation and the treatment of diarrhoeal dehydration through Oral Rehydration Therapy (ORT).

Hygiene education is lacking in the formal education system of Baluchistan. Very basic hygiene (usually related to religious habits) is taught at the primary or mosque school level but most schools are without latrines and many are not served with water. Hygiene education improves with higher levels of education but the high drop-out rate, particularly for girls, means the majority of the rural population receives little hygiene education and even fewer have the knowledge to understand hygiene problems.

The Department of Health has hygiene education as part of their mandate but most of the financial and human resources are devoted to curative treatment. The staff at the local level are not well trained to give adequate hygiene education. The greatest achievements in hygiene education have come from BIAD and more recently the Pak-German Self-Help

project.

Since its inception in 1981, BIAD has extended its programme into four areas of the province, reaching 25 clusters with 63 villages and a population of 46,800. BIAD has twelve mobile teams, each consisting of a Community Development Officer, two female para-medics responsible for community health promotion, one sanitarian, and one lady teacher. Health and hygiene promotion are a major component of their work which is delivered one to one to mothers by the female team members. This education has been integrated with the provision of water supply, drainage and latrines.

UNICEF has spent some of its resources on developing a series of health education materials, including pinch and scoop salt sugar mixture for ORT and diphtheria-polio-tetanus (DPT) vaccination. Others will include hand washing, correct latrine use, nutrition and breast-feeding.

3.7 Education

Baluchistan's educational levels are the lowest of any of the provinces. Rural literacy for people aged 10-years and above was 10% for males and 2% for females in 1981. In 1986 there were 122,000 boys and only 25,000 girls enroled in primary schools. The drop-out rates (those not completing primary school) were 68% for males and 93% for females. Throughout all of Baluchistan, there are 3356 primary schools, 2210 Mosque schools, 528 Middle Schools and 240 High Schools.

Virtually all of the higher centres for learning within Baluchistan are located in Quetta. They are listed below:

- Polytechnical School;
- University of Baluchistan;
- Rural Development Academy;
- Railway Accounts Academy;
- Medical College;
- Teacher Training Schools (several);

- Intermediate Colleges (several);
- Degree Colleges (several);
- Vocational Colleges (two); and
- Commercial Institute.

Outside of Quetta, the only higher level facilities that exist include some teacher training schools, some intermediate and degree colleges and two vocational colleges (Kalat and Khuzdar). The Department of Education is trying a small engineering university to get started in Khuzdar as well.

3.7.1 Human Resource Development

Opportunities for higher education are limited in Baluchistan, with the exception of certain facilities located in Quetta. Throughout the formal educational system, from primary school up, there is a shortage of qualified staff, and limited resources for equipment to facilitate learning. Technical training centres generally provide a good standard of teaching for basic training skills, with most emphasis appropriately placed on practical learning. They are suitably equipped for rural training needs and provide skills that are relevant to water supply and sanitation, such as masons, carpenters, plumbers, electricians, diesel mechanics, millwrights, and cement finishers.

Polytechnical schools offer basic level courses that lead to higher institutions for civil and mechanical engineering. The curriculum is standardized throughout Pakistan. Only one polytechnical school exists in Baluchistan.

The Rural Development Academy in Quetta is presently expanding to a new location. This academy operates as a part of LGRDD, providing training courses for junior and senior staff. These facilities are also available for the elected representatives.

Beyond the formal educational institutions, human resource development is available within government departments. Upgrading (refresher)

courses for employees are provided and some effort is made to reach employees at the local (village) level, at least by LGRDD. There is a need to encourage this type of training and upgrade the facilities.

4. CONSIDERATION OF ISSUES

For the preparation of this Inception Report, the team collected, analyzed and synthesized a large volume of existing date on the sector. Key issues were identified based on the analysis of data, meetings with senior government officials, and discussions with other agencies working in the sector. These issues were then evaluated to determine the key critical issues, their root causes and conclusions that could be drawn to enable strategies to be developed.

This section deals with the evaluation of the issues while the subsequent section deals with the development of initiatives based on these findings.

4.1 Key Issues

The water supply, sanitation and health sector was divided into segments and sub-segments as outlined below:

. Technological	-	Water resources;
	-	Water supply;
	-	sanitation; and
	-	drainage;
. Economic	-	cost recovery; and
	-	private sector;
. Institutional	-	government departments;
	-	District and Union Councils;
	-	elected representatives; and
	-	non-governmental organization;

- socio-cultural
  - community involvement;
  - practices, taboos and beliefs;
  - community based organizations;
  - women in development;
  - population and settlement;
  - health and hygiene education; and
  - human resource development;

4.2 Technological Issues

4.2.1 Water Resources

The primary concern in Baluchistan is the availability of water resources. There are three critical issues:

- lack of available water;
- lack of suitable quality water; and
- lack of information on water resources.

Much of Baluchistan is characterized by very low precipitation and high evaporation. Surface water is scarce and supply is intermittent. Large parts of the province have poor potential for ground water sources. Consequently, there are people in many rural areas who survive on very low quantities of water.

In areas where water supply is sufficient, the concern becomes quality of water. A large percentage of the rural population uses very substandard water. Some use brackish (saline) ground water, others use polluted surface water from streams and canals, some are collecting surface water from half-filled half-cut earthen ponds, and others are collecting water from unprotected sources such as open wells or polluted Karezes. Even the people served by piped water schemes are generally receiving water whose quality is below standards set by the World Health Organization. The primary reason for this situation is a lack of alternative sources that are economically and technically feasible. Also, water sources that were traditionally used have been overexploited

or polluted by the increased population pressure.

Another issue that complicates the provision of water supply relates to quality and availability of water resources data. Information is available on several water basins but the quality of data is limited owing to lack of funding for detailed surveys. WAPDA has done surveys for its own use, but it is somewhat hesitant to provide data to other Government Departments. The PHED has limited financial and manpower resources and cannot expect to fulfil this information gap in the near future, nor does PHED possess laboratory facilities for sampling water quality at existing water sources.

It is possible to draw several conclusions regarding water resources in Baluchistan:

- Baluchistan faces very difficult physical constraints for water supply;
- water is available in certain areas but economic and technological constraints have limited development;
- better information on water resources would enable better long range planning for the sector; and
- the need for water is so acute in certain areas that people resort to very poor quality water sources for lack of alternatives. Consequently, PHED's main priority is to make water available to as many people as possible, and accepts lower quality standards in order to meet this goal.

4.2.2 Water Supply

There are a number of key issues surrounding the existing water supply schemes and policies used for new schemes:

- excessive cost of water supply schemes;

- poor operation and maintenance;
- lack of priority given to water quality;
- limited staff with sufficient technical skills;
- inappropriate criteria and designs; and
- inequitable coverage in rural areas.

The cost of water supply schemes in Baluchistan are often the highest in Pakistan. Table 3.5 provides details on the per capita costs of existing projects operated by PHED in each District. The main reason for high cost schemes is that many water sources are distant from the point of demand or at depths that involve major investments in equipment and engineering. Occasionally, the reasons for high cost may stem from inappropriate design and technology. For example, standard solutions are used without investigating new technology options because the technical skills to apply this technology are lacking. When costs are compared with other provinces, Baluchistan costs appear very high on a per capita basis because the population served by water schemes in Baluchistan are almost exclusively implemented by Government agencies while private sector funding has only been active in the supply of water to individual landowners in the limited agricultural areas. In other parts of Pakistan, the private sector is found to be more cost-effective than the public sector.

The operation and maintenance of water supply schemes falls under the mandate of Local Government (District and Union Councils). In practice, operation and maintenance is handled by PHED because local bodies do not possess technical skills nor the financial resources to manage the water schemes. PHED has had to take over schemes that were abandoned or functioning poorly. This has added a tremendous financial burden on PHED, one that ultimately reduces the availability of funds for new schemes.

In Baluchistan, the lack of adequate water resources and the lack of financial and technical resources has resulted in low coverage in the water supply sector. Priority has been given to increasing coverage but most schemes do not offer adequate quality water. PHED justifies new

schemes on the assumption that previous conditions were so bad and any new water scheme improves the situation. A large share of the population that are fortunate enough to have piped water schemes may still receive poor quality water because sources are not adequately protected or the distribution systems are inadequate.

The improvement of water supplies is constrained by the shortage of staff having appropriate technical skills. The PHED staff are qualified but limited in numbers and lack access to retraining in new technologies such as environmental engineering. At the local levels the availability of technical skills for planning, constructing, inspecting, operating and maintaining is limited. Local Government departments do have engineers at the subdivisional level but the village workers at the Union Council level have inadequate skills for implementing all but simple water supply schemes. The educational institutions are not well suited for training field engineers. The good engineers that come out of universities are not interested in pursuing careers with small scale rural water schemes.

PHED has undertaken a huge task with limited resources, so it is not surprising to find standard design criteria used for most schemes. These designs may provide the greatest savings of time, staff and finances, but they do not always use the most appropriate technology for recipients. If PHED had more staff to assess each scheme more thoroughly, they could customize standard design to better fit local needs. They would require additional technical training to broaden their expertise related to alternative technologies and community involvement.

In Baluchistan there is inequitable coverage of water supply for rural areas. PHED schemes are aimed at urban centres and larger villages. This is consistent with government policies that specifying, "piped water supply systems will be restricted to bigger villages with a population ranging from 3,000 to 5,000 with handpumps being provided to smaller villages" (Seventh Five Year Plan 1988-93). Traditional technology used in Baluchistan does not include handpumps capable of

lifting water from great depths (150 to 300 ft), therefore neither the government nor private sector has focused on smaller villages which comprise two-thirds of the rural population. Coverage is also disproportionately low in Nasirabad Division where water is available from irrigation canals. Once again, access to water receives priority over quality of water supply.

The main conclusions stemming from water supply issues include:

- the high cost of water supply schemes in Baluchistan can result in compromises on the quality of construction materials. Frequently, the reduced capital cost can add to the cost of operation and maintenance in the long run;

- significant funds are now used in the operation, maintenance and repair of existing schemes compared to the funds available for new schemes. Thus large amounts of money are expended without increasing coverage;

- the high level of needs combined with high cost schemes results in lower priority for water quality;

- physical limitations (i.e. water resources) and the lack of technical skills at the local level have resulted in a lack of private initiative for water supply schemes; and

- the Seventh Five Year Plan recommendations for water supply do not appear to be appropriate for Baluchistan (e.g. size of village for piped water schemes). Also, many exemptions are given to Social Districts but in Baluchistan, this applies to almost every District, resulting in a lack of policy direction for improved water supply.

4.2.3 Disposal of Human Wastes

There are two issues related to sanitation. The first involves peoples perception of the need for human waste disposal while the second includes technical aspects related to the design and construction of sanitation facilities (latrines). The former issue is more critical in Baluchistan because a low coverage exists in rural areas. Where latrines do exist, they have been provided by the informal private sector. Only recently have there been attempts to provide sanitation facilities with public (or donor agency) funds. Some of these schemes have failed because designs used did not meet the peoples' perceived needs, costs were excessively high and, in some cases, recipients lacked training in the proper use of latrines.

In general, the rural population of Baluchistan is unaware of the connection between proper hygiene and good health. Given the low education levels in rural areas, particularly for women, there is no easy way to educate them about the benefits delivered by proper hygiene and sanitation facilities. It is only through example, education and peer pressure that people's habits can be changed. Changing cultural practices and taboos, particularly given the complexities of rural society in Baluchistan, is not a simple task.

If disposal of human wastes is to increase significantly, the provincial government must take an active rule in assisting rural people. This may take the form of education, technical assistance, organizational leadership or financing (provision of credit). To date, only limited programmes through BIAD, the Pak-German Self-Help Project, and WASA have attempted to construct latrines on a wide basis. PHED does not see the disposal of human wastes as their responsibility and, in terms of priority, it would rank behind water supply and water quality. The Health Department has a better appreciation of the needs but they view sanitation as a public works project which is outside their jurisdiction.

In conclusion, unless there is a major shift in priorities, government departments will not take an active rule in the provision of human waste disposal facilities in rural Baluchistan. Donor agencies can help fill this void but still a province-wide approach is necessary rather than isolated welfare schemes. For this reason, it would appear that efforts should initially be placed on increased awareness of the benefits on hygiene at all levels of government and the public at large. Only then, can donor agencies effectively support self-help projects or the private sector.

4.2.4 Drainage and Sanitation

Drainage comprises the formal and informal water courses used to remove sullage and storm water; it is frequently referred to as sanitation. In most of rural Baluchistan, the need for drainage is not as urgently felt as it is in heavily populated areas of Punjab and Sind, particularly where water tables are high. Only in Nasirabad Division do these extreme conditions occur. In other parts of Baluchistan, population density is low, villages are widely dispersed, precipitation is low, natural drainage is good and use of water for sullage removal is rare. Even still, simple drainage is necessary for periodic storm waters and removal of what little waste water that does exist.

In most rural villages, some rudimentary form of drainage is provided by local villagers. These systems are adequate until new water supply systems are installed. At that time, more sophisticated drainage systems may be required. These may still be provided locally, such as the lining of channels with bricks.

PHED has not been very active in the provision of drainage systems. The more costly formal drainage systems, such as concrete covered drains, are beyond the resources of rural Baluchistan or any government department. This is evident simply by observing conditions in Quetta, let alone rural areas.

For Baluchistan, it would appear that drainage for rural areas will largely remain an informal activity. This is appropriate since costs are low, schemes can be implemented locally, and the need for more sophisticated and costly schemes is not as great as in other parts of the country. As a general rule, however, the installation of new water supply systems will inevitably require new or improved drainage facilities. It may also require more permanent solutions which communities need to the ultimate disposal rather than dislocation of sullage. Community education regarding drainage can help increase awareness of the problem and should be an element of every water supply scheme.

4.3 Institutional Issues

Institutional issues have been grouped into four categories:

- government departments;
- District and Union Councils;
- elected representatives; and
- non-governmental organizations.

The key issues and their causes are discussed separately for each item but the conclusions are combined because there are many interlinkages.

4.3.1 Government Departments

The key critical issues identified with respect to government departments were as follows:

- roles and mandates;
- links between departments and communities;
- lack of coordination between departments; and
- capacity and capability.

One common problem in the water supply sector is the overlapping mandates of departments that has been caused by segmentation of

departments and the creation of new agencies to meet specific short term needs. At the same time, the awareness of overlapping mandates causes some departments to abdicate their responsibilities, hoping someone else will take over these items. For example, PHED has the mandate for the provision of water supply, sanitation and drainage facilities for the betterment of health conditions but they have no projects involving the disposal of human wastes and no environmental engineers. Since these are long term goals, the issue of sanitation (at least for urban areas) has been left to the Water And Sanitation Authority. Another example is the lack of community education related to water supply schemes. This responsibility is left to the Health or Education Departments.

These problems often stem from the inability of departments to coordinate their actions and obtain interdepartmental support. Certain departments are relatively powerful and do not want interference from other agencies. Once special agencies are created, they sometimes outlive their original mandate and they pursue new objectives to maintain their existence.

Although PHED can operate effectively in the provision of water it has not pursued community involvement in its schemes. Projects are viewed as engineering endeavours and the local communities have no role to play. In return, the communities view these projects as the sole responsibility of the government. Even if PHED were to encourage more community involvement, it has no qualified staff to deal with the social, economic and environmental concerns. Local Government and Rural Department deals much more effectively with communities but even then, the involvement of broadbased community support rarely takes place. This is due to the fact that decision making is controlled by elected officials or a few influential leaders, particularly Sardars in tribal areas.

4.3.2 District and Union Councils

The key critical issues with respect to the involvement of District and Union Councils in the sector include:

- knowledge and awareness toward the sector;
- attitude towards community involvement;
- capability and capacity; and
- structure of local government.

Based on previous accomplishments, it may appear that LGRDD places low priority on water supply, disposal of human wastes, and sanitation and drainage. In actual fact, high priority is given to water supply, which during the last three fiscal years represented 25% of the LGRDD expenditures. The awareness of water supply is high but lack of manpower and financial resources provide formidable constraints, are so inadequate. District and Union Councils simply have too broad a mandate for too large an area. It is only through special funds that major schemes can be undertaken.

District and Union Councils may perceive the need for community involvement but their first concern is to serve the local politicians that sit on Union Councils and members of the Provincial and National Assemblies who influence the allocation of funding. Too many projects are decided by political pressure groups without any involvement of people at the grassroots.

In all fairness, the duties required of local development officers and village workers far exceed their work experience. Staff tend to concentrate on areas of work that they are familiar with and avoid new areas in which they are inexperienced.

Finally, the structure of Union Councils can lead to problems for rural development because local elected officials have local biases which lead to conflicting objectives rather than coordinated development. Funds are distributed equitably to avoid conflicts but most often it results

in thinly dispersed resources that may be less effective.

