Northern Areas

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

Final Strategic Investment Plan

VOL. I

Wardrop - Acres
Cowater International
NESPAK.

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Rural Water Supply, Sanitation and Health

Prepared for the World Bank
under sub-contract to
Wardrop-Acres Consultants

September 1989

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LIST OF ABBREVIATIONS

A/XEN	Assistant Executive Engineer
ADP	Annual Development Plan
AKF	Aga Khan Foundation
AKHB	Aga Khan Housing Board
AKRSP	Aga Khan Rural Support Program
BHU	Basic Health Unit
CBS	Community Basic Services Program
CE	Chief Engineer
CIDA	Canadian International Development Agency
DHD	Deputy Health Director
DPO	District Program Office(r)
ha	hectare
HRD	Human Resources Development
HWD	Human Waste Disposal
km	kilometers
LB&RD	Local Bodies and Rural Development Department
m	meters
M&E	Monitoring and Evaluation
mm	millimeters
NA	Northern Areas
NAPWD	Northern Areas Public Works Department
NGO	Non-Governmental Organization
O&M	Operations and Maintenance
$_{o}C$	degrees Celsius
P&D	Planning and Development
PARD	Pakistan Academy for Rural Development
PC-I	Planning Commission Proforma No. 1
PWP	People's Works Program
Rs	Rupees
SE	Superintending Engineer
SO	Social Organizer
SOU	Social Organization Unit
sq km	square kilometers
UG	User Group
UNICEF	United Nations Children's Fund
VO	Village Organization
WO	Women's Organization
XEN	Executive Engineer

EXECUTIVE SUMMARY

BACKGROUND

The Government of Pakistan has undertaken to expand the coverage of water supply, sanitation and drainage facilities to people living in the rural areas. In its Seventh Five Year Plan (1988-1993), the government set ambitious targets for increasing water supply coverage in rural areas to 75 percent and sanitation coverage to 40 percent by the end of the Plan period. To assist the government in achieving these targets a Sector Review was undertaken in 1987 by a team of consultants. As a result of the Sector Review, the World Bank initiated a Strategic Investment Planning and Project Preparation Process with financial support from the Canadian International Development Agency.

In December 1988 a project team consisting of Wardrop-Acres, CoWater International and Nespak were engaged to submit Strategic Investment Plans and Project Preparation for the four provinces, Azad Jammu and Kashmir, and the Northern Areas. Development Research and Management Services (DRMS) were sub-contracted to undertake the Northern Areas Investment Plan in August 1989.

The Northern Areas present a unique opportunity to address the government's sectoral priorities by building on the strengths of government institutions and NGOs. There is currently no donor commitment for investment in the Northern Areas. However, several donor agencies have indicated a strong interest in the Strategic Investment Planning and Project Preparation for the Northern Areas as a potential area for future Investment. The Investment Plan presented here will be widely circulated among potential donors to solicit donor assistance for the Plan.

In the preparation of this plan, the consultants have worked closely with the Northern Areas Administration, key officials of line agencies, and the Aga Khan Rural Support Program. In the next phase of project preparation, individual initiatives will be studied in depth and detailed cost estimates will be refined in close collaboration with concerned implementing agencies. Donor support for the suggested initiatives will be solicited in close collaboration with the Government of Pakistan.

THE STRATEGIC INVESTMENT PLAN

The Strategic Investment Plan for the Northern Areas recommends an investment of Rs 368.7 million[1] in rural water supply, sanitation and hygiene over the eight-year period 1990-91

[1]Except where specifically indicated, rupee figures quoted in the Executive Summary are in terms of constant 1989-90 rupees.

to 1997-98.[2] Of this amount, Rs 233.3 million is recommended as new donor investment.

The remainder of this summary is organized around three important dimensions of the Investment Plan - sectoral, institutional and financial.

The sectoral objective of the plan is to assist the government in achieving the Seventh Five Year Plan targets of extending the coverage of water supply to 75 percent, and of sanitation to 40 percent of the rural population, with special concern for the needs of women, the rural poor and neglected regions.

The institutional dimensions of the plan require: organizing and strengthening the concerned government agencies to enable them to respond more effectively to technical and social concerns; organizing broad-based community participation to mobilize community resources on an equitable and sustainable basis; and, engaging non-governmental organizations (NGOs) to provide technical and organizational expertise in support of government agencies and community organizations.

The overall financial strategy of the plan requires mobilization of resources from government, community organizations, individual users and donors. The application of these resources is identified with recommended projects for investment by donors and government. Taken together, the recommended projects constitute an integrated plan to supplement government allocations for the sector over eight years. At the same time, each project also represents an identifiable and manageable opportunity for donor investment in the Northern Areas.

BACKGROUND TO THE NORTHERN AREAS

The three districts of the Northern Areas - Gilgit, Baltistan and Diamer - comprise one of the most rugged and remote parts of the world. The Northern Areas have an estimated 1988 population of 751,000, and an area of 72,496 sq km. The region is heavily mountainous, since it forms the intersection of four of the highest mountain ranges in the world - the Himalayas, Karakorams, Pamirs and the Hindu Kush. The Karakorams alone contain 19 peaks exceeding 7,500 m, including the K2, the second highest mountain in the world.

The boundaries of the Northern Areas include Pakistan's frontiers with Afghanistan, China, and India. The Soviet Union

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[2]Corresponding to Rs 168.1 million for the remaining three years of the Seventh Five Year Plan, and Rs 200.6 million for the Eighth Five Year Plan.

lies across Afghanistan's Wakhan Corridor that was devised as a dividing line between the British and Czarist Empires. Because of their strategic location, the Northern Areas were an important theatre of activity for the Great Game, the nineteenth-century struggle for geopolitical supremacy in Central Asia.

The region has evolved in relative isolation for many centuries. Contact with the outside world was limited to trade in essential commodities, or to caravan raids, warfare and some slave trade. Rapid processes of change began in the Northern Areas in the 1970s. The formal abolition of feudal systems confirmed the long decline of traditional local institutions, especially at the village level. The opening of the Karakoram Highway (KKH) and other arterial roads brought changes in the markets for labor and goods that disturbed the subsistence economy. The build-up of civil and military establishments, the arrival of donor projects, and the emergence of tourism have contributed further to recent changes.

For the purposes of the Rural Water Supply and Sanitation Project, perhaps the most important trends in the Northern Areas are socio-economic and institutional. Increasing incomes and exposure to the outside world have created an effective demand for many of the attributes of improved health and living conditions. A unique set of circumstances makes it possible to organize an innovative and effective response to this demand: there has been heightened government and donor interest in the Northern Areas; some strengthening of government capacity in the sector; and the formation of hundreds of broad-based Village Organizations in Gilgit and Baltistan under the sponsorship of the Aga Khan Rural Support Program, a non-governmental organization.

SECTOR OBJECTIVES AND STRATEGIES[3]

Overview

The provision of water supply, improved sanitation and hygiene education facilities to an estimated (1988) rural population of 677,530 requires a long-term perspective on these three sub-sectors.

In the water supply sub-sector, a generous estimate of the

[3]Based on the following sections of the main report: Section 2.4 (for assessment of the current situation); Section 3.2 (for assessment of needs); Section 3.3 (on service standards); and Section 4.3 (on strategies).

present situation is that 27 percent of the population has access to piped water. Field surveys indicate, however, that safe and reliable piped water is available to perhaps only 9 percent of the rural population. Without the investment recommended in this plan, it is projected that, by 1998, just over 30 percent of the estimated rural population of 964,500 will have access to piped water: available resources can barely keep pace with the growing population. With the recommended investment, the coverage is expected to increase to 78 percent by 1998.

Reliable population coverage figures for sanitation facilities in rural areas are not available. Available evidence is that coverage is almost certainly in the low single digits. The plan proposes the demonstration of latrines in more than 75 percent of the villages in the Northern Areas, but adoption depends considerably on cost and household income levels.

There is, at present, no specialized health education agency in the Northern Areas, nor is there a clearly articulated assessment of the region's needs and possible responses in hygiene education. The plan proposes to target hygiene education and the provision of related inputs on women.

A consolidated list of delivery targets proposed in the plan is given below:

Water Supply

- The construction of new water supply schemes in 164 small villages (with population less than 500) and 180 medium-sized villages (population 500-2,000) by the Local Bodies and Rural Development Department, in collaboration with organized communities.
- Organization of User Groups in Diamer District for the purposes of implementing the schemes mentioned above.
- The construction of 43 new water supply schemes in large villages (population more than 2,000) by the Northern Areas Public Works Department.
- Rehabilitation of 128 existing water supply schemes by the Local Government and Rural Development Department.
- Rehabilitation of 22 existing water supply schemes by the Northern Areas Public Works Department.
- Establishment of three water quality testing laboratories, one in each of the district headquarters, to be managed by the Department of Health.
- Provision of 100 water testing kits to the dispensaries of the

Department of Health.

Sanitation

- Motivation and dialogue in 584 villages as part of the sanitation program.
- Establishment of up to 2,920 latrines in homes for demonstration purposes.

Human Resources Development

- Training for 68 field staff, 25 management staff and 769 technical personnel of the agencies involved in implementation of the proposed plan.

Credit

- Establishment of a revolving loan fund worth Rs 9.2 million for the provision of credit for house water supply connections, rehabilitation of water supply schemes, installation of domestic sanitation facilities, and purchase of inputs for improved hygiene.

Rural Water Supply

Rural water supply is a widespread felt need in the Northern Areas. There are many reasons why villagers demand piped water. The sustainability of water supply schemes would be considerably enhanced if village needs could be adequately addressed through a combination of engineering, health and socio-economic guidelines.

The primary considerations in deciding service levels are the available resources, which includes capital cost and the source of water, and the minimum water requirement (qualitative and quantitative) sufficient to ensure proper hygienic conditions.

The key aspects of water supply that require attention are: new schemes, drainage, rehabilitation, operation and maintenance, water quality, and the provision of household connections as demand for them grows.

The proposed approach to water supply is based on the following guidelines:

- Selection of villages for new schemes to be implemented with community participation will be on the basis of needs identified through a process of village dialogues, and will take into account the community's demonstrated capacity for collective management.

- In these schemes, villages will be provided one standpost for every ten households. Scheme design will allow a per capita provision of 5 gallons for the village population, with an expansion capacity of 15 gallons per capita for fifty per cent of the population.

- Credit will be made available for individual house connections.

- Water quality testing accessible to ordinary villagers through dispensaries will be organized by the Department of Health.

The proposed approach to rehabilitation includes the following key elements:

- Dialogue with the community to ascertain its willingness and ability for improved O&M, to be followed by provision of grant (for major repairs) or loans (for minor repairs).

- Training in maintenance for line agency staff and scheme managers and operators identified by the community.

The physical conditions in the area do not warrant a major investment in drainage: natural slopes, drains and permeable soils serve to facilitate drainage without substantial cost. The following basic guidelines are important and feasible:

- Public taps or standposts should be located directly at, or near the channel, to drain directly into the channel.

- Community and house connections located away from the channel should drain nearby or have secondary channels for draining into the main channel.

- Each executing line agency and community organization will be responsible for ensuring that these specifications are integrated into all their projects.

The Northern Areas Public Works Department will be responsible for the operation and maintenance of large schemes implemented by it. It will recover costs through user charges. Community organizations will be responsible for O&M on schemes implemented by them. Local communities will be assisted and motivated by:

- A plumber to be trained and equipped for clusters of 1-5 community organizations; and,

- A Social Organization Unit that will include one sub-engineer and cover 50-60 villages.

Well-defined Terms of Partnership will determine the responsibilities of community organizations, the plumber and

supporting agencies.

Sanitation

Improved sanitation is a household facility, rather than a public good like piped water and drainage. Thus, it would be useful to develop mechanisms through which individuals could meet household demands. The evidence is that household demand is likely to be greatly differentiated by income and gender (the latter because of the requirements of privacy and *purdah*.) Thus, what is needed is a demand-driven, household-oriented strategy for improved sanitation, with particular attention to women's needs.

Experience with previous programs in the region shows that the construction of demonstration latrines in public places has very little impact on the dissemination of the facility. The major factor affecting the demand for latrines is its high cost relative to the income of most villagers. Added to that, there is the cost of alterations in the existing house, especially in the traditional cluster and multi-story housing that is characteristic of Baltistan.

The recommended approach to improved sanitation consists of motivation, demonstration, and the provision of credit and materials. It is subject to the following guidelines:

- Demonstration latrines will be constructed in private houses at partially subsidized costs, and only if there is a new technology to be demonstrated.

- Credit will be made available to households interested in installing latrines.

The Investment Plan accepts that it is not possible to achieve the stated target of 40 percent sanitation coverage given in the Seventh Five Year Plan. The more realistic target of 30 percent coverage will be pursued.

Hygiene

Hygiene education is neither a popular felt need, nor a field in which options attractive to the villagers have been formulated so far. On the part of villagers, the demand for hygiene education has not yet been clearly articulated. On the part of intervening agencies, there are no key interventions that could be offered to villagers with a reasonable chance of widespread adoption. In assessing the need for hygiene education, one must be careful not to impute ignorance of hygienic practices, when in fact the unhygienic habits may be due to socio-economic factors such as poverty and heavy workload.

The recommended approach calls for a hygiene education program with the following steps and elements within an integrated RWSS approach:

- The program will begin by identifying appropriate hygiene messages; the delivery strategy for these messages will depend on the content and target group for the messages.
- The focus of the program will be on villages with a basic level of water availability.
- Women will be the main target group of hygiene education; communication and extension will be through women field staff of line departments and NGOs.
- Hygiene education will be integrated with the other activities of line departments and development programs, and with other project components of new water supply schemes, drainage and sanitation.
- The program will be supported by the delivery of recommended inputs and credit for improved access to the inputs.

Equitability Concerns

The major vehicle for equitable participation in the activities proposed in this plan is a community organized in a broad-based and democratic way, and undertaking its functions through the regular participation of all beneficiaries in open general meetings. Such organizations, called Village Organizations, have been functioning in the Northern Areas since 1983 under the Aga Khan Rural Support Program, which operates in Gilgit and Baltistan Districts. Similar groups can be organized in Diamer District for RWSS activities using the experience gained with Village Organizations. The next section outlines approaches to broad-based community participation.

Equitability concerns also require a particular focus on the needs of women. Female staff should be hired, so that women at the village level can be involved directly in the diagnostic process of scheme identification and in planning. Women's involvement is critical for those aspects of the program where women need to be involved directly, e.g. water supply (location and height of standposts, drainage design, etc.), hygiene education, control of water quality, sanitation, etc. Women's access to household connections, sanitation facilities and use of inputs (iodized salt, oral rehydration salt, filter bags, household latrines) should be improved by allowing women direct access to credit facilities.

Finally, equitability in the context of the Northern Areas requires special attention to Diamer District, which receives less development assistance than other districts and lags behind them in access to water supply and, possibly, sanitation. The proposed district level allocations would help narrow the gap between Diamer and the other districts in the RWSS sector.

INSTITUTIONAL ROLES AND LINKAGES

Overview

This Investment Plan is formulated with the explicit recognition that government alone will not be able to implement the recommendations, and that institutional roles in this sector will have to be reorganized and strengthened if the given objectives and targets are to be realized.

The proposed institutional strategy seeks to: (a) effectively utilize community organizations to identify, implement, monitor and maintain projects in rural water supply, sanitation and hygiene; (b) strengthen the management capacity of government agencies, supplement their technical resources, and assist them in mobilizing the beneficiaries and their resources; and, (c) utilize NGOs and their expertise in technical fields and social organization to facilitate joint implementation by government and organized beneficiaries.

The following overall institutional roles and arrangements are proposed:

It is proposed that large water supply schemes be implemented by the Northern Areas Public Works Department (NAPWD). The creation of a Public Health Engineering Circle within NAPWD is recommended for undertaking an expanded role in the sector.

It is proposed that small and medium-sized rural water supply schemes in Gilgit and Baltistan be implemented by existing Village Organizations, and those in Diamer by User Groups to be created on the pattern of Village Organizations. For these schemes, the executing government agency would be the Local Bodies and Rural Development (LB&RD) Department.

For coordination, management and monitoring of RWSS activities, it is proposed that a Rural Water Supply and Sanitation (RWSS) Unit be created within LB&RD. This Unit will coordinate the hygiene program, and manage the programs for sanitation, training, and loans to villagers.

It is proposed that the Aga Khan Rural Support Program (AKRSP) provide technical and organizational assistance to community

organizations and the RWSS Unit in all their village-level RWSS programs.

A new Health Education Unit has been proposed for the Department of Health.

Support for a planned polytechnic has been proposed for the Department of Education.

Expatriate Technical Assistance (TA) has been proposed in the fields of monitoring and evaluation, hygiene education and public health engineering.

For purposes of review and coordination of RWSS activities, a Steering Committee headed by the Administrator is proposed; its members will be the heads of agencies participating in the RWSS Investment Plan.

Community Organizations

The direct rationale for community participation is provided by the expectation of government and donors that local communities would take on greater financial and managerial responsibilities in the RWSS sector in the future. In particular, it is expected that communities will take over sole financial responsibility for O&M of water supply projects.

The need for investing in community organization is provided by the observations that:

- Traditional rural institutions for the management of infrastructure and other resources are weak or non-existent;
- Government line agencies have no delivery mechanism at the village level; and,
- The lowest tier of local government, the Union Council, does not have the financial and organizational maturity to manage community projects.

The last observation needs emphasis and explanation, since community participation in development projects is often equated with decision making by elected representatives. The approach recommended in this plan expects the community to have decision making powers and assign operational or decision making roles to its representatives. This will not happen without a forum in which ordinary villagers can organize to identify, help design, implement, monitor and maintain their projects; review progress, approve payments and verify the accounts; discuss and resolve problems, and enforce traditional sanctions; select villagers for training and remunerate them; save money for joint obligations and

secure loans; and provide an organized and regular venue for interaction with the staff of development agencies.

Based on these expectations, the proposed institutional strategy for the Northern Areas will follow two broad directions. The first is for the Gilgit and Baltistan Districts, where Village Organizations have been formed; in many villages, Women's Organizations also exist with the Village Organizations. The second is for Diamer District where these organizations have not as yet been formed.

Where Village Organizations exist, they will be the executing agency for water supply, sanitation and hygiene education components, with LB&RD as the overall coordinator (through the proposed RWSS Unit), and AKRSP and the private sector playing supporting roles. In areas where Village Organizations have not been formed, a participatory approach will be followed, and LB&RD will coordinate this by creating User Groups and by following the approach to participatory development outlined in Annex 5.

The specific responsibilities for collaborating Village Organizations, User Groups and development agencies will be laid down in the terms of partnership to be determined between the communities and the agencies. This is a standard approach used by AKRSP in dealing with Village Organizations, and will be extended to RWSS activities.

Government Agencies

Northern Areas Public Works Department

It is recommended that a Public Health Engineering Circle (PHEC) be created within the existing NAPWD. This recommendation is of value both within and beyond the plan: once 100 percent coverage of water supply and sanitation is achieved in the large villages (projected by the end of the 1994-95 financial year), the orientation of the PHEC should be with the efficient management of its schemes.

The PHEC's main responsibilities will be the construction and maintenance of water supply and drainage systems in towns and in villages with a population of more than 2,000; and, collection of user charges from all the consumers of water supply. Additional responsibilities are expected to include testing for water quality and control of its schemes in collaboration with the Department of Health; and, collection of data pertaining to water resources in the Northern Areas along with a reference for the special design criteria and engineering skills required in these areas.

Local Bodies and Rural Development Department

It is recommended that a Rural Water Supply and Sanitation Unit be created within LB&RD. The Unit will work with Village Organizations, User Groups and AKRSP to identify local needs in the sector, coordinate the implementation of water supply schemes, ensure participation of women in RWSS programs, and monitor RWSS programs. In addition, the RWSS Unit will be expected to:

- Initiate a sanitation program by motivation and demonstration of appropriate technology in villages;
- Coordinate the provision of inputs and access to credit for sanitation through contact with private contractors, credit institutions and development projects; and,
- Coordinate the training of village masons, plumbers, female hygiene education workers and others involved in the sector by organizing short, basic refresher courses through development projects and non-governmental organizations working in the sector (Aga Khan Foundation, AKRSP, etc).

Department of Health

The Department of Health will be the lead agency in water testing, and in the prevention of water borne diseases through its district hospitals and village level dispensaries. The creation of a Public Health Education within the department is proposed.

The Department of Health will be expected to conduct a comprehensive survey of water quality in the Northern Areas, in order to identify the areas where special efforts need to be made to reduce infant morbidity and mortality, prevent goitre and reduce the other ailments (skin and eye infections) among women. For water quality testing, it will establish three laboratories in the Northern Areas, one in each of the present district headquarters, and provide simple water testing kits to its 103 dispensaries. It will also make appropriate recommendations on measures to improve the quality of the contaminated water.

The Department of Health will also be responsible for the delivery of hygiene education messages, supplies for the improvement in water quality, medicines for water borne diseases, etc.

Department of Education

A polytechnic for the Northern Areas was proposed in the Sixth Five Year Plan, and its PC-I has been approved recently. It is proposed that support in civil engineering be provided to this polytechnic when it is completed (tentatively expected by 1992).

Non-governmental Organizations

The Aga Khan Rural Support Program (AKRSP) has indicated a strong interest in supporting the proposed RWSS Sector Investment Plan. AKRSP is one of the more successful NGOs in the country and operates an innovative rural development program in an area that includes all of Gilgit and Baltistan. It has been supported in the past by several donors, and has also been evaluated by the Operations Evaluation Department of the World Bank.

The main roles envisaged for AKRSP in the Investment Plan revolve around providing support to the RWSS Unit, Village Organizations and User Groups in all their village-level RWSS programs. This support will draw upon AKRSP's expertise in social organization, village infrastructure, the management of savings and loans through Village Organizations, women-in-development programs, and human resources development.

RECOMMENDED PROJECTS

Water Supply Schemes

This project involves the implementation of 164 small and 180 medium water supply schemes through Village Organizations and User Groups in Gilgit, Baltistan and Diamer. An estimated 271,760 people will benefit. With the completion of these schemes, an estimated 70 percent of the population in villages less than 2,000 will be covered by the end of the Investment Plan period in 1997-98.

The proposed RWSS Unit under the Local Bodies and Rural Development Department will be the implementing agency for these schemes. The estimated cost is Rs 163.9 million, including Rs 155.5 million for the construction of water supply schemes; this excludes community contributions and local duties and taxes.

Sanitation Program

The recommended sanitation program consists of three phases: motivation, construction of demonstration latrines in private households by financing the cost of skilled labor, and wider adoption by individual households (with loan facility). It will be implemented by the proposed RWSS Unit of LB&RD in an estimated 584 villages. The estimated cost is Rs 3.2 million, including Rs 2 million for a revolving loan fund.

Water Quality Control and Testing

A component for testing water quality is proposed in the Investment Plan in view of the high incidence of water borne diseases in the Northern Areas that is attributed to water contamination. The Department of Health, through the proposed Health Education Unit, will be responsible for overall implementation. Three laboratories will be established, one in each district. At the field level, the 103 existing village dispensaries will be involved in water testing. The cost (exclusive of local taxes and duties) is estimated at Rs 2.2 million, including a training component.

Hygiene Education Program

There are four components of the proposed hygiene education program: a series of village and management level workshops; training at the village level, in-service training of project staff, and training of line department staff; the supply of inputs at cost and at subsidized rates to encourage the use of recommended inputs, together with a small amount of credit for purchase of inputs like filter bags and other recommended inputs; and message development and monitoring for feedback and refinements of the hygiene education strategy. The proposed RWSS Unit of LB&RD is will have implementation responsibility for this program. The estimated cost is Rs 1.3 million.

Creation of Rural Water Supply and Sanitation Unit in LB&RD

It is proposed that the Rural Water Supply and Sanitation Unit to be created within LB&RD be funded by donor assistance. This Unit will be the main implementing agency for rural water supply schemes (in villages of less than 2,000 population), sanitation, and hygiene education program proposed under the Investment Plan. The Unit will also be the main coordinator for the human resources development program. It will have three main sections at the headquarters and district levels: Engineering, Program Coordination, and Monitoring and Evaluation. The most significant institutional objective of the Unit will be to establish a link with village development institutions for social sector programs.

The total cost of establishing and financing the recurrent expenditure of the RWSS Unit for the eight years of the Investment Plan period is Rs 35.6 million, including training and an expatriate Technical Assistance component of Rs 10.8 million.