4.3.3 Elected Representatives

Elected bodies in this section refer to Members of National and Provincial Assemblies and Senators. The key issue with respect to elected bodies is that they have a lot of power to redirect financial resources but the awareness of local needs and issues is often lacking. Political pressure groups can influence these members but such groups rarely have broad-based support at the community level.

4.3.4 Non-Governmental Organizations (NGOs)

Non-governmental organizations can play an important function in community development. In Baluchistan, few NGOs are presently working in the rural water supply and sanitation sector and more support is found in the health sector. The notable exception is UNICEF. The problem is that many of the NGOs which are simply social clubs. As a result, some organizations are viewed to be wasteful of funds and do not provide benefits to a broad-based population. Another problem relates to the availability of funds. Normally, NGO's must be registered with the Social Welfare Department to be eligible for funding. The process of registration may present a barrier to new organizations. Often an NGO may originally offer an adequate mandate but these promises go unfulfilled because the mandate was unrealistic given their resources, or the members may simply drift away from their mandate due to lack of interest and commitment. Nonetheless, some NGO's are successful; their lack is one of integrating their efforts with government programmes.

One positive aspects of NGOs is that they can provide a forum for women to participate and make their views heard. In Baluchistan, the involvement of women in such organizations is still very low and more support is needed.

4.3.5 Conclusions For Institutions

There are numerous institutions that have some mandate to cover water supply, sanitation and health concerns. Unfortunately, these government bodies are not coordinated and existing mechanisms are not used effectively. Many institutions are highly influenced by political members or pressure groups which may lack awareness in the sector and have no broad-based popular support.

Based on experience to date, all institutional agencies have a credibility problem from the community's point of view. Agencies are aware of this and consequently they often avoid community involvement.

Conversely, government institutions rarely perceive the need for actively involving the community; hence projects are seen by villagers to be the responsibility of the government. When problems arise, the government department loses credibility. Constant interaction between communities and line departments is essential if progress is to be made in the section.

Most institutions are understaffed at the local level and staff are not qualified to deal with multi-disciplinary problems.

NGOs could play an important role in community involvement but they also have a credibility problem--both with the communities and with government departments. Support should be given to organizations that have shown capability in the section.

These elected officials have good access to the line departments because most of their time is spent in the provincial or national capital. The level of awareness in the sector depends on the individual member. Where members are well informed and aggressive, good work is likely to follow.

Elected officials are more likely to support larger scale projects which are highly visible and enhance their political image. The small scale

rural projects in water supply or sanitation are less attractive. Similarly, hygiene education is unlikely to be perceived as a project that provides quick and visible benefits, unlike a new hospital or training academy.

4.4 Economic Issues

4.4.1 Cost Recovery

Cost recovery is a major concern in Pakistan. Increased reliance on foreign loans and negative balance of payments has created political awareness of strict budgetary controls and the necessity of self-sustaining cost recovery. In Baluchistan, the problem is more acute because the province relies almost exclusively on the Federal Government for funding because provincial taxes and user charges represent less than 10% of annual expenditures. Expenditures are being restricted to essential items but they continue to exceed the revenues collected domestically.

Public Works Projects that have significant operation and maintenance cost components are coming under increased scrutiny because they place additional burden on financial resources. In the context of this project, there are fundamental differences in the manner in which the concept of cost recovery would be applied to each of the broad sector components, water supply, latrines and drainage. The reasons, briefly stated are:

- for water supply projects, the critical issue is at least recovery of operation and maintenance costs. The funding of operation and maintenance costs by the beneficiaries is a prerequisite for the sustainability of the schemes;

- a latrine is a private good, unlike a water supply system; therefore, expenditures incurred on the creation of this asset have to be seen as a private investment; and

- not only does drainage fall in the category of a public good, it also has the problem of indivisibility. Furthermore, the recipients of such a facility have difficulty assessing how it benefits the individuals personally. Therefore, mobilising the community either directly or indirectly,for drainage is an arduous task.

The critical issues relating to cost recovery for rural water supply, sanitation and drainage in Baluchistan include:

- affordability (ability to pay);
- willingness to pay; and
- poor mechanisms for collection of revenue.

Community-based financial management.

The ability to pay for water supply in Baluchistan is critical because a large percentage of the rural population is very poor. The Federal Government considers all Districts of Baluchistan, with the exception of Quetta, to be special areas because they fall below the poverty line. The ability to pay a significant portion of the cost of water supply is further impeded by the high cost of water schemes and particularly the high per capita cost in areas with low population density. In essence, when the high cost of supply and operations are combined with the rural population that is primarily in poverty conditions, the feasibility of making significant contributions to water supply schemes (in monetary terms) is very doubtful. A financial assessment of existing PHED water schemes was conducted and verified the high per capita costs (see Table 3.5). These data combined with estimates of rural income were used to develop an estimate of affordability. At present, the typical monthly household cost for operation and maintenance of water supply schemes ranged from 15 to 40 rupees. Most rural households could afford 15 rupees per month, but few could afford 40 rupees per month. This measure of affordability excludes any contribution to capital cost.

The situation for provision of human waste disposal facilities is similar, with only the wealthiest families being able to install latrines. It is estimated that the cost of a pour-flush latrine would

be equivalent to 2 years of savings for households earning Rs. 1500 to 2000 per month (assuming saving of Rs. 160 per month) and 4 years of savings for households earning Rs. 1000 to Rs. 1500 per month (assuming savings of Rs. 80 per month). Only 14% of the rural households in Baluchistan earned more than Rs. 2000 per month (Household income and Expenditure Survey, 1984-85) with households unable to set aside savings for installing latrines, availability of credit may be important once the demand for latrines is felt. Hopefully this situations improved with rising income levels but this example is indicative of the situation in Baluchistan. At present, the primary reasons for installing latrines is to maintain social status and provide privacy for women who remain in seclusion much of the time. Even then, the awareness of the need for proper hygiene is still lacking.

Obviously, the situation of affordability in Baluchistan is a major constraint but other forms of payment may be possible such as contributions of materials and labour or payment in kind (food products, etc). In certain parts of Baluchistan, these types of payment may be feasible based on traditionally strong communal involvement (e.g. Karezes) and recent positive experience with the Pak-German Self-Help Project. Still information must be collected to better assess rural people's ability to pay. All areas would be able to provide assistance in the form of labour but this will be unskilled general labour that is mainly required during construction and to a lesser extent for maintenance. Existing PHED schemes do not attempt to recover cost nor involve the community as a means to reduce costs.

The second critical issue is the willingness to pay. People in Baluchistan perceive that any scheme constructed by government agencies is provided free of cost. Baluchistan's rural areas are mostly below the poverty level, so people anticipate that government expenditures are always grant and not to be repaid because virtually all the province is classified as a special case for development funds. In addition, people expect the government to operate and maintain the schemes because they were constructed by a government department.

For water supply schemes, people are less willing to pay for service because very few rural households have separate connections. Since water is distributed communally, there must be a collective mechanism for payment. Such a system exists traditionally, as is evident from the operation of karezes and the construction of deep hand-dug wells schemes are constructed by government departments because the community has no sense of ownership. It should be remembered that piped water schemes provided by PHED often have high operation and maintenance costs relative to traditional schemes. They usually require a monetary commitment rather than simple devotion of labour.

The apparent low willingness to pay is contrary to the high value that people in Baluchistan attribute to water. The high value placed on water can be observed from consumption and conservation habits which stem from a long history of survival in very arid environmental conditions. Unfortunately, this high value does not necessarily translate to willingness to pay, once an adequate supply of water is made available without any effective cost recovery mechanism.

Issues of affordability and willingness to pay are difficult to quantify and do not apply equally throughout the Province. However, a problem that exists everywhere is the inadequacy of mechanisms to collect water charges. The Local Government has the mandate to collect charges for publicly supplied drinking water but in practice few, if any, villages pay user charges. Since Local Government is responsible for the operation and maintenance of public works, including water supply and drainage, the absence of revenue collection means that costs must be paid out of their other revenues. In most cases, local bodies (District and Union Councils) are unable to meet this financial commitment and many schemes have fallen into disrepair or have been taken over by PHED. Today, all schemes constructed by PHED or previously constructed by the Irrigation Department are operated and maintained by PHED, yet PHED does not have the mandate or the capability to collect water chagas.

The root cause of this problem is that the local governments are controlled or highly influenced by elected officials who do not want to

impose additional taxes on their constituents. Rather, in the case of electricity of gas service, a single apolitical utility collects charges and if payment is not made, service can be promptly cut off. To implement a similar system for drinking water supply, one must have a responsible agency that can control the allocation of water and can collect charges without political interference.

The conclusions with respect to cost recovery are as follows:

- cost recovery is accepted as a policy goal by government departments but this has not been translated into action;

- ability to pay is a serious constraint but it has been assumed to apply universally. This is not the case, yet little effort has been made to exploit this potential;

- there is a perception that government schemes are provided free of cost. This has distorted traditional systems highly that valued water the result being an apparent low willingness to pay when someone else makes water available;

- people may be willing to contribute to the capital cost by payment in kind but no effort has been made by PHED to involve the communities in such schemes;

- contributions to the cost of operation and maintenance are unlikely unless the community feels some commitment or ownership of the water supply and drainage system. Otherwise, a strong centralized agency is required to administer service and collect user charges; and

- latrines are viewed as a luxury or prestige items and have not been seen as a priority for public works by line departments. At present, all schemes are financing privately or with the assistance of donor agencies. It would appear that willingness to pay is constrained both by the ability to pay and by the lack of

knowledge of health benefits.

4.4.2 Private Sector

The private sector includes people ranging from the local mason on up to the engineering consultant. The lower end of the spectrum has been operative for centuries.

For Baluchistan, the main issues for the private sector include:

- extent of private involvement in the sector;
- capabilities of the private sector;
- support for the private sector; and
- private initiative.

The karez (tunnel) system depended entirely on local artisans for construction and maintenance. A family based informal system of well digging exists, particularly in the Pathan areas of Baluchistan. These uniquely trained artisans are widely available and have extended their services to the construction of deep pit-latrines. Masons are also widely available. Unfortunately, no quantified data are available as to number or specific location of these artisans.

As one moves up the scale to tubewells and modern technology, greater reliance must be placed on government and private enterprise based within and outside the province. The formal provision of water supply and sanitation in rural Baluchistan came into existence only during this decade. Government departments financed virtually all water schemes and formal drainage schemes. The design is performed by government staff and construction and supervision is contracted to the private sector. Operation and maintenance is handled by government department.

At present, WAPDA has 12 rigs, PHED has 6 rigs (with more on order), and Irrigation Department, WASA and BDA all operate their own rigs. Government has thus taken over a function which would normally be undertaken by the private sector. In Baluchistan, this may be a

necessary condition to support local private contractors who are not large enough to invest in equipment. The lease of equipment to local contractors enables them to compete with larger national contractors.

The capability of the private sector in Baluchistan is a concern for future development of water supply, latrines and drainage systems. Local civil and municipal contractors are available (a minimum of five sizeable contractors) in Quetta. Throughout Baluchistan there are more than 50 businesses but they are primarily civil contractors. Government has been drawing on these and others in the District Centres for construction of buildings, small dams, reservoirs, distribution systems and pump houses. It is only the large projects that require contractors from outside the Province.

One problem is the quality of local contractors. Local contractors may be used due to political pressure rather than technical merit. As a result, construction may suffer. Engineering design capability in Baluchistan is under-developed and designs used in other parts of Pakistan are not always not applicable to local rural water supply system requirements. There is also a lack of training facilities and teachers for trade skills of local artisans are exist and they should be supported in efforts to pass on their skills.

Another issue is the lack of support available to the private sector. The informal sector passes traditional skills on through generations but the formal sector needs access to higher quality training facilities. Such facilities are lacking in numbers and in quality. The government has no programmes to assist the private sector, neither technically nor financially.

A final issue is the apparent lack of private initiative. In the Pathan areas an also in the Mekran area, where tribal systems are not so strong, the private sector is more developed and capable. In the strong Baluch and Brahui tribal areas, the private sector is characterized by family-run organizations and each has its own territory. For drinking water supply schemes, little private initiative exists because most

schemes are very costly and no revenue is derived from water use. For latrines and drainage in rural areas, the informal private sector is active but not the larger contractors. Only when government funding is provided does the formal private sector get involved. The private sector is not involved with the operation and maintenance of water scheme and this is a potential opportunity that should be studied.

The conclusions of the private sector are as follows:

- the informal private sector (local artisans) exists and is capable of small scale water supply, sanitation and drainage schemes;
- the formal private sector is active in government funded schemes. Local contractors are widely used but sometimes on the basis of political/tribal influence rather than ability;
- in certain parts of Baluchistan, the capability of the contractors is low because the private sector is poorly developed. Most the contractors have civil capability but not design, mechanical or electrical expertise;
- there is lack of support for the private sector in terms of training facilities and access to credit; and
- there is little incentive for private initiative due to low economic returns (high capital costs and low revenues), poor local economy and competition with government services.

4.5 Social Issues

4.5.1 Community Involvement

There are three key issues related to community involvement in the water supply, sanitation and health sector. These include:

- lack of knowledge and awareness;

lack of opportunities and experience; and
leadership.

The lack of knowledge and awareness of interrelationships between water, sanitation and hygiene appears to be a key critical issue. This has been demonstrated by the BIAD programme and may also be seen from the poor hygiene practices throughout the communities of Baluchistan. The root causes for this are the low literacy levels and tribal structure of society.

Another critical issue with respect to the communities and their role in the sector appears to be a lack of opportunities and experiences. The provision of water supply has become the responsibility of the Government. Procedures used by government departments do not encourage the involvement of communities, with the exception of LGRDD. This is due to the lack of linkages between providers of service and users. The only link between the user and provider is the leader,(e.g. Malik Councillor, or the political leaders. This lack of broad-based community involvement is the reason for many technical failures and inappropriate designs) and lack of community commitment for contributing to the operation and maintenance of schemes.

The last key issue with respect to communities is the question of leadership. Strong leadership is a prerequisite for successful community participation in public works schemes. In Baluchistan, a strong leader is usually present in tribal, feudal or religious societies. Problems frequently arise from strong leaders who simply reject outside interference (as is the case in Zhob District) and make decisions for the community rather than with community involvement. This is common of tribal areas where the Sardar is very dominate. Due to barriers at the village level, community participation will be difficult to achieve in the strong Baluch and Brahui tribal areas.

The main conclusions that can be reached with respect to community involvement in the sector include:

- villagers must be made aware of the benefits of adequate water supply, sanitation and hygiene education. Programmes could be designed to overcome the constraints of low literacy and education and the behaviourial problems engrained in tribal and religious societies; and

- no obvious mechanism exists to provide closer interaction between communities and line departments. Within this link community needs cannot presently be expressed or even identified.

4.5.2 Practices, Taboos and Beliefs

As adult human excreta is considered to be harmful, men and women generally (with few exceptions) defecate outside the house. As menstrual blood is also taboo in this society, men and women go to separate places for defecation. Women may go some where near the house and men may have to walk further from the house. Since child excreta is not supposed to be "polluting", they may go any where in the house compound.

There generally seems to be no practice of anal washing with water after defecation. Men and women both use a dry earth ball for this purpose except perhaps in wealthier families who have water sources located inside the house. Since earth, like anywhere else in the country, is supposed to be purifying, no need may be felt to wash hands with water.

Water, like earth, has an important role in purifying and cleaning. Women for instance, take a special purifying bath after menstruation.

Similarly, distinction is made between water for use in the kitchen and drinking water, and water which is used for other purposes such as washing clothes, cattle, bathing etc. Women (with few exceptions) are responsible for providing water for domestic use. Water is brought from

the source in bags made of leather or old tyre-tubes. At home, drinking water may be transferred to day pitchers, some of them have such a shape that they may never be washed. Everyone at home may drink directly from these pitchers.

Very few people relate water to disease. The water which looks clean and taste fine may be considered good for drinking. Running water is usually considered clean and people may believe that evil spirits cannot cross running water.

Infants may be believed to become ill due to "incorrect" diet of the mother through her milk, or if it is a male child, the cause may be due to the evil eye. Although breast feeding is culturally encouraged, colostrum is considered harmful and hence children are given honey and water for these days after the birth. There is also an increasing trend of formula bottle feeding as fashion among betteroff village families or as a supplement to insufficient mothers milk. Bottles may not be washed properly and the milk may not be changed after every feed. No relationship is perceived between faeces and diarrhoea, nor is the faecal-water transmission of disease understood.

Several conclusions can be formulated regarding the impact of cultural practices, taboos and beliefs on water use, sanitation and hygiene:

- perceptions are deeply engraved in the rural society and traditional practices are reinforced by the structure of villages, low levels of education, and use of village elders for disseminating knowledge;

- without changing peoples perceptions and habits, the introduction of any new technology is unlikely to succeed;

- qualified hygienists are needed to change these beliefs but they are in short supply, particularly women; and

- people are concerned about disease. By explaining the connection between hygiene and health, demand for safe water and good sanitation may increase, although the process will be a lengthy one.

4.5.3 Community Based Organizations

Community Based Organizations (CBOs) can play an important role in community development schemes. The main issues identified regarding their involvement in water supply, sanitation and health are as follows:

- relationship of CBOs to established power structure;
- resources and capacities of CBOs; and
- knowledge and awareness.

A major constraint for CBOs is that government staff (policy makers, engineers, administrators, and project personnel) perceive them as being poorly organized and lacking in capability. Even those that are registered by the Social Welfare Department are generally thought to be of little us to provincial water supply and sanitation programmes. At the Union Council level, some credibility may exist because prominent members may be well known.

In Baluchistan, CBOs are relatively weak organizations and largely inexperienced with water supply, sanitation and health. Part of the problem is the low education level but more importantly, most CBOs have not had the opportunity to be actively involved in the sector. As organizations, one of their strengths is that they represent the whole village and therefore can be effective in motivating people. It is clear that CBOs lack experience and would need significant technical and management assistance, but they can also provide many solutions to local implementation problems.

The CBOs generally lack awareness about the sector with the exception of water availability. The lack of knowledge reflects the low education level and poor hygiene practices common throughout rural Baluchistan.

Recently, there has been some increased awareness in areas where aid agencies are working. Both BIAD and the Pak-German Self-Help project have had some success in this area.

The conclusions that evolve from this analysis are as follows:

- CBOs have a major credibility problem with government departments which reduces their effectiveness; and

- Most CBOs lack awareness of the of the sector, problems but once involved, they can be effective in motivating their people.

4.5.4 Women in Development

The major consideration associated with the role of women in development are:

- women's own perception regarding male dominance;
- women's access to economic means; and
- lack of consultation or community matters.

Women's perception of male dominance stems from the traditional and religious bifurcation of roles, combined with religious and cultural beliefs that women should stay behind the veil. The latter also is a root cause for women having little access to economic means.

Traditional society depends upon women to undertake only non-remunerative duties (no payment received) including domestic chores, collection of water, tending livestock, educating children, doing light work in fields and household handicrafts. All income generating and cash expenditure activities are usually reserved for men in these traditional societies. Moreover, the structure of society in rural Baluchistan where women can not enforce even the rights of inheritance coupled with the very low level of economic activity and jobs for even men are negligible, severely inhibit the access of women to economic means.

The traditional belief that woman are less wise than men is propagated by mullas (religious leaders) is one of the main reasons why women are not consulted on community matters. Also, the observance of Purdah makes it impossible for women to interact publicly with men on decisions regarding community matters. Another very important constraint or women participating in development is the very low level of literacy (2%) in rural Baluchistan.

In conclusion, it has been observed that women should be consulted on decisions regarding water supply and sanitation and they should be the main targets for introducing hygiene education. However, there are serious cultural, religious and educational constraints that affect the level of active participation from women.

4.5.5 Population and Settlement

There are two key demographic factors that have a influence on the rural water supply and sanitation sector. Firstly, population distribution and settlement patterns affect the provision of water supply because the rural population density in Baluchistan is very low and widely dispersed in small villages. Secondly, the population is growing rapidly and there are noticeable population shifts to larger centres.

Settlement patterns have developed over time as a function of physical conditions (availability of water, soil conditions, climate, etc), economic opportunities (agriculture, livestock, commerce etc) and cultural factors (tribal relationships, nomadic existence, etc). The availability of water is major factor in historical settlement patterns. During the last 30 years, economic opportunities (e.g. mining, fishing, commerce) have played a large role, thus creating imbalances between water supply and demand. Conversely, the development of new water supply schemes with surplus capacity can influence future settlement development.

Population growth is a significant development issue in Baluchistan because of the high growth rate - the overall population is increasing

at a rate of 3% per annum, but in some rural Districts, the growth rate is much higher. Baluchistan has limited resources to allocate to its present problems and rapid population growth erodes any progress. Thee are may reasons for the high population growth rate:

- lack of family planning;
- religious beliefs and cultural practices;
- lack of education;
- early marriages;
- lack of rural electrification;
- traditional security of large families;
- perceived low survival rate; and
- actual decline in death rate and increase in life expectancy.

In general, the traditional beliefs and practices have resulted in high birth rates while improvement in medicine and health facilities have lowered death rates. The resulting high population growth is putting added pressure on a limited and scarce supply of water. At the same time, the population is shifting to larger centres. The urban migration helps to reduce population growth in rural areas, but the estimated rural growth rate in Baluchistan is still high. There has also been an influx of more than 800,000 Afghanistan refugees. The wealthier refuges have settled in urban centres whereas the poorest families remain in refugee camps, awaiting an opportunity to return to their homeland. There is however a sizeable number of refugees that have been assimilated into the neighbouring rural areas of Baluchistan. They have put added pressure on local resources. The majority of refugees are expected to return to Afghanistan, so the Government does not consider their impact on development planning.

There is also a sizeable number of nomadic people that continue to shift their homes on a seasonal basis. These people rely on a pastoral economy and shift with their livestock to find suitable grazing areas. These movements can distort the demand of water supply in the more arid parts of the province, although the movements are usually based upon the availability of adequate water supply. The maintenance of nomadic

practices will depend on the long term reliability of water supply. Additional data would be needed to assess the regional impact of nomadic people on water demand and the impact of changing water resources on traditional nomadic movements. This is an issue in the more remote parts of the province.

The main conclusions that can be drawn regarding population issues in the sector are as follows:

- water availability was a major influence in historical settlement patterns in Baluchistan, resulting in low density and small, widely dispersed villages;
- economic factors are more important in explaining recent population shifts, thereby altering the balance between water supply and demand;
- new water supply schemes can influence future development and growth of settlements; and
- population growth is causing increased pressure on water resources that are already in short supply.

4.5.6 Health and Hygiene Education

The quality of life and health standards of the rural population in Baluchistan is very low and the Government places a major emphasis on improvements in these areas. In section 3.5 the current status of health conditions was shown to be much worse than the national conditions, which are already low.

The two major health problems in rural areas are malnutrition related and water related diseases. The latter stems from poor quality water supply, poor water use habits and poor sanitation practices. Together, these problems have caused high infant and child mortality and generally poor health for adult populations.

Regarding the rural water supply, sanitation and drainage sector, the main issues for health and hygiene education include:

- lack of knowledge and awareness at the community level;
- resource allocation (preventative versus curative treatment);
- lack of commitment by health workers; and
- difficulty in reaching women.

Despite the poor environmental conditions in rural Baluchistan and the resultant health problems, there are many behaviourial habits and practices that make conditions worse and impede solutions There are many reasons for poor water use and sanitation practices:

- low education levels;
- lack of hygiene education programmes;
- lack of exposure to correct practices;
- proliferation of conflicting cultural beliefs and practices; and
- lack of knowledgable people to teach good practices.

At the same time, there is no appreciation of the link between hygiene and disease, and consequently there is indifference or opposition to change. To bring about improved health conditions, it is necessary to raise the level of awareness that many health problems stem from poor hygiene and polluted water sources. Consequently, it is essential to mobilize a force to implement hygiene education at the community level to derive the benefits of new or rehabilitated water supplies.

The problem of resource allocation is common in countries where health conditions are acute and resources are limited. When people are sick, the immediate need for curative treatment takes precedence over the preventative programmes. The high cost of curative programmes may absorb most of the funding available in the health sector. To compound this problem, Government tends to allocate funds to impressive hospitals and sophisticated equipment which offer high visibility and prestige, and are but mainly located in urban centres. Medical professionals are also drawn to these facilities where chances for advancement are much

greater than in rural health clinics. Curative facilities (e.g. hospitals) can be centralized but preventative facilities must be decentralized and therefore are more difficult to plan, implement and staff.

It should be recognized that preventative programmes involving rural water supply and sanitation systems are very complex, quite costly and take a great deal of time to implement and achieve benefits. A preventative measure such as inoculation of children against disease is comparatively simple, cost-effective and shows quick benefits.

While health workers have health and hygiene education as part of their duties, most devote little effort to it due to lack of time or lack of motivation. The four types of health worker in Pakistan best able to carry out hygiene education are the Traditional Birth Attendants (TBAs), Lady Health Visitors (LHVs) at Basic Health Units, medical/health technicians and medical doctors. Doctors' potential contribution to hygiene education in the rural areas is limited by their urban-rural maldistribution, and frequently lack of interest or incentive to do health education, compared to higher-technology interventions. However, doctors know that the most important thing that can often be done for a patient is not a technical intervention but help in overcoming a problem through changed behaviour. So doctors in rural areas, as well as lady health visitors, TBAs and health technicians could form a nucleus for hygiene education.

There is general agreement that women should be the primary audience for hygiene education and there is widespread recognition in the difficulty of reaching them. Almost all rural women are illiterate. Their lives focus predominantly upon meeting the needs of their families. Their seclusion, their traditional beliefs and superstitions constrain the infiltration of new ideas or possibilities from the outside world. The more experienced health educators argue that rural women are best reached through women-to-women contact during home visits, with women's discussion groups as a possible second stage. The low numbers of trained women able to be used for such activities is a major constraint.

The female health care resources that now exist throughout the province are either over extended or inappropriately oriented and very few are natives of Baluchistan. Reaching women through men is not seen as effective, although men need to know about hygiene and support the practice of new behaviours by their wives. Schools are another medium for hygiene education but success is limited by low enrolment, high drop-out and an uncertain influence of children upon the domestic hygiene of their families.

The conclusions that can be drawn from health and hygiene issues are:

- a behaviourial change is required before significant benefits are possible;

- disseminating knowledge to rural villages is difficult and requires a long procedure that will demand a large number of experienced staff;

- patience is required for preventative programme; therefore Government departments need to take a long term perspective on health;

- more health workers should be encouraged to devote more time and effort to health and hygiene education, particularly in rural areas; and

- hygiene education will not be successful unless programmes are appropriately geared for women. This requires the recruitment and training of local, female health workers.

4.5.7 Human Resource Development

The critical issues relating to human resource development in the sector are as follows:

- absence of related training programmes;
- lack of qualified teachers;
- low perceived value of training and adult education;
- effectiveness of new training programmes; and
- lack of priority allocated by government departments.

The first two issues are interrelated and simply highlight the lack of educational facilities and number of qualified staff in Baluchistan. This is a major constraint for human resource development, but it also a good opportunity for donor agencies to lend assistance and funding. In the long run, this may prove to be the most cost-effective and beneficial means for contribution.

The next two issues are important to consider if real progress is to be made with training/education programmes in rural Baluchistan. For people to learn properly, there must be a desire to learn and hence a perception that the programme is beneficial to that individual's well-being. This may not be a simple process because villagers have survived with traditional ways and, in fact, are often very self-sufficient. They may reject efforts to change what they perceive to threaten their social status. It is for this reason that many tribes in Zhob District have opposed any form of development. The other problem, once people have agreed to learn a new skill, is the effectiveness of new training programmes being implemented in areas where no formal system presently exists. Also, it is desirable for training to precede the implementation of water supply, sanitation and drainage schemes. But if training occurs too soon, there may be no opportunity to reinforce the skills that have been learned. A better approach would be no incorporate training programmes into new schemes and to utilize newly developed skills for operation, maintenance and future system extension.

The final issue relates to the low priority that is given to human resource development by line departments. Sometimes the problem is one of overlapping mandates. For example, the Health Department sees hygiene education as a component of a sanitation project whereas the department installing the public facility may have no appreciation or skills for education. PHED has no environmental engineers or hygienists and so cannot implement community training.

The conclusions that can be drawn are as follows:

- human resource development is required in virtually every aspect of the sector;
- the initial constraint is lack of training facilities and qualified staff;
- for effective programmes, rural people must gain an appreciation of the need for education; and is must be lined to allow important to reinforcement of the skills learned; and
- enhanced education opportunities should be available at all levels of government to increase the awareness of decision-makers and those implementing the projects.

4.6 Conclusions

The purpose of identifying critical issues and assessing their root causes was to arrive at conclusions that address the key elements of the sector. This section combines all of the conclusions, examines linkages between them, and presents a summary of conclusions which form the basis for developing initiatives in Section 5.

4.6.1 Synthesis of Conclusions

The water resources and population issues have proved to be constraints within which initiatives for the sector must comply. Water resources

and settlement patterns are closely connected in Baluchistan. There is a need to evaluate alternative water resource options in populated areas that have insufficient water supply. Conversely, areas with high potential for water supply should be considered for future economic development. Therefore, better information on water resources is needed in order to set long term water management policies.

All potential projects a face trade-off between economic and technical decisions. Water supply schemes in Baluchistan are costly and the quality of water supplied is usually sacrificed to make schemes viable. A hard look at appropriate technology is required in order to minimize costs, maximize quality, and provide sustainable projects. The qualified staff to conduct these assessments are too busy applying conventional technologies.

Appropriate technology can only be applied if the human and technical aspects are understood. Combining these skills means interaction between communities and line departments. To achieve this, they must first gain mutual respect for one another, then they need a mechanism to work together.

The need for water supply, sanitation and hygiene education in Baluchistan is great, but full awareness of this need by the people and by decision-makers is lacking. People must first understand the connection between hygiene the problems and solutions. These behaviourial changes will disrupt many cultural practices and beliefs, so community support will be required to make changes more quickly and smoothly.

Institutions play a major role in the supply of public works. They can also be the source of many problems. Good, realistic policies must be adopted that will meet the long term needs of Baluchistan. Criteria are also needed to set short-term priorities. Then policies must be turned into actions effectively and efficiently. This will require strengthening of existing institutions and making the system work better by coordinating the actions of various departments. Also, all members

of the relevant institutions should be educated about the needs in the sector and the necessity of improved community involvement.

Human resource development covers a wide spectrum. Four types of human resource development have been identified for this sector. The first involves spreading awareness of needs to rural people and to senior government officials and politicians. The second is the provision of health and hygiene education. The third is training for selected community leaders, and government staff working on schemes at the local level (this may include technical, management, health care, community development economic and social sciences). Finally, the fourth type is teacher training to increase the quality of resource staff in all aspects but particularly health care for rural areas and especially female health workers.

Cost recovery is an important policy but it must be applied carefully in Baluchistan. The average ability to pay is low, particularly since most schemes are quite costly. Each scheme should be assessed for cost recovery in order to improve cost-effectiveness in the sector. Options for reducing the government's financial burden include collection of user charges, community self-help projects, and better use of the private sector, especially the informal group of local artisans.

5. DEVELOPMENT OF INITIATIVES

5.1 Goals, Objectives and Criteria

The identification and evaluation of issues was centred around a broad mission statement or goal which read:

> "The development of strategic provincial investment plans committed to the betterment of health and overall quality of life for the rural population through more cost-effective, sustainable water supply, sanitation and hygiene education initiatives which maximize community involvement".

After assessing the various issues for Baluchistan and identifying the most critical concerns, it is now possible to reassess this mission statement.

Health

Given the extremely low health standards in Baluchistan, which are related to inadequate water supply, the lack of sanitation facilities and the poor hygiene habits, health concerns must receive a high priority for (investment) decisions.

Quality of Living Standards

The quality of living standards in rural Baluchistan are also very poor. Any proposed scheme in this sector will have a direct benefit on the quality of life, but it should be viewed as a secondary concern as compared to the basic necessities of life. Therefore, quality of life will not be a critical criteria for investment decision in Baluchistan.

Cost-effectiveness

Baluchistan is a poor province and it cannot afford to be wasteful of financial resources. The term cost-effective is more appropriate for Baluchistan where the issue of full cost recovery may be unrealistic. Cost of schemes in Baluchistan have been found to be higher than other provinces for reasons already discussed. However, more effort should be made to develop technologies appropriate for rural Baluchistan. Many simple technologies could be implemented and managed by communities, thereby reducing the technical and perhaps financial burden on the government. Cost-effectiveness should be an integral element of every scheme or programme.

Sustainable Projects

Investment projects should achieve high success rates. Success can be measured by cost, achievement of design parameters, and long problem-free life. However, it is unrealistic to think that schemes will operate problem free given the environmental conditions, quality of equipment, and quality of construction and maintenance. Projects will be successful if they can be repaired and maintained easily and at low cost, preferably by the local people. Thus, the concept of appropriate technology should apply to the design life of the project.

Maximization of Community Involvement

Community involvement is not a goal in itself but rather a means to achieving other goals. Community involvement is not a prerequisite for good projects but it has been shown that the community involvement can significantly improve a project. Community involvement and coordination with government institutions is not an easy task, and projects should take into account the time requirements for developing community involvement. Close evaluation of the type and degree of community involvement is required for each investment scheme.

5.1.1 Specific Goals and Objectives

Health Status

Investment projects should have direct and indirect impacts on improvement in health. An acceptable level of health should be achieved in each rural district. The objective should be the reduction of infant and child mortality due to water related diseases in the rural areas of Baluchistan.

Water Resources

Districts with the greatest population density and inadequate water supply should be the focus for ground water testing.

The objective is to identify alternative water supply options for the rural population.