Creation of Public Health Engineering Circle in NAPWD

A separate water section previously existed within NAPWD, but

it was amalgamated within the Works Department. It is proposed that a new Public Health Engineering Circle be created within the existing NAPWD. This circle will be responsible for the implementation of large water supply schemes and water quality monitoring and improvement. Specifically, it is expected to implement 43 new water supply schemes during the Investment Plan period in villages with a population of more than 2,000 people. The total cost that will be incurred on institutional strengthening through a new Public Health Engineering Circle is Rs 15.4 million, of which Rs 1.7 million is recommended for donor investment.

Creation of Health Education Unit in the Department of Health

The Department of Health in the Northern Areas does not have a Health Education Unit. There is a need to establish such a Unit in the area in view of the lack of provision of basic health care for the population in the villages. This Unit will be responsible for water testing and control and will eventually take over the responsibility for hygiene education and for coordination with other agencies. During the Investment Plan Period an effort will be made to develop the Unit for its future role in the sector.

The cost of material required under the donor project is Rs 4.9 million (after deducting taxes and duties); in addition, the cost of the technical assistance program is estimated at Rs 7.3 million. Thus, the donor investment recommended is Rs 12.2 million.

Strengthening AKRSP's Role in Rural Water Supply and Sanitation

The Aga Khan Rural Support Program will be involved in supporting community organizations, orienting the staff of LB&RD in participatory approaches, and conducting technical surveys and preparing cost estimates for the schemes which will be implemented through the Village Organizations in Gilgit and Baltistan District. AKRSP will also participate in the training of LB&RD staff to establish User Groups through participatory approaches to development for Diamer District. It is proposed that a female program coordinator for social sector activities and a middle management level staff member be appointed at AKRSP to assist in the implementation of the Investment Plan. The total amount of donor investment required for this component is Rs 3.4 million.

Strengthening the Polytechnic Planned for the Northern Areas

It is recommended that the capacity of this polytechnic to cater to the special engineering needs of rural water supply in high mountain valleys be developed by the addition of staff and

curriculum development in civil engineering. The polytechnic will be under the Department of Education. An amount of Rs 7.5 million is recommended for investments in the project, including Rs 6.5 million for foreign technical assistance.

FINANCING

It is estimated that the main sources of capital funds[4] for the sector will be: allocations made to NAPWD and LB&RD in the Annual Development Plan (ADP) for the Northern Areas; the People's Program and funds for Special Development Programs; UNICEF; and community contributions towards O&M and capital cost.

The total amount available from the Annual Development Plan, Special Development Programs, UNICEF and from community contribution for the Investment Plan period is expected to be Rs 130.3 million. From this amount, the funds available for capital investment are expected to be Rs 108 million. All of these funds are expected to be for water supply. There have been no public sector investments in drainage, hygiene education or sanitation in the villages of the Northern Areas.

The Northern Areas are exempted from all taxes except octroi and the Annual Development Plan is financed entirely through federal grants. It is expected that ADP allocations are likely to remain constant in real terms due to the underlying inflationary pressures, high investments in the energy and communication sectors, and the limited ability to mobilize additional resources. It is estimated that Rs 72 million will be available from ADP sources in the eight year Investment Plan period.

The total amount available to the Northern Areas under the People's Program for the financial year 1988-89 was Rs 30 million for investments in water supply and sanitation, health and rural roads. In view of the experience with such special programs in the past, it is estimated that not more than Rs 24 million will be provided to the Northern Areas for investments in the sector.

An amount of Rs 8 million has been estimated as the level of UNICEF investment in the next eight years.

A two-pronged approach is being suggested for the financing of the capital costs by the community. For villages with more than 2,000 people, it is suggested that the community should not pay any capital costs. For villages with less than 2,000 people in which schemes will be implemented by Village Organizations and User Groups, it is recommended that the community finance a small part

[4] In constant 1988-89 prices.

of the capital cost. This capital cost will be for any purchase of land and small amounts of local materials.

There is a total resource gap of Rs 238.4 million in 1989 prices between the investment required and available resources. In current prices, this resource gap is Rs 315.4 million. The recommended New Donor Investment Plan is Rs 233.3 million in constant 1988-89 prices and Rs 315.5 million in current prices All local taxes and duties (Iqra surcharge, import license duties) have been subtracted from components which were recommended for donor investment.

The total amount of funds required for the recurrent expenses of the Investment Plan are Rs 96.8 million in constant prices. This is 26 percent of the total Investment Plan. The major components of the Investment Plan which require recurrent funds are Institutional Strengthening of LB&RD, the Public Health Engineering Circle, the Department of Health and the Foreign Technical Assistance Program. A total of Rs 51 million is recommended for investment by the donors to meet the recurrent expenses. The government will be expected to meet the remaining recurrent expenses of Rs 45.7 million.

A total amount of Rs 22.6 million is required for the operations and maintenance of water supply schemes constructed under the Investment Plan. It is expected that Village Organizations and User Groups will contribute Rs 14.74 million towards O&M during the eight year period. Past levels of community contribution towards the operations and maintenance of village level projects suggest that these costs will be covered by these contributions. An additional amount of Rs 7.9 million will be collected from users by the Public Works Department.

1. INTRODUCTION

1.1. Introduction to the Project

The Government of Pakistan has undertaken to expand the coverage of water supply, sanitation and drainage facilities to people living in the rural areas. In its Seventh Five Year Plan (1988-1993), the Government set ambitious targets for increasing water supply coverage in rural areas to 75% and sanitation coverage to 40% by the end of the Plan period. To assist the Government in achieving these targets a Sector Review was undertaken in 1987 by a team of consultants. As a result of the Sector Review, the World Bank initiated a Strategic Investment Planning and Project Preparation Process with financial support from the Canadian International Development Agency. An important element in that process was the national policy conference on rural water supply and sanitation, held in Islamabad in April 1988.

In December 1988 a project team consisting of Wardrop-Acres, CoWater International and Nespak were engaged to submit Strategic Investment Plans and Project Preparation for the four provinces, Azad Jammu and Kashmir, and the Northern Areas. Development Research and Management Services (DRMS) were sub-contracted to undertake the Northern Areas Investment Plan in August 1989.

The Strategic Investment Plan presented in this report is based on two, related sets of agenda. Sectoral targets and priorities for investment by Government and potential donors are derived from the five-year development plans of the Government of Pakistan. This proposal covers the remaining three years of the Seventh Plan and the entire period of the Eighth Plan, that is, the period 1990-1998. Strategies and mechanisms for implementation are derived from the recommendations of the national sector conference held in April 1988. The principal recommendations included the following: expand the role of beneficiaries in the planning, implementation and maintenance of projects; transfer responsibility for scheme financing, and operations and maintenance, from the government to the users; adopt an integrated approach to the provision of water supply, sanitation and hygiene education; enhance the role of the non-governmental and private sectors; promote the use of cost-effective and appropriate technologies; and, develop the level of skills of users/villagers.

The Northern Areas present a unique opportunity to address the Government's sectoral priorities by building on the strengths of government institutions and NGOs. During the 1980s, government line agencies and local government institutions have had extensive exposure to donor-aided programs in rural water supply, health and hygiene. Since 1983, the Aga Khan Rural Support Program (AKRSP) has sponsored the formation of hundreds of broad-based Village Organizations (VOs) in Gilgit and Baltistan Districts. In

the past, government agencies and the VOs have collaborated in small but significant ways in the field of agricultural development; in addition, the Aga Khan Health Services are implementing a primary health care project with some of the VOs. The challenge now is to devise an institutional strategy that would: (a) effectively utilize the VOs to identify, implement, monitor and maintain projects in rural water supply, sanitation and hygiene; (b) strengthen the management capacity of government agencies, supplement their technical resources, and assist them in mobilizing the beneficiaries and their resources; and, (c) utilize AKRSP's flexibility and its expertise in technical fields and social organization to facilitate joint implementation by government and organized beneficiaries.

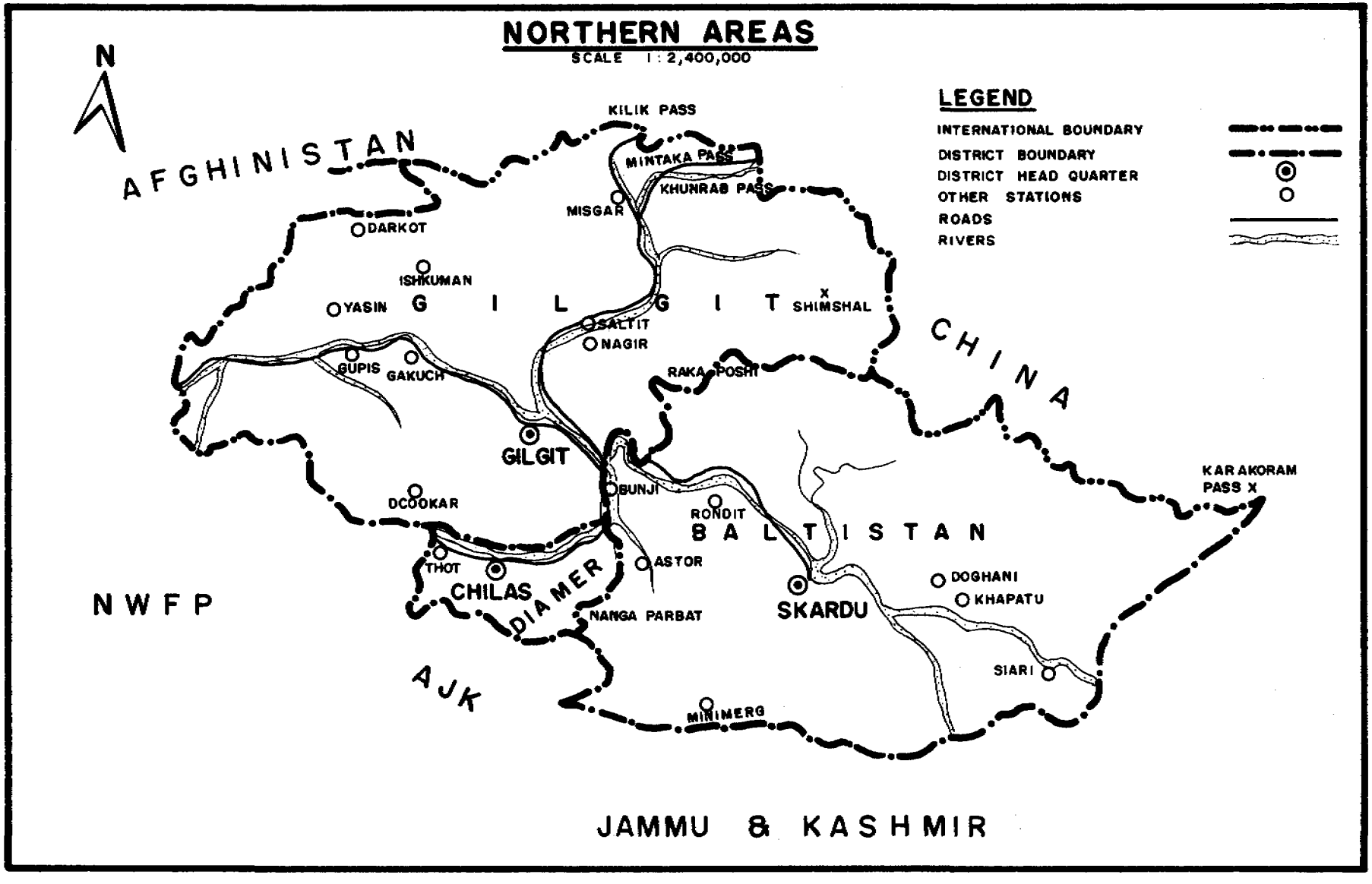
DRMS have pursued this challenge by working closely with the Northern Areas Administration, key officials of line agencies, and the Aga Khan Rural Support Program. In the next phase of project preparation, individual initiatives will be studied in depth and detailed cost estimates will be refined in close collaboration with concerned implementing agencies. Donor support for the suggested initiatives will be solicited in close collaboration with the Government of Pakistan.

1.2. Introduction to the Northern Areas

The three districts of the Northern Areas - Gilgit, Baltistan and Diamer - comprise one of the most rugged and remote parts of the world. The total area is 72,496 sq km, situated between latitudes 34°40' and 37°04' North, and longitudes 72°30' and 77°50' East. The region is heavily mountainous, since it forms the intersection of four of the highest mountain ranges in the world - the Himalayas, Karakorams, Pamirs and the Hindu Kush. The Karakorams alone contain 19 peaks exceeding 7,500 m, including the K2, the second highest mountain in the world. The Indus River rises in Tibet 900 km to the east and flows through the Northern Areas.

The boundaries of the Northern Areas (map on next page) include Pakistan's international borders with Afghanistan and China, and the Line of Control in the disputed Indian-held territory of Jammu and Kashmir. The Soviet Union lies across a strip of Afghan territory called the Wakhan Corridor that was devised as a dividing line between the British and Czarist Empires. Because of their strategic location, the Northern Areas were an important theatre of activity for the Great Game, the nineteenth-century, cloak-and-dagger struggle for geopolitical supremacy in Central Asia between the British, Chinese and Russian Empires.

The region has evolved in relative isolation for many centuries. Contact with the outside world was limited to trade in essential commodities, or to caravan raids, warfare and some slave


NORTHERN AREAS
SCALE 1 : 2,400,000
N
LEGEND
INTERNATIONAL BOUNDARY
DISTRICT BOUNDARY
DISTRICT HEAD QUARTER
OTHER STATIONS
ROADS
RIVERS
AFGHINISTAN
KILIK PASS
MINTAKA PASS
KHUNRAB PASS
MISGAR
DARKOT
ISHKUMAN
YASIN
G I L G I T
SHIMSHAL
SALTIT
NAGIR
GUPIS
GAKUCH
RAKAPOSHI
CHINA
GILGIT
BUNJI
KARAKORAM PASS
DCOOKAR
RONDIT
BALTISTAN
THOT
CHILAS
DIAMER
ASTOR
NWFP
NANGA PARBAT
SKARDU
DOGHANI
KHAPATU
SIARI
AJK
MINIMERG
JAMMU & KASHMIR

trade. Trade between neighboring valleys, however, was siginificant.

Rapid processes of change began in the Northern Areas in the 1970s. The formal abolition of feudal systems confirmed the long decline of local institutions, especially at the village level. The opening of the Karakoram Highway (KKH) and other arterial roads brought changes in the markets for labor and goods that disturbed the subsistence economy. The build-up of civil and military establishments, the arrival of donor projects, and the emergence of tourism have contributed further to recent changes.

Four kinds of continuing changes are likely to be significant for the region's development in the near future.

There is continuing major investment in infrastructure, including new roads, improved telecommunications and hydro-electric power generation. These changes will integrate the Northern Areas more fully into Pakistan, and open greater opportunities for marketing, out-migration and within-region labor mobility.

Continuing institutional change is likely to be observed with the continuing evolution of local government and AKRSP-sponsored Village Organizations, the strengthening of government departments, and the arrival of new financial institutions and development programs. These changes will likely have a favorable impact on the region's organizational, managerial and financial capacity for development.

Numerous changes are taking place in the markets for labor, other resources and products: the region is in transition from a subsistence to commercial economy. One siginificant effect of this is growing specialization in skills and production, encouraged by the mobility of labor and goods. At the same time, communities are adjusting to local shortages (of labor, agricultural products, etc.) through large increases in imports.

Changes in demography and settlement patterns are likely to be dominated by large (seasonal and semi-permanent) migration, reduction of agropastoral transhumance, and rapid (almost anarchic) urbanization.

Some of the key changes that are taking place in the rural economy of the Northern Areas are summarized in the form of stylized facts in Annex 1. There is considerable practical interest and scholarly research in the nature and consequences of long-term physical and socio-economic changes in the Northern

Areas.[1]

For the purposes of the Rural Water Supply and Sanitation Project, perhaps the most important trends in the Northern Areas are economic and institutional. Increasing incomes and exposure to the outside world have created an effective demand for many of the attributes of improved health and living conditions. At the same time, the formation of broad-based Village Organizations has created the potential for communities themselves to manage their common concerns in the future. Both these observations suggest promising opportunities for intervention under the RWSS Project.

[1]Among the more notable research efforts are those led by geographers from the Federal Republic of Germany, as well as the Snow and Ice Hydrology Project centered around the Wilfrid Laurier University in Canada.

2. THE SECTOR[2]

2.1. General

2.1.1. The Physical Setting

The physiography of the Northern Areas is rugged and hilly, with steeply and heavily dissected slopes, and with watercourses along the slope faces and valley bottoms[3]. Due to secondary and tertiary incisions, landslides and erosion, the landscape is highly irregular. The geology of the area is a mixture of igneous and metamorphic sedimentary rocks consisting of slate, mica-rich gneiss and crystalline schist. The terrain is naturally unstable, and landslides and rockfalls are common occurrences. The soil is mixed with stones and boulders, and is very low in clay and organic matter content.

The Northern Areas lie just outside the zone of the monsoon rainfall system, in a partial rain shadow. The inhabited parts of the region (i.e., those up to 3,100 m) receive 100-500 mm of precipitation per year, mainly as snow during the winter months. The climate of the area can be best described as arid continental Mediterranean-type, with significant variation in temperature and precipitation caused by altitude and topography. During the hottest months (June, July and August), the mean maximum and minimum temperature is about 37 °C and 22 °C, respectively. The coldest months are December, January and February, when mean maximum and minimum temperature is 12 °C and 1 °C, respectively. In the higher valleys, however, the mean minimum temperature in winter falls as low as -14 °C.

Most villages are located on alluvial fans or river terraces, dominated by a backdrop of steep mountains with narrow openings up into *nullahs* that lead to alpine pastures, glaciers and snow fields. The *nullahs* contain the mountain streams that feed the gravity channels that irrigate the fans and terraces and provide drinking water. From cultivated fields, water drains freely (when it is abundant) into rivers that flow into the Indus. Each village or cluster of settlements is, in effect, a small, vertically-differentiated ecosystem (illustrated in Figure 2.1).

Communities depend for their water supply on meager rainfall and more abundant snowfall at high altitudes. Traditionally, water is brought into the village through gravity-fed channels which provide water for irrigation, domestic use and

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[2]Additional material for this section is contained in Annexures 1-4 and parts of Annex 5.

[3]This and the next paragraph are derived from AKRSP, 1983.

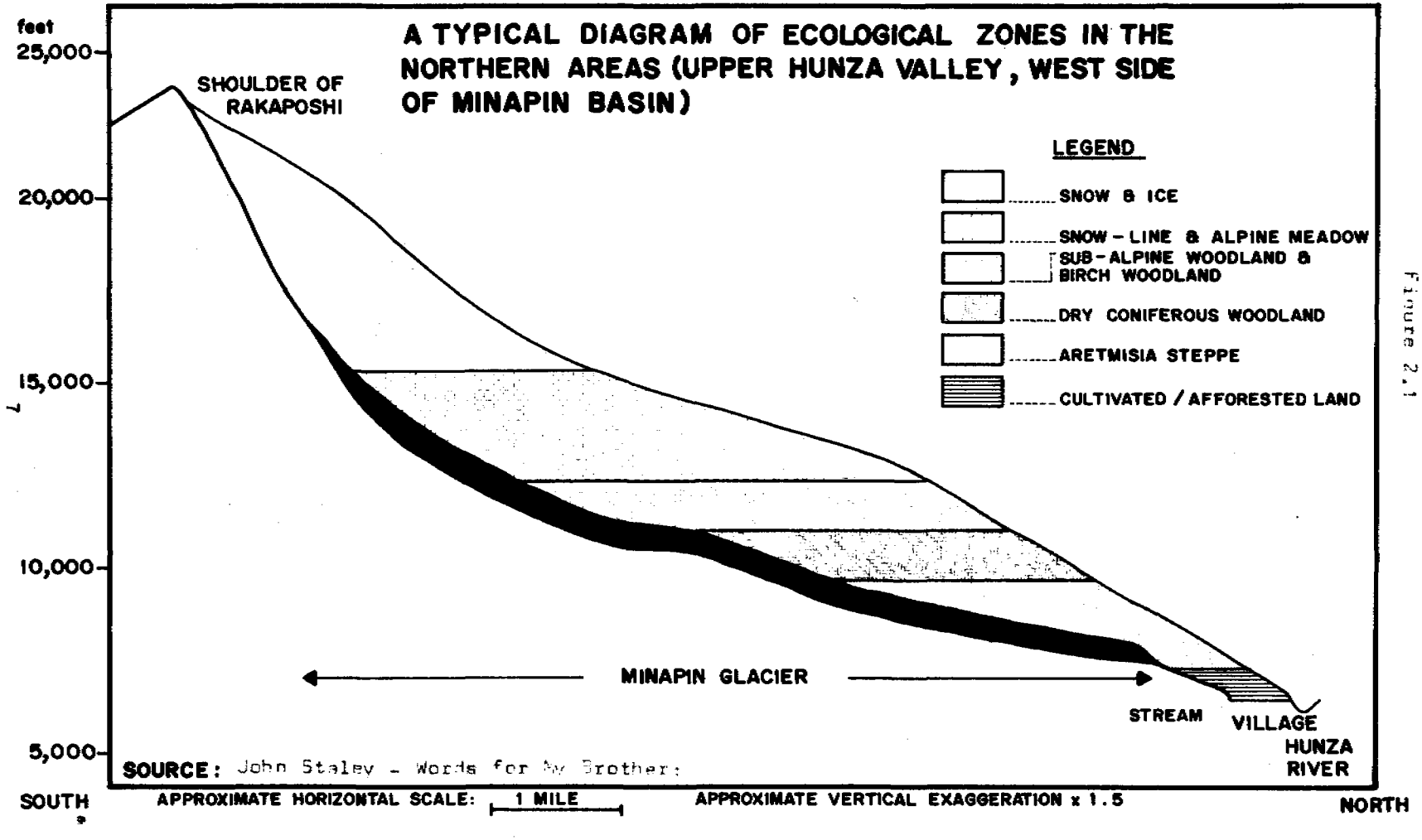
A TYPICAL DIAGRAM OF ECOLOGICAL ZONES IN THE NORTHERN AREAS (UPPER HUNZA VALLEY, WEST SIDE OF MINAPIN BASIN)
feet
25,000
20,000
15,000
10,000
5,000
SHOULDER OF RAKAPOSHI
LEGEND
SNOW & ICE
SNOW - LINE & ALPINE MEADOW
SUB - ALPINE WOODLAND & BIRCH WOODLAND
DRY CONIFEROUS WOODLAND
ARETMISIA STEPPE
CULTIVATED / AFFORESTED LAND
MINAPIN GLACIER
STREAM
VILLAGE
HUNZA RIVER
SOURCE: John Staley - Words for My Brother;
SOUTH
APPROXIMATE HORIZONTAL SCALE: 1 MILE
APPROXIMATE VERTICAL EXAGGERATION x 1.5
NORTH

Figure 2.1

watermills (for grinding).[4] In winter, when supply to the channels is frozen, drinking water is obtained by walking down to the lower-lying adjacent rivers.

Two aspects of the region's physical characteristics are of particular relevance to the water supply sector - the sources of water, and the effect of altitude.

There are three principal sources of water for gravity-fed channels - meltwater from glaciers and snow, springs, and rivers. This classification is useful for understanding (a) the year-to-year reliability of water supply, and (b) the quality of water. Altitude is important as a determinant of the number of frost-free days and, thus, of the annual availability of water from channels.

Channels fed by perennial springs provide the most reliable supply of water, but such springs are rare[5]. In general, glacier-fed channels show the least year-to-year variability in discharge, and spring-fed channels dependent on winter-spring recharge show greater variability. Channels that depend exclusively on snowmelt are the most variable, while those that take off from rivers are also vulnerable to year-to-year fluctuations.

Whiteman (1985) cites local farmers from snowmelt-dependent villages as reporting a severe shortage of water once every 4-5 years, on average. Whiteman estimates that this "corresponds to a Gilgit rainfall over the winter/spring [January-May] period of 40 mm or less which can be expected in 25 percent of the years. Interestingly enough, casual inspection of ibex horn trophies does show poor annual horn growth rate at about this frequency, reflecting poor nutrition most likely resulting from inadequately watered range."

While irrigation dependent on snowmelt presents problems of high year-to-year variability, water from glaciers sometimes carries large quantities of silt and rock. Where this is a serious problem, villagers have constructed open tanks close to the head of the channel to trap rocks and heavy sediment. These tanks have to be cleaned regularly, sometimes at a considerable cost in labor.

River-fed channels are affected by the seasonal changes in river flow. A channel head constructed to divert river water at planting time may be inundated when glacial melt adds to the

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[4]The traditional unit for measuring discharge is one watermill, equal to about 2-3 cusecs.

[5]The following description of sources of water supply is taken from Husain (1987).

river's discharge. The head will have to be relocated upstream in order to obtain water during summer. Such relocations during the crop year may involve substantial inputs of labor.

Perennial spring water, which is the rarest source of water supply in the region, has several advantages over other sources. It is free of silt; it is not susceptible to great variability; and, as noted by Whiteman (1985), it is also "up to 5 °C warmer."

There are no aggregate data on what proportion of the population is supplied by each of the three sources of water supply discussed above. Small-scale observations suggest that the frequency of source is highest for glacial and snowmelt, and smaller for springs and rivers, in that order.

The effect of altitude is important for water supply because it affects the number of frost-free days available at a given location[6]. Table 2.1 gives the estimated relationship between altitude and the number of frost-free days.

Table 2.1

Relationship between Altitude and the Number of Frost-free Days

Altitude (feet)	Altitude (m)	No. of Frost-free Days
4500	1372	338
5000	1524	325
5500	1676	312
6000	1829	299
6500	1981	286
7000	2134	273
7500	2286	260
8000	2438	247
8500	2591	234
9000	2743	221
9500	2896	208
10000	3048	195
10500	3200	182

Source: Gordon Conway, M. Alim Mian, Zahur Alam, Mohammad Yar Khan

[6]The number of frost-free days is also affected by the aspect (north-facing *versus* south-facing) of the village.

and Tariq Husain. Agroecosystem zoning of the Hunza Valley - first iteration. International Institute for Environment and Development, London, May 1987 (mimeo.).

Thus, the number of frost-free days at Gilgit (altitude 1,430 m) is estimated to be 332, while at 3,200 m it would be about 182. The general rule of thumb for the Northern Areas, as estimated by Conway et al. (1987) is that there is a decline of 0.6 °C for every 100 m increase in altitude. The methodology for this estimation is explained in Conway et al. (1987); the temperature data used by them are contained in Whiteman (1985) and come from eight weather stations in the Northern Areas.

The physical conditions of the region also have a bearing on the long-term sustainability of settlements and water supply schemes. There are many indications in the region of earlier settlements that were abandoned due to mudflows and abrupt or gradual movements in glaciers. Such events disrupted the water supply, sometimes with the result that a channel could no longer be constructed to command the existing settlement. Data on the long-term movement of glaciers were collected by Chinese road engineers who interviewed old villagers during the construction of the KKH; these data are available in Chinese, with English abstracts, in the form of a book left behind by the Chinese in some of the villages along the KKH. Other long-term data are being collected and analyzed by the Snow and Ice Hydrology Project of Wilfrid Laurier University.[7]

2.1.2. Social and Institutional Setting

The Northern Areas have a rich and diverse mix of linguistic, cultural and religious groups. In addition to Urdu, the official language, five languages are spoken here - Balti, Shina, Burashashki, Wakhi and Khowar. The variety of ethnic origins reflects the characteristics of the regions that border the Northern Areas in all directions - Afghanistan, Chinese Xinqiang, Ladakh (in India) and Central Asia. Up until some six centuries ago, the region was largely Buddhist. Over this mosaic of diversity rests the unifying force of Islam, but even in religious affairs, there are three major sects - Sunni, Shia Ithnasheri[8] and Shia Ismaili. Diamer is Sunni, Baltistan is almost entirely Shia Ithnasheri, while Gilgit has all three sects in significant proportions.

Before annexation by the British in 1892, the entire area

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[7] The team leader is Dr Ken Hewitt.

[8] including the Noor Bukhshis in Baltistan.

was ruled by local feudal chiefs called Mirs and Rajahs. Under the British Political Agent, several of these chiefs continued to have local autonomy; some of them also had formal relationships with the Maharajah of Kashmir, who posted a Governor at Gilgit under an arrangement with the British.

Traditionally, natural resources in the Northern Areas were managed by local communities under the dispensation of feudal authority. Land and irrigation development in the region was spearheaded by the feudal chiefs. The chiefs could use the authority of the state to induce or constrain their subjects (through forced labor, land transfers, etc.) into constructing new channels, rehabilitating old ones, and developing new land. There was a system, therefore, to maintain and increase society's natural wealth and vital physical infrastructure.

A general decline in feudal authority commenced with the arrival of British administration in 1892; this decline appears to have become more pronounced in the last 35-40 years. The Mirdoms and other feudal states were formally abolished in 1974. One effect of the decline in feudal authority is evident in the slow pace of irrigation and land development in the years prior to the arrival of AKRSP. For example, despite the growing pressure on land during these years, no land settlement schemes were undertaken that would match the scale of projects sponsored by the Mirs up to about 50 years ago. Decaying physical infrastructure is one corollary of declining feudal authority; rapidly diminishing forest and pastures are others.[9]

The situation prior to the arrival of AKRSP was that there was an institutional vacuum at the community level.

There is, however, a continuing tradition of cooperative effort among the communities of the region. This tradition is most visible in the irrigation sector. The channel head may be several miles from the village, and its maintenance is the collective responsibility of the village. In spring, the entire village turns out to clean the channel before the date for first irrigation. This common effort is part of tradition and is referred to as *rajaki* (presumably from Rajah); violators of *rajaki* are required to pay a fine, usually wages for the number of days on which the individual absented himself from *rajaki*.[10] Routine maintenance during the agricultural year is carried out by one or more *chowkidars*, paid through contributions made by villagers in cash or

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[9]The relationship between declining traditional institutions and decaying physical infrastructure and diminishing natural resources is also observed in other parts of Pakistan.

[10]In NWFP, the tradition of *ashr* corresponds to *rajaki*; fines imposed on those who absent themselves from *ashr* are called *nagha*.

kind; the *chowkidar* enjoys a high status in the village. In periods of water scarcity (such as at the time of planting in spring) villages practice *warabundi*, i.e., a roster of turns by which water is used by each farmer for a specified length of time.

The challenge for community organization is to tap such traditions of cooperation, to endow the community with the organization and resources necessary for self-sustaining development.

2.1.3. The Farm-Household

Landholdings in the Northern Areas are small; they range from an average cultivated area of 0.57 ha in Baltistan to 0.93 ha in Diamer.[11] These averages include land that can produce only one crop each year because of the short growing season. Family size averages 7-8, and income from agriculture is insufficient for most families to maintain even a subsistence level of consumption. Increasing numbers of skilled and unskilled male workers look for off-farm employment both within and outside the region.

The physical plan of a homestead and its sanitation and drinking water systems vary from region to region. Generally, humans and livestock live in close proximity to each other, the humans often having to pass through the stock yard or livestock pen to enter the family quarters.[12] Day-to day livestock management is undertaken by the women, who also process dairy products. The close inter-dependence between people and livestock is reflected in the system of beliefs and taboos, as well as in traditional rituals. For example, new-born babies are wrapped in dung, ostensibly to keep them warm.

At the household level, some farmers have their own desilting pool between the channel and the crop field, or within the walls of the house (for drinking water). The silt trapped in the pool is cleaned regularly and then spread in the livestock stalls; mixed with animal droppings, this silt makes good organic fertilizer for the farmer's field. Among ethnic groups (such as the Hunzakuts) which use nightsoil as fertilizer, the silt is mixed with human excreta and used on kitchen gardens.

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[11]These and other statistics on the agriculture of the Northern Areas are drawn from various sources and presented in Annex 2.

[12]In Baltistan, livestock are kept downstairs and the family lives upstairs, but the entrance to the house is downstairs. In most parts of Gilgit, a single-level plan is followed, but humans still have to pass through the livestock pen.

2.1.4. Demographic Background and Settlement Patterns

Detailed population data and related discussion are contained in Section 3.1 and its tables.

The 1988 estimated population of the Northern Areas is 750,920, of which 90%, or 677,530 is rural. According to the 1981 Population Census, the rural population is settled in 762 villages. The average inter-censal growth rate (from 1972 to 1981) was reported to be 3.8% per annum. Some local sources claim that this high growth rate is due to under-enumeration during the 1972 census, while others claim that the 1981 census resulted in over-counting.

The region is sparsely populated, because much of it is not suitable for habitation and cultivation; the population density is just over 10 persons per sq km. Human settlements are located on alluvial plains or river terraces located along river valleys. By and large, these valleys radiate upwards as one proceeds outward from the largest villages and the district headquarters. Several villages in each valley may share common pastures and forests, and some may share a common source of water. Livestock-based transhumant systems are still prevalent, albeit diminishing, especially in Diamer District and the higher valleys of the region.

2.1.5. Administrative Arrangements

The Northern Areas are divided into three districts - Gilgit, Baltistan and Diamer - which are further sub-divided into a total of 12 sub-divisions. Recently, plans have been announced for the creation of two new districts (as was done briefly in the 1970s) - Ghizar District in Gilgit, and Ghaince District in Baltistan. (Due to the absence of disaggregated data for the new districts, this report uses available data on the three existing districts.) Even with the two new districts, the number of civil sub-divisions will remain the same, i.e., at twelve. LB&RD has organized its system so that its markaz corresponds to the sub-division of the civil administration.

The administrative center of the Northern Areas is Gilgit Town, 610 km north of Islamabad on the Karakoram Highway. Chilas is the headquarters of Diamer District, and Skardu of Baltistan District. Gilgit and Skardu are also connected to Islamabad by Pakistan International Airlines, though the flights are subject to weather.

The Northern Areas are administered by the Federal Government through an Administrator who reports to the Kashmir Affairs and Northern Areas Division (KANA) of the Ministry of Kashmir Affairs and Northern Areas. The area is treated as a civil Division with an Administrator heading the administrative and other

line departments. There are two Additional Commissioners, one for development and the other for general administration, who follow the Administrator in rank. Development projects fall within the overall responsibility of the Additional Commissioner (Development), who heads the Planning and Development Cell of the Northern Areas Administration. District administration is headed by the Deputy Commissioner, while each of the twelve sub-divisions is headed by an Assistant Commissioner.

2.2. Sector Institutions

2.2.1. Scope of Description and Analysis

This section describes and assesses six categories of institutions in the Northern Areas which have been involved in the water supply and sanitation sector, or which have a potential role to play in the future. The six categories are:

- Local government institutions, particularly the Union and District Councils;
- Government line agencies - the Local Government and Rural Development Department (LB&RD); the Northern Areas Public Works Department (NAPWD); the Planning and Development (P&D) Cell and its Monitoring and Evaluation Unit; and, the Department of Health;
- Non-Governmental Organizations (NGOs), particularly the Aga Khan Rural Support Program (AKRSP), the Aga Khan Health Services (AKHS), and the Aga Khan Health Board (AKHB), the last two active in parts of Gilgit District;
- Donors, that is, UNICEF;
- The Private Sector; and,
- User Based and Community Groups - the Village Organizations sponsored by AKRSP, and the Village Project Committees set up for the UNICEF-Government Community Basic Services (CBS) Program.

The description provided below includes notes on current responsibilities, and organizational and financial resources; development and recurrent budgets are discussed in the departmental profiles of government line agencies. This is followed by assessment of strengths and weaknesses in view of the organization's potential for contributing to the RWSS strategy. Organizational charts are provided where necessary.

General information on financial resources is summarized in Table 2.2 (showing the ADP allocations).

Table 2.2

Budget Allocation and Expenditure
Northern Areas

(Rs. million)

Year	ADP Allocation	Development Expenditure	Recurrent Budget
Fifth Plan Period			
1978-79	97.1	93.5	
1979-80	106.2	101.1	
1980-81	139	139.1	
1981-82	152.6	139.4	
1982-83	181.4	133.9	
Sixth Plan Period			
1983-84	154.8	151.9	
1984-85	200	191	
1985-86	280.5	277	
1986-87	420	415.7	180.1
1987-88	500	419.3	183.6
Seventh Plan Period			
1988-89	424.9		250.4
1989-90	469.2		256.6

Source: Annual Development Plans 1978-79 to 1989-90, and Research Officer, Planning and Development Department, Northern Areas.

Departmental allocations of NAPWD and LB&RD are given in Table 2.3.

The contributions of donors and special development programs to the RWSS sector are estimated in Table 2.4. These three tables are presented at the outset because they provide the context for more than one of the following sub-sections.

Table 2.3

NAPWD and LB&RD Budgets

(Rs. million)

Year	LB&RD			NAPWD		
	Develop--ment	Recurrent	Dev. for W/Supply	Devlop.	Recurrent	Dev. for W/Supply
1985-86	20	1.58	2.1	172.84		7.1
1986-87	25.23	3.01	1.8	215.23	54.43	10.8
1987-88	32.5	5.6	1.8	235.44	67.85	9.1
1988-89	25.15	6.31	1.7	267.55	62.37	* 15.2
1989-90	25	6.62	1.5	324		15.6

* Estimated on the basis of proportionate share of water supply schemes in Department's allocation.

Source: LB&RD, and Office of the Chief Engineer, NAPWD, Northern Areas.

2.2.2. Local Government Institutions

Background

Local government institutions (Northern Areas Council, District Councils and Union Councils) were introduced in 1979, and there are currently 3 District Councils, 3 Municipal Committees and 105 Union Councils.

The Northern Areas Council (NAC) is the highest elected forum in the Northern Areas. It has 16 elected members and additional *ex officio* members, and is chaired by the Federal Minister for Kashmir Affairs and Northern Areas. The Council has the power to approve development projects worth up to Rs 60 million. The body is provided technical support by the Development Working Party (DWP), which can approve projects of up to Rs 20 million, and is responsible for the scrutiny of projects before approval by the Northern Areas Council. Unlike the provincial assemblies of the four provinces of Pakistan, the NAC is only an advisory body: it does not have legislative powers.

In addition to the NAC, there are three other active tiers of local government - the District and Union Councils, and the Municipal Committees. Of these, the first two are active in

rural areas and are described and assessed below.[13]

Table 2.4

Estimates of Special Development Funds
and Donor Allocations in The Sector

(Rs. Millions)

Year	P.W Program	* SDP	UNICEF (CBS)	AKF (CBS)	Community (CBS)
Actuals					
1985-86		19.1	2.8	0.4	1
1986-87		28.7	1.5	0.8	1.6
1987-88		47.8	3.5	0.6	1.6
1988-89	30	22.4	5.7		
1989-90	30	14.3			

* Figures for Special Development Programs have been estimated on the basis of percent share of Water Supply in 1988-89 Special Development Program allocation.

Sources: Director General, Peoples Works Program; Brief Prepared by PEPAC on CBS Evaluation; and Planning Department, Northern Areas.

The Union Council

This is the lowest tier of local government. It is an elected body representing, on average, 7 or 8 villages. The members elect from among themselves a Chairman and a Vice-Chairman.

In the water supply sector, the Union Council has the power to prohibit use of water from any source suspected of being dangerous to public health; to provide and maintain wells, water pumps, tanks, ponds and other works for the supply of water; to adopt measures for preventing the contamination of the sources of drinking water. It is also responsible for taking any measure

[13]Local government institutions other than the District and Union Councils are described in Annex 1; these include the various tiers of local government that were contemplated under the Northern Areas Local Government Order, 1979, but never operationalized.

likely to promote the welfare, health, safety, comfort and convenience of the inhabitants of the village or visitors.

The District Council

The three District Councils in the Northern Areas have the following elected membership:

Gilgit District	12
Baltistan District	12
Diamer District	8

In addition, the department heads for the district are *ex officio* members of the Council, but do not have the right to vote.

The District Council has extensive administrative powers, especially concerning education, and public services and utilities. In the water sector, it is responsible for providing water supply, construction, and repair and maintenance of water works and other sources of water supply. It is also responsible for promoting sanitation and public health; disseminating information on different matters affecting citizens, including hygiene and community development; promoting education in public health; adopting measures likely to promote the health and welfare of women, infants and children; and cooperating with other organizations engaged in activities similar to those of the District Council.

Assessment

The formal system of Local Bodies and Rural Development (LB&RD) in the Northern Areas is new. Financially, the local councils are dependent almost totally on grants-in-aid from the government. Organizationally, the local councils do not have any institutional mechanism at the village level. At the lowest level - the Union Council - there is one individual who represents one or more villages, but his presence is no substitute for sustainable managerial and financial participation by beneficiaries. Thus, without a sound financial and organizational base it would be unrealistic to expect local councils to undertake the O&M of village-level water supply projects with their own, locally-generated resources. They can, of course, spend government grant monies on O&M (as is done by the Public Works Department); but if government could provide such funds, it would not expect resource mobilization through community participation.

While local government has potentially wide statutory responsibilities, it is not a substitute for community participation. This general conclusion is supported by two detailed sets of analysis that are presented in the Annexures: a case study of the Community Basic Services Program in the Northern Areas (Annex 4); and an overview (in Annex 5) that points out the

pitfalls of confusing participation with representation.

2.2.3. Government Line Agencies

Local Bodies & Rural Development Department

Mandate and Responsibilities:

LB&RD acts in support of the local government institutions of the Northern Areas. Its general mandate is to assess the needs of the villages in terms of their social and economic development, and to take appropriate action for insuring such development.

Organization and Manpower:

The Deputy Director is the head of the department at the Northern Areas level. There are three district offices in Skardu, Gilgit and Chilas (headed by Assistant Directors), under which Project Managers are responsible for implementing projects at the sub-divisional level.

The basic organization and manpower of LB&RD is shown in Figure 2.2.

The total number of employees of LB&RD is 163, including staff at the district and sub-divisional offices. A very large proportion of these employees (more than 70%) have administrative or support functions; LB&RD suffers from a serious shortage of technical staff for execution of work. There are only 4 assistant executive engineers (one for each district, and one in the rural development section), and 12 sub-engineers (one for each sub-division). Considering LB&RD's responsibilities in social sector programs, it also seriously lacks female senior staff: although the department has two women supervisors, no women have permanent positions in implementation at the village level.

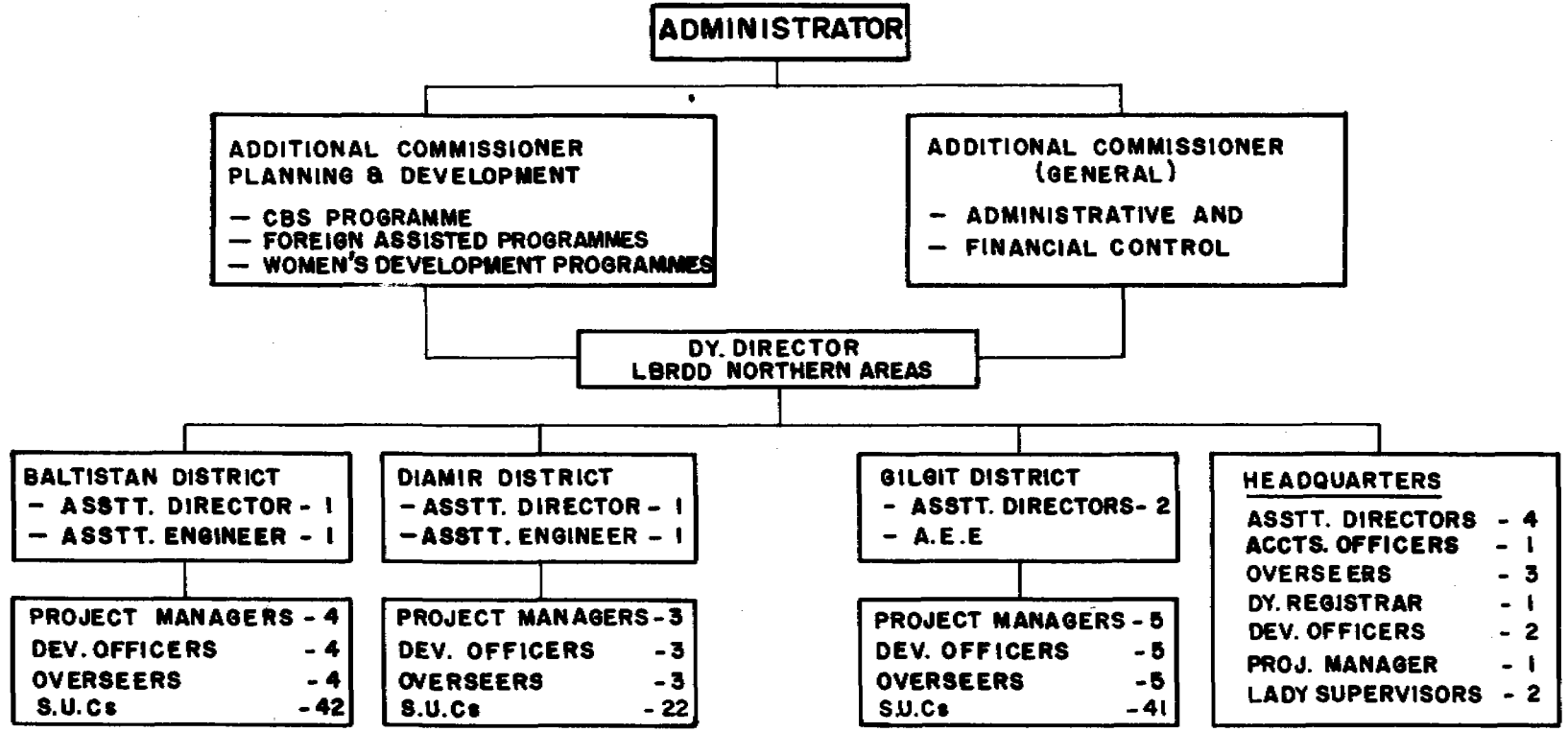
Financial Resources:

LB&RD's development and recurrent budgets are shown in Table 2.3.

The department has received an average of just over Rs 25 million per annum in ADP funds for the five fiscal years ending 1989-90. Its 1989-90 allocation is no higher than the 1986-87 budget. This means that its development budget has declined significantly in real terms. The recurrent budget of LB&RD, however, has more than doubled in current rupee terms since 1986-87; for 1989-90, the recurrent budget is Rs 6.62 million. This represents a significant increase in both real and nominal terms.

The 1989-90 LB&RD development allocation for water supply

ORGANISATIONAL CHART OF LB & RD DEPARTMENT



MANPOWER STRENGTH

DY. DIRECTOR	- 1
ASSTT. DIRECTORS	- 7
ASSTT. ENGINEERS	- 3
PROJ. MANAGERS	- 12
DEV. OFFICERS	- 12
OVERSEERS	- 12
OTHER ADMIN STAFF	- 116
TOTAL	163

SOURCE : LBRDD. NORTHERN AREAS

schemes was Rs 1.5 million. The allocation for water supply development has been declining in both nominal and real terms since 1985-86. These reductions are probably due to special allocations in the ADP for the development of water supply schemes by the Northern Areas Council (Table 2.4).

Assessment of Capacity:

LB&RD currently constitutes the most experienced institution with community involvement in the water supply and sanitation sector for the Northern Areas. This expertise must be built upon and augmented.

LB&RD performs a very important role in the development of the Northern Areas, but the distribution and composition of its staff seriously limits its capacity. Some rearrangement is needed: more women, more technical and social organization staff, and limits on the administrative and support staff. Computerization should help reduce the burden of administration and accounting.

The potential of LB&RD is also constrained by its technical and managerial capacities. Field visits showed the extent of the technical problem: many water schemes were inadequately designed, and eventually became obsolete. The lack of management capacity appears particularly acute in the context of the large number of projects that are undertaken at once by the department without proper assessment of the technical requirements and without ensuring proper monitoring. Since LB&RD is the support agency for local government, it has to prepare, approve and monitor the extremely large number of projects that are identified each year by the elected representatives.

The training needs for LB&RD are mostly of a technical nature for the sub-engineers and assistant executive engineers; social organization skills would also be beneficial for both the technical and non-technical field staff. For the assistant executive engineers and some assistant directors of the sub-divisions who actually implement projects at the village level, there is a need for greater project management skills to improve the sustainability of the projects.

Northern Areas Public Works Department

Mandate and Responsibilities:

The Northern Areas Public Works Department (NAPWD) has a very wide mandate entailing a variety of engineering responsibilities to provide services throughout the Northern Areas in the following four fields:

- Transport and communication;

- Physical planning, housing and water supply;
- Power generation and transmission;
- Irrigation.

In the water supply sector, NAPWD has been involved with the larger settlements, and has implemented few small schemes.

Organization and Manpower:

The Chief Engineer's Office is the ultimate decision making body within NAPWD; under its supervision are the SE (Works) Unit; the Planning, Design and Monitoring Unit; and three regional circle offices. In Gilgit and Baltistan, a special division is responsible for the water and power sector.

The basic organization and manpower of NAPWD are summarized in Figure 2.3.