Population/Settlement Patterns

Economic development policy should be consistent with the availability of water resources wherever possible. The objective is to implement policies that reduce population pressures in areas where water is scarce or of poor quality, thereby resolving regional imbalances between water supply and water demand.

Water Supply

The goal is to increase the coverage of water supply in rural areas and to increase water quality to a minimum acceptable standard. The objective will be to increase the coverage of water availability,particularly in the smaller villages. A minimum acceptable standard of water quality should be pursued in all rural areas.

Sanitation

The goal is to increase the availability of good sanitation facilities for the rural population. The objective will be to increase awareness and promote good sanitation practices by improving the quality of sanitation facilities.

Drainage

The goal is to provide a minimum level of acceptable drainage in rural villages. The objective is to have adequate drainage for all new water supply schemes and to provide adequate drainage for existing water supply schemes.

Cost Recovery

The existing policy of cost recovery should be put into practice for water supply, sanitation, and drainage schemes. However, full cost recovery is unrealistic in Baluchistan. The objective is for beneficiaries to provide some contribution to the capital cost of the water supply and drainage schemes. A mechanism is required to recover all (or portion) of the operating and maintenance costs.

Institutions

Government institutions must be more effective in the implementation of water supply, sanitation, drainage and hygiene education. The objective is to maximize the use of funds allocated to the sector and to increase community involvement.

Socio-Cultural

The goal is to increase the level of community involvement, responsibility and commitment in the sector. The objective is for schemes to maximize the level of community involvement and, where feasible, the community should be encouraged to take as much

responsibility as possible.

Private Sector

The private sector should take a more direct role in the design, construction, operation and maintenance of schemes in the sector. The objective is to reduce the proportion of government funding in the sector.

Human Resource Development

The goals are to increase the level of awareness and understanding of issues in the sector, improve health and hygiene education, increase technical capabilities, and provide support to training facilities. The objective is to increase the awareness of water supply, sanitation and hygiene in the rural population. Increased understanding is required by the government officials, politicians, village leaders and other people directly involved in the sector. Also, opportunities for training should be extended, accordingly in order to support these achievements.

5.1.2 Criteria

Various strategies can be used to help accomplish the goals and objectives outlined above. It is then necessary to develop criteria to assess and select the best strategies for meeting these goals.

The following criteria have been proposed based on existing government policies, criteria commonly adopted by donor agencies, and local conditions in Baluchistan:

- maximize cost-effectiveness of the projects and programmes;
- use simple, appropriate and sustainable technologies;
- maximize the level of community involvement and contribution (financial and other);

- provide maximum socio-economic benefits (education, health, living standards, incomes);
- achieve a basic level of service (quality) as a minimum target;
- minimize operation and maintenance requirements and cost;
- schemes must all have community acceptance;
- human resource requirements must be achievable; and
- use private sector involvement where capabilities exist.

These criteria would be used as a guide to evaluate ~~successful strategic investment plans~~. They may be revised and some may receive higher priority because it may not be possible to satisfy all the criteria at the same time.

5.2 Potential Initiatives

The following sections describe potential initiatives which address the key goals and objectives discussed in Section 5.1. These are initiatives that will be further developed through field investigations and data analyses in the next phase of our study. At present, the initiatives are flexible and many of them have several options. The purpose of this section is to clearly reveal the directions for the study while, leaving room for interactive discussions and feedback from the Provincial Steering Committee, the Government of Pakistan, the World Bank and other donor agencies. The methodology for developing these initiatives, in the next phase, is described in the workplan (Sect. 6).

5.2.1 Institutional Development Initiatives

The objectives of initiatives for institutional development are to strengthen institutional capabilities, streamline the procedures, increase inter-departmental coordination, and increase the level of direct involvement with communities. For the delivery of water supply, sanitation and drainage, two classifications of schemes are presented. One involves systems that serve a large rural population and/or demand high levels of technical input for design, construction, operation and maintenance. The other involves small or individualized schemes that serve small numbers of people and are relatively simple to implement, operate and maintain.

Large Schemes

For large schemes, one option would be to let PHED continue to take strong role by providing the technical inputs of its engineers, managers and supervisors. It would act as an executing agency in collaboration with the Union Council. PHED would be responsible for macro-planning functions.

The initiative in this option would be to develop much closer interaction between PHED and the communities, enabling villages to participate in project identification, decision-making, implementation and ultimately to take full responsibility for operation and maintenance, wherever possible. This would require a new section of experts within PHED to work closely with village committees or organizations. Alternatively, community development sections could be strengthened within LGRDD at the District Council level to liaise between the PHED and the community. Since coordination between line departments is presently weak, a formal procedure would be required for project implementation that facilitates inter-departmental schemes. A major task of developing this kind of initiative would be to determine the requirements for staffing.

Small Schemes

One option would be for LGRDD to take a lead role in providing the technical and management expertise for the project through its engineers, managers and supervisors. The Union Council would have the responsibility to carry out the project with strong community participation at the village level. Macro-planning would be carried out by the P&D Department. This option would build upon the existing institutional structure.

The initiative in the above option would be to strengthen the LGRDD in technical expertise and project management. This would require the addition of engineering and management staff which have strong experience in rural water supply program delivery. The additional strengthening needed in project management reflects a need for staff with experience in community development within this section.

Another option would allow the community to have a stronger say through its elected representatives. The District Council would take a strong lead role in providing the management and technical expertise. The LGRDD would be responsible for district/sector planning for rural development having strong inputs to the P&D in their macro-planning. Heavy reliance would be placed on the Union Council for project execution through the community and its CBOs.

The initiative would involve establishment of a District level planning and project/programme monitoring unit within the LGRDD staffed by planners, financial analysts, economists, and sociologists. At the District Council level the initiative would include strengthening of technical capabilities through hiring and training of expertise and by establishing community development units.

5.2.2 Community Participation Initiatives

There are several initiatives that relate to community participation:

- improved interaction with line departments;
- community awareness programmes;
- community participatory programmes; and
- needs assessment programme.

In section 5.1, institutional initiatives included closer community involvement. Community based organizations (CBOs) are weak, inexperienced in the sector and consequently have been perceived by government as lacking credibility. To increase interaction with line departments, one initiative would be to create more capable and effective village organizations. Key individuals must be identified in villages and the organization should be strengthened to handle more responsibility for projects. Similar approaches have been used by BIAD and the Pak-German Self-Help Project.

Another initiative could involve the creation of community awareness programmes. These programmes would largely be conducted by village organizations with the support of LGRDD, NGOs and donor agencies. Promotional aids for water supply, sanitation and health issues could be developed by agencies and the information would be disseminated through village organizations. The agencies would require capable staff, training facilities, technical assistance and support services to implement this programme.

A third initiative could be a community participation programme. The underlying theme would be that the community itself should take a stronger role in the provision of its services. A programme of village orientation and motivation would therefore be recommended which would provide the communities with adequate and accurate information on the various sources of assistance and how to go about approaching them. This programme should be based at the District level. First however, it would be necessary to inform and convince those at the District level of the validity and viability of approaches being proposed. It would be

Test, promote, develop approach.

the validity and viability of approaches being proposed. It would be equally important for politicians to also be included in the orientation. Mobile promotional personnel from the District offices should work at the Union Council level with audio-visuals and written material. Although literacy is very low in the rural areas, people can and do arrange for literate people to read material when it is important to them. Whenever possible, the news media and radio should be used as well as the word of mouth. It would be important for the information to be consistent and accurate. It should include details on what programmes are being offered, how assistance can be sought by the village, what its roles and responsibilities will be, and what benefits could ultimately arise. For this last point, co-ordination with health and hygiene education programmes would be essential.

The last initiative could be a needs assessment programme. The assessment of the communities needs and perception of needs would be an essential first step in the planning for rural water supply and sanitation schemes. The information collected should include socio-cultural, economic, environmental and physical conditions. The initiative would first be to develop a methodology for assessment that can be applied to all communities. Secondly, an appropriate agency should be identified to mobilize the expertise for conducting the surveys or studies. These units could be created within a line department (such as PHED or LGRDD) or within District or Union Councils or with an NGO. These options need to be assessed further. Co-ordination with other initiatives would be essential.

5.2.3 Technical Initiatives

Several initiatives are proposed for technical schemes in water supply, disposal of human wastes (latrines) and sanitation and drainage. Some data gaps exist on water resources and further effort is required by the team which may alter the choice of water supply initiatives.

The potential initiatives identified to date include:

- delivery of water supply to schools in villages with existing or proposed piped water supply;

- provision of latrines in schools and other community centres;

- development of water supply systems for small villages located close to identified water sources;

- rehabilitation of existing water supply schemes (traditional and modern) and improvements to water tanks and distribution systems;

- upgrading quality of surface water supply where rural population density is high and groundwater potential is poor, as occurs in Jafarabad and Tamboo Districts;

- installation of deep setting handpumps for small villages in areas where groundwater potential is good;

- improvement works for existing water sources that are unprotected and subject to contamination;

- investigation of alternative water supply schemes in the brackish water zones of Lasbela and Chagai Districts; and

- assessment of drainage problems in special areas, such as Nasirabad.

Some of these initiatives involve small schemes which may best be handled as self-help projects, supported by LGRDD or NGOs or the informal private sector. Other initiatives may involve larger schemes which require more technical assistance from PHED. Lastly, some initiatives are more investigative and would require assistance from line departments, WAPDA and the private sector (national consultants and manufacturers). This list is only indicative of the types of

initiatives available and there is potential for numerous projects within each, especially, given the diversity in Baluchistan. All of these initiatives would have to eventually be integrated with community participation and human resource development initiatives.

5.2.4 Health and Hygiene Initiatives

Health and hygiene education has proven difficult to implement and even more difficult to sustain. The objective is to raise consciousness about the role of water and human wastes disposal and the health benefits resulting from improvements in personal and household hygiene. Wherever possible hygiene education programmes should be carried out in conjunction with schemes for water supply and latrines because hygiene education cannot have much impact without the availability of adequate water and sanitation. Hygiene education can be usefully combined with other programmes such as adult literacy classes, home schools and income generation schemes. The following are some options for hygiene education which utilize existing personnel within existing programmes:

School Teachers may be retrained under separate training programmes conducted at the District level as a means of upgrading teachers and their effectiveness in the primary schools. By focusing on female school teachers such an activity would be very cost-effective in reaching a primary target group, the rural girl. Initial trials could be carried out using NGOs, UNICEF or possibly the Aga Khan University's Community Development Department which is already carrying out hygiene education programmes in the rural Sind. These programmes should be integrated with schemes to supply water and latrines to schools;

Traditional Birth Attendants (TBAs) represent another option. UNICEF provides a good example of TBA training programmes. TBAs can be used to carry hygiene education messages. UNICEF's programme utilized Lady Health Visitors to train the TBAs. Hygiene education is already, to some extent, part of the curriculum;

- Community Health Workers and Medical Technicians can also be utilized to carry forward hygiene messages. They can be trained through mobile teams working at the District level by the Department of Health with the assistance of an already active NGO or UNICEF;

- Female Vaccinators have been highly successful in the NWFP/UNICEF Experimental Programme of Immunization despite the widespread belief that women could not function as vaccinators in traditional society. These women are already including hygiene message within breast-feeding, Oral Rehydration Treatment and immunization messages. Such a programme would be difficult to implement in Baluchistan due to the shortage of female health workers, but this still has promise as a longer term initiative; and

- Adult Education Specialists can also include hygiene education in their literacy programmes. Collaboration could be sought with LAMEC (Literacy and Mass Education) and the Adult Basic Education Society (ABES), an NGO based in Lahore. They could work in Baluchistan where literacy rates are still very low. ABES is already involved in female adult literacy programmes using health and hygiene messages extensively as the content of their literacy material.

Hygiene education materials should be designed around existing perceptions, taboos and practices, respecting their negative and positive aspects. The local people should be involved in the design of information materials. Messages and means of delivery could be designed, field tested and expanded programmes undertaken through initial participatory workshops and with community based organizations that are interested or already active in health related activities at the village level.

5.2.5 Human Resource Development Initiatives

Two types of human resource development have already been noted elsewhere. They include community awareness programmes and health and hygiene education programmes. Two additional types are included here. One type involves the improvement of standards and facilities at formal educational institutions. Another type is retraining for professionals and teachers, and skills development programmes for adult education. Four potential initiatives have been identified.

The first could be the upgrading the curricula and staffing at the Polytechnical Institute, University of Baluchistan, and various colleges and academies. The objective would be to improve opportunities for higher education in Baluchistan in subjects relevant to rural development. The ultimate goal would be to have more technicians, sociologists, environmentalists, health care workers, and social workers who are native of Baluchistan. Special emphasis should be placed on increasing opportunities for women.

The second initiative could be the development of in-house training programmes for employees of LGRDD. In Quetta, the Rural Development Academy is under construction at a new location. A concerted effort is needed to focus on a high quality curricula and staffing. This institution should be available to the planners and administrators of LGRDD, senior officials in other line departments or agencies, and elected representatives. Also, training skills must be passed down to the Divisional, District Council and Union Council Levels, either through this Academy or by decentralized workshops. Courses should include management and community development skills.

The third initiative could be for skills development and technical training. A small network of technical and vocational training institutes exists in Baluchistan. These institutes have the capability of providing skills to masons, carpenters, pipe-fitters, plumbers, electricians, diesel mechanics, etc. However, the outreach is currently limited to the urban labour force. This initiative would involve the

extension of the training programmes to cover the rural areas through establishment of smaller training facilities at the District level or through mobile training units at the Union Council level. In addition, the initiative would require modification of course contents to suit sector needs, modest upgrading of teaching staff, audio-visual aids, equipment and vehicles. The scope for involvement of the private sector in skill training programmes could also be tested through this initiative.

Village committees.

The fourth initiative would be complementary to the skills development and technical training programme just described. This initiative would identify existing artisans with traditional skills which exist at the village level (referred to as the informal private sector). These artisans would be assessed for their technical capabilities and encouraged to participate in the programmes for local apprenticeship training in nearby villages. Selective artisans could participate in workshops at the Union Council level for skills exchange and courses in new technologies, management and financing. The objective would be to strengthen technical skills at the village level to promote local involvement in the operation and maintenance of water supply schemes, installation of latrines, and improvement of drainage.

5.2.6 Cost Recovery Initiatives

There are three types of initiatives relating to cost recovery as follows:

- promotion of community financing;
- development of mechanisms for cost recovery; and
- provision of funding and credit.

In the first initiative funds could be collected by the community and paid to the provider of operation and maintenance for services rendered under the supervision of community. The community should also contribute to capital cost of the water schemes. These contributions may include labour, materials, and payment-in-kind, as well as monetary.

In poor areas of Baluchistan, full cost recovery is not feasible, but communities must be prepared to make some commitment for new schemes. Studies could assess the principals and procedures of community financing and determine where it is most likely to succeed and how it should be implemented. Some Districts could then be selected for trial. Community organizations would have to receive training in motivation, collection, accounting, supervision and inspection of services. Community revolving funds could be set up of help finance future improvements to water systems.

A second initiative is to assess alternative mechanisms for cost recovery which are both effective and equitable.

One alternative to consider would be a direct mechanism for collecting user charges. These charges could be set by a central agency to provide a more equitable system of recovery for public works like water supply and drainage. The responsibility for collection could be centralised or decentralised. The actual collection and maintenance of accounts should be decentralised to provide motivation for payment, a feeling of local responsibility, and incentives for areas with good cost recovery.

Another possibility would be to use indirect mechanisms such as taxation. In the short term, this does not appear to be viable in Baluchistan but there are non-tribal areas where it could be attempted on a trial basis. This would require an evaluation of the rural fiscal structure of Union Councils and District Councils to identify where scope exists for levying surcharges.

In the third initiative, Districts would be classified by relative levels of development (high, medium and low). For each categorization, site selection and cost recovery criteria and the portfolio of services and projects would be determined. For instance, the government may decide that in the relatively developed areas it should be focusing its efforts and energies on promoting sanitation projects and would be interested in funding water supply schemes only if the beneficiary community contributes say 50% of capital costs. The matching

contribution would be met from a Community Development Fund set up by the Provincial Government for this purpose. Poorer communities would be expected to contribute a smaller portion of the cost. Applications from communities would be submitted for evaluation by either the respective District Councils or the LGRDD who would ultimately be responsible for approval of the application. This model could be first attempted through an investigative demonstration project and, if successful, upgraded and expanded to other Districts in the Province.

5.2.7 Private Sector Initiatives

Initiatives for the private sector include:

- privatization of operations and maintenance;
- upgrading capability of the private sector; and
- financial support for the private sector.

In the first initiative, it is proposed that the operation and maintenance as well as the billing and collection of tariffs for water supply be contracted out to the private sector, in selected areas, where feasible. The Union Council (under supervision of the District Council) would invite bids from private firms to take over these functions. The Union Council would be responsible for monitoring the firm to ensure that it continued to meet its contractual obligations. In Baluchistan, areas would have to be identified where the private sector is capable and the community is likely to receptive to the idea of cost recovery. Such conditions may exist in Districts like Quetta, Pishin, Lasbela and Turbat. LGRDD could monitor the progress of this initiative.

The second initiative would involve strengthening the technical and managerial capabilities of the formal private sector (mainly contractors and equipment suppliers). Human resource development initiatives were already discussed in Section 5.2.5. A parallel programme could involve technology workshops, held in conjunction with the line departments, local agencies, NGOs and donor agencies. It would attempt to strengthen the private sector capabilities in each district and would keep them up-

to-date on appropriate designs, materials, standards, and equipment. The government departments and agencies own almost all the drilling rigs in Baluchistan. Training sessions could be given to contractors prepared to lease government rigs which would expand the capability of small firms and promote greater competition between contractors.

The last initiative would be to provide financial support for the private sector. The private sector could play a role in the construction of latrines for individual households. At present, few latrines are constructed because there is no government funding available, affordability is a problem, and there is low perception of the need for latrines. Since there are initiatives to increase awareness of the health benefits related to improvements in sanitation, a financial initiative would help to resolve the other problems. Latrines would only be constructed by the higher income households, but even they may find the capital outlay is a burden. Credit could be provided by government or donor agencies to the private contractor which in turn would allow individuals to pay for the latrines in instalments. The private contractor would be responsible for the loan and must therefore ensure that payments are received promptly from the houseowner. Future loans would be based on the contractor's previous credit records and quality of work performed. A special fund could be set up and allocated by LGRDD through commercial banks in rural towns.

5.2.8 Provincial Sector Data Base Initiative

One of the constraints to the development of this sector is the lack of reliable and consistent data on which rational plans for its development can be based. A data base could be set up within the LGRDD on a Union Council level which will regularly collect and monitor such information as installed water supply systems, technology and design, their functional status, water resources availability and their quality, health statistics, community needs for health services, private sector activity, and population coverage. The data base should include information on all sector components including water supply, drainage, latrines and hygiene education.

6. WORKPLAN

Project activities have been divided into categories as outlined in Section 2. Each category is discussed below and is supported by detailed lists of activities presented in Appendix IV.

The project time span has been divided into five phases. At the end of the discussion below, a schedule of the main tasks the team expects to accomplish in each phase is presented. The schedule is a guideline for the development of expanded plans being compiled during the first half of March.

6.1 Data Collection

Preliminary data collection began in December, 1988 and was completed February 15, 1989. It identified and collected readily available secondary data and formed the basis for:

- the division of the sector into sub-segments to be studied;
- the definition of data bases, outlining data to be collected during the detailed data collection phase; and
- the focus of project activities during the coming months.

The detailed data collection activities began mid February and will continue until June 15. During this period:

- secondary data will be collected to assess specific issues and needs;
- limited field studies will be undertaken to verify selected secondary data; and
- some primary data collection will be undertaken using sampling techniques where secondary data are not available.

The final phase of data collection will fill gaps in the data which become apparent as initiatives are formulated.

In the schedule at the end of this section, data collection will occur in:

- Phase II activities 2 to 7, focused by the analysis carried out for the Inception Report; and

- Phase III activities 11 and 13, focused further by discussions of the Inception Report.

6.2 Data Analysis

Analysis of the detailed data collected will take place in parallel with the collection from March 1 - June 21.

Key critical issues, identified in the analysis of the initial data will be reviewed as more detailed information is collected. They will be confirmed as stated, or refined to reflect the new data. Issues judged to have an effect on the other issues, i.e. to "drive" the rest, will be given the highest priority.

In-depth analysis of each issue will determine:

- the root causes of each issue - why the issue is important;

- strengths which can be built on and weaknesses which must be overcome; and

- conclusions reflecting types of action which can be taken.

The strengths and weaknesses will then be priorized in order to identify actions of the greatest likelihood of success and areas in which the need is the greatest.

Through the analysis of the data, gaps will be identified. The process of data collection will start again, leading to more analysis using the methodology outlined above.

The conclusions reached will form the basis of the investment strategy. Projects will then be identified, and it may follow that needs for additional data will once again result in additional collection and analysis.

Analysis of data will take place in the schedule:

- Phase II activities 2 to 6; and
- Phase III activities 11 to 13.

6.3 Synthesis of Information

As data is being analyzed, the results are being evaluated for linkages. This synthesizing process will be carried out in parallel with data analysis, from March 15 until June 30. It will occur in Phase II activities 2 to 6, Phase III activity 11 as well as the subsequent phases.

Key interrelationships and constraints identified earlier will be verified by analyzing the conclusions reached in the analysis phase.

Strengths and weaknesses which overlap in several issues will be deemed to be of critical importance and will be given top emphasis.

6.4 Formulation of Initiatives

The formulation of initiatives is the last step in the process before identification of potential projects.

Goals will be developed for actions which will build on the available strengths and lessen the effects of the weaknesses.

For each goal, a set of specific objectives which are quantifiable and measurable will be established. The objectives will include a time element. They will be priorized in terms of most pressing needs, having the broadest anticipated impact and short-term visible impacts and long-term benefits.

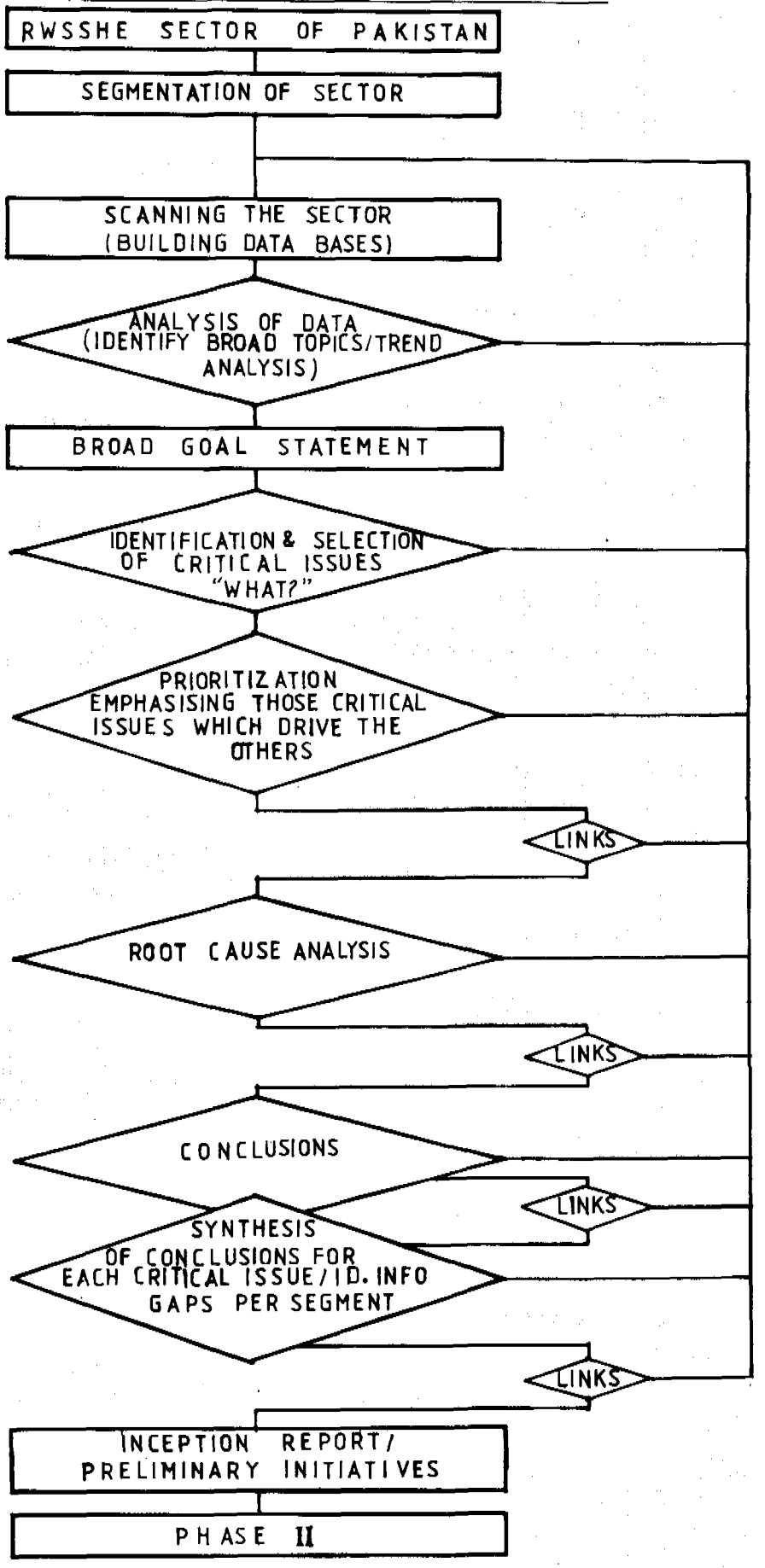
A set of strategies on how the goals and objectives are to be met will be set for each objective or set of objectives. Development of the strategies will be guided by the major issues and the overall project goal of developing projects which lead to affordable and sustainable water supply, sanitation, drainage and hygiene education projects while maximizing community participation. Criteria for evaluating the strategies will be defined and used to select ones which offer the appropriate impact, benefit, and likelihood of success. These strategies will be rolled into initiatives which will form the basis of the investment plan and from which projects will be identified.

Phase I activities concluded with a formulation process which produced a preliminary set of initiatives. These will be refined following the discussions of this report. Phase II activities 6 and 8 will narrow the refined initiatives to a specific set and Phase III activities 11 and 12 will lead to the selection of final initiatives for the investment plan and subsequent project identification.

6.5 Project Outputs

The project outputs include a Strategic Provincial Investment Plan, Project Identification Reports and a National Summary Investment Plan as discussed in Section 2.

STRATEGIC PLANNING METHODOLOGY
PHASE I-JAN 6 TO FEB 25



WORKPLAN PHASE I - JAN 6 to FEB 28

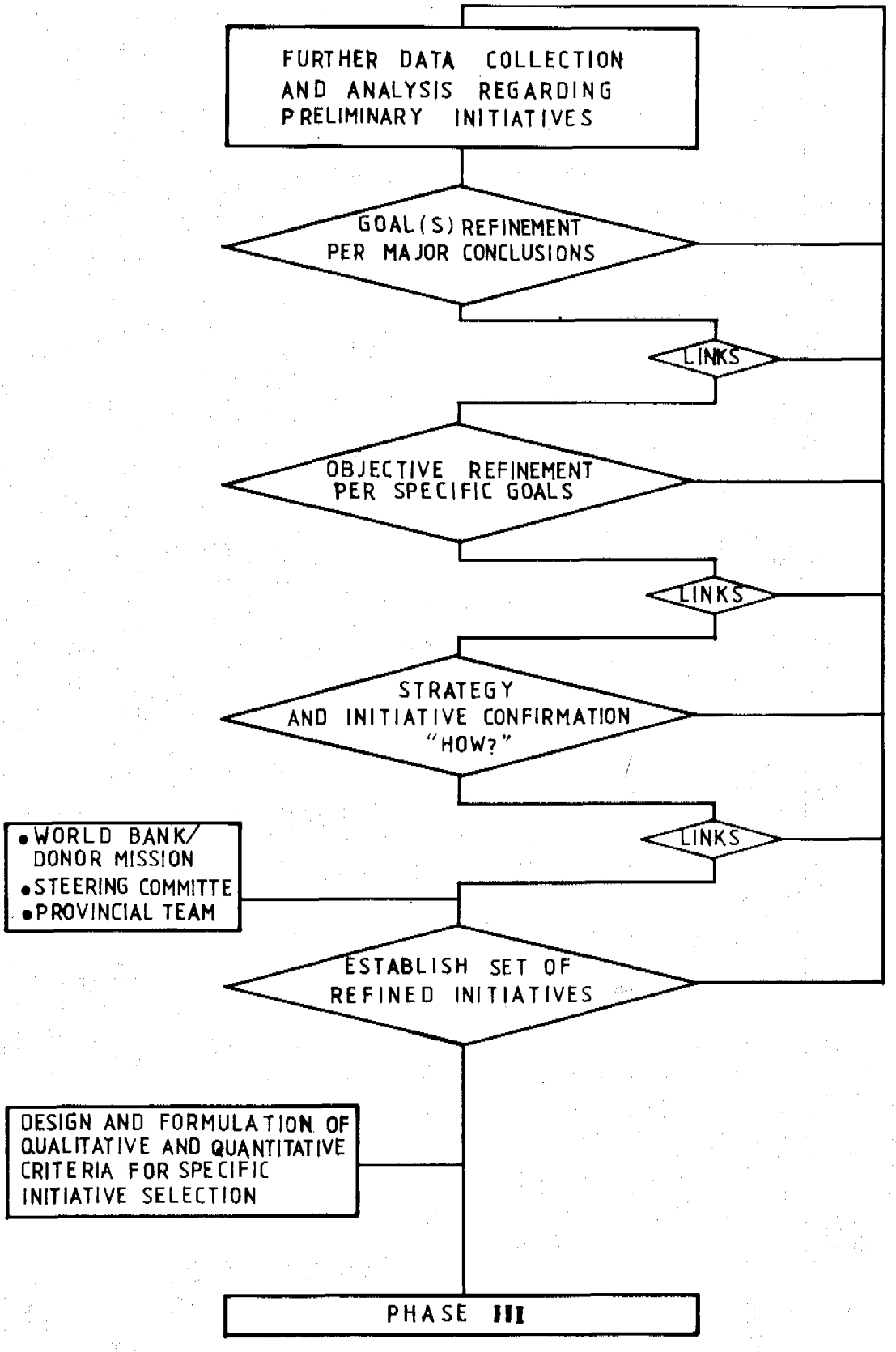
Initial reconnaissance of data and issues leading up to the Inception Report and a set of preliminary initiatives and indicative projects.

WORKPLAN PHASE II - MAR 1 to APR 1

Enhancement of data and refinement of preliminary initiatives identified in the Inception Report in order to establish the set of refined initiatives:

ACTIVITY	APPROX. TIME REQUIRED	COMPLETION DATE	RESPONS-IBILITY
1.PREPARATION OF DETAILED WORKPLAN FOR PHASE II		05/03/89	
Prepare detailed workplan for Phase III and review with MG	02 days		PT/CT
2.REVIEW AND ENHANCEMENT OF STRATEGIC ANALYSIS BASED ON INCEPTION REPORT		14/03/89	
2.1 Review conclusions of inception report and identify data gaps for each key issues of each subsegment	01 day		PT
2.2 Prioritise data gaps and collect highest priority data	10 days		PT
2.3 Analyse data and identify new trends	10 days		PT
2.4 Revise root causes and refine conclusions for each key issue	01 day		PT
3.GOAL REFINEMENT		15/03/89	
3.1 Refine goals and formulate new ones in light of new data and conclusions	01 day		PT
3.2 Review linkages between goals and synthesise into major goals for each subsegment	01 day		PT

STRATEGIC PLANNING METHODOLOGY
PHASE II – FEB 26 TO MAR 31



4.Objective Refinement		16/03/89	
4.1 Refine objectives and formulate new ones for each major goal	01 day		PT
4.2 Review linkages between objectives and synthesise into major objectives for each major goal within each subsegment	01 day		PT
5.STRATEGY CONFIRMATION AND REFINEMENT		26/03/89	
5.1 Confirm formulated strategies and establish new ones that will best achieve major objectives	02 days		PT
5.2 Review linkages between strategies and synthesise into major strategies for each subsegment	01 day		PT
5.3 Compare major strategies with strategic options in the Inception Report .	01 day		PT
6.INITIATIVE CONFIRMATION AND REFINEMENT		26/03/89	
6.1 Refine preliminary intiatives and if needed formulate new ones	03 days		PT
6.2 Review linkages between initiatives of each goal and synthesise for each subsegment	02 days		PT
7.WB/DONOR MISSION		12/03/89	
7.1 Meeting with Steering Committee, WB and prospective donors to review contents of Inception Report	02 days	to	PT/CT
7.2 Confirmation by WB of order of magnitude of expected foreign investment into the sector		26/03/89	
8.ESTABLISH A REFINED SET OF INITIATIVES IN CONSIDERATION OF STEERING COMMITTEE/ WB-DONOR MISSION RECOMMENDATIONS	02 days	31/03/89	PT