The NAPWD is a large department: 653 employees with offices at the district and sub-division levels. For its engineering capacity, it has a total of 5 superintending engineers, 13 executive engineers, 48 assistant executive engineers, and 14 overseers (sub-engineers). However, when one considers the multiplicity of tasks that NAPWD has to perform (construction of roads, bridges, buildings, water schemes, hydel stations, and others), its human resources appear to be fully utilized.

Financial Resources:

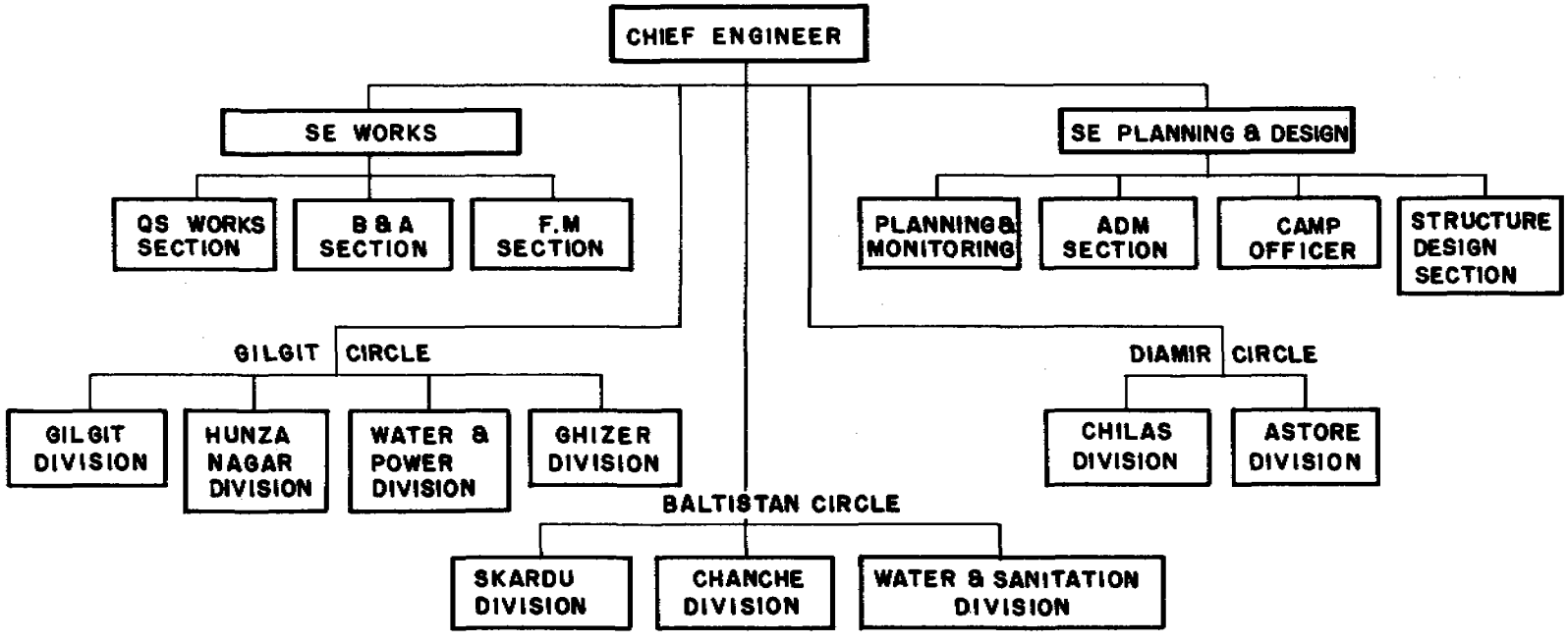
The NAPWD's allocation in the Annual Development Plan is shown in Table 2.3. Its allocation in 1989-90 was Rs 324 million. This is 76% of the total Annual Development Budget for the Northern Areas. The recurrent budget of the Department in 1988-89[14] was Rs 62.4 million. The development budget of the Department has grown at an average rate of about 10% in real terms each year. The recurrent budget has not grown by the same amount and may even have gone down in real terms. More than 80% of NAPWD's recurrent budget is spent on the maintenance of existing schemes.

Allocations for Energy, Transport and Communication, Irrigation, and Physical Planning and Housing are all made to the NAPWD. In 1988-89, investments in Transport and Communication formed 46%, Energy 23%, and Physical Planning and Housing 10% of the NAPWD's budget.

The annual allocation to the water supply and drainage sector is made from the Physical Planning and Housing budget; it

[14]Figures for 1989-90 were not available.

NORTHERN AREAS PWD ORGANIZATION CHART



MANPOWER STRENGTH

CE	1
SES	5
XENS	13
A/XENS	48
OTHERS	580
TOTAL	653

SOURCE : PWD, NORTHERN AREAS

was Rs 15.6 million in 1988-89 for both urban and rural areas (Table 2.3). These allocations show a generally upward trend, but with wide variance over time.

Assessment of Capacity:

The strength of NAPWD resides in its technical capacity, its experience in implementing and maintaining water schemes, and its network of regional offices.

Its weaknesses are the present overload, its very strict implementation procedure which does not allow for any new approaches, and its lack of interaction with the communities in which it undertakes work. Under the present arrangements, NAPWD would be unable to effectively take on any additional work.

For effective participation in the RWSS Investment Plan, NAPWD's public health engineering capacity would need to be enhanced. It would also benefit from training in:

- Technical skills for the overseers (sub-engineers); and,
- Project management skills for the assistant executive engineers and executive engineers.

Planning and Development Cell

Mandate and Responsibilities:

At the Northern Areas level, a Planning and Development Cell has been created which is headed by the Development Commissioner (P&D) and which is responsible for planning, monitoring and coordination of the development process in the region. The P&D Cell coordinates the development activities of line agencies.

Organization and Manpower:

The P&D Cell is headed by the Development Commissioner under the direct authority of the Administrator of the Northern Areas. The senior staff consists of four Assistant Chiefs, a Planning Officer, and a Research Officer.

Responsibilities are distributed to each Assistant Chief according to a sector of development: education and health, engineering works, forests and agriculture, and industry. One Assistant Chief has been given additional responsibility for the Monitoring and Evaluation Unit (described below) that was formerly located in the Community Basic Services Program. Each Assistant Chief has the help of an economic investigator (two in the case of the Assistant Chief responsible for the M&E Unit). These economic investigators usually possess an M.A. in Economics or an M.B.A.

The Planning Officer is more specifically responsible for the Special Development Program. The Research Officer has responsibility for the preparation of the ADP, and the release and reappropriation of funds.

Assessment of Capacity:

The P&D Cell takes very little initiative by itself; its role has become an administrative one rather than a planning one. In fact, the Cell acts as a communication link between the people of the Northern Areas (usually through its representative institutions such as the Northern Areas Council, the District Councils, etc.) and the various Government line departments, to facilitate the administrative process required for the execution of development projects.

At present, the P&D Cell lacks the planning capacity required to fulfill its mandate; it does not get involved sufficiently in the identification of projects.

Monitoring and Evaluation Unit

Mandate and Responsibilities:

The Monitoring and Evaluation Unit, now located in the P&D Cell, has been operational since 1982, when it was created with the mandate of "assisting the program management and coordination of the CBS Program by providing appropriate and timely information for decision-making". The officers were to conduct field visits to collect fresh information from the projects under execution or already completed. This information was to be transmitted to the implementing agencies and the donors through field reports. Quarterly progress reports and annual reports have been produced since the creation of the Unit.

The M&E Unit has gone through many transformations since it was created. Initially, the Unit was reporting directly to the Administrator of the Northern Areas; a large part of the expenditures, including some of the salaries, were then covered by UNICEF and the Aga Khan Foundation, but the funds were distributed to LB&RD, which in turn distributed them to the Unit.

UNICEF and AKF support was withdrawn in June 1988; through mutual agreement, the Government was supposed to take responsibility for the Unit, and create the corresponding positions, but lack of funds prevented this from happening. Instead, the Unit was placed under the supervision of the Planing and Development Cell, and most positions were not renewed, leaving the Unit with very limited staff. Moreover, the Unit was given new responsibilities within the P&D Cell, some of which were irrelevant to its mandate of monitoring and evaluation.

Organization and Manpower:

Originally, the Unit was headed by a Research Director, who supervised two M&E officers, one coordinator (women's activities), one coordinator (AKF), and nine support staff. The Unit was independent, reporting only to the Administrator of the Northern Areas and the donor agencies. The present status of the Monitoring and Evaluation Unit makes it a division of the P&D Cell, therefore under the supervision of the Development Commissioner. The head of the Unit is an Assistant Chief of the P&D Cell who actually has other responsibilities in addition to those relating to the M&E Unit. Under his supervision there is only one economic investigator, and two support staff.

Assessment of Capacity:

Monitoring and evaluation is an essential part of water supply and sanitation projects, especially in the Northern Areas considering the limited experience in maintaining and operating the required infrastructures and equipment. The present status of the Monitoring and Evaluation Unit prevents it from carrying out its mandate.

The Unit has been provided with responsibilities totally irrelevant to its mandate: it is basically confined to administrative tasks for the P&D Cell. It lost much field of its field expertise when some of the positions were not renewed in June 1988. The physical and operational resources of the Unit are also limited.

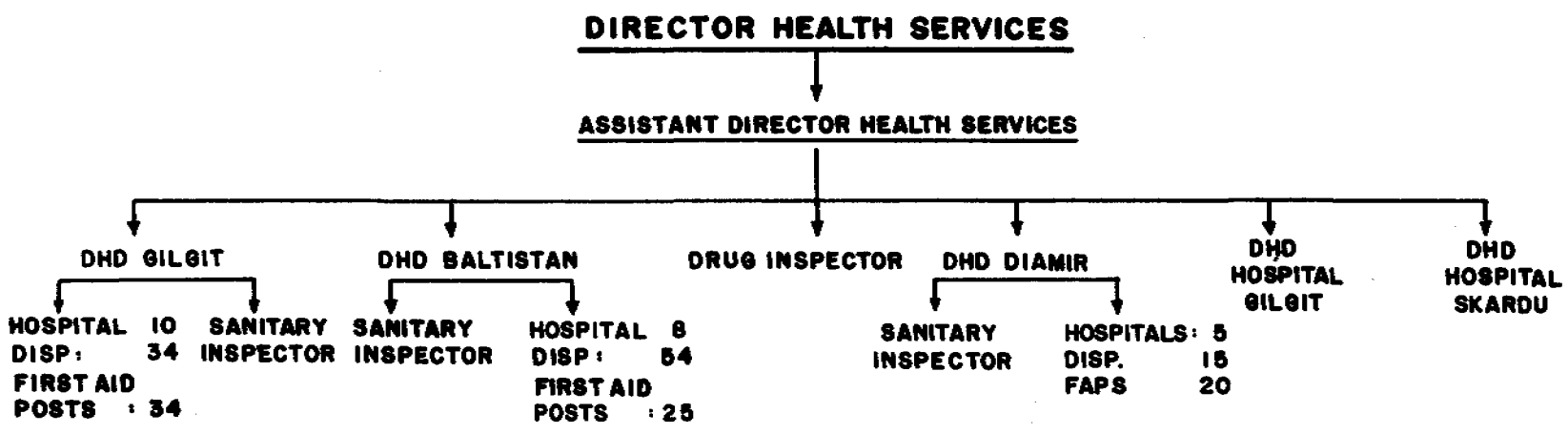
Department of Health

The basic organization and manpower of the Department of Health are summarized in Figure 2.4.

The Department has control over 23 hospitals, 16 BHUs, 79 first-aid posts, and 103 rural dispensaries scattered throughout the Northern Areas. Unlike other provinces, the Department does not have a Health Education Unit. The Department feels constrained by the absence of such a Unit and by the absence of a trained female cadre at the village level.

The Department of Health has collaborated with other line departments and non-governmental organizations on several projects. It has helped organize training courses. Under the Community Basic Services program, the Department helped train 158 Traditional Birth

ORGANIZATION CHART FOR NORTHERN AREAS HEALTH DEPARTMENT



MANPOWER STRENGTH

	GILGIT	BALTISTAN	DIAMIR
SPECIALISTS	16	14	1
MEDICAL OFFICER	31	21	17
FEMALE MEDICAL OFFICER	4	12	2
DENTAL OFFICERS	1	6	4
PERA MEDICAL STAFF	392	413	150
OTHERS	279	327	89

SOURCE: DEPARTMENT OF HEALTH NORTHERN AREAS

Attendants and 196 Community Health and Nutrition Workers[15]. The Department is currently contemplating working on a school health program with the Department of Education and AKHS.

The on-going activities of the Department of Health include:

- o Expanded program of immunization;
- o Diarrhoeal disease control;
- o Training of Traditional Birth Attendants;
- o Family planning;
- o Iodine deficiency disorder program;
- o Training of nursing assistants at the district hospitals.

Assessment of Capacity:

The Department of Health, like the other departments of the Northern Areas, has very limited resources to carry out its mandate. Any additional responsibility will strain further these existing resources.

The Department has an extensive network of health outlets; although its capacity is very limited (except for Gilgit and Skardu, most hospitals are of very small size, and most other outlets have very limited resources), it covers all the regions of the Northern Areas, and constitutes an essential element in the propagation of hygiene knowledge. It also has links with NGOs operating in the region.

The Department of Health lacks a clearly stated approach toward hygiene education; as a consequence, there is no specific program or policy on hygiene education at the Department. Hygiene is currently learned by the population indirectly through the Department's other activities, through the AKHS activities, and to a limited extent through the primary schools for the children.

2.2.4. Non-Governmental Organizations

The Aga Khan Rural Support Program

Established in December 1982, AKRSP is today one of the more successful and prominent NGOs in Pakistan. It operates in the districts of Gilgit, Chitral and Baltistan. It is a private, non-

[15]Report of Monitoring and Evaluation Unit, Community Basic Services Program, Northern Areas, April, 1988.

sectarian development program, headed by a resident General Manager reporting to a Board of Directors (organizational chart in Figure 2.5).

AKRSP has three principal objectives[16]:

i) Raising the incomes and quality of life of approximately one million people in the remote and poor areas in the mountainous north of Pakistan;

ii) Developing institutional and technical models for equitable development;

iii) Evolving sustainable, long-term strategies for productive management of natural resources in a dry and fragile mountain environment.

A fourth objective, conditional on the achievement of the first three, is to demonstrate approaches that can be replicated elsewhere.

The basis of the AKRSP approach is decentralized (i.e., village-based) participatory development. The broad rationale for this approach is the belief that the systems of development administration, resource management and development finance are incomplete without the organized participation of ordinary villagers in the process of development.

AKRSP has demonstrated how village organization can be utilized to make the administration of conventional development programs more effective and equitable: it has demonstrated a working model that provides the "missing link" at the village level. This is essentially a model of development administration through participatory Village Organizations. It has been replicated successfully throughout the project area.

An interim assessment of AKRSP was undertaken by the Operations Evaluation Department of the World Bank (1986). Another evaluation is planned for September-October 1989. AKRSP has received generous assistance from the governments of Canada, the Netherlands, Britain, the United States, the Canadian province of Alberta, the European Community, and the Women's Division of the Government of Pakistan; from OXFAM, the Ford Foundation and the Konrad Adenaeur Foundation; from Habib Bank Limited and the National Development Finance Corporation in Pakistan; and from the Aga Khan Foundation branches and affiliates in Switzerland, Pakistan, Canada, Britain and the United States.

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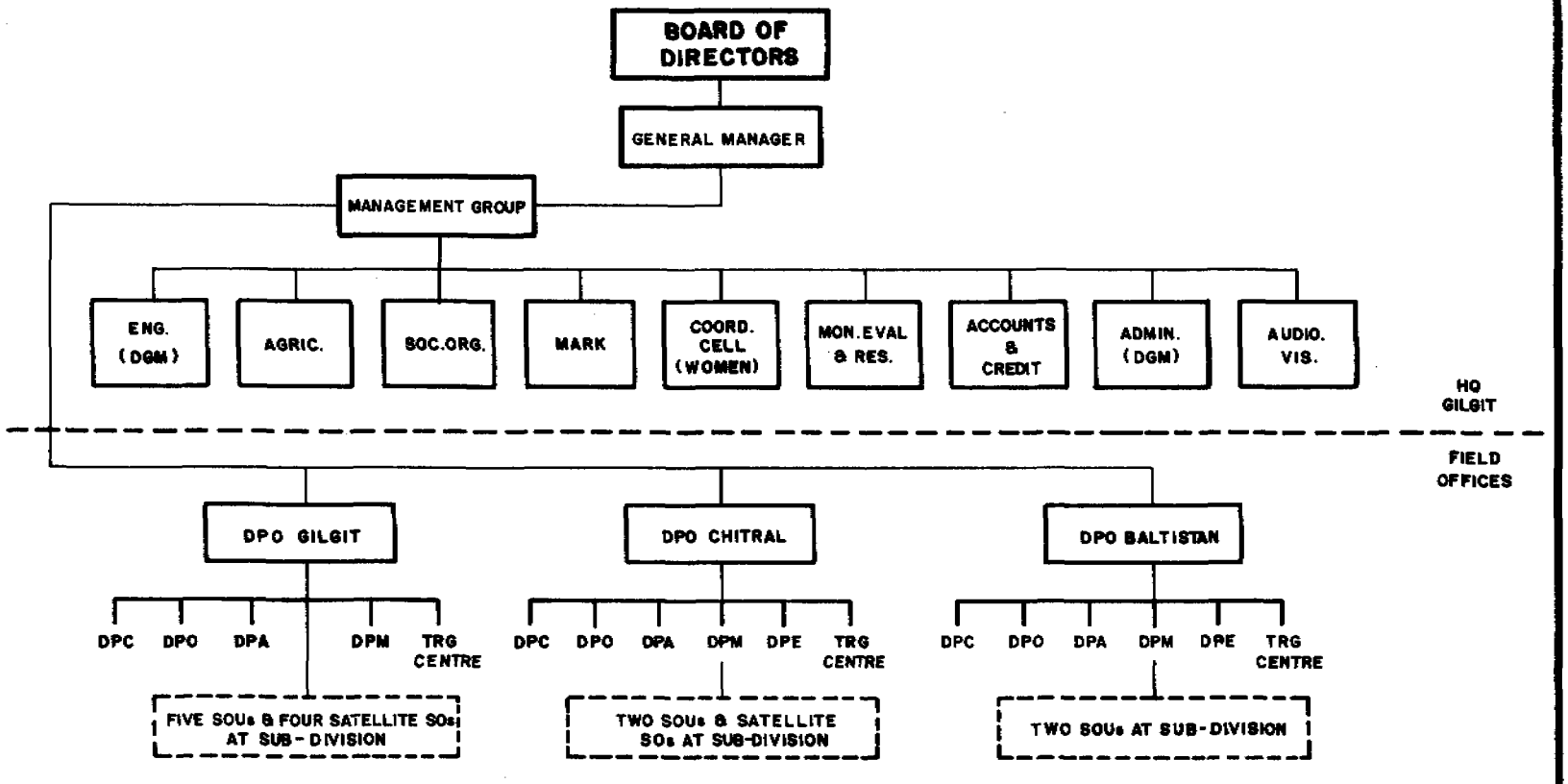
[16]The following description of AKRSP is excerpted from its draft paper on strategy and operational design for 1990-1992.

THE AGA KHAN RURAL SUPPORT PROGRAM
ORGANISATION CHART



SOURCE : OED / IBRD
NOV. 1986

Figure 2.5

AKRSP has also attracted considerable attention from government and donors interested in replicating its approach. A non-governmental organization to undertake a similar program in the North West Frontier Province (NWFP) - the Sarhad Rural Support Corporation - is being formed and should be operational by 1990. The National Commission on Agriculture (1988) recommended that the principles, with some modification, might be spread across the country as part of the local government system. The Steering Committee for the National Conservation Strategy is considering ways of incorporating AKRSP-type grass-roots initiatives in its policies and projects. The Asian Development Bank and the Government of NWFP have agreed to employ the principles of participatory development in two large projects (in Chitral District and Mardan Division). And the AKRSP General Manager has been invited to make presentations on the approach to Prime Minister Benazir Bhutto and the Chief Ministers of NWFP and Sind.

AKRSP's progress in institutional development can be measured by the progress of improved models of management introduced by AKRSP and accepted by the villagers. The basic model that AKRSP has promoted is that of village organization and collective management, combined with the acquisition of skills and the development of financial discipline and capital formation. In 6 1/2 years, AKRSP has been able to form 1,087 Village Organizations and 271 Women's Organizations (WOs). Total membership in these organizations is 63,300, with more than half the population of the three project districts (Gilgit, Chitral and Baltistan, covering an area of 69,000 sq km) now being involved. More than 6,000 village activists have been trained in a wide range of managerial and technical skills that they are now using to the benefit of the VOs supporting them. By June 1989, these local organizations had mobilized savings of Rs 60 million and received a cumulative total of Rs 111 million in short- and medium-term loans for income-generating activities. The repayment rate to the revolving loan fund is approximately 98%.

The purpose of the Village Organizations is to create a local forum in which villagers can decide on their priorities in the light of local circumstances, can draw up and implement their own development programs based on the principle of equity, and can demand and make efficient use of the services and inputs available from development agencies operating in the area. The process through which AKRSP interacts with VOs to elicit their priorities and plans is the Diagnostic Survey (with its three dialogues, described in Annex 5). The Diagnostic Survey was initially devised for PPI projects. Over time, however, AKRSP has realized that it represents an essential and systematic planning methodology for <u>all</u> collective village activities. Without systematic dialogue, it is not possible to design viable packages (with clearly articulated expectations and terms of partnership) for implementation by the VOs.

Thus, AKRSP has approached each VO through a series of dialogues. The VOs have responded by creating several management models to implement the following broad program packages:

land development;
increased productivity;
provision of credit;
marketing;
reduction in the workload of women; and,
coordination with social sector programs.

AKRSP plays a facilitating rather than direct role in social sector programs. It is collaborating with the Aga Khan Health Services in the Northern Areas Primary Health Care Project in parts of Gilgit and Chitral. Such collaboration is premised on the specialist agency's acceptance of the VO as the implementing agency for an activity. AKRSP provides necessary support to the VOs and helps train staff from other agencies, particularly in social organization.

Other Aga Khan Institutions

The Aga Khan Health Services (AKHS) and the Aga Khan Housing Board (AKHB) are active in parts of Gilgit District in activities that fall within the purview of the RWSS Investment Plan. Since they were financed by Ismaili community funds and managed exclusively by volunteers from the Ismaili community, both agencies formerly had a mandate that was restricted to predominantly Ismaili areas. In recent years, management has become increasingly professional, and the agencies have successfully raised funds from international donors, including the Aga Khan Foundation.

In collaboration with AKRSP Village Organizations, AKHS has initiated a process of dialogues in non-Ismaili areas in Gilgit and Baltistan. In the Ismaili areas, AKHS already has a history of collaboration with Government and UNICEF, particularly through the CBS Program. AKHS has a network of Minor Medical Units in Ismaili areas, and has worked extensively in primary health care and health education.

The Aga Khan Foundation's iodized salt program is perhaps one of the most remarkable instances of catalytic initiative by an NGO in the region. This program is managed by a part-time administrative officer at the AKF office in Rawalpindi, who oversees the procurement of rock salt, its processing and packaging at Rawalpindi, and its transportation to private sector wholesalers in Gilgit. From Gilgit, the salt - with the brand name Markhor - is distributed widely through usual private sector marketing networks. The operation has been evaluated as an efficient, low-cost, high-payoff intervention in public health.

2.2.5. Donors

UNICEF

UNICEF has been very active in the Northern Areas in the last ten years. Most of UNICEF's activities in the water supply and sanitation, and health sectors were through the CBS Program which was designed by UNICEF, but almost exclusively implemented by the Government line departments[17]. The CBS program was developed to provide a package of basic services to the women and children of the Northern Areas, with the following strategic objectives:

- To reduce the infant and child mortality and morbidity due to communicable diseases, infantile diarrhoea, dysentery and related infections from the present level of 27.3% to 23% in the target areas.
- To reduce the prevalence of protein-calorie malnutrition in infants and children (0-5 years age group) from the present level of 24.17% to 20% in the target areas
- To reduce maternal mortality from 6.8 per thousand live births to 6 per thousand in the target areas.
- To increase enrolment of 5-9 age group for boys from 21% to 35%, and for girls from 10% to 25% in the target areas.
- To increase rural women's participation in income generating activities from 25% to 40% in the target areas.

To reach these goals, the following targets were set:

- The construction of 150 water supply schemes and 150 demonstration water drainage systems.
- The construction of 300 demonstration latrines and encouragement to construct individual household garbage disposal pits and a minimum of five latrines in private households in each village and to encourage the construction of three bio-gas plants by the community in each district.
- The training of 150 village plumber-cum-sanitary workers for maintenance of the water supply schemes and the

[17]except in parts of Gilgit where there was collaboration with the Aga Khan Health Services.

sanitation facilities.

- o The training of 150 Traditional Birth Attendants.
- o The training of 150 Community Health and Nutrition Workers.
- o To impart vocational skills training to 150 women.
- o The establishment of 150 Community Women's Centers.
- o To impart refresher courses to primary school teachers and mid-level health personnel.
- o To provide immunization to 90% of the 0-5 population in the selected 150 villages.
- o To establish a system for effective distribution and use of Oral Rehydration Salts (ORS).
- o To train 600 Village Project Committee members in program management techniques through community participation.

The entry point used was a drinking water supply scheme.

An assessment of the CBS Program is provided at Annex 4. Some of the lessons learned from this assessment are reproduced below.

A standard package of services was designed for all the 150 villages selected. The villages were not allowed to pick and choose components from the package in accordance with their health status or needs.

A major drawback of the CBS Program was its failure to involve the target population. Women were to be the main beneficiaries of the Program. However, there was no effort to involve the women in the planning or implementation stage. The participation of the women was restricted to those packages which required women trainees, e.g., the Traditional Birth Attendant package and the vocational skills training program. The nature of the CBS packages was such that women would have taken greater interest than men in the implementation of the program, as it would have helped reduce their workload and provide them direct access to other basic services.

Despite the extent of its expected community involvement, communication between the villagers and the program planners was minimal. There was no mechanism through which the representatives of the community could regularly meet the implementers of the Program. Contact between the VPCs and the community was also restricted or non-existent.

2.2.6. User Based and Community Groups

There are two institutions that exist at the village level which have or could play a role in the water supply and sanitation sector. Both were established as part of rural development programs implemented by NGOs in the Northern Areas.

Village Organizations

Village Organizations (VOs) have been set up by the Aga Khan Rural Support Program in Gilgit and Baltistan Districts. The VOs were established in order to fulfill AKRSP's objective of "increasing the capacity of local people to solve their own problems so that they could plan and implement their own development programs" (World Bank Evaluation, 1987). The VO becomes a forum which villagers use to take decisions; it is representative since a minimum of 75% of the households must be members; decisions are usually taken by consensus. To ensure that villagers understand their responsibilities, terms of partnership are agreed to publicly between the villagers and AKRSP; every member of the VO has to understand and sign these terms of partnership. The VO is required to meet regularly (once every week or two).

Strengths:

- The VO is a participatory institution that nurtures and is sustained by consensus; it ensures community involvement in the decision-making process.
- It is a body that meets regularly, therefore it can act upon problems relatively fast as they arise.
- It provides an efficient way of accumulating and managing common savings, which is essential for O&M of water supply schemes.

Weaknesses:

- It is not a legally recognized institution, and is not a formal part of the local council system.
- In large villages, more than one VO exists requiring meetings between representatives of each VO.
- Presently, the women's organizations are separate from the VOs.
- The Village Organizations have been institutionalized in only two districts: Gilgit and Baltistan. The District of Diamer does not have any Village Organizations.

Village Project Committees

The Village Project Committee was established through the UNICEF sponsored Community Basic Services Program. Its mandate was to represent the community in the implementation and O&M of the CBS program. The Committee consists of 4 or 5 members: the Chairman being the Union Council member, while the other members are supposed to be nominated by the village council after consultation with the community. The VPC, as needed, can form sub-committees with specific tasks. The responsibilities of the VPC are to:

- Maintain contact with the local government system - the Union and District Councils;
- Plan and implement the CBS Program with the participation of the local population;
- Take charge of the financial management of the program at the field level;
- Supervise and monitor program activities;
- Nominate community workers;
- Decide about the service charges in consultation with the community.

Strengths:

- The VPC is integrated into the local government system, giving it a tangible legal status.

Weaknesses:

- Although the Union and District Councils have responsibilities related to the water supply and sanitation sector, they do not have the means to carry out these responsibilities. The procedure they follow only permits isolated project interventions, without any synergy being created.
- The committee as an institution depends on representation by 4-5 individuals: it is antithetical to participation and decision-making by beneficiaries. It is a closed shop, protected by links to the political system, in which committee members are not accountable to users.

2.2.7. The Private Sector

Interviews with private sector contractors, retailers and

artisans in the Northern Areas[18] revealed that the major client of contractors was the Northern Areas Public Works Department, while households were served by the retailers and artisans. The main business of the retailer was the sale of pipes and sanitary fittings. The contractor was engaged in the construction of large schemes and the artisans provided skilled labor for masonry work, repairs and the construction of household level schemes. It seems that the major source of training for the private sector is on-the-job-training. The availability of skilled labor and the supply of inputs was not listed as a constraint in the sector. Credit was given as a need by all three categories. All the respondents stated that business was increasing and all had plans to expand.

Basically, all the required materials, expertise and manpower are present in the Northern Areas in the private sector.

- Various sizes of pipes and various models of latrines are available in the markets of Gilgit and Skardu. Much of this hardware is Pakistani made and therefore readily available.

- Many private contractors have gained experience working for NAPWD. These contractors usually hire local workers at the project site. There are also a few engineering consultants able to undertake relatively complex engineering works; most of them have had experience with NAPWD as well.

2.3. Sector Financing

2.3.1. Macro Resource Availability

The provision of development funds to the Northern Areas is mainly through the Annual Development Plans, the Special Development Program funds available through the Northern Areas Council, and through a small amount of donor funding which is channelled through Non-Government Organizations (AKRSP, Aga Khan Foundation and others) and donor funded development projects. The distribution of funds to the three districts of the Northern Areas is *not on the basis of population*. This is a clear departure from the allocation of funds on the basis of population in the provinces and is justified on the grounds of the small population, poor resource base, low income levels, relative isolation and under development of physical and communication infrastructure in the area. The Northern Areas are exempt from the payment of local taxes. As a result, the Northern Areas do not generate any funds locally and have a deficit budget.

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[18]Private Sector Survey conducted by Research Director, Women's Development Project, UNICEF, April, 1989. Northern Areas.

The Annual Development Plan allocation for the Northern Areas has gradually increased each year by roughly 10 percent in real terms (Table 2.2). The rate of growth has not been constant but has been very high in certain years. The Fifth Plan allocation for the Northern Areas in nominal terms was Rs 676.3 million. In the Sixth Plan the allocation rose to Rs 1,555 million, and to Rs 3,122 million in the Seventh Plan. From 1986 onwards the Annual Development Plan allocation has remained above Rs 400 million and is currently at Rs 425 million. The percentage utilization of ADP funds has remained close to 100 percent in the Fifth and Sixth Plan periods.

Special Development Funds have not been disbursed separately to the Northern Areas but expenditures have been made through the Annual Development Plans. Under the previous Prime Minister's Five Point Program and the funds made available to the Northern Areas Council, an additional Rs 62 million has been provided on average.

There is no information available locally about the People's Works Program. The allocation for the Northern Areas is expected to be more than Rs 30 million but the exact amount could not be ascertained. The main sectors which have been identified for investments under the People's Works program are water supply, education and health.

The recurrent budget has also increased modestly in real terms. The recurrent budget allocation is roughly half of the development expenditure and in the current year is at Rs 256.6 million. Government subsidization of transport and its price support policy of essential commodities (fertilizer, wheat) has increased pressure on a small resource base and diverted funds from direct investment in the provision of basic services to the rural population.

Overall the ADP allocations for the Northern Areas reveal the following trends:

- Very little growth in the public sector ADP in real terms;
- A large share going to building the communication and physical infrastructure;
- Lower allocations to the social sectors in real terms, including rural water supply and sanitation;
- No tax base for the generation of funds locally; and,
- A growing resource gap.

2.3.2. Sector Resource Availability

The two main departments which make investments in the rural water supply and sanitation sector in the Northern Areas are the NAPWD and LB&RD. NAPWD receives its allocation for water supply, drainage and sanitation under the physical planning and housing category. LB&RD receives funds for investments in the sector through the funds allocated for rural development. In recent years funds have also been made available for investments in the sector through Special Development Programs.

The total investment in the sector, as a percentage of ADP allocation, has remained at 25-36%. The total level of investment in the sector has increased in real terms and is currently Rs 106.1 million. The allocations to the sector through the Special Programs in the ADP have increased the annual allocation in the sector by 25-50% of the ADP over previous years.

The sectoral allocation between the implementing departments has also grown at a constant rate. The Physical Planning and Housing Sector received slightly more than 70 percent of the funds in the sector between 1979 and 1983. However, with the initiation of special development programs a major share of funds in the sector is being spent through these program.

2.3.3. Donor Agency Funding

In recent years, government investment in the Northern Areas is being supplemented by a growing number of donors. In most cases the trend has been to disburse these funds through special development projects such as the Aga Khan Rural Support Program, the Community Basic Services Program, the Food and Agriculture Organization's projects, and the programs funded by the Aga Khan Foundation. The emphasis of donor funds has been on agricultural and rural development, health and education.

The Aga Khan Foundation has been active in the area since 1982. AKF funds are concentrated on rural development, the provision of basic health, and primary education through a network of Aga Khan institutions. The Aga Khan institutions primarily involved in the sector are the Aga Khan Housing Board, the Primary Health Care Project and the Aga Khan Health Services.
The Aga Khan Rural Support Program is primarily involved with institutional development at the grass-roots level and with the development of income-generating activities. However, AKRSP expects to play a major role in coordinating the use of the Village Organizations for the provision of social sector activities to the villages. As such, investments of the AKRSP can be considered to contribute to institutional development in the sector. In the past, UNICEF through the Community Basic Services Program was the main supporter of rural water supply and sanitation sector.

UNICEF has contributed a total amount of Rs 17.59 million from 1981 to 1987 under the CBS program[19]. The annual investment of UNICEF under the program ranged from Rs 1 million to Rs 3.5 million. Most of this cost was in the form of pipes for the water supply schemes and for organizing training.

Under the CBS program, the Aga Khan Foundation gave a total of Rs 2.3 million from 1983 to 1987. This amount was for funding of the TBA program and some assistance to the school development program. Investments of the Aga Khan Housing Board, Aga Khan Health Services and the Primary Health Care project are not easily available.

2.3.4. Community Financing

Villages in the Northern Areas have a long tradition of managing their common property resources. A host of development programs have built on this tradition of self-help by devising program strategies which are premised on the community's financing of capital and operations and maintenance costs. Under the CBS program the communities subsidized the construction of schemes and managed the operations and maintenance of schemes. It is estimated that the market value of the community's contribution in the capital cost of water supply schemes was more than 50% of UNICEF's share. For the three years from 1985 to 1987 this cost is estimated to be Rs 4.2 million (Table 2.4).

In a study on irrigation channels[20] in Gilgit, it was estimated that, on average, a VO's contribution to the capital cost of a scheme was Rs 8,000 for skilled labor and Rs 20,500 for unskilled labor. The maintenance cost of schemes for the life of the project was calculated at a 15% discount rate for 21 years as an additional contribution of the community since the community was to operate and manage the irrigation schemes. It was estimated that this cost, on average, was Rs 57,500 per VO.

2.4. Current Situation

2.4.1. Water Supply

Coverage

Records available with the Northern Areas Administration revealed that currently 197 villages of the Northern Areas have a

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[19]A brief prepared by PEPAC on the Evaluation of the CBS Programme. PEPAC, April, 1989.

[20]Hussein, M.H. et al. An Evaluation of Irrigation Projects Undertaken by AKRSP in the Gilgit District of Northern Pakistan. July, 1986.

water supply system which has been installed with the assistance of Government. These existing schemes are reported to serve an estimated 181,500 people. Field visits to more than 70 of these villages showed that approximately 50% of the reported completed schemes are in need of major rehabilitation works (Annex 3) and, therefore, should not be counted in total coverage. Table 2.5 and Table 2.6 show the estimated coverage of water supply in 1988 and the household water supply source in 1981/1985, respectively.

Table 2.5

Summary of Estimated Water Supply Coverage (1988)

District	Small Village		Medium Village		Large Village		Total		
	No. of Vill. Covered	Pop. Covered	No. of Vill. Covered	Pop. Covered	No. of Vill. Covered	Pop. Covered	No. of Vill. Covered	Pop. Covered	% of Pop. Covered
Gilgit	12	3,826	60	45,397	10	28,537	82	77,760	30%
Baltistan	25	6,832	43	29,284	14	43,913	82	80,029	30%
Diamer	7	2,071	24	18,139	2	3,438	33	23,648	16%
Total	44	12,729	127	92,820	26	75,888	197	181,437	27%

Basic Coverage Definition

Basic coverage is defined as having access to a safe (non-contaminated) drinking water source within 200 m from the house, which can provide a minimum of 5 gallons per head per day. Under this definition, the existing traditional means of distributing and storing water (channels and storage pits) are not considered to be safe, and villages relying on such sources are not considered to be covered even if the source of water itself is safe. Also, unprotected sources and inadequate maintenance of the reservoir (regular cleaning) leads to a contaminated water supply. In such instances, although a village has an operational distribution system, its supply is not safe, and therefore is not considered covered.

It is essential to note that "coverage" relates only to the technical aspect of providing access to a safe drinking water supply; it does not necessarily mean that the population uses this safe source. This is why coverage should not be seen as an end in itself. Accomplishing 75% coverage as proposed in the Five Point

Program means nothing if the population still uses more practical but unsafe sources for drinking water.

Table 2.6

Statistics on Household Water Supply Sources For Northern Areas

	Percentage of Households (1981)									Total (1981)		% of Total Households
	Gilgit			Baltistan			Diamir					
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	No. of Hhds.	%age	(1985)
Source of Drinking Water :												
Inside the House:												
Piped	0.64%	41.92%	6.14%	0.19%	19.38%	1.30%	0.20%	14.81%	1.26%	2,402	3.06%	7.05%
Handpump	0.09%	1.05%	0.22%	0.10%	0.16%	0.11%	0.02%		0.02%	101	0.13%	0.12%
Well	1.01%	2.27%	1.18%	0.31%	0.43%	0.32%	0.02%	0.08%	0.02%	445	0.56%	2.66%
Outside the House:												
Piped	2.54%	38.32%	7.30%	7.00%	58.13%	9.94%	1.72%	18.20%	2.92%	5,814	7.41%	12.99%
Handpump	0.07%	1.28%	0.23%	0.04%		0.04%	0.32%	0.47%	0.33%	137	0.17%	0.26%
Well	26.39%	3.95%	23.40%	4.07%	0.65%	3.87%	1.04%		0.96%	8,144	10.38%	8.38%
Pond	3.04%	0.10%	2.65%	6.42%	0.91%	6.11%		23.64%	1.72%	3,032	3.86%	5.65%
Spring/River/ Stream/etc	66.22%	11.11%	58.88%	81.87%	20.34%	78.33%	96.68%	42.47%	92.77%	58,392	74.40%	62.89%

Sources: 1981 Population Census and Northern Areas Council, Five Year Plan 1986-91.

Technology Used

The similarity of settlement patterns and physiographic features throughout the Northern Areas limits the variety of technologies appropriate for the region. Traditionally, the practice of using the irrigation channels for distribution of drinking water and water pits for storage has been the main method for the provision of drinking water, and is still widespread throughout the area. Similarly, the range of new technologies adapted to such conditions is very limited; it mainly consists of gravity piped systems. Such a system usually consists of an intake chamber, a reservoir situated above the village in order to build enough pressure, a sedimentation tank or filtration tank when required, a distribution framework, and public taps shared between a few houses.

Targets

According to 1981 Census figures there are 762 villages in the Northern Areas. The total number of settlements is estimated to be over 1,000.; many of these are very small villages comprising only a handful of households. Also, some large villages are made up of settlements scattered over a large area. These factors create problems for implementation of water schemes: in very small villages, the per capita cost can be very high, and the means of maintaining a scheme might be limited; for scattered villages, the required lengths of pipes might raise the per capita cost substantially. In these instances, protecting the water supply and using the traditional methods properly might be sufficient to ensure access to safe drinking water. For this project, only those villages should be considered which have more than 30 houses, and those that are sufficiently clustered. The exact number of such villages in the Northern Areas is not known, but the best sources available, confirmed by field visits, would put the estimate at around 625 villages. Similarly, large villages where the population migrates seasonally are included in this total number, but should be given a lower priority.

Therefore, considering that already 197 villages have been provided with water supply schemes (operational or not), approximately 420 to 440 new schemes would need to be implemented, most of them small or medium sized.

Rehabilitation Needs

Field visits showed that approximately 150 completed schemes need to be rehabilitated in some way. Moreover, it is very likely that a large proportion of schemes that are presently operational will need to be rehabilitated in the near future. Table 2.7 shows the detailed figures). The cost and amount of work vary widely from one scheme to another, but the most common problems are noted below:

- Burst pipes; cold temperatures during the winter have caused water to freeze in the pipes, often at the taps. New pipes are required to replace the damaged ones, and where the freezing has been caused by the pipes not being laid deep enough, excavation is required (sometimes quite extensively).

- Low quality pipes; in some instances low quality pipes were laid, or PVC pipes were laid in an inappropriate manner. These pipes have been seriously damaged and need to be replaced; this means extensive work digging out the pipes and replacing them.

- Leaking tanks; the material used for construction was of

low quality or the work was not done properly. These tanks usually need to be entirely reconstructed.

Table 2.7

Summary of Rehabilitation Need of Existing Schemes

Level of Repair	PWD Schemes		LB&RD Schemes	
	No. of Schemes	% of Total Schemes	No. of Schemes	% of Total Schemes
Maintenance	8	20%	20	13%
Minor Repair	7	15%	61	40%
Major Repair	7	15%	47	31%
Total	22	50%	128	84%

No. of schemes implemented by NAPWD = 44
No. of schemes implemented by LB&RD = 153

- Unprotected sources; the source itself can be contaminated. Sometimes the only solution is to treat the water (filtration), but sometimes contamination can be avoided by protecting the source. Animal and human activity should be controlled above the source; also, the incoming water should be filtered through a screen to avoid accumulation of debris in the reservoir. Similarly, the tanks need to cleaned regularly, which has not been done in many cases.

- Blocked pipes; the high content of silt in some streams used as sources, as well as accumulation of debris in the pipes cause them to block. These pipes must be freed of debris, usually involving digging them out and installing appropriate screens in the different intakes.

Implementation Approaches

Two Government line departments have been involved in implementation of water schemes in the Northern Areas: LB&RD and NAPWD. Both Departments have executed schemes using the same technology - gravity piped systems - but used two different approaches, neither of which can be considered sustainable in the long term if coverage is to be expanded. As a general rule, NAPWD

undertakes only the larger, higher cost projects, while LB&RD undertakes smaller projects. NAPWD has completed 44 schemes so far whereas LB&RD has done 153 schemes.

NAPWD Approach:

This approach assumes that drinking water is a free good which everybody is entitled to receive, and that it is the Government's responsibility to provide such a service to every citizen. Therefore, all aspects of implementation and maintenance are taken over by the Department; community involvement is non-existent. Work is undertaken through private contractors. The average completion period for NAPWD schemes is between 12 to 24 months. After completion, NAPWD will hire permanent maintenance staff such as a plumber, a helper, and a *chowkidar*, as well as provide all hardware needed, to ensure operation and maintenance.

Technically, such an approach has proven to be relatively effective. Virtually all the schemes operated through this approach are still functioning, although sometimes with serious limitations. But this approach is very costly; already, even with the present insufficient coverage, funds are lacking to undertake much-needed repairs to some existing schemes. To extend the same level of service to all the villages of the Northern Areas would be impossible with projected resource availability.

The main advantage with NAPWD's approach is that it is more suitable to larger settlements where the level of technical knowledge required is higher, and where it is more difficult to have community participation in project implementation and maintenance.

LB&RD Approach:

LB&RD's expertise in water supply and sanitation comes mainly from its involvement with the UNICEF funded CBS program. This program was implemented from 1982 to 1986, and involved 153 villages. In regard to water scheme implementation, LB&RD has adopted the CBS approach to all its other projects. The project had an integrated approach to community health centered around water supply and sanitation. Extensive field visits to villages where LB&RD had implemented schemes showed that the approach has serious shortcomings; nevertheless, the CBS has shown the way for further community involvement in water supply and sanitation projects in the Northern Areas.

The CBS-LB&RD approach for implementing the schemes relied heavily on a particular form of the self-help principle. The community was expected to provide all the manpower needed for constructing the system, for maintaining it after completion, and also paying for some expenses relating to the purchase of local materials. Responsibility for the management of the scheme rested

with the Village Project Committee, which consisted of the local member of the Union Council along with 3-4 few other persons. Technical assistance is provided by LB&RD.

Field visits have shown that this approach had failed in many villages due to the following reasons:

- The community was not motivated sufficiently to use a safe drinking water source.
- The Village Project Committee is not an adequate form of representation. In practice, for most villages, the only active person was the Union Council member.
- The community was not always explained its responsibilities. Although the CBS program is supposed to be on a self-help basis, very often, the communities were expecting LB&RD to make repairs to the scheme when needed. Maintenance responsibilities are often not distributed adequately.
- Mostly men rather than women were involved in the various steps of implementation. This prevented much needed input from those most involved with water related issues.
- Many people who were trained through the CBS program were not used properly after coming to the village after completion of training. The knowledge gained was not put into use, and the trainees were not given significant responsibilities because there was no forum at the village level for using the services of the trainee and compensating him for his services and supplies.
- The delivery of hardware or supervision was sometimes late to come, causing the community's enthusiasm to drop significantly.

The rate of implementation of LB&RD schemes is low because of the policy not to pay for unskilled labor. Due to the short work and growing season, the opportunity cost of labor in the summer months is fairly high and it is difficult to get volunteers for scheme construction.

The piecemeal method of financial disbursement to the Union Councils for village level projects has caused delays in scheme implementation and there is no incentive for the users to maintain a scheme which has not become operational.

2.4.2. Drainage

Drainage of used water is not as much of a problem as it is in the Southern parts of the country. Most villages are located

on steep slopes, and are also traversed by a network of irrigation channels which greatly help in draining used water. In fact, most taps or standposts are already installed along those channels, the water directly flowing into it. At some villages where the CBS program was implemented, aprons were also installed at the standposts, but very often the quality of construction was not very good, and most of these installations are not operational anymore.

Considering this situation, drainage should not constitute a program of its own; rather, it should be included in the construction specifications of the water schemes. Future standposts should be installed at the channels; or small drainage pits filled with rocks be built at the standpost site to enable water to flow directly into the ground.

2.4.3. Human Waste Disposal

Coverage

Coverage in human waste disposal is very minimal; the only project that has implemented sanitation infrastructures on a significant scale in the Northern Areas is the CBS program. Through it, 120 demonstration latrines were installed in public places at a cost of approximately Rs. 5,000 per unit. Also, 880 less costly units were constructed in households with technical assistance. All these latrines were installed in villages participating in the CBS program, and are therefore scattered evenly throughout the NAs. Independently, some households have decided to install a latrine in their home; most often, this is done when a new house is built rather than added to an existing one. Any program to install new latrines should take into account the problems of providing an existing, traditional house with a latrine.

Private, household level initiatives are usually taken by more affluent and well educated families. Data on coverage in urban areas (source: 1981 Population Census) are reported in Table 2.8. Just about 43% of urban housing units have access to latrines, whether shared or separate. These data, in effect, suggest an upper limit to the coverage that can be expected in rural areas in the medium term, when income and education levels are not likely to change by much.

The population of Baltistan District uses a particular means of HWD known as the Balti latrine, which is widely used in this District. This latrine, often a communal one, is a simple pit latrine. Excreta from the pit is used as manure in the fields, but its handling is usually not carried out hygienically: excreta

is not fully decomposed when utilized.[21]

Table 2.8

Latrine Facility For Urban Housing Units (1981)

	Gilgit		Baltistan		Diamir		Total	
	Total	%	Total	%	Total	%	Total	%
Houses With Separate Latrines:								
With Flush	622	16.26%	163	8.77%	150	11.82%	935	13.45%
Without Flush	348	9.10%	1,122	60.39%	2	0.16%	1,472	21.17%
Houses With Shared Latrines:								
With Flush	106	2.77%	17	0.91%	5	0.39%	128	1.84%
Without Flush	160	4.18%	326	17.55%			486	6.98%
Houses With no Latrine	2,590	67.69%	230	12.38%	1,112	87.63%	3,932	56.55%
Total	3,826		1,858		1,269		6,953	

Source: 1981 Population Census

Targets

Unlike water supply schemes, latrines are a matter for household rather than village-level decision making. While the demand for water supply schemes is clearly articulated at the village level, the demand for latrines is uncertain and it varies from one household to another. Therefore, it is preferable to follow a demand-driven, household-oriented strategy rather than a target-oriented, user group strategy for latrines.