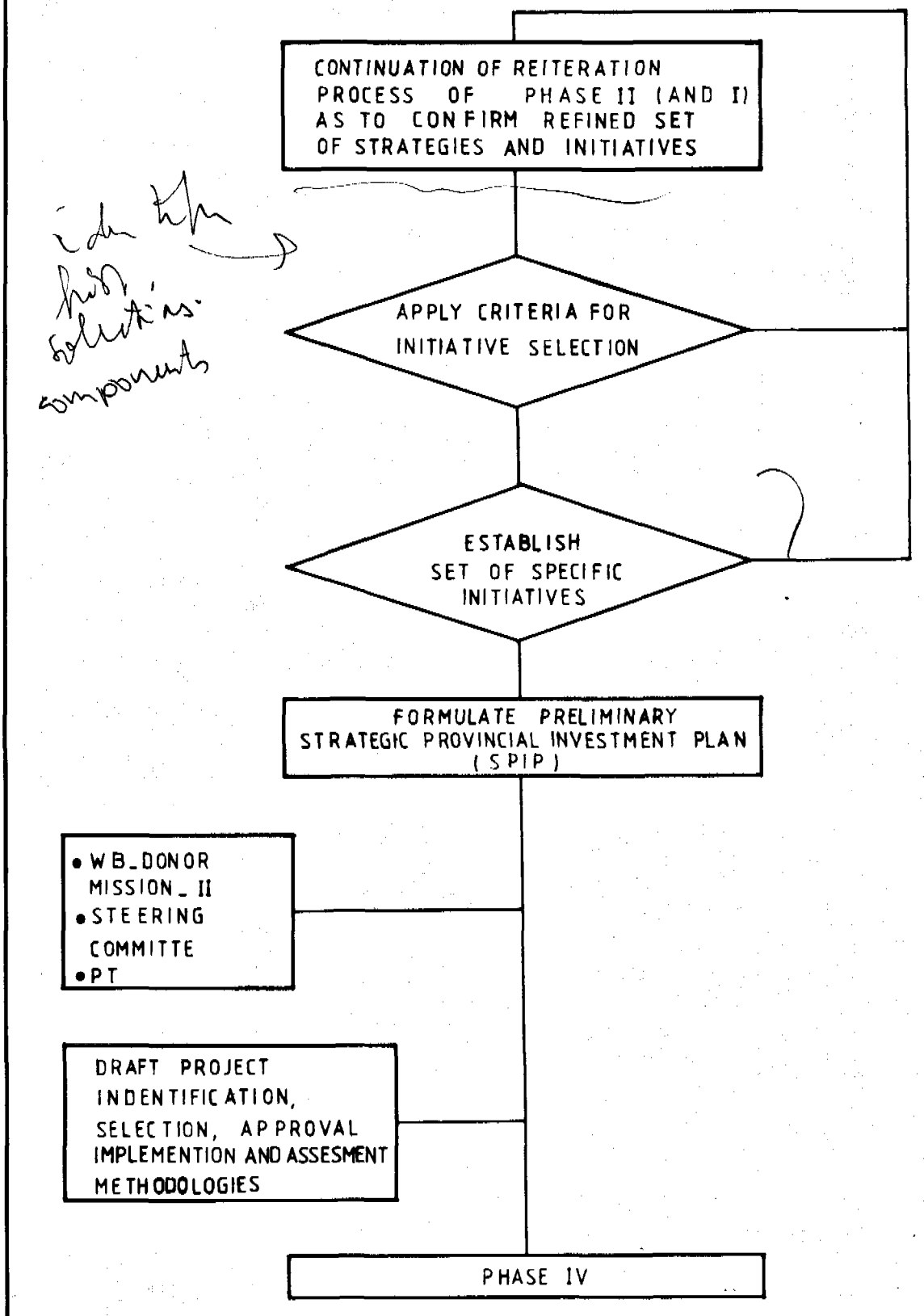
9.FORMULATION OF INITIATIVE SELECTION CRITERIA

Design qualitative and quantitative criteria for the selection of specific initiatives	07 days	31/03/89	CT

10.PREPARATION OF DETAILED WORKPLAN FOR PHASE III

Prepare detailed workplan for Phase III and review with MG	02 days	31/03/89	PT

STRATEGIC PLANNING METHODOLOGY
PHASE III APRIL – JUNE



WORKPLAN PHASE III - APRIL 2 to JUNE 11

Selection of most appropriate and feasible of the refined initiatives to be developed into a preliminary strategic provincial investment plan

ACTIVITY	APPROX. TIME REQUIRED	COMPLETION DATE	RESPONSIBILITY
11.CONTINUATION OF STRATEGIC ANALYSIS		24/04/89	
11.1 Collect additional data in support of refined initiatives and to meet selection requirements	10 days		PT/CT
11.2 Refine strategic analysis, goals, objectives, strategies and initiatives in light of latest data	05 days		PT/CT
12.SPECIFIC INITIATIVE SELECTION		13/05/89	
12.1 Apply qualitative criteria to refined initiatives to select a short list of initiatives	02 days		PT/CT
12.2 Apply quantitative criteria to the short list of refined initiatives to select final set of specific initiatives	05 days		PT/CT
13.PRELIMINARY STRATEGIC INVESTMENT PLAN FORMULATION			
13.1 Group specific initiatives into programmes	01 day		PT
13.2 Assess resource requirements and time frames for each programme	04 days		PT/CT
13.3 Allocate resources for the '90-'93 and '94-'97 planning periods	10 days		PT/CT
13.4 Produce preliminary strategic provincial investment plan	15 days	20/05/89	PT/CT
13.5 Deliver Preliminary Strategic Investment Plan		11/06/89	PT
14.DRAFT METHODOLOGIES FOR PROJECT IDENTIFICATION, SELECTION, APPROVAL, IMPLEMENTATION AND ASSESSMENT FOR FUTURE USE BY LOCAL EXECUTING AGENCIES	10 days	11/06/89	CT
15.PREPARATION OF DETAILED WORKPLAN FOR PHASE IV AND REVIEW WITH MG	02 days	11/06/89	PT/CT

STRATEGIC PLANNING METHODOLOGY

PHASE IV JUNE - AUGUST 1989

FINALIZE SPIP FOLLOWING RECOMMENDATIONS FROM WB/ DONOR MISSION II & STEERING COMMITTEE + PT

FINALIZE PROJECT INDENTIFICATION - SELECTION - APPROVAL - IMPLEMENTATION AND ASSESMENT METHODOLOGIES

~~FORMULATE~~ PROJECTS IN ACCORDANCE WITH STRATEGIC PROVINCIAL INVESTMENT PLAN

PHASE V

SEP - NOV 1989

~~FINALIZE PROJECT DOCUMENT~~

PREPARE NATIONAL SUMMARY

WORKPLAN PHASE IV - JUNE 12 to SEPT 10

Finalisation of strategic provincial investment plan and preliminary project document preparation:

ACTIVITY	APPROX. TIME REQUIRED	COMPLETION DATE	RESPONS-IBILITY
16. REVIEW OF PRELIMINARY STRATEGIC INVESTMENT PLANS WITH WB AND STEERING COMMITTEE	02 days	25/06/89 to 09/07/89	PT/CT
17. FINALISATION OF STRATEGIC INVESTMENT PLAN		To be defined	
18. FORMULATION OF RELATED PROJECTS WITHIN STRATEGIC INVESTMENT PLAN FRAMEWORK			
19. FINALISATION OF METHODOLOGIES FOR PROJECT IDENTIFICATION, SELECTION, APPROVAL, IMPLEMENTATION AND ASSESSMENT			
20. PREPARATION OF DETAILED WORKPLAN FOR PHASE V AND REVIEW WITH MG			

WORKPLAN PHASE V - SEPT 11 to NOV 05

Finalisation of projects and preparation of national summary report

ACTIVITY	APPROX. TIME REQUIRED	COMPLETION DATE	RESPONS-IBILITY
21. PREPARATION OF FINAL PROJECT DOCUMENTS		To be defined	
22. PREPARATION OF NATIONAL SUMMARY REPORT		To be defined	

STRATEGIC PROVINCIAL INVESTMENT PLAN AND PROJECT PREPARATION
FOR RURAL WATER SUPPLY SANITATION AND HEALTH
OF PAKISTAN
WORK PLAN BAR CHART

ACTIVITY TITLE	ACTIVITY DESCRIPTION	COMPLETION DATE	MARCH 1989				
			WK.1	WK.2	WK.3	WK.4	WK.5
1.PREPARATION OF DETAILED WORK PLAN FOR PHASE II	Prepare work plan and review with central team	05/03/89	########	##			
2.REVIEW AND ENHANCEMENT OF STRATEGIC ANALYSIS BASED ON INCEPTION REPORT	2.1 Identify data gaps 2.2 Collect additional data 2.3 Analyse new data 2.4 Refine conclusions	14/03/89	########	################	######		
3.GOAL REFINEMNENT	3.1 Refine goals and formulate new ones 3.2 Review links and synthesise	15/03/89	########	################	########		
4.OBJECTIVE REFINEMENT	4.1 Refine objectives and formulate new ones 4.2 Review links and synthesise	16/03/89	########	################	##########		
5.STRATEGY CONFIRMATION AND REFINEMENT	5.1 Confirm strategies and establish new ones 5.2 Review links and synthesise 5.3 Compare strategies with Inception Report and refine	26/03/89	########	################	################	################	##
6.INITIATIVE CONFIRMATION AND REFINEMENT	6.1 Refine preliminary initiatives.Formulate new ones 6.2 Review links and synthesise	26/03/89	########	################	################	################	##
7.WORLD BANK/DONOR MISSION and STEERING COMMITTEE MEETINGS	7.1 Meetings to review Inception Report 7.2 Confirmation of order of investment	12/03/89 to 26/03/89			################	################	##
8.ESTABLISH REFINED SET OF INITIATIVES		31/03/89					################

STRATEGIC PROVINCIAL INVESTMENT PLAN AND PROJECT PREPARATION
FOR RURAL WATER SUPPLY SANITATION AND HEALTH
OF PAKISTAN
WORK PLAN BAR CHART

ACTIVITY TITLE	ACTIVITY DESCRIPTION	COMPLETION DATE	MARCH 1989				
			WK.1	WK.2	WK.3	WK.4	WK.5
9.PREPARATION OF INITIATIVE SELECTION CRITERIA	Design qualitative and quantitative criteria	31/03/89			##########	##########	##########
10.REPARATION OF DETAILED WORKPLAN FOR PHASE II	10.1 Prepare work plan 10.2 Review with Central team	31/03/89					####

STRATEGIC PROVINCIAL INVESTMENT PLAN AND PROJECT PREPARATION
FOR RURAL WATER SUPPLY SANITATION AND HEALTH
OF PAKISTAN
WORK PLAN BAR CHART

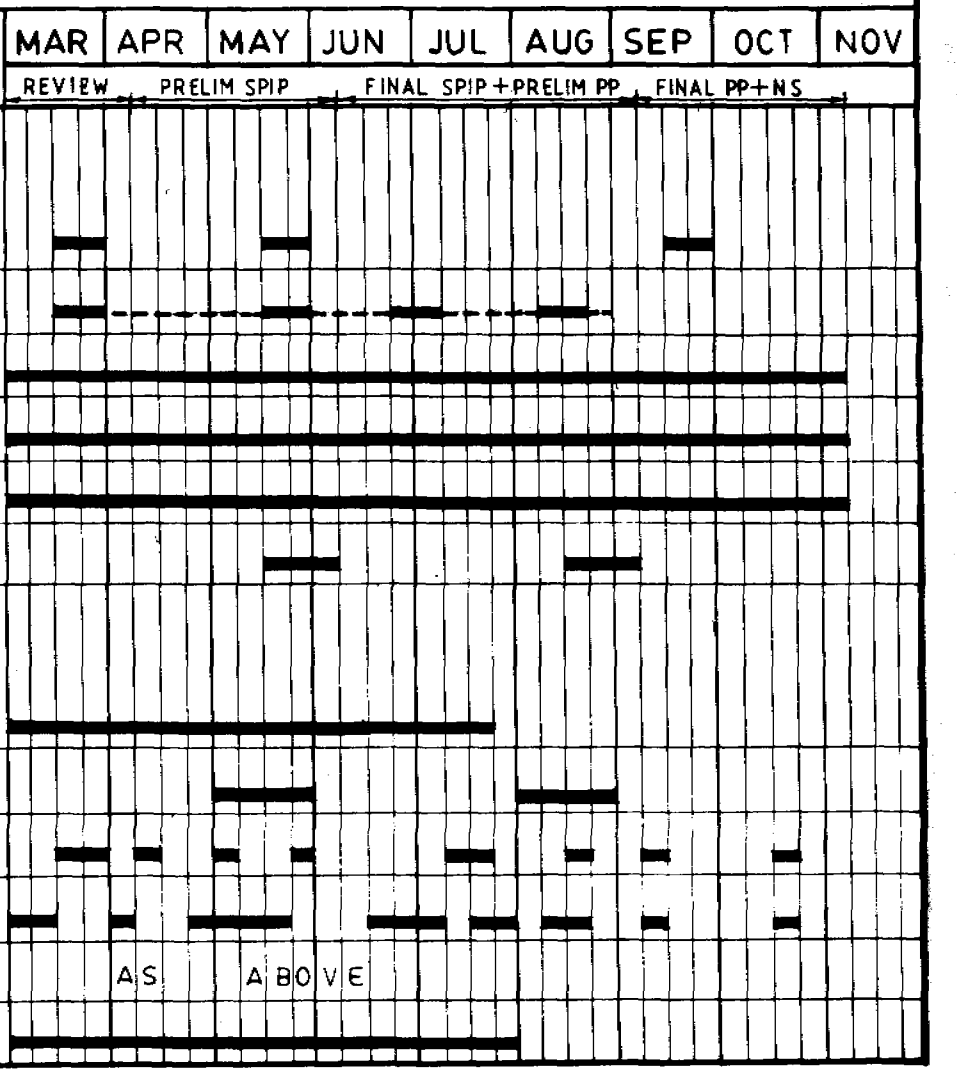
ACTIVITY TITLE	ACTIVITY DESCRIPTION	COMPLETION DATE	APRIL	MAI	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
			1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1
11.CONTINUATION OF STATEGIC ANALYSIS	11.1 Collect additional data 11.2 Refine analysis/initiatives	24/04/89	##########							
12.SPECIFIC INITIATIVE SELECTION	12.1 Apply qualitative criteria 12.2 and quantitative criteria for initiative selection	13/05/89	##################	######						
13.PRELIMINARY STRATEGIC INVESTMENT PLAN FORMULATION	13.1 Group initiatives in programs 13.2 Assess resouce requirements 13.3 Allocate resources 90-93/98 13.4 Produce preliminary SPIP 13.5 Review and deliver SPIP	20/05/89 11/06/89		######	###########					
14.DRAFT METHODOLOGIES FOR PROJECT IDENTIFICATION,SELECTION,APPROVAL IMPLEMENTATION AND ASSESSMENT	Draft methodologies for future use by local executing agencies	11/06/89		################## ######						
15.PREPARATION OF DETAILED WORK PLAN FOR PHASE IV	Prepare work plan and review with Central Team	11/06/89			###					
16.REVIEW OF PRELIMINARY STRATEGIC INVESTMENT PLAN (SPIP) W.BB/ STEERING COMMITTEE		25/06/89 to 09/07/89				######				
17.FINALISE STATEGIC PROVINCIAL INVESTMENT PLAN		10/09/89				##########				
18.FORMULATION OF RELATED PROJECTS WITHIN THE SPIP		05/11/89				##########	################	################	################	###

STRATEGIC PROVINCIAL INVESTMENT PLAN AND PROJECT PREPARATION
FOR RURAL WATER SUPPLY SANITATION AND HEALTH
OF PAKISTAN
WORK PLAN BAR CHART

ACTIVITY TITLE	ACTIVITY DESCRIPTION	COMPLETION DATE	APRIL	MAI	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
			1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1
19.FINALIZE PROJECT METHODOLOGIES		10/09/89				**********	**********	******		
20.PREPARATION OF DETAILED WORKPLAN FOR PHASE V		31/08/89					***			
21.PREPARATION OF FINAL PROJECT DOCUMENTS		05/11/89						*********	**********	***
22.PREPARATION OF NATIONAL SUMMARY REPORT		05/11/89								***