Technology Used

Except for the Balti latrine used in Baltistan, and its

[21]In the Northern Areas, organic fertilizer is an extremely precious resource since the soils are low in organic matter content. The shortage of organic fertilizer creates the pressures that inhibit villagers from allowing human or animal waste to decompose fully before using it as fertilizer.

counterpart used by the Hunzakuts, there is no other traditional method of human waste disposal. Virtually everybody simply goes to the fields; often, children will defecate directly into the water channels. The Balti latrine consists of an elevated platform sitting above a pit; an apron on the side is used to empty the pit.

The new technology which was introduced recently is a more hygienic way of disposing of human waste. The flush latrine, which has a water seal, empties in a single deep pit, and has a concrete superstructure. The flush action can be obtained either by using a reservoir when the home has a house connection, or by manually pouring water in the basin. The CBS demonstration latrine had a cost of Rs. 5,000 per unit, which is very expensive for most families in the area. The household latrines, also installed by the CBS program, have a cost of Rs. 3,000; efforts were made to reduce cost by eliminating the concrete superstructure.

Implementation Approaches

The UNICEF CBS program attempted to promote the use of latrines by building a demonstration latrine in all the villages participating in its program. A public place was chosen, often a school, so that local people could access the latrine; but the very fact that it was a public latrine led to problems of maintenance. In most villages, nobody took responsibility for cleaning the latrine; and therefore these latrines became very dirty, actually setting a counter-example, and were eventually abandoned.

The household latrines installed under the same program did not produce a demonstration effect, either.

2.4.4. Hygiene and Hygiene Education

There is currently no general hygiene education program as such in the Northern Areas. The only hygiene education that is carried out is usually a by-product of another health related program.

The CBS experience of training Community Health and Nutrition Workers was largely a failure because these trainees were not given a proper position after completion of their training when they were coming back to their villages.

The Aga Khan Health Services (AKHS), through their network of 18 Minor Medical Units and associated LHVs and male health workers organize health talks using flip charts, posters, etc. The AKHS is also planning a school health education program in collaboration with the Department of Education.

The Aga Khan Housing Board's Living Conditions Improvement Program (LCIP) is promoting the use of house latrines, water purification, smokeless stoves and the use of health and

hygiene messages.

The results of a cursory survey[22] reveal that a high degree of awareness prevails among rural women on matters related to health. The cause of diarrhoea among children and the major diseases caused by polluted water are generally known. The survey found that this knowledge is not always applied due to the lack of basic facilities. The survey also showed that women normally consult the village dispenser for treatment and that he was an important source of health and hygiene information.

2.4.5. Input Supply

With improvements in communications and the functioning of markets in recent years, items for which there is a local demand are readily available in the Northern Areas, at least in the urban centers. Inputs for household use are generally stocked by retailers, while specialized construction material (such as pipes) is usually purchased on order by large traders. Most kinds of pipes and ordinary bathroom fittings are available locally in this way. The supply of vaccines, however, is more problematic since they require a cold chain through areas without electric power for refrigeration.

2.4.6. Provision of Credit

There are significant formal and informal markets for lending in the Northern Areas. Existing sources, however, have their limitations. Informal credit is usually given by village shopkeepers for basic consumption items which they sell, or by friends and relatives for personal needs. Formal credit is usually monopolized by a small number of individuals. The main problem is for small farmers to get access to credit.

Formal sector lending for agricultural development is large and growing, but the bulk of the lending - perhaps all but a handful of loans - has gone to a small number of individuals with access and the kind of collateral required by the banks. For the most part, these individuals appear to have invested in transportation, land and buildings for purposes of tourism and trade; smaller amounts have been invested in tractors, threshers and sawmills. Formal sector loans are also available from commercial banks and the House Building Finance Corporation (HBFC). These loans, however, are heavily subsidized, and are in short supply relative to the demand. There is an established link between Habib Bank Limited and the Village Organizations, through AKRSP. There are also ongoing attempts to link up HBFC lending to AKRSP VOs to make it more accessible, but the procedures have not

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[22]Naghma Imdad, Health Anthropologist. Some major Patterns of Health Determining Behavior in the Northern Areas, CoWater, 1989.

yet been finalized.

Over time, AKRSP has developed a reasonably effective village-based savings and credit program for agricultural purposes. In its new strategy, AKRSP is contemplating the extension of this program to non-agricultural lending at the village level. It is contemplated that, initially, up to 20% of a VO's loan portfolio will be for non-agricultural purposes. If the VOs show the capacity for greater self-reliance over time, AKRSP plans to allow greater flexibility to them, both in terms of the amount of lending and the application of credit funds. AKRSP is starting a two-year pilot program to test new and more decentralized approaches to savings and loans, and there is an opportunity to explore the potential for lending for social sector needs through the VOs.

2.5. The Role, Status and Constraints of Women

2.5.1. The Role and Status of Women

In the Northern Areas women are primarily responsible for domestic tasks which require water, such as cooking, washing clothes and dishes, house cleaning, children and care of livestock. As such, women spend an appreciable part of their time in the collection and use of water. It is estimated that, on average, women in the Northern Areas spend anywhere from 20 to 80 percent of their time in the collection of water and activities directly related with the use of water[23]. Even where standposts or taps are available at home, women still have to go to community standposts, ponds and irrigation channels or other common sources away from the homes because of mal-functioning taps installed at home and the high maintenance cost which discourages frequent repair.

The incidence of water borne diseases is very high in the Northern Areas. Studies on infant mortality estimate that infant and child mortality rates in Pakistan are anywhere between 119 per thousand (UNICEF, 1988) to 160 thousand (World Bank, 1988) live births. It is estimated that 45% of all deaths among young children are caused by diarrhea dehydration. Traditional practices of withholding fluids and breast feeding during a diarrhoeal attack exacerbate the problem. Women's life expectancy at birth in Pakistan was estimated at 51 years in 1986[24]. Low female survival rates in Pakistan are in part due to the maternal morbidity rates which at 600 per 100,000 live births are among the highest in South

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[23]The Aga Khan Rural Support Programme and Pembroke College, Cambridge University. Space Time Routinization of Women's Activities. Rebecca Caroe. Undergraduate thesis, 1987.

[24]World Development Report 1988.

Asia[25].

Women suffer from a host of ailments and infections which are related to the poor quality of water and the long distances that women have to carry water. There is a high incidence of skin infections, eye diseases, hepatitis and malaria among women. Women in some areas suffer bald patches, physical deformities and internal injuries because of carrying water from distant sources. Because of the sparse use of water for personal hygiene, women also suffer from other ailments. Due to the lack of iodine in water in the Northern Areas the incidence of goitre is very high. Iodine deficiency in pregnant women can increase the rate of miscarriage, still birth and neonatal death.

The health impact of safe water supplies has the potential to significantly reduce infant and maternal mortality and morbidity. The availability of easily accessible water supply can also make women more productive and efficient in the performance of their domestic chores and allow them spare time for other activities. The reduction in female workload can also have a significant impact on female literacy rate, as often, daughters are not sent to school because of the work at home.

The potential health benefits from hygiene education are very high due to the high illiteracy rate and the lack of women's exposure to basic health and hygiene facts about water and sanitation. The effect of improved personal and domestic hygiene can have a significant impact on infant and female mortality and morbidity. The highly variable water quality and the high incidence of water borne diseases all imply a high pay-off for potential investment in hygiene education in the Northern Areas.

Rural sanitation is a more severe problem for women than it is for men because of the high privacy requirements of women and because of the social norms of seclusion and segregation of women. Women can only defecate in the fields before dawn or at night when the chances of their securing privacy are high. Women are said to suffer from various ailments because of this restriction on the frequency of defecation.

2.5.2. Constraints on Access of Women to Basic Water Supply and Sanitation Services[26]

Among the constraints that limit women's accessibility

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[25]

[26]Hussein, M. Strategic Interventions for Women in the Rural Water and Sanitation Sector in Pakistan. DRMS, Islamabad, April, 1989. Report Prepared for PHRWD, World Bank.

to water supply and sanitation facilities, two main types of constraints can be identified: factors which restrict the provision of basic water supply and sanitation at the village and household level, and those which determine the use of existing facilities by women. Among the first set of factors, economic and institutional factors are major constraints, and among the second, social and technical factors are more important.

Economic Factors and Lack of Control of Resources

The low level of income is the principal reason for the lack of adequate water supply and sanitation infrastructure at the household level in the Northern Areas. The average per capita income is less than half of the national average. The average family in Pakistan is unable to afford even the basic minimum facilities. Women are the prime users of water supply schemes and are more susceptible to breakdowns in the supply system than the men. Due to their limited control of household resources and decision making, the investment in household water supply and sanitation from family income is often the last item on the agenda.

In most need assessment surveys that have been conducted by development planners, water supply is identified as the number one priority. The installation and average maintenance cost of house connections is prohibitive. The basic question of affordability is often overlooked by development planners who place too much emphasis on lack of knowledge as being the binding constraint. This misconception of the principal reason leads to programs placing an undue amount of importance on hygiene education and the development of a cadre of community promoters who will educate the people on the importance of safe and adequate water supply. Experience in the Northern Areas shows that unless a hygiene education program is strongly supported by the provision of materials and loans for improvement in the basic level of service, the program is likely to have little or no impact.

Inadequacy of Planning for Different Livelihood Systems

The nature of the livelihood system can often be a serious constraint in allowing women access to adequate water supply and sanitation facilities. For example, the transhumant livelihood systems in the Northern Areas limit what can be done for a population which is constantly on the move or which seasonally migrates to the highland summer pastures.

The planning process has also been unable to cater to the needs of farming systems in which livestock breeding is the predominant enterprise. Such farming systems require a more comprehensive survey of the water requirements of the human and animal population. Consideration of the water needs of only the human population will not be sufficient and will be a partial solution. Women are mainly responsible for the care of the

livestock and lack of adequate government planning is reflected in making the women's task more difficult.

Lack of Participation in Investment Decisions

Women are the prime users of water, but all the decision making regarding village and household level investments in the water supply and sanitation sector is in the hands of men. Within the household, men take the major investment decisions since they are the main earners of cash incomes and productivity and the capacity to make investment decisions are judged on the basis of the cash income earned rather than the total productive contribution to the household. Women are virtually excluded from the government line departments and the local government institutions which are responsible for investment decisions in the sector.

Social Restrictions and Mobility

The social practice of *purdah* restricts women's mobility within the village and denies her access to water sources which are located in public places or areas with too much outside traffic. The practice of segregation also limits women's access to places when men are present. The exclusion of women from village mosques further limits their access to the existing water infrastructure at the village level as often, due to the frequency with which religious ablutions are performed, mosques are a popular site for the provision of water taps, standposts or other water supply sources.

Women's Exclusion from Management and Operation

All the NAPWD schemes have male operators and guards. Women are restricted in their social contact with men and because of this reason, women who use the water cannot enquire into the delay or timing of water supply. This is not an insignificant constraint as most of the schemes have fixed timings and in case there are unforeseen delays, the women have no choice but to wait.

Inappropriate Technologies and Difficult Access

Well conceived schemes are often inaccessible to women because the technology used cannot be operated by women. The manual operation of the handpump is too difficult or in the case of an animal drawn facility, women may not have access to animals to drive the machines. Inappropriate site selection and small technical details which only the user of the community taps can advise on, make all the difference between easy and difficult access.

Lack of Literacy, Training and Extension Services

Illiteracy, lack of training and exclusion from extension services, inhibits the access of women to existing facilities. The inclusion of women in extension training schemes would allow them to repair individual handpumps which frequently breakdown. Often, men do not bother with repairs because women are the principal users of the scheme. Follow up visits to project and scheme sites reveal that women are often better informed of the operation and specific problems of a particular scheme.

Lack of Access to Input Supply and Delivery Mechanisms

The input supply systems for the provision of inputs like credit and spare parts for investments in the water supply and sanitation sector are extremely weak, if not non-existent, and such as they are, they do not involve women. Women do not have access to resources for investment in water taps or sanitation facilities at the household level. It is understandable that women who need these facilities more than men because of the nature of their responsibilities and because they are more significantly affected as a result of a breakdown in the system, would be more willing to invest in these facilities. The availability of water supply and sanitation inputs to women might appreciably enhance the household's desire to invest in this sector from private resources.

Lack of Monitoring and Evaluation

Women suffer the most due to the absence of a proper and effective system of monitoring and follow-up of existing NAPWD and LB&RD schemes. The issues of water quality, operation of a scheme, lack of maintenance and the inadequate nature of existing supply are often overlooked under the mistaken impression that the mere existence of a scheme provides adequate coverage to the rural population. The current government strategy of concentrating on new coverage rather than improving the existing facilities reflects the lack of monitoring of existing schemes.

2.6. Assessment of the Present ADP Programs

2.6.1. Service Coverage and Standards

There are presently 197 water supply schemes in the Northern Areas. The population coverage of these schemes is about 27% (Table 2.5). It is estimated (from a rapid assessment of existing schemes summarized in Table 2.7) that 28% of the existing schemes are in need of major repair and 35% need minor repair. From the total of 197 schemes, 44 were implemented by NAPWD and 153 by LB&RD. The main reason for the state of disrepair of these schemes is the low level of maintenance budget provided in the recurrent budget given to NAPWD and the low level of community involvement in scheme design and implementation.

For schemes implemented by LB&RD, standposts are provided with a service capacity of 5-10 gallons per capita. No provision is made for house connections for these schemes. There is no system for water quality testing and control in LB&RD. The design of NAPWD schemes is for 15 to 20 gallons per capita. NAPWD makes a small provision for chlorination. The main advantage of these water supply schemes is the improved access to water availability closer to the house.

2.6.2. Project Selection Criteria

There are two aspects of project selection in the Northern Areas; village selection for projects and project selection for villages. The first is by and large a political process. The Northern Areas Council (NAC) and the District and Union Councils identify the villages for projects. The second aspect of project selection for villages is often determined by donor agencies and may not be linked to the needs of the villages. For example, under the CBS program UNICEF and AKF decided upon an integrated package of services which they would deliver to 150 villages and the District Councils decided in which villages the projects would be implemented.

Generally, for projects under the Annual Development Plan, the NAC selects projects and villages for implementation through the NAPWD and the District Council and Union Council select projects for implementation by LB&RD. Since 1985, a special provision of funds has been made in the Annual Development Plan for implementation of projects through Village Project Committees. These projects were initiated under the Prime Minister's Five Point Program.

2.6.3. Approval Process

There are two types of approval which are required before schemes can be implemented: political approval and technical approval. The political approval is given by the local representative councils, and the technical approval is given by the technical staff of the implementing agency. These two approval processes are not conducted simultaneously and are often separated from each other. Technical staff which does not wield political power has much less say in the approval process.

The Union Council submits a list of schemes in its area to the District Council. The District Council does not have the power to reject schemes suggested by the Union Council but has the power to order the schemes on a priority basis. In practice, this power to establish priority is used generously to determine the acceptance and rejection of schemes.

There is limited recognition of the seasonal constraint

in the approval process. The working season in the Northern Areas falls between March and October. The budget year ends on 30th June and the unspent amount is surrendered. The allocations made in the new budget are often not received until October. From July to October no funds are released.

The Union Council on average covers about 7 villages. Often a villages is not represented in the Union Council by a representative from that particular village. The selection of schemes for these villages is a difficult problem. Villages not represented in the Union Council by a member of their village are often ignored.

The District Councils get funds on the basis of population and the Union Councils divide them between the members. Funds are not allocated on the basis of costs of schemes. Disbursement of funds for projects is on a piecemeal basis. The PC-I's which detail the history of water supply schemes when a request is submitted for extension assess that the existing schemes in the Northern Areas have not been designed with any long term perspective plan.

2.6.4. Technology Choice and Design Criteria

The existing schemes have low storage capacity, poor purification arrangements, and defective siting. Schemes in the urban areas are overly dependent upon regular three-phase power supply which is not generally available. Some NAPWD schemes were designed with the specific aim of reducing the high turbidity of the water. Filtration of the water is generally not feasible in the Northern Areas due to the high silt content which can choke the filters very rapidly. Most of the NAPWD schemes are resubmitted for expansion several years after their completion.

Normally the pipes that are used are 2-inch pipes for main lines and 1/2-inch pipes for the distribution line. The storage capacity of tanks ranges between 5,000 and 30,000 gallons. Because of the extreme weather conditions it is recommended that the pipes be laid at least 3 feet below the ground. However, when the schemes are implemented by the community, using voluntary labor, and the level of supervision and control during construction is limited, this critical technical requirement is often not met.

2.6.5. Procurement, Tendering and Contractual Procedures

Procurement and contractual procedures depend on the three kinds of implementation mechanisms:

- Line agency (i.e., NAPWD) using contractors;
- Implementation through elected or other community

representatives, that is LB&RD schemes, Special Development Programs, and the CBS Program; and,

- Implementation by the Village Organization (in the case of AKRSP).

The NAPWD enters into contract with the local contractor, who procures all material and labor. Payment is made on the basis of work done; fifty percent of the cost is paid if material is transported to the site. Approvals for payments follow the usual procedures prescribed for government contractors.

In the CBS Program, UNICEF provides the pipe through LB&RD, which transports it to the site. In this and other LB&RD programs, there is no contractor. The Village Project Committee is the implementor. The VPC is appointed by Union Councilor. LB&RD pays fifty percent of the cost for purchase of materials. A Pre-Receipt is taken first from the Project Manager for payment received from the Assistant Director, LB&RD. The final installment is paid after the VPC obtains a certificate of completion from LB&RD technical staff. Only two installments are paid, and these are for purchased material; local material and labor is expected to be contributed by the community.

Similar procedures are followed in SDP-funded schemes identified by elected representatives. The Northern Areas Council or District Council member is given the funds to purchase the materials.

In the case of AKRSP-sponsored Village Organizations, the entire responsibility for procurement and implementation rests with the VO as a single entity. This responsibility is specified in the Terms of Partnership accepted by AKRSP and the VO prior project initiation. Five installments are paid, including four in advance that correspond to project initiation, and physical progress of 20%, 40%, and respectively 60%. Payment is made by a check made in the name of the VO, whose account can be operated jointly by two members nominated by the VO (usually the President and Manager). Each instalment is subject to a resolution of the General Body of the VO and on-site inspection by the Social Organization Unit.

2.6.6. Commissioning and Post Construction Management

For NAPWD , there are two categories of which total 3,100 (1,600 in Gilgit, 1,000 in Baltistan, and 500 in Diamer). These staff include foremen, supervisors, road inspectors, work munshis, and unskilled labor. Some of the staff is called Regular Temporary Establishment (RTE) and is funded through the revenue budget which comes for capital maintenance. Work Charged staff is chargeable to the development fund of a specific project during its construction. RTE is pensionable and Work Charged is not. There is a provision for operational and maintenance staff in the PC-I.

LB&RD leaves post-construction management to the community. It posts one plumber with a kit at the markaz (sub-divisional level); there are 12 sub-divisions in the Northern Areas. He covers about 10 Union Councils. This plumber is paid Rs 1,500 per month. He gives on the job training in new projects and looks after major breakdowns in existing schemes.

2.6.7. Cost Recovery of Capital Cost

The NAPWD pays all costs for scheme construction, including the cost of land, local materials and labor. In several cases, a special PC-I is made to allow compensation for loss of land, trees and crops to the owners. The community is not charged the cost of capital or maintenance, and there is no service charge for water.

In LB&RD schemes, the cost of land, local material and unskilled labor is the responsibility of the community. LB&RD pays for purchased materials and skilled labor.

2.6.8. Operation and Maintenance

About 75% of the non-development budget of NAPWD is spent on repair and maintenance of existing schemes. In 1988-89, this amount was Rs 53.9 million. A provision of 1.7% of the capital cost of a scheme is made as annual recurring cost for the civil works. Between 5-6% is charged as annual recurring cost for mechanical and electrical works and a lump sum provision of Rs 100,000 per scheme is made for small repairs and maintenance staff.

The total recurrent budget of LB&RD in 1989-90 is Rs 6.6 million. There has been a growth of more than 300% in the annual allocation for LB&RD since 1985-86.

LB&RD assistance is available to the villagers in case of major breakdown, for which it provides pipe, plumber and accessories. LB&RD also undertakes rehabilitation of old schemes.

3. POPULATION, DEMAND AND NEEDS

3.1. Current Population, Growth and Settlement Pattern

3.1.1. Population, its Distribution and Growth Rates

The Northern Areas are among the most sparsely populated regions of the country; population density in 1988 was an estimated 10.36 persons per sq km, only a fraction of the 134 persons per sq km average for Pakistan as a whole.

The estimated population of the area in 1988 was 750,920, of which the rural population is 677,530, or 90% of the total (Table 3.1). It is estimated that more than 92,000 households live in the 762 villages of the Northern Areas, an average of 120 households per village. In terms of the rural population, Gilgit and Baltistan Districts are about equal in size, while Diamer has the smallest rural population.

Table 3.1

Estimated Population Statistics and Basic Data for Northern Areas (1988)

	Gilgit	Baltistan	Diamer	Total
Population	309,400	282,780	158,740	750,920
Growth Rate	4.35%	3.35%	3.68%	3.8%
Area	28,500	25,850	18,146	72,496
Population Density (per sq km)	10.86	10.94	8.75	10.36
Urban Population	48,268	17,352	7,770	73,390
Percentage of Total	15.6%	6.1%	4.9%	9.8%
Growth Rate	6.6%	5.73%	4.0%	5.9%
Rural Population	261,132	265,428	150,970	677,530
Percentage of Total	84.4%	93.9%	95.1%	90.2%
Growth Rate	3.84%	3.14%	3.6%	3.5%
No. of Settlements	284	227	251	762
No. of Rural Hhds.	32,642	37,918	21,567	92,127
Avg. Household Size	8	7	7	7.4

Sources: 1981 Population Census and AKRSP Project Area Data Book, 1987.

The population growth rate for the region averaged 3.8%, which is higher than the national average of 3.1%. It is estimated that the growth rate in urban areas is 5.9%, compared to 3.5% for rural areas. The population estimates are extrapolations from the 1981 Population Census figures, using inter-censal growth rates.

3.1.2. Settlement Patterns, Transhumance and Migration

The 1981 Population Census counted 762 established rural settlements in the Northern Areas; this number corresponds to the revenue villages of the settled parts of Pakistan. Many of these villages are large, and are divided into well-defined localities, each with its own mosque, *jamaat khana* or *imam bargah*[27]. Villages that were developed in the last 80-90 years to relieve pressure on some of the older fiefdoms often show distinct ethnic or sectarian division corresponding to geographical boundaries within the village. The exact number and size distribution of these settlement (as opposed to villages) are not known; however, they are estimated to number more than 1,000. The estimated distribution of rural population according to village size (classified as small, medium and large) is shown in Table 3.2.

Table 3.2

Population Distribution According to Village Size (1988)

	Gilgit				Baltistan				Diamer				Total for Northern Areas			
Village Size	No. of vill.	Pop.	% of Pop.	% of Total vill.	No. of vill.	Pop.	% of Pop.	% of Total vill.	No. of vill.	Pop.	% of Pop.	% of Total vill.	No. of vill.	Pop.	% of Pop.	% of Total vill.
Small	122	39,692	15.2%	43.0%	78	24,154	9.1%	34.4%	157	49,065	32.5%	62.5%	357	112,911	16.7%	46.9%
Medium	139	148,323	56.8%	48.9%	111	119,177	44.9%	48.9%	86	76,844	50.9%	34.3%	336	344,344	50.8%	44.1%
Large	23	73,117	28.0%	8.1%	38	122,097	46.0%	16.7%	8	25,061	16.6%	3.2%	69	220,275	32.5%	9.1%
Total	284	261,132	100%	100%	227	265,428	100%	100%	251	150,970	100%	100%	762	677,530	100%	100%

Small village --> Population less than 500.
Medium village --> Population between 500 and 2,000.
Large village --> Population greater than 2,000.

Source: Extrapolated from Northern Areas Population Census, 1981.

[27]These are Islamic places of worship for the community.

Nearly 47% of the villages are small (population less than 500), but constitute only 16.7% of the total rural population in 1988. The medium (population 500-2,000) and large villages have 50.8% and 32.5% of the rural population, respectively. The size distribution of rural settlements tends to vary visibly across the three districts: in Baltistan, 46% of the population lives in settlements of more than 2,000 inhabitants, while in Diamer the corresponding proportion is less than 17%.