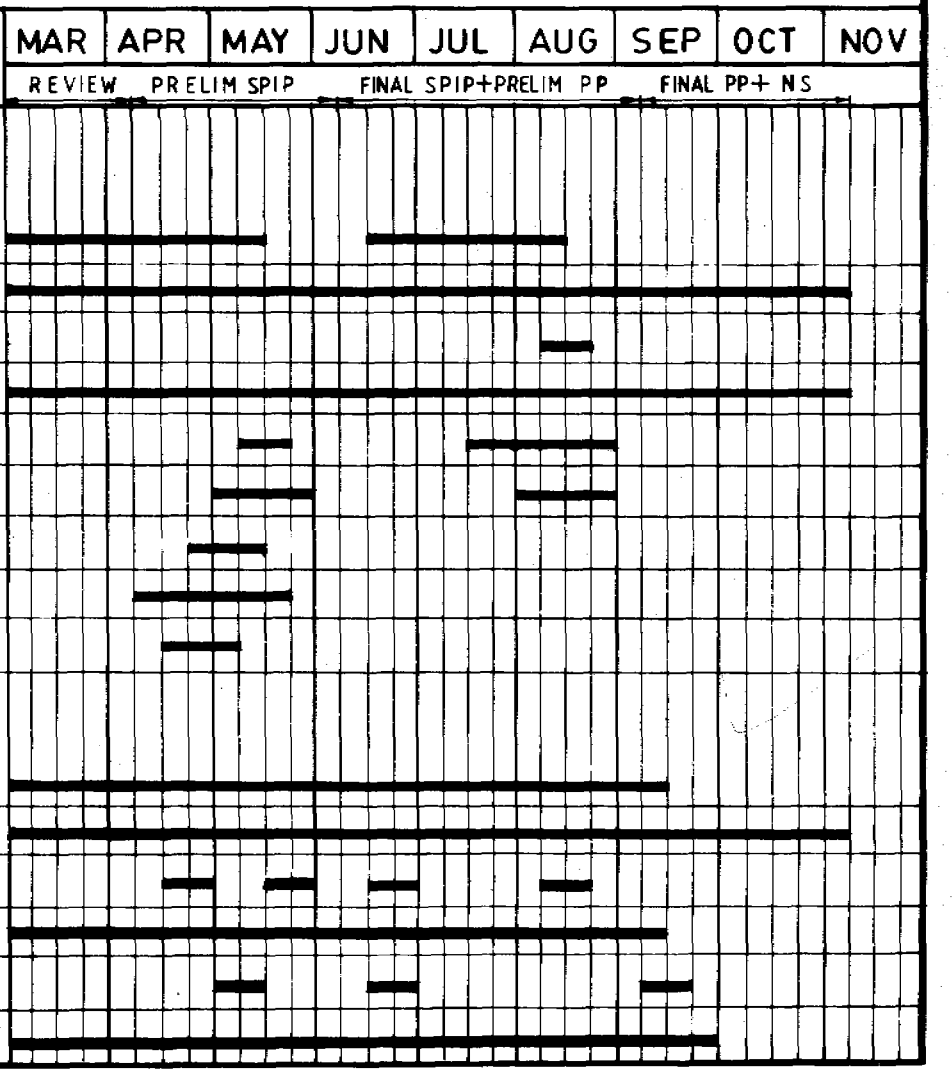
HUMAN RESOURCES SCHEDULE

POSITION	NAME	MONTHS REMAINING
MANAGEMENT GROUP		
PROJECT DIRECTOR	Mc GINNIS	
PROJECT CODIRECTOR	Mc GARRY	
PROJECT MANAGER	FOY	
DEPUTY PROJECT MANAGER	ABID	
DEPUTY PROJECT MANAGER	BAKHTEARI	
MANAGEMENT ADVISOR	ASHWORTH	
STRATEGIC PLANNING GROUP		
STRATEGIC PLANNER	RATHIER	
ADVISOR PLANNING	WEBSTER	
ECONOMIST	PASHA	
FINANCIAL ANALYST	KARDAR	
SOCIOLOGIST	BAKTHEARI	
DEMOGRAPHER	KHAN	



HUMAN RESOURCES SCHEDULE

POSITION	NAME	MONTHS REMAINING
TECH RESOURCES GROUP		
HYDROGEOLOGIST	SHAH	
RURAL WATER ENGINEERS	CARR	
PUBLIC HEALTH	GOLDTHORPE	
HEALTH	IMDAD	
ADULT EDUCATION	ETHERINGTON	
HUMAN RES. DEVELOPMENT	ELLIS	
INSTITUTIONS/P.SECTOR	O'CALLAGHAN	
COST RECOVERY ECON.	GHAUS	
WS+S	KALBERMATTEN	
PROVINCIAL TEAMS		
TEAM LEADERS		
SOCIOLOGISTS		
SOCIOLOGIST	SHAHEED	
ENGINEERS (SR)		
ENGINEERS (JR)		
FINANCIAL ANALYSTS		



APPENDIX-I

APPENDIX I

PROJECT ORGANIZATION AND MANAGEMENT

Project Staff are organized into the Provincial Teams and the support group made up of the Management, Strategic Planning and Technical Resources staff as illustrated in Figure I-1. The Provincial Teams are based in the respective Public Health Engineering Department offices and the support staff is based in Islamabad.

Provincial Teams are charged with developing the investment plan and identifying projects for implementation. Team Leaders are responsible for day to day operations and take the lead in liaising with the Provincial Government. All staff assigned to the team, including short-term members of the Technical Resources Group when they work in the province, are directed by the Team Leader.

The Provincial Teams are integrated with P and D, PHED, and LGRDD. The latter two departments have nominated staff to work on a full time basis as members of the Team and all three have nominated additional staff to work in liaison positions.

The Provincial Team reports to, and is guided by, a Provincial Steering Committee as outlined in Section 2 of thisReport. At the National level, the Project is overseen by a Federal Steering Committee made up of:

. Chairman - Secretary,
Ministry of Local Government and Rural Development;

. Member - Joint Secretary,
Ministry of Local Government and Rural Development;

. Member	-	Joint Secretary, R.D.L.P. Section, Planning Commission;
. Member	-	Physical Planning and Housing Section, Planning Commission;
. Member	-	Joint Secretary, Ministry of Education;
. Member	-	Joint Secretary, Ministry of Health;
. Member	-	Joint Secretary, Ministry of States and Frontier Region;
. Member	-	Joint Secretary, Ministry of Kashmir Affairs and Northern Areas;
. Member	-	Director (Technical), WAPDA;
. Member	-	Chief, Health and Nutrition Section, Planning and Development Division; and
. Member	-	Deputy Secretary, Ministry of Local Government and Rural Development.

The Islamabad based staff are responsible for the overall direction of the project and provide support to all four Provincial Teams. The Management Group monitors the day to day management process and its extension to the Provincial level, ensures goals are reached on time and provides liaison with the Federal Government and the World Bank. The Project Director and Co-Director are based in Canada and visit the project from time to time to ensure it operates within contractual guidelines and to provide management and technical advice. The Project Manager has overall operational responsibility for the project and all staff report to him. He is supported by two Deputy Project Managers who

provide guidance and technical support to the Sociologists and Engineers on the Provincial Teams and by an Advisor - Management/Engineering on short-term assignments.

The Strategic Planning Group takes the lead in developing methodologies and criteria and works with the Provincial team to apply and to modify them as necessary to meet local conditions. All of the staff in this group are on long term assignments.

The Technical Resources Group is comprised mainly of short-term staff who provide technical inputs in their area of expertise to both the Islamabad and Provincial Teams.

APPENDIX-II

METHODOLOGY

The project uses a Strategic Planning approach to the work. Strategic Planning differs from Comprehensive Planning in that it focuses on key issues and interrelationships in order to quickly arrive at appropriate programmes for implementation while the latter is much more broad based and attempts to identify all components of a specific subject. For example it is necessary to review the economy of the province. Using a strategic approach, only those items of the economy which have a direct bearing on the water supply, sanitation and health sector will be considered - eg. income levels, ability to pay for services, income generating activities which affect the way water is used. In a comprehensive study, all aspects of the economy would be studied.

The methodology is comprised of six categories of activities:

.	Project Initiation	-	Series 100 activities;
.	Data Collection	-	Series 200 activities;
.	Data Analysis	-	Series 300 activities;
.	Synthesis of Information	-	Series 400 activities;
.	Initiatives Formulation	-	Series 500 activities;
.	Outputs	-	Series 600 activities.

Since the project initiation activities related only to project start up and this phase is now complete, they are not discussed in this report.

1. Data Collection

Data collection activities are divided into three categories. The preliminary data collection began in December before the project was formally initiated and was completed by February 15, 1989. This work identified the availability of secondary data, collected what was readily available and formed the basis for:

. the division of the sector into sub-segments to be studied:

- water resources;
- water supply;
- sanitation and drainage (disposal of sullage and storm water);
- disposal of human waste;
- institutions subdivided into:
  - . government departments;
  - . District and Union Councils;
  - . Elected Representatives; and
  - . Non-Governmental Organizations (NGOs);
- economy;
- financial resources;
- cost recovery;
- private sector;
- social/cultural subdivided into:
  - . communities;
  - . role of women;
  - . practices, beliefs, and behaviours; and
  - . community organizations;
- population;
- health; and
- human resources development;

. the definition of data bases, outlining data to be collected; and

. the focus of project activities in the coming months.

Further detailed data collection began mid February and will continue until June 15. Activities are aimed at collecting the information defined by the data bases. Selected secondary data will be verified by independent field studies and some primary data collection will be undertaken using sampling techniques where secondary data are not available. It is anticipated that investigation may be needed to gain

an understanding of the rural communities - the beliefs and behaviours of the populace, the availability and strength of village organizations which could be involved in project implementation, and the ability and willingness of people to pay for services.

During the period July 1 - September 30, data collection will be focused on project identification. Analysis of the data collected and identification of potential initiatives will both highlight data gaps to be filled, resulting in the final phase of data collection.

2. Data Analysis

Analysis of the data collected will also be an ongoing activity.

The preliminary analysis phase ended February 15, 1989 and provided:

- preliminary identification of issues to be studied in each subsegment;
- preliminary selection and priorization of the key critical issues (those which drive the rest) for each subsegment;
- preliminary analysis of the key critical issues, including their root causes and identification of data gaps; and
- conclusions reached.

Analysis of the detailed data collected will continue in parallel with the collection activities and will end June 30, 1989. During this phase the following activities will be carried out:

- review of the preliminary identification of key critical issues in the light of the additional data collected;

priorization of key critical issues and an in depth analysis of them identify:

- factors which are the basis of the issue being of critical importance (root causes);
- strengths which can be built on and weaknesses which must be addressed; and
- conclusions reached;

. priorization of strengths and weaknesses; and

. identification of data gaps, collection of the data and analysis of it using the same methodology outlined above.

In the final phase, July 1 - September 30, additional data collected for project identification will be analyzed in the same way.

3. **Synthesis of Information**

As a result of the analysis of data, conclusions will be reached based on quantitative and qualitative assessment of root causes. These conclusions will then be studied or synthesized to identify the key interrelationships and constraints. Strengths and weaknesses which overlap in several issues will be given top emphasis.

Synthesis is an ongoing activity, tied into the collection and analysis of data. The major effort will end June 30, but conclusions reached as the result of the more focused project identification data collection will also be checked for interrelationships with other conclusions.

4. Formulation of Initiatives

In order to formulate initiatives which will lead to projects, specific objectives and strategies must be devised and criteria to select the most appropriate ones developed.

Within the overall goals of the project, specific objectives will be set based on the interrelationships identified among the conclusions. The objectives will define in broad terms initiatives which will build on existing strengths and opportunities and lessen the effects of weaknesses.

For each goal, a series of objectives will be set which are quantifiable, measurable, and include a time element. The objectives will then be priorized in terms of:

- most pressing needs;
- broadest anticipated impacts; and
- short-term visible impacts and long-term benefits.

The objectives serve to further quantify the goals.

A set of strategies for meeting each objective or set of objectives will then be formulated. The overall project goal of developing projects to improve the health and quality of life of the rural population through more cost effective and sustainable water supply, sanitation and hygiene education initiatives while maximising community involvement, will focus the development of the strategies as it did in the analysis of issues.

Criteria to evaluate the different strategies will be developed. Criteria which could be used include:

- likelihood of success;
- potential for community involvement;
- potential for the involvement of women; and

. coverage to be achieved and impact expected.

Using the criteria, the best strategies will be selected and result in recommended projects.

5. Project Outputs

The outputs of the project include this Inception Report, a Strategic Provincial Investment Plan, National Summary Investment Plan and Project Identification Reports.

The Inception Report is being submitted March 4, 1989, two months after the project was initiated.

The Strategic Provincial Investment Plan will be presented to the Government in draft form three months later, June 10, 1989, and in final form, September 9, 1989.

5.1 Report Format for Strategic Provincial Investment Plan

The formulation of objectives outlined in the previous section will form the basis of the investment strategy. The contents of the report defining the strategy will be finalised in the coming months, but the initial outline is:

. Rural Water Supply, Sanitation and Health Sector

- current situation;
- Government priorities and targets for increased coverage (Seventh Five Year Plan, 1988 - 1993 and Perspective Plan, 1993 - 1998; and
- sector issues.

. Population and Demand

- overall and rural population projections;
- present and future demand for services;
- population to be served; and
- proposed service levels.

. Investment Strategy

- objectives;
- analysis of alternative strategies; and
- investment criteria.

. The Investment Plan

- size and components of investment plan by sub-sector (based on order of magnitude cost estimates);
- Provincial Investment Plan;
- types of investments - 1990 - 1993; and
- types of investments - 1994 - 1997.

. Financing

- prospects of overall macro resource availability;
- projections of Government allocations to the sector;
- involvement of donor agencies;
- future operations and maintenance cost requirements;
- affordability and willingness to pay of beneficiaries;
- mechanisms for cost recovery; and
- overall financing plan.

. Project Management and Implementation

- institutional arrangements;
- organization and management;

- involvement of communities;
- operation and maintenance; and
- personnel/training requirements.

5.2 Outline of Identification Reports for Projects to be Implemented 1990-93

Draft project identification reports will be submitted September 9, 1989 and in final form, November 4, 1989. The format of the reports will also be developed during the coming months, but the initial outline for a water/sanitation project to be implemented in the period 1990 - 1993 includes:

. The Water Supply, Sanitation and Health Sector

- provincial background;
- economic and health indicators;
- water resources and control;
- present service coverage and standards;
- sector goals;
- staffing requirements and training needs;
- financial implications; and
- involvement of international agencies.

. The Project Area and the Need for a Project

- planning horizon;
- project area;
- population patterns;
- economic and social conditions;
- regional development prospects;
- existing and future land use patterns;
- sector institutions;
- available water resources;
- existing water supply systems and population served;
- existing sanitation systems and population served;

- existing drainage and solid wastes removal systems and population served; and
- need for a project.

Strategic Plan for Water Supply, Sanitation and Hygiene Education

- objectives;
- water supply service standards;
- sanitation and drainage service standards;
- community preferences and affordability;
- capital availability;
- future demands for water services;
- future demands for sanitation services;
- future demands for drainage services; and
- strategic plan for water supply, sanitation and drainage, and hygiene education.

. Proposed Project

- project definition;
- institutional responsibilities; and
- financial aspects.

. Conclusions and Recommendations

- conclusions;
- issues; and
- recommended actions.

5.3 Outline of Identification Reports for Projects to be Implemented 1994-98

The outline of water supply projects which could be considered for the subsequent period, 1994 - 1998 is:

- a map showing the project area and definition of the intended beneficiaries;
- explanation of how the project complies with the strategic investment plan;
- description of the present services in the project area with an outline of the deficiencies of the services;
- summary of the main objectives of the project, indicating the number of people to be served, anticipated standards of service and expected conditions in the project area after the project is completed;
- outline of the proposed project components in terms of physical facilities and supporting activities - e.g. hygiene education, training;
- estimate of the local and foreign costs of implementing the projects and proposals for cost recovery;
- description of the institutional responsibilities for the future project feasibility study, detailed design and implementation; and
- recommendations for future actions regarding the project.

Both project identification report outlines suggested above are for integrated water supply, sanitation and hygiene education projects. They will be modified as needed for other types of projects - human resource development, community development.

APPENDIX-III

APPENDIX III

FUNCTIONS OF DISTRICT COUNCIL

A district may, if the government so directs, undertake all or any of the following functions:-

A. Public Works

1. Provision, maintenance, improvement and management of public roads, public streets and public ways, culverts, bridges, public buildings, wells, water pumps, tanks, ponds and other works of water supply.

2. Provision maintenance and management of sarais, dak bungalows, rest houses and other buildings for the convenience of travellers.

3. Plantation and preservation of trees on road sides, public ways,public places and public buildings.

4. Provision and maintenance of public gardens, public playgrounds and public places.

B. Public Health

5. Prevention and cure of infectious diseases and enforcement of vaccination.

6. Establishment, maintenance and management of Hospitals and Rural Health Centres.

7. Establishment, maintenance and management of First Aid Centres.

8. Provision and maintenance of Medical Aid Units.

9. Establishment, management and visiting of Health Centres,

maternity centres, and centres for the welfare of infants and children, training of Dais and adoption of other measures likely to promote health and welfare of women, infants and children.

10. Payment of grants to medical aid societies and institutions.

11. Establishment, management, maintenance and the visiting of dispensaries.

12. Promotion of sanitation, public health and educating people in public health.

C. **Education**

13. Provision, maintenance and management of primary schools.

14. Construction and maintenance of buildings as hostels of students.

15. Payment of grants and subsidies to institutions and organizations engaged in the promotion of education.

16. Promotion of adult education.

D. **Agricultural Development and Economic Welfare**

17. Agricultural, industrial and community development promotion of national reconstruction and development of cooperative movement and village industry.

18. Adoption of measures for increased agricultural production.

19. Establishment and maintenance of model agricultural farms.

20. Popularization of improved methods of agriculture, maintenance of improved agricultural implements and machinery and lending of such

adoption of measures for bringing waste land under cultivation.