Livestock-based transhumant systems are still prevalent, albeit diminishing, especially in Diamer District and the higher valleys of the region. In parts of Diamer, entire villages (except caretakers) migrate to the high pastures and settlements for the summer. In other areas, only adult men may migrate with the animals. The movement from settled villages to the high pastures takes place along traditional stages, or transit camps.

The small farmers of the Northern Areas supplement the meager output from the short growing season with nonfarm income earned during the slack agricultural season. There are limited hard data on migration and nonfarm income, and much of these are in unpublished papers. The general impression is that migration within the region as well as to the rest of Pakistan has increased considerably with improvements in communications over the last ten years. There is anecdotal but widespread evidence of seasonal labor mobility for agricultural and construction work, the pattern being one of movement from the poorer, high altitude valleys to the lower and more affluent valleys. There is also similar evidence of movement to the plains of Pakistan in search of short-term employment during the winter months.

3.2. Demand and Needs for Service

3.2.1 Water Supply

Demand

By all appearances, rural water supply is a widespread felt need in the Northern Areas. Most villagers can see its benefits and understand the arrangements under which NAPWD and LB&RD can offer water supply schemes.

The large programs sponsored by these agencies have undoubtedly served as demonstration of the benefits of having piped water. Only in a few villages does it seem that having a piped water system is not perceived to be a significant improvement. During our assessment of the rural water supply schemes, having access to a communal standpost was almost always perceived to be an improvement from the traditional channel. To a lesser extent, villagers also desired house connections. The possibility of future demand for house connections should be taken into account

in planning the schemes.

Several needs assessment surveys have been conducted in the Northern Areas. The first such survey was conducted in the planning phase of the Community Basic Services Program in early 1982. A more recent assessment of the felt needs of the people of the Northern Areas was conducted by the Aga Khan Rural Support Program in 1989. The results of the first survey indicated that drinking water was the number one priority of a majority of the villagers and as such the CBS Program used drinking water supply schemes as the entry point for the program. The AKRSP survey was conducted in 40 villages in Gilgit, Chitral and Baltistan and about 3,000 households were interviewed. This survey indicated that 29% of the households in Gilgit considered clean drinking water their first priority, 12% listed it as their second priority and 7% as their third priority.

The advantages of having a piped water system as perceived by the villagers are not always those linked to an improvement in health. Often, the perceived advantages relate to practical considerations such as convenience, reliability, and prestige for the village. Over time, it is almost certain that there will be a vocal demand not only for piped water schemes, but also for quality in terms of the attributes that most concern villagers.

Needs and Response

There are many reasons why villagers demand piped water. The sustainability of water supply schemes would be considerably enhanced if village needs could be adequately addressed through a combination of engineering, health and socio-economic guidelines.

The results of our assessment of the rural water supply schemes in the Northern Areas (see Annex 3) have shown that many schemes are not operating, are not maintained properly, or do not use a proper source, resulting in contaminated water being used for drinking purposes. This situation has important repercussions on the present investment plan: a rehabilitation strategy must developed to rectify these malfunctioning schemes. For some schemes, the corrective actions needed are very simple and involve very little cost, but for other schemes, major works along with major investments are required. Already, 197 schemes have been constructed by NAPWD and LB&RD, of which approximately 62% or 123 require rehabilitation (minor as well as major), and another 27 need basic maintenance. For most of those requiring rehabilitation, part of the investment already made in building the scheme can be recovered, especially the pipes which are the bulk of it.

Ideally, all settlements of the Northern Areas should have their own piped delivery system to ensure protection of the

supply from the source to the tap. But many settlements are very small or very scattered, in both cases increasing dramatically the per capita costs of building a scheme. Hence a large number of schemes will be required to cover a small percentage of population living in these settlements or villages. Since most of the population is concentrated in medium-sized or large villages, it is optimal to develop schemes for such villages on priority.

For smaller villages or settlements there might not be justification for constructing a scheme even for many years due to resource constraints. In these villages priority should be placed on hygiene education so that it may be possible for the villagers to develop better practices for insuring protection of their water resources. The small population of most of these villages makes it possible to do so by implementing strict regulations on water use and water contamination.

A safe water supply is increasingly recognized as being a necessary condition for sustaining good health (although it is not the only condition). The traditional sources of water presently being used in the Northern Areas (even where a safe piped water supply is available) do not constitute a safe source for drinking water. More than 70% of the households draw water from streams or rivers through small channels which flow near the house. This water is used for drinking and domestic purposes. These channels are open and highly infected. In most cases water is brought inside the house through a sub-channel which is used, contaminated and recycled to the main channel. The user next door contaminates it further and the level of pollution keeps rising. The result of water pollution is a very high rate of diarrhoea and other water borne diseases. Table 3.3 shows the incidence of diarrhoea cases among various age group. The number of cases of water related diseases show the extent of need for safe piped water facility.

According to our estimates (Table 2.7), water supply schemes have been built throughout the Northern Areas, reaching approximately 27% of the population. But considering that many of these schemes need to be rehabilitated, only 9 % of the total rural population of the area can be said to have access to safe drinking water supply.

Although safe water is not abundant, and at times can be scarce, it is possible to manage efficiently the available supply to satisfy in an environmentally sound way the needs of the population. In some villages, scarce resources call for sensible water management from the community. In some other villages, the nature of the problem is qualitative rather than quantitative. Safe spring sources are not always available, communities sometimes have to rely on stream water which can easily get contaminated. Approximately 70% of all settlements rely on such sources which require sedimentation and filtration treatment.

Table 3.3
Incidence of Diarrhoea Cases in Northern Areas

Age group (Both Sexes)	Population	Incidence of Diarrhoea: Cases	Percentage	Deaths: Numbers	Percentage
0 - 1	60,067	8,355	14	306	0.50
1 - 5	109,114	13,149	12	75	0.10
5 - 14	147,009	8,815	6	16	0.01
14 - 45	286,224	10,368	4	33	0.01
Above 45	33,872	1,933	6	39	0.12
Total	636,286	42,620	7	469	0.07

Source: Northern Areas Council, 1985. Five Year Development Program with Community Participation and Plan of Action 1986-87 to 1990-91.

3.2.2 Drainage

Demand

Drainage at the sites of the standposts appears to be a common felt need, for without it the site rapidly becomes muddy and unsanitary. Other than this demand, no clear statement on drainage needs has been formulated so far by the communities. Experience with the CBS Program has shown that the demand for drainage is very limited. In fact, most infrastructure to help drainage has been neglected.

In the medium term, increases in household incomes could operate in the following ways to increase the demand for drainage:

- Through an increase in the number of household connections; and,
- Possibly through greater education and awareness of hygiene.

Needs and Response

The physical conditions in the area do not warrant a major investment in drainage: natural slopes, drains and permeable soils serve to facilitate drainage without substantial cost. If

community standposts for water collection are located along water channels, a concrete apron draining into the channel would suffice. For more distant standposts, drainage could be into a pit by the standpost.

Most standposts on completed schemes have been installed directly above or very near the channels. What is needed for future schemes is a consideration during the construction period for accommodating the modest additions required to ensure drainage. Later, as more and more house connections are installed, the need for drainage might increase.

3.2.3 Human Waste Disposal

Demand

The major factor affecting the demand for latrines is the cost involved for the villager. The (pour flush) latrine itself costs more than Rs 5,000, a big investment for most villagers.[28]

Added to that, there is the possible cost of alterations in the existing house. This is especially true of the traditional cluster and multi-story housing that is characteristic of Baltistan District.

Finally, recognized felt needs expressed by male village representatives could preclude the expression of women's felt needs for improved sanitation.

The experience of the latrine construction program of CBS and the Aga Khan Housing Board was that the construction of demonstration latrines in public places had very little impact on the dissemination of the facility.

Needs and Response

The important point about improved sanitation is that it is a household facility, rather than a public good like piped water and drainage. Thus, it would be misleading to plan for it on the basis of a community's felt needs. It is more useful to develop mechanisms through which individuals could meet household demands. The evidence is that household demand is likely to be greatly differentiated by income and gender. Thus, what is needed is a demand-driven, household-oriented strategy for improved sanitation.

It is a common observation that the more affluent in a village are much more likely than the poorer residents to have

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[28]The amount in question is the equivalent of what many villagers say they spend on about one year's higher education for a child sent to Karachi.

toilet facilities. The lack of purchasing power is a principal reason for the low adoption rates of the latrines promoted and demonstrated under the CBS program. The achievement rate of targets under this UNICEF-funded program was 31% for the construction of demonstration latrines, 29% for the construction of household latrines, and 11% for the construction of latrines on payment. This program was not backed by credit facilities. It offered subsidized inputs, which formed less than 10% of the cost of the facility.

Gender differences are likely to be an important factor in considering the levels of demand. During most interviews with male villagers, latrines were not identified as an important need for them; in fact many expressed the view that it was actually "very pleasant to go to the fields". Because of *purdah* considerations, women's demand for household latrines, if not very high, is much greater than that of the men. Most often this tends to be neglected. Women and children will be the main beneficiaries of indoor sanitation facilities.

Apart from the main urban centers (Gilgit, Skardu, and Chilas), there is probably no need at the moment and for the time period encompassed by this plan for sewer networks. Pour flush and even simple pit latrines, if well designed and maintained, should be sufficient for helping reduce significantly the transmission of diseases through the fecal-oral route.

3.2.4 Hygiene Education

Demand

Hygiene education is neither a popular felt need, nor a field in which options attractive to the villagers have been formulated so far. On the part of villagers, the demand for hygiene education has not yet been clearly articulated. On the part of intervening agencies, there are no key interventions in that could be offered to villagers with a reasonable chance of widespread adoption.

Need and Response

The integrated RWSS approach opens up the possibility of engaging villagers in dialogue and designing a hygiene education program suited to local needs. There are several facets of rural life in the Northern Areas that would appear unhygienic to experts in the field. The challenge is to make real progress in a few key areas, by identifying messages with demonstrable payoff, and by focusing on responsive target groups.

The prevailing situation presents a long list of possible opportunities that need to be analyzed in practical terms:

- Conflicting uses from the same water supply. In most villages where traditional means of accessing drinking water are prevalent, there is no regulation of conflicting uses of the water supply. Washing of clothes, and washing of children is carried out in the same channels used to distribute drinking water. Small children defecate directly into the channel, often helped by a parent. Animals are not kept away from the channels, resulting in contamination of the supply from their excrement. Food is washed at the channel. When the channels are diverted to serve private homes, domestic refuse is drained into them.

- Direct handling of dung and human waste is common, especially in Baltistan, but the practice of washing one's hands with soap before eating, or after completion of manual work is not widespread.

- Bottle feeding of infants is increasing in popularity among young mothers, but the practice of sterilizing the bottles is not followed by all parents.

- Domestic waste is usually not disposed of properly.

- Food is not protected against flies, it often sits on a shelf or on the ground without being covered.

- In villages where there is an operational water scheme that supplies safe drinking water, it is common for the people to still use contaminated channel water because the tap water is warmer than the channel water. The water flows through pipes that were not laid deep enough in the ground, and is heated by the sun. The people have a definite preference for cold drinking water.

The most common effects of these practices include gastro-enteritis among the population, especially the children. In summer, this is the most common cause of admission at the Gilgit district hospital. The high rate of diarrhoea is another common occurrence.

In assessing the need for hygiene education, one must be careful not to impute ignorance of hygienic practices, when in fact the unhygienic habits may be the product of socio-economic factors such as poverty and heavy workload. Due to the short growing season, villagers find themselves extremely busy during certain periods of the year. This is especially true for women who, in addition to their responsibilities towards agricultural production, also have domestic responsibilities, including fetching of water. To reduce this overload of work, a woman might decide to fetch water from the nearest rather than the safest source; and because most schemes have communal taps, the channel is usually the nearest

source.

3.3. Proposed Service Standards

3.3.1 Water Supply

The primary considerations in deciding the service levels are the available resources which includes capital cost and water source and the minimum water requirement (qualitative and quantitative) sufficient to ensure proper hygienic conditions.

Four "typical drawings" of gravity water supply systems are illustrated in Figures 3.1 to 3.4.

The following level of service is proposed for water supply coverage in the Northern Areas:

- Villages will be provided one standpost for each ten households. The scheme design will allow a per capita provision of 5 gallons for the village population with an expansion capacity of 15 gallons per capita for fifty per cent of the population to meet the projected future demand for house connections.

- Extension of water supply schemes to the household level will be undertaken by individual households at their own cost and only after agreement among the community to do so. Credit will be made available for such house connections through the community.

- The high incidence of water borne diseases and the high infant mortality rate necessitate attention to water quality through a proper system of water testing and treatment. The nearest dispensary of the Health Department will provide basic testing services at a small fee to Village Organizations and individual households.

3.3.2 Human Waste Disposal

The services provided under this sub-sector should be:

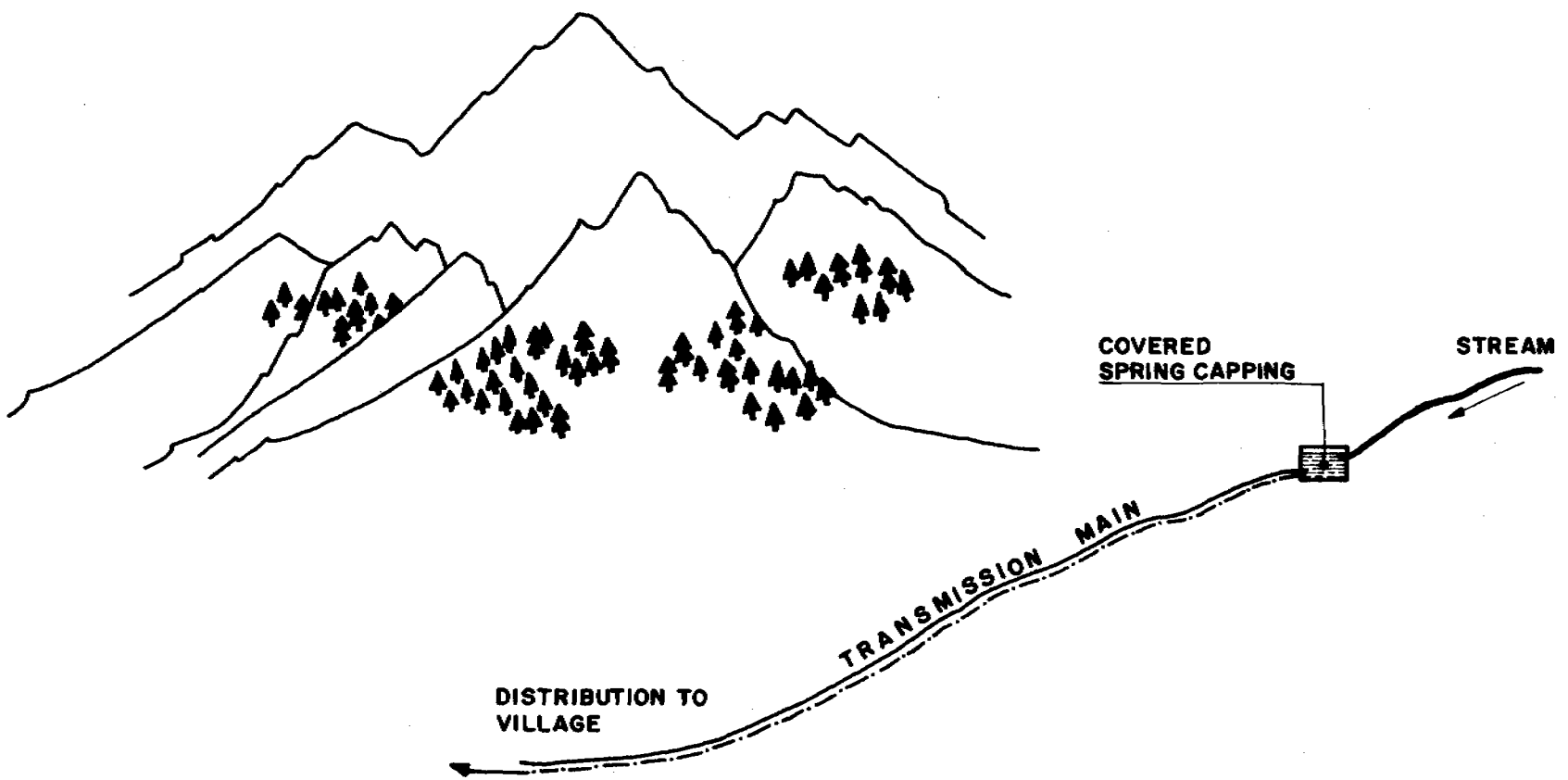
- Demonstration of new/low-cost latrines in private homes; and,

- Provision of credit to households interested in installing latrines.

Technical options can be demonstrated and recommended, but since decision making over latrines rests with households, a central planner would be in no position to enforce technical standards.

TYPICAL DRAWING OF THE GRAVITY WATER SUPPLY SCHEMES IN THE NORTHERN AREAS

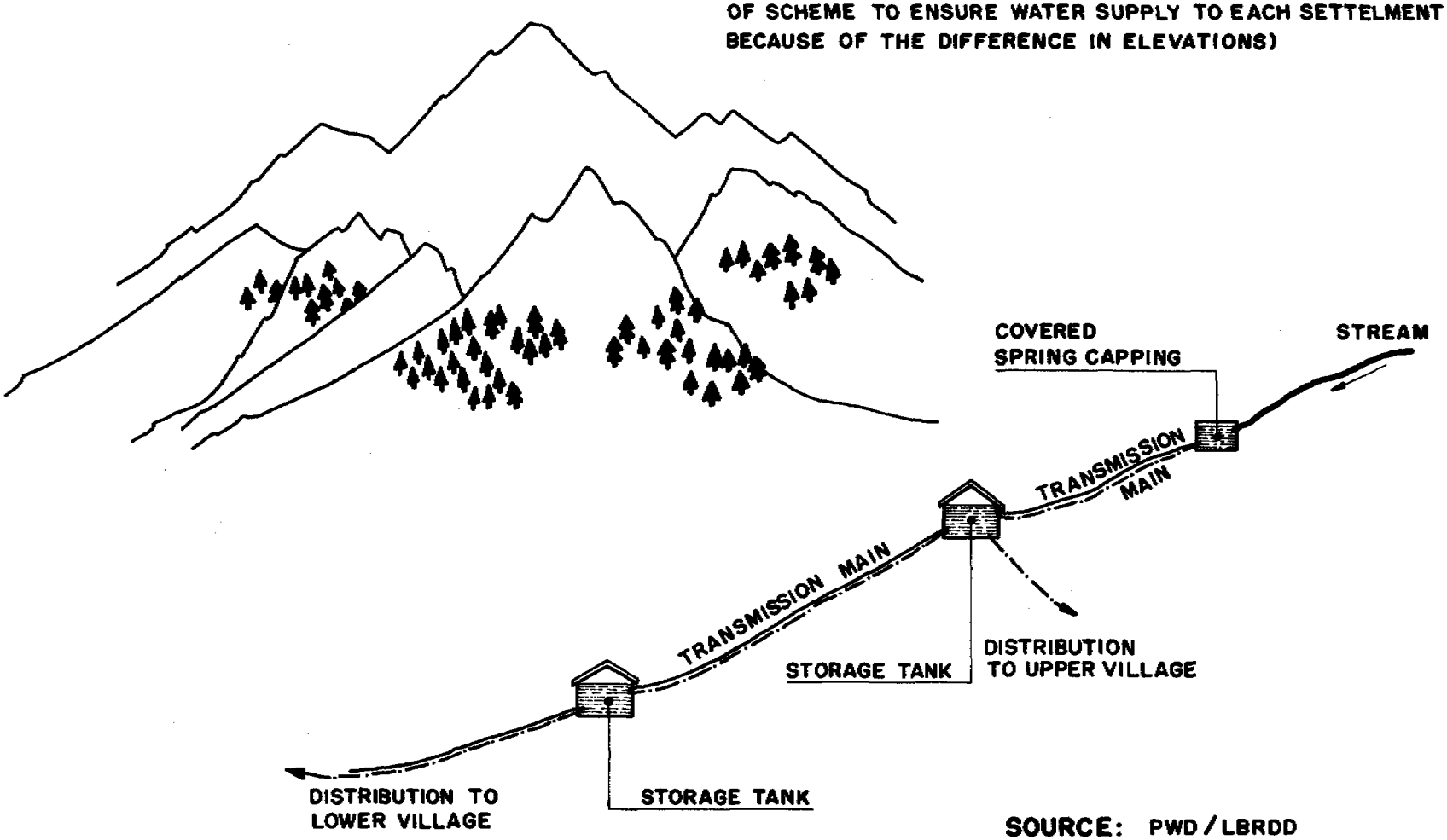
1- WITHOUT TREATMENT WITHOUT STORAGE



SOURCE: PWD / LBRDD
PROJECT FIELD SURVEYS

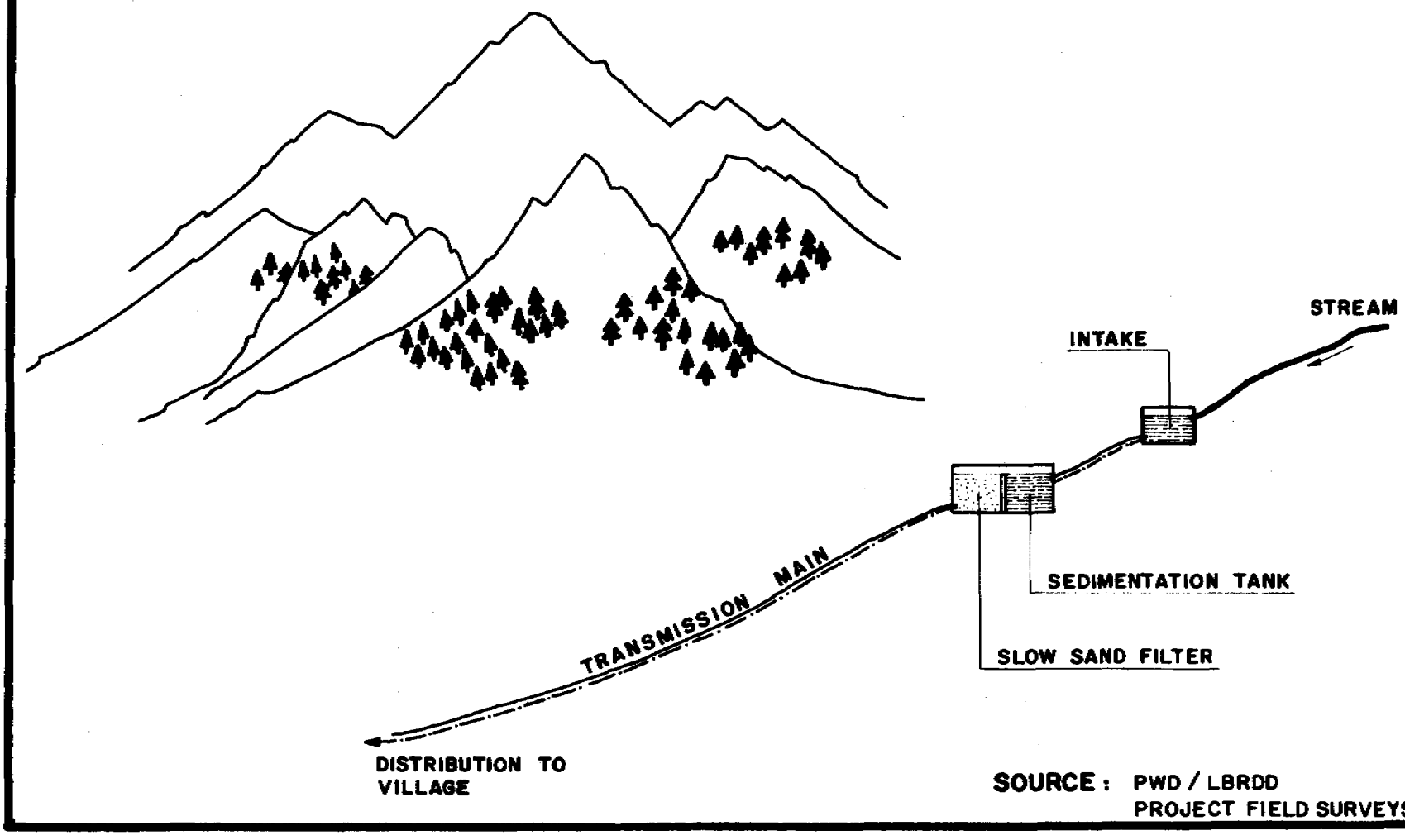
2 - WITHOUT TREATMENT WITH STORAGE

(SEPARATE STORAGE TANKS ARE REQUIRED FOR EACH TYPE OF SCHEME TO ENSURE WATER SUPPLY TO EACH SETTELMENT BECAUSE OF THE DIFFERENCE IN ELEVATIONS)