21. Promotion of agricultural credit, agricultural education and adoption of other measures likely to promote agricultural development.

22. Promotion and coordination with Agrovilles.

23. Provision, regulation and maintenance of markets.

24. Popularization of cooperative movement and the promotion of education in coordination.

25. Construction and repair of embankment supply, storage and control of water for agricultural purposes.

26. Promotion of cottage industry

E Articles of Food Drink

27. Protection of food stuff and prevention of adulteration.

F Drainage

28. Provision and maintenance of adequate system of public drains and regulation of the disposal of industrial wastes.

G. Livestock and Dairy Development

29. Voluntary registration of the sale of cattle and other animals.

30. Prevention of cruelty to animals and measures to combat ordinary and contagious diseases of birds and animals.

31. Provision, maintenance and improvement of pastures and grazing grounds.

32. Regulation of milk supply.

33. Establishment and maintenance of cattle colonies.

H. Culture

34. Holding of fairs and shows.

35. Promotion of public games and sports.

36. Provision, organization and maintenance of museums, exhibitions and art galleries.

37. Provision and maintenance of public halls, public meeting places and community centres.

38. Celebration of National Occasions.

39. Establishment, management and maintenance of welfare homes and other institutions for the relief of the destitute.

40. Suppression of beggary, prostitution, gambling, taking of injurious drugs, consumption of alcoholic drink and other social evils.

41. Establishment and maintenance of information centres.

42. Encouragement of national regional languages.

43. Reception of distinguished visitors.

I. Public Safety

44. Relief measures in the event of any fire, flood, hail storm,

earthquake, famine and other natural calamities.

J. Other Functions

45. Provision and maintenance of libraries and reading rooms.

46. Prevention and abatement of nuisances and encroachment.

47. Regulation of traffic, licensing of vehicles and the establishment and maintenance of public stands for vehicles in Rural Areas.

K. Rural Development

48. Aggregation of the financial allocation and physical programmes and targets received from the provincial government in different sectors and to draw up a District Development Programme. In this work the council will take into account Federal Projects, their allocations and the physical targets falling in or benefitting the districts (Generally the organization may develop and take on complete planning functions).

49. To propose/submit, if necessary, to the Local Government and Rural Development for modifications in the aggregate district programmes after identifying the (a) gaps, (b) internal inconsistencies (c) compatibility of the programme with capacity available in the District Implementation, maintenance and supervision and (d) evaluating it in the light of local priorities.

50. To facilitate the formation of associations for the performance of tasks that can be done/performed collectively, for example, consumer association for distribution of electricity, farmers associations, for distribution of agriculture inputs, cooperative marketing associations etc.

51. To discharge the overall responsibility for the identification

appraisal of projects and approval of projects and approval of projects prepared and to be constructed by Rural Local Councils and Town Committees in the following sub-sectors:

- Primary Schools;
- Basic Health Units;
- Family Welfare Clinics;
- piped water supply;
- Potable water/storage tanks;
- Handpumps/Sanitation; and
- Rural Roads;

52. To propose disbursement of ADP funds for the approved projects to various local councils mentioned in (51) above inclusive of Municipal Committees if necessary.

53. To take appropriate measures for the development of skills, crafts and cottage industries, development of skills would include promotion of industrial homes, domestic and cottage level crafts and trades, modest repairs of agricultural and other machinery, training of unskilled labour, etc.

54. To review the implementation of the District Development programme (as an extension of the function of government and as their agents) by holding review meetings within the district as well as through periodic inspections and progress reports from the lower tiers etc.

55. To supervise and submit to the government regular progress reports on the implementation of Development Projects at different levels within the district.

56. To evolve standard designs and specifications to the extent possible and desirable in harmony with the general conditions in the district and use appropriate technology to execute its

development projects on a more economic basis:

57. To monitor the supply of agricultural inputs and to make appropriatge recommendations to the concerned authorities;

58. To formulate Tehsil Markaz Development Programme derived from the District FDevelopment Programme in consultation with the respective Local Councils in Tehsil and to review periodically its implementation;

59. Disseminate information about the projects and allocations of funds for the District Development Programmes throughout the District to keep the people fully informed about the projects to be executed in the district. This will not only mobilise the interest of the people in the development work, for the district but also make them more watchful about the use of development funds by the better community supervision;

60. Improvement of breeding of cattle, horses and other animals;

61. Establishment and maintenance of cattle and diaries;

62. Initiation, promotion, undertaking individually or on cooperative basis of commercial schemes, like the establishment of cattle, poultry, fish and agricjltural farms, installation of wells/tubewells, construction of tanks for the storage of irrigation water, establishment of workshops for manufacture and repair of agricultural implements and machinery, provision and maintenance of transportation service, construction of shops, establishment of markets, and other commercial enterprises for which funds are available.

APPENDIX-IV

DETAILED LIST OF PROJECT ACTIVITIES

200 **Data Collection**

210 Water Resources, Rural Water Supply, Sanitation and Drainage

211 Compile data on the physical environment including sources of ground water and surface water, and rainfall.

212 Using secondary data, determine coverage in terms of the number of villages with water supply, sanitation and drainage services, grouped by District and population.

213 Identify the technologies used:

- water supplies
  - ground water or surface water sources;
  - hand pump or mechanized pumps;
  - treatment and distribution facilities;
  - public or private ownership, operation and maintenance;
- sanitation; and
- drainage.

214 Using sampling techniques, examine arrangements for operation and maintenance and analyze existing data to gain an appreciation of system status:

- number operating;
- number operating but needing repair; and
- number not operating.

215 Identify present criteria for design, project priorization and selection and special criteria for underdeveloped areas.

220 Institutional Assessment

221 Identify institutions involved in the province and each district and their mandates including responsibilities for the planning, design, implementation, operation and maintenance of water supply, sanitation and drainage systems or the provision of related services:

Government Departments:

- PHED;
- LGRDD;
- Department of Education (including schools);
- Health Department (including Traditional Birth Attendants and Lady Health Visitors);
- WAPDA; and
- Social Welfare;

. District and Union Councils;

. Elected Representatives;

. Non Governmental Organizations;

. Private Sector; and

. special projects with particular attention to the methodology and relationship between agencies, private sector and donor agencies.

222 Determine institutions' organizational structure:

. organization chart;

. basis for making promotional appointments; and

. scheme of service.

223 Examine the institutions management philosophy, policy and guidelines.

224 Examine funding mechanisms:

- source of the funds, financial year, and operating budget (salaries, expenses and revenues);
- method of establishing operating budgets and justifications used; and
- review of funds transfer mechanisms in the province vis-a-vis urban and rural.

225 Examine training institutions and determine:

- class timetable, class size, and ages and gender of students;
- curricula, facilities, learning materials and text books;
- attendance policies and achievement; and
- educational level classification system.

226 Identify the Provincial/National linkages:

- composition of the coordinating body and frequency of meeting;
- guidelines, mandate, and authority/approval levels of staff;
- how staff are appointed to the coordinating body; and
- appraise the effectiveness of the linkages.

227 Examine staff development/training:

- training policy;
- scope of development - i.e. is it limited to specific groups;
- performance appraisal procedures;
- assessment and licensing of teachers in schools and training institutions;
- job opportunities after graduation and promotion policy;

- incentives for staff to take training and opportunities available - training courses, seminars, workshops, study tours, fellowships, scholarships or training of trainers;
- facilities;
- instruction level and quality, equipment and training aids;
- locations; and
- hostel/accommodations and allowances, and costs involved.

228 Assess the capacity to undertake an accelerated development programme.

230 Economy

231 Examine the rural economy, focusing on level of prosperity and ability to pay for services.

232 Identify regional development at the district level:

- income levels and affordability;
- demand for water supply, sanitation, and drainage;
- production indicators - number of tube wells, tractors; and
- service indicators - number of roads, banks, schools.

232 Review sources of funds for provincial departments and recent government statements leading to a forecast of the likely future funding.

233 Review cost recovery experience in this and other service sectors.

234 Determine the magnitude of capital costs of civil, mechanical and electrical components of water supply, sanitation and drainage facilities, and operation and maintenance costs.

235 Study the Private Sector in terms of:

- technologies, designs, and standards used by the private sector; and

. the sector's role as:

- a consultant;
- a contractor;
- a supplier of hand and mechanized pumps and construction materials;
- a manufacturer of pumps, drill rigs and supplies, and construction materials;
- a participant in operation and maintenance activities;
- a financier for hand pumps; and
- an owner or operator of a community water supply system.

240 Social/Cultural

241 Study communities in terms of:

. community leadership and its relationship with water related issues;
. ethnic segmentation in the community;
. level of experience with water and sanitation issues; and
. knowledge and awareness of water, sanitation and health.

242 Review the role of women in the community:

. perceptions regarding women which are held by the women themselves and by others;
. general levels of knowledge women possess;
. restrictions placed on women by the purdah system;
. women's access to independent economic means;
. their role in water issues; and
. skills available to women and the opportunity to gain new skills.

243 Determine local practices and attitudes:

- allocation of responsibility with respect to waste and sullage collection and disposal;
- defecation practices;
- solid waste disposal;
- hygiene including care of children and preparation of food;
- understanding of linkages between hygiene and health;
- responsibility for the maintenance of rural water supply and sanitation facilities and health education delivery; and
- perceptions of how well their needs are being met.

244 Review the existence, activity level and experience of community based organizations:

- number of formal and informal groups;
- level of activity;
- past involvement with water supply, sanitation, drainage and hygiene education;
- numbers of people involved; and
- the quality of the groups.

245 Define community involvement:

- current situation; and
- what villagers want and are capable of with respect to planning, construction, management, operation, maintenance and financing of water supply, sanitation and drainage facilities.

250 Population

251 Estimate the population and population growth rate from existing data in terms of:

. village size - number of people living in mauzas of the following size categories on a district basis:

- 200 - 500 people;
- 500 - 1000 people;
- 1000 - 2000 people;
- 2000 - 5000 people; and
- 5000 - 10000 people; and

. population densities.

252 Identify the physical pattern of rural settlements and numbers in different population.

260 Health

261 Obtain health indicators, especially the incidence of water related diseases.

262 Review existing health services and allocation of resources.

263 Assess past experience in hygiene education indicating the goals of the programme and coverage achieved.

270 Human Resources Development

271 Inventory all training organizations and efforts:

. school system, including mosque, primary, secondary, polytechnical and universities - numbers, number of students and teachers, number of lady teachers and curricula;

- institutional or job related training at the Union and District Council, line department and private sector level; and

- village level training in project management, community organization and operations and maintenance.

272 Identify recipients of present human resource development programmes:

- staff in institutions;
- local government officials; and
- villagers.

280 Government Policy

281 Identify government priorities and sector objectives on a national and provincial basis.

282 Define cost recovery policies:

- tariffs and collection mechanisms for public utility managed schemes;
- community financing mechanisms for user-managed schemes; and
- recurrent expenditure shortfalls and their impact on operation and maintenance.

283 Identify present investment criteria.

290 Data Collection Associated with Assessment of Past Investments

291 Assemble data on recent investments in the sector, criteria for selection of project investment priorities, and present plans.

300 Data Analysis

310 Analysis Process

311 Assess the reliability of data being collected.

312 Review the preliminary identification of the Key Critical Issues in light of more data collected. Priorize the Key Critical Issues.

313 Analyze the Key Critical Issues:

- identification of root causes;
- identification of strengths and weaknesses; and
- conclusions.

314 Priorize strengths and weaknesses.

320 Water Supply, Sanitation and Hygiene Education

321 Assess the implications of the physical pattern of rural settlements for the design of systems.

322 Establish the causes of present systems being inoperative.

323 Evaluate current technologies being used from the point of view of appropriateness, sustainability, acceptability, affordability, ease of operation and maintenance, and potential for community participation.

324 Establish design criteria:

- service levels and technology options to be used for each socio-economic module; and
- daily production requirements per capita of each water supply technology type.

325 Determine the number of communities by population category who need:

- no change to the existing system;
- repair/rehabilitation of existing system;
- expansion of existing system; or
- a new water supply, sanitation or drainage system.

330 Institutional Development

331 Establish the commonality of mandates among PHED, LGRDD, DH, DE, WAPDA, and the private sector.

332 Propose an allocation of responsibility within the agencies, identifying which agency has:

- sole responsibility; or
- joint responsibility - prime or sub.

333 Assess where strengthening would be desirable for each organization.

344 Establish what data WAPDA possesses which could be made available to other institutions.

340 Economy

341 Assess the likely magnitude of future funding for the sector.

342 Establish affordable and acceptable tariff structures.

342 Assess the technologies being used by the private sector for construction, operation and maintenance, and capital and recurrent cost recovery.

343 Evaluate construction materials available and needed and their costs.

344 Establish the availability of water supply system equipment, costs, local manufacturing, quality control and distribution mechanism.

345 Assess the financial needs of the private sector.

350 Social/Cultural

351 Evaluate communities' desire and ability to participate in planning, design, construction, management, operations and maintenance, and financing capital and recurrent costs.

352 Assess the need for external community motivation and mobilization.

353 Evaluate the special needs of low income areas and develop relevant mechanisms.

354 Establish the presence of community organizations which may be used in project implementation.

355 Evaluate the need for hygiene education.

360 Human Resources Development

361 Assess the status of water resources knowledge affecting the choice of technology, competing demands, and water system management and control methods, and their adequacy.

362 Evaluate technical and financial training needs in institutions, the private sector, the community and local politicians.

363 Assess the role of schools, TBA's, and other health workers.

364 Establish staff shortages by institution and category.

370 Government Policy

371 Assess the impact of recurrent expenditure shortfalls on water supply, sanitation, drainage and determine its financial needs.

380 Review Sector Investments

381 Compare the past rate of investments made in rural water, sanitation and hygiene systems to the targets set.

382 Identify reasons for variances.

400 **Synthesis of Information**

410 Identify Key Inter-relationships and Constraints

411 Assessment of the relationships and constraints by the Provincial team.

412 Review with the Project Central Support Group.

413 Review with the Provincial Government.

420 **Define Initiatives**

421 Assessment by the Provincial Team.

422 Input from the Project Central Support Group.

423 Preparation of proposals.

424 Review with government staff to reach concensus.

430 **Establish Community, Private Sector, and Institutional Roles**

431 Examine issues in provincial meetings with inputs from community groups, private sector representatives, line departments and project central support staff.

432 Prepare proposals.

433 Achieve concensus to provide guidelines for the formulation of projects.

440 **Determine Human Resources Development Approach**

441 Identify alternative training approaches.

442 Prepare proposals for method of delivery.

443 Review with government staff and obtain concensus.

500 **Formulation of Initiatives**

510 The Planning Process

511 Strategic Planning Group develops seminars for Provincial Planning Teams.

512 Strategic Planning Group monitors and evaluates the process in each province to achieve consistency in its application.

520 Provincial Investment Plans

521 Strategic Planning Group establish levels of investment in conjunction with GOP authorities and discusses them with Provincial Teams.

522 Provincial Teams prepare a draft investment plan based on the conclusions reached.

523 Finalize the investment plan.

530 Initiative Identification and Selection

531 Establish goals, objectives and evaluation criteria:

- formulate potential goals, objectives and criteria through meetings with Provincial Teams;
- Provincial Teams present proposed goals, objectives and criteria to GOP authorities for approval;
- Provincial Teams identify high priority geographic areas and target groups and ensure initiatives being considered are representative of the views and wishes of the communities.

532 Identify potential initiatives and priorize in a workshop format through advocacy bargaining approach.

533 Select initiatives through goals achievement process.

540 Provincial Project Documentation

541 Strategic Planning Group develops format and methodology for project documentation.

542 Strategic Planning Group holda seminar to familiarize Provincial Planning Teams with the documentation preparation process.

543 Provincial Teams prepare project documentation.

544 Economic and financial analysis of proposed projects.

550 National Summary Investment Plan

551 Review of Provincial Investment Plans by Strategic Planning Group

552 Feedback of national level analysis to Provincial Teams.

553 Preparation of National Investment Plan by Strategic Planning Group.

600 **Project Outputs**

610 Inception Report

611 Write Inception Reports based on preliminary analysis of data gathered and identifying:

- present situation;
- objectives;
- options to be considered; and
- methodology for the study duration.

612 Review the report with GOP officials and refine.

613 Prepare the final report.

620 Strategic Provincial Investment Plans

621 Prepare a preliminary first draft of one provincial investment plan.

622 Review the report with appropriate Government and World Bank personnel and refine having had this additional input.

623 Prepare draft provincial investment plans based on the format of the approved preliminary report.

624 Review the report with appropriate Government and World Bank personnel and refine as appropriate.

625 Submit the final investment report.

630 Project Identification Reports

631 Prepare draft project identification reports and discuss with Government and World Bank staff and refine as appropriate.

632 Submit final reports.

640 National Summary Investment Plan

641 Prepare and submit a national summary of the provincial investment plans.

642 Develop proposed implementation programmes identifying local, Provincial, National and foreign components.