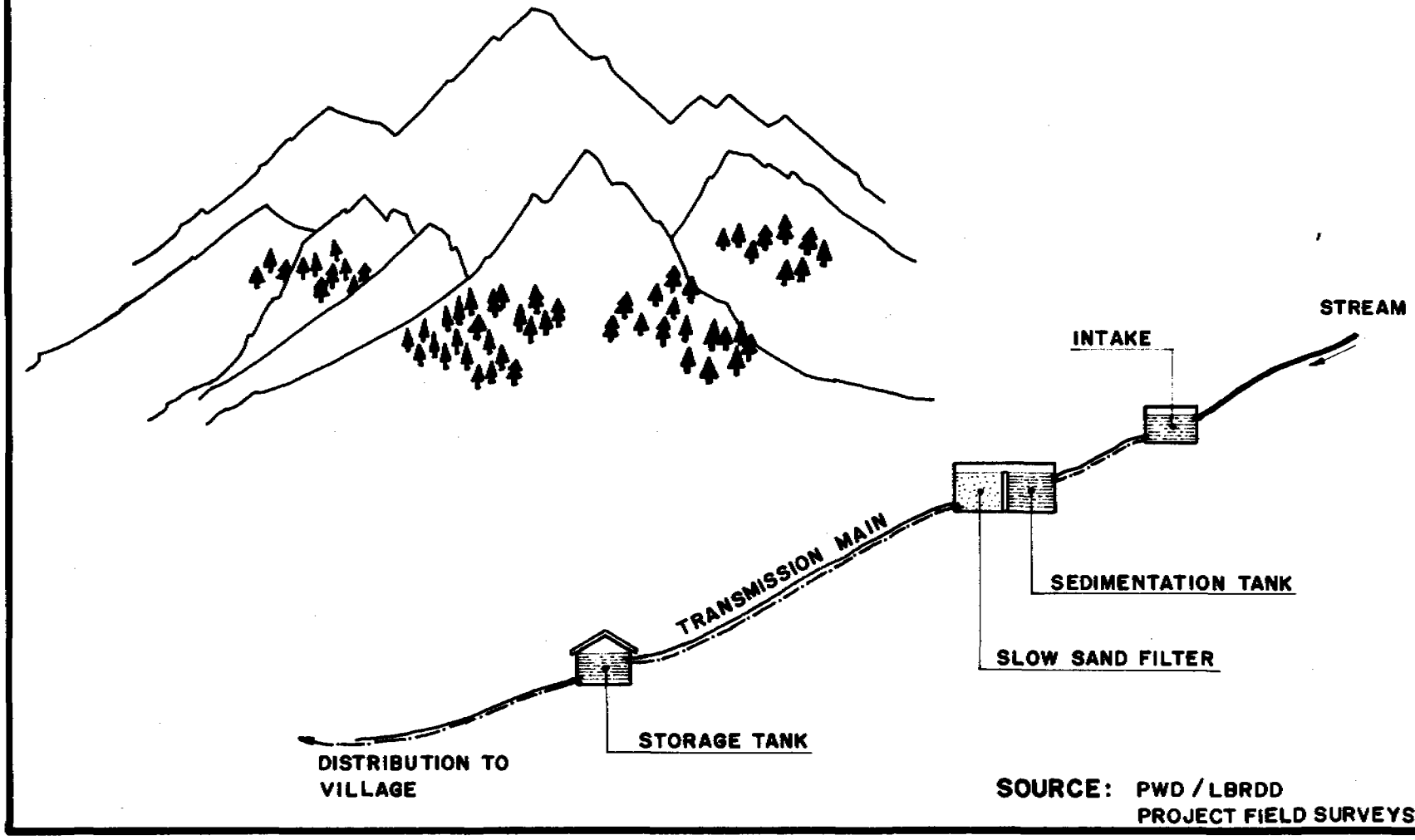
SOURCE: PWD / LBRDD
PROJECT FIELD SURVEYS

3 - WITH TREATMENT WITHOUT STORAGE



SOURCE : PWD / LBRDD
PROJECT FIELD SURVEYS

4 - WITH TREATMENT WITH STORAGE



SOURCE: PWD / LBRDD PROJECT FIELD SURVEYS

3.3.3 Drainage

The following service standards for drainage are proposed:

- Public taps or standposts should be located directly at, or near the channels, so that they drain directly into the channels.
- Public taps installed away from the channels should be connected to them through secondary channels, or a drain should be built. Such a drain can be constructed simply by digging a small pit directly below the tap, and filling it with rocks; would flow between the rocks to the bottom of the pit, and seep into the ground without accumulating at the surface.
- Homes installed with house connections should have a secondary channel draining into the main network, or have a drain (as explained above) directly at the tap.

3.3.4 Hygiene Education

The hygiene education program should be directed primarily at women, who are secluded and have very low levels of literacy and access to mass media. Thus, the program should ensure effective communication with women through women field staff, appropriate extension aids for an illiterate audience, and extension of messages aimed at women's concerns.

Education should be backed by the provision of inputs and supplies for which a demand is expressed by the villagers.

4. INVESTMENT STRATEGY

4.1. Objectives

The general objectives of this strategy for the Northern Areas are:

- o Sectoral: To improve the quality of life and health status of the people by the provision of water supply, sanitation and hygiene education facilities; and,
- o Institutional and Financial: To enhance the sustainability of schemes by the introduction of efficient and cost effective implementation and management systems.

The sectoral objective of this investment strategy is to assist the Government in achieving the Seventh Five Year Plan targets of extending the coverage of water supply to 75% of the rural population and sanitation to 40% of the rural population.

The investment strategy is formulated with the explicit recognition that the Government will not be able to achieve these targets with current levels of investment, and that the institutional roles in this sector will have to be reorganized if the given targets are to be realized.

The institutional objective is to devise an institutional strategy that would: (a) effectively utilize the User Groups to identify, implement, monitor and maintain projects in rural water supply, sanitation and hygiene; (b) strengthen the management capacity of government agencies, supplement their technical resources, and assist them in mobilizing the beneficiaries and their resources; and, (c) utilize NGOs and their expertise in technical fields and social organization to facilitate joint implementation by government and organized beneficiaries.

In operational terms, the proposed strategy is drawn from:

- o Analysis of bottlenecks and constraints in the Northern Areas (Section 4.2 below); and,
- o The key recommendations of the National Policy Conference on Rural Water Supply and Sanitation held in Islamabad in April 1988.

The operational objectives of the investment strategy for the Northern Areas are outlined below:

- o To involve the community in the planning, implementation, operations and maintenance of water supply systems in

order to increase the rate of coverage, improve the efficiency of the system and ensure long-term sustainability.

- To build on the experience of development projects and programs in the design of institutional arrangements for the water supply, sanitation and hygiene education sector.

- To strengthen existing institutions both at the grass-roots level and government line departments to better implement and manage the programs in the sector.

- To strengthen the role of the private sector in the provision of goods and services which are needed in the sector.

- To involve women more directly in aspects of scheme planning, maintenance and hygiene education as they are the principal users of water for domestic purposes.

- To integrate a water supply scheme with sanitation and hygiene education programs in view of the high incidence of water borne diseases and infant mortality rates in the Northern Areas.

- To put in place an implementation and management system which recognizes the government resource constraint by letting the User Group pay some of the local capital costs for water supply schemes and a service charge for operations and maintenance.

- To encourage the use of cost-effective, appropriate and affordable technologies.

- To provide service levels which reflect the expressed demands of the beneficiaries.

4.2. Current Sector Bottlenecks and Gaps

The major bottlenecks and constraints in the sector are discussed under the following categories: community participation, institutional, technical, social, economic and financial, women and human resources.

4.2.1. Community Participation

The rationale for the following conclusions on community participation is provided by the empirical and conceptual discussion in Annex 4 and Annex 5. Annex 4 is a case study of the Community Basic Services Program operating in the Northern Areas. Annex 5 is a discourse on understanding and implementing

participatory approaches. The prescriptive conclusion is that community participation needs to be viewed as a process that engages the resources and ingenuity of all beneficiaries, not just their representatives.

The following specific constraints and bottlenecks are noteworthy:

- The broad-based development oriented institutions (Village Organizations) that exist at the village level have not been involved in developments in the rural water supply and sanitation sector.

- The communities of the Northern Areas have well developed common property regimes for the management of highland pastures, forests, irrigation channels, water, etc. This system is supported by a sophisticated sanctions system to ensure compliance. Development programs have rarely made use of this system in the implementation of water supply and sanitation schemes.

- The existing Government line departments have been unable to evolve an effective strategy for community involvement in scheme implementation and operations and maintenance.

- Development projects in the water supply and sanitation sector have in the past followed a narrow definition of community participation which has prevented broad-based and open participation of the users in scheme planning, implementation and management.

- Selection criteria which have given undue importance to political considerations and imposed the view of development planners without adequately reflecting the priorities of the community in scheme selection and design have been a major barrier to community participation.

- The inability of previous programs to strike a balance between an integrated approach and one that leaves the selection of project components to the users has hindered community participation in components which are not perceived by them as being important (Traditional Birth Attendant training and Sanitation components of the CBS program).

- Implementation strategies which are insensitive to local resource constraints, cultural and economic factors have prevented effective community participation.

- Lack of uniformity in the implementation strategies of NAPWD, LB&RD and other development projects like UNICEF

and AKRSP have led to the creation of unsatisfied expectations which have discouraged community participation.

4.2.2. Institutional

- The system of financial disbursements, low level of contact between the Union Council and the villagers and the poor organizational capacity of the Union Council limit its involvement in the sector.
- Identification of villages by the local government institutions on political grounds has a detrimental effect on scheme planning, implementation and operations and maintenance.
- The lack of a Government line department with the technical, financial and personnel resources to cater to the needs of the water supply and sanitation sector.
- The NAPWD department has a very large mandate and the provision of clean drinking water to the rural population forms a very small part of its mandate. Besides, it lacks the community orientation which the investment in the sector requires.
- The LB&RD lacks the technical capacity and the financial resources to play an active part in the water supply, sanitation and hygiene education sector. The community participation approach of the LB&RD department is narrow and limited.
- The lack of a framework which links the government line departments with grass-roots level institutions and the poor coordination between the line departments and development programs involved in the sector.

4.2.3. Technical

- Schemes do not involve the User Group in determining the technical feasibility and designing.
- Piped water supply schemes in the Northern Areas increase accessibility to water but do not improve water quality.
- Scheme design does not cater to the altitudinal variations which dictate the depth of laying pipe and regulate water supplies in the extreme winter temperatures when water availability is minimal.

4.2.4. Economic and Financial

- Traditional prescriptions in the sector overlook the fact that the underlying reason for poor access to water supply and sanitation facilities is poverty; lack of knowledge and awareness are not the principal reasons for poor health and quality of life status.

- The extreme labor constraint in the Northern Areas (labor intensive farming and short work season) is overlooked in scheme construction and slows down the implementation rate of schemes.

- The recurrent cost of NAPWD schemes has been rising annually by ** % and takes up a major share of scarce government resources.

- The Northern Areas do not generate any funds locally due to the special tax exemption status allowed by the Federal Government. Local institutions do not generate any funds either.

4.2.5. Women

- Women are the principal users of water for domestic purposes, but their involvement in planning for the sector is minimal due to their social segregation and seclusion.

- Programs which have been targeted at women and children have not involved women directly in scheme planning, implementation or management with a minimal impact on the target population.

- The incidence of water borne diseases and the infant mortality rate is extremely high but there is no emphasis on water quality control or hygiene education for women.

- Existing programs and projects have no women staff which restricts the access of these institutions to the male population in villages.

4.2.6. Human Resources Development

- Traditional programs in the sector have relied on voluntary workers at the village level. In a situation of extreme labor shortage excessive reliance on voluntary labor has undermined the development of a cadre of skilled village level workers.

- The absence of a local polytechnic which is oriented to the special technical and engineering needs of planning

and designing for high mountain valleys.

- The low level of skills, the low level of motivation and incentives for government staff.

- The absence of training of government staff in effective strategies of community involvement.

4.3. Strategies

4.3.1. Geographical Strategy

The number of schemes implemented in each district will be on the basis of population. It is expected that the 75% target should be reached for water supply schemes in all three districts by the end of the Eighth Five Year Plan. The Rehabilitation and Sanitation Strategy is also planned along the same lines but due to the demand driven nature of these programs the implementation rate may be different by the end of the Eighth Five Year Plan period.

The main implementation responsibility for small and medium schemes in villages less than 2,000 population will be that of the Village Organization in Gilgit and Baltistan. In Diamer, User Groups will be created and the program will be initiated in Astore due to the strong demand from that area of the need for a Village Organization based approach.

4.3.2. Institutional Strategy

The overall institutional strategy is based on the following premises:

- That broad-based community participation is essential if the proposed project is to mobilize community resources for identification, implementation, monitoring and maintenance of projects;

- That, to the greatest possible extent, the proposed strategy should strengthen and build upon existing institutions and their strengths, rather than creating new institutions and new institutional roles;

- That existing grass-roots institutions need to be linked to the government line departments directly and a mechanism for coordination between them needs to be established.

- That the Union Council cannot replace these institutions and its role in a project must be defined by the community itself. The role of the Union Council should be one of support and coordination for the grass-roots

institutions.

The emphasis on community participation and related institutional arrangements suggested here is in recognition of the special circumstances of the Northern Areas where grass-roots institutional development is at the most advanced stage in the country. The institutional strategy is to build on the experience with these broad-based community organizations in Gilgit and Baltistan Districts called Village Organizations (VOs) and originally sponsored by AKRSP. These organizations were formed around income-generating projects, and have been articulating a large number of demands for linkages with social sector activities such as health, education and housing. In one part of Gilgit District, they are participating in the Primary Health Care Project sponsored by the Aga Khan Health Services. A small number of VOs have also been involved in school construction and in planning for improved housing for their members.

The proposed institutional strategy for the Northern Areas will follow two broad directions. The first is for the Gilgit and Baltistan Districts where Village Organizations have been formed; in many villages, Women's Organizations also exist with the Village Organizations. The second is for Diamer District where these organizations have not as yet been formed. Where Village Organizations exist, they will be the executing agency for water supply, sanitation and hygiene education components with LB&RD as the overall coordinator (through the proposed Rural Water Supply and Sanitation Unit) and AKRSP and the private sector playing a supporting role (see Section 5.5). In areas where Village Organizations have not been formed, a participatory approach will be followed, and LB&RD will coordinate this by creating User Groups and by following the approach to participatory development outlined in Annex 5.

The creation of an NGO for the social sector was considered but the idea has not been incorporated in the implementation strategy due to the understanding that the provision of basic services should be the responsibility of a government line department and should not be left to a Non-Governmental Organization. The advantages in implementation (of speed, cost effectiveness, etc.) which the use of an NGO would have allowed are being achieved by the involvement of the community and the User Group.

4.3.3. Strategy for the Involvement of Women

- Female staff should be hired for those aspects of the program where women need to be involved more directly, e.g. water supply (location and height of standposts, drainage design, etc.), hygiene education, control of water quality, sanitation, etc.

- There is a need for coordination between the women staff of existing line departments (Health, Education), development projects and programs (AKRSP, Aga Khan Foundation, Primary Health Care Projects, UNICEF) and women in villages (Women's Organizations, Traditional Birth Attendants).

- Women at the village level should be involved in a more direct role in the water supply, sanitation and hygiene education programs; the diagnostic process of scheme identification and planning should include women.

- Where Women's Organizations do not exist and where it is initially difficult to involve women directly, the participation of women should be encouraged through initial dialogues with village elders, through religious sanction, and with influential men, with the ultimate objective of involving women in the process.

- Women's access to household connections, sanitation facilities and use of inputs (iodized salt, oral rehydration salt, filter bags, household latrines) should be improved by allowing women direct access to credit facilities.

4.3.4. Technical Strategy

The technical strategy consists of the following guidelines:

- The technical approach and technology choice should be flexible in order to contend successfully with the great diversity of location-specific factors in mountain environments.

- The rate of implementation of schemes should be determined by the Village Organization or User Group, which will be the implementing agency at the village level. The Investment Plan will give guidelines on what this rate might be on the basis of past experience.

- Four main kinds of technical variations in schemes have been identified; these are combinations of gravity flow schemes with treatment and storage or without treatment and without storage.

- No provision is made for treatment of water with fine silt particles less than 0.06 millimeter. Settling such small particles is extremely expensive. No special provision is being made for the treatment of water loaded with heavy material as a result of summer floods.

- A strong training component for operations and maintenance is being built around water supply schemes which require slow sand filters and other techniques which require special skills.

- The use of KPM pipes is being suggested for NAPWD schemes but not for LB&RD schemes. KPM pipes are in short supply and there is no definite manner of verifying the difference between KPM and ordinary pipes.

4.3.5. Financial Strategy

- For construction of water supply schemes, the VO or User Group will pay the cost of local materials, land and partially subsidize the labor cost for schemes which can be implemented by the community. For large schemes implemented by NAPWD, the government will initially pay the entire cost of the scheme's construction.

- The VO or User Group will pay the entire cost of operations and maintenance for small water schemes implemented by the community. For schemes implemented by the NAPWD, a user fee will be levied and collected by the NAPWD. This user fee will include part of the cost of scheme construction.

- The cost of latrines will be borne by the private users. Inputs for the construction of latrines will be partially subsidized only in the case of an untested technology during the initial stages of development and demonstration.

- Credit will be made available through the VOs and User Groups for investments in the water supply and sanitation sector. A special effort will be made to improve the access of women to credit facilities. Financial mechanisms will be put in place which link the availability of credit to the purchase of inputs so that credit is given in kind.

- Service charges (at the rate currently prevalent for lending to VOs) will be levied on all loans advanced to the Village Organization or User Group. A guideline will be provided by the Aga Khan Rural Support Program for onward lending to households.

- Village Organizations will arrange for the provision of credit through the revolving fund which they will be managing. Viable User Groups will also be given revolving funds to disburse among their members.

- Credit arrangements will be made for the Village Organization or User Group on a collective basis. Disbursement of loans to and recovery from individual households will be the responsibility and the function of the Village Organization and the User Group. The VO or UG will be collectively responsible for default on principal and service charges.

4.3.6. Water Supply Strategy

The binding constraint on the speed of implementation of water supply schemes is the institutional capacity of the major implementing and support agencies namely, Village Organizations, NAPWD, LB&RD and the Aga Khan Rural Support Program. The annual implementation rate is based on the past rate of implementation of productive physical infrastructure projects at the village level.

The following guidelines constitute the water supply strategy:

- The selection of villages for the provision of water supply schemes will be on the basis of village needs identified through the diagnostic process. For districts where the number of planned schemes is lower than the number of villages demanding the scheme, the selection of villages will be on the basis of indicators of the community and Village Organization performance (savings, repayment of past loans, matching grant, etc).

- Villages will be provided one standpost per each ten households. The scheme design will allow a per capita provision of 5 gallons for the village population with an expansion capacity of 15 gallons per capita for fifty per cent of the population to meet the projected future demand for household connections.

- Extension of water supply schemes to the household level will be undertaken by individual households at their own cost and only after agreement among the community. Credit will be made available for such house connections through the VO or UG.

- The high incidence of water borne diseases and the high infant mortality rate necessitate attention to water quality through a proper system of water testing and treatment. The nearest dispensary of the Health Department will provide basic testing services at a small fee to Village Organizations and individual households.

- All the inputs and materials which are required for program implementation will be purchased directly by Village Organization and User Group representatives from

the private sector. In collaboration with the Aga Khan Rural Support Program and the proposed RWSS Unit, a short training session will be conducted to advise village representatives on the purchase of inputs.

4.3.7. Rehabilitation Strategy

- On the assumption that a breakdown of existing schemes implies an inability or unwillingness on the part of beneficiaries to rehabilitate the scheme, a diagnostic process with Village Organizations and User Groups will be adopted before concrete measures are taken.

- Three types of rehabilitation needs are anticipated on the basis of field surveys undertaken in the Northern Areas. It is estimated that 27 percent of the existing schemes will need major repairs, another 34.5 percent will need minor repairs and 14 percent will need proper maintenance. NAPWD will be given special funds to conduct the major and minor repairs on its schemes. Village Organizations and User Groups will be provided funds for major repairs and loans for minor repairs.

- Training will be provided to NAPWD staff and scheme managers and operators identified by the community for proper maintenance.

- The rehabilitation of existing schemes will be completed within the first three years of the Investment Plan and a proper system will be put in place for the maintenance and operation of existing schemes.

4.3.8. Drainage Strategy

The physical conditions in the area do not warrant a major investment in drainage: natural slopes, drains and permeable soils serve to facilitate drainage without substantial cost. What is needed for future schemes is a consideration during the construction period for accommodating the modest additions required to ensure drainage.

The following guidelines are important:

- Public taps or standposts should be located directly at, or near the channels, so that they drain directly into the channels.

- Public taps installed away from the channels should be connected to them through secondary channels, or a drain should be built. Such a drain can be constructed simply by digging a small pit directly below the tap, and filling it with rocks; would flow between the rocks to

the bottom of the pit, and seep into the ground without accumulating at the surface.

- Homes installed with house connections should have a secondary channel draining into the main network, or have a drain (as explained above) directly at the tap.

Each executing agency will be responsible for ensuring that these specifications are integrated into all their projects.

- For NAPWD, this will mean including these specifications in the terms of agreement between them and the contractors hired to execute the schemes.

- For LB&RD, this will mean including these specifications in the terms of partnership agreed to between LB&RD and the Village Organizations and User Groups.

- For the Village Organizations and User Groups, this will mean ensuring that villagers working on the scheme are indeed following these specifications.

Such a strategy should ensure sufficient hygienic conditions at the taps and standposts, and at the same time, avoid the additional costs of a full-fledged drainage program.

4.3.9. Sanitation Strategy

The Investment Plan accepts that it is not possible to achieve the stated target of 40 percent sanitation coverage given in the Seventh Five Year Plan. The more realistic target of 30 percent coverage is being aimed for in the strategy presented in the Investment Plan. The sanitation program is a demand driven program.

The sanitation program will be initiated in those villages with existing water supply schemes which have a large proportion of house connections. It will also be introduced in those villages where new water supply schemes are being initiated. As such, it is expected that the sanitation program will be initiated in 584 villages.

A phased approach is being recommended in the sanitation program, beginning with motivation, demonstration, provision of credit and materials.

The following guidelines are particularly important:

- Five demonstration latrines will be constructed in private houses at partially subsidized costs and only if there is a new technology to be demonstrated. No demonstration latrines will be constructed in public

places.

- On the understanding that lack of sanitation facilities is primarily due to low income levels, a key feature of the sanitation program will be the provision of credit through the VOs for input supply for the construction of latrines.

- The dissemination of indigenous latrine models will be done with a recognition that there are limits to the expansion in the use of existing models (balti) due to cultural constraints on using nightsoil as fertilizer.

- The private sector will be encouraged in the installation and provision of supplies in the sanitation program and the government line departments will play a minimal role in supplies.

- Close coordination will be expected in the implementation of this program with agencies which have been involved with the implementation of a latrine demonstration and construction program. These agencies include UNICEF, LB&RD, the Aga Khan Housing Board, etc.

4.3.10. Human Resources Development Strategy

- The selection of village level workers for training will be the responsibility of the User Group and the Village Organization.

- A system of remuneration will be adopted which ensures that village level workers are remunerated for their services and supplies by the users. The system will follow the experience of AKRSP in training village level para-professionals.

- The high mountain valleys of the Northern Areas require special skills which are not taught by any of the existing polytechnics in Pakistan. This facility will be developed in the polytechnic planned for the Northern Areas.

- The more immediate needs of the officials of the line departments will be met by providing them exposure to the training courses available in polytechnics in Peshawer and Islamabad, and by making appropriate arrangements for training courses with local and foreign organizations with relevant experience as well as in high mountain environments.

4.3.11. Hygiene Education Strategy

Due to the curative orientation of the Department of Health, a two-pronged approach is being suggested for the Hygiene Education Program. The first approach is to give the Department of Health the lead role in the dissemination of hygiene education messages because of its wide network of physical infrastructure at the village level and available evidence which suggests that the village level dispenser is frequently used by village women for referral. The second approach is to give the lead role to the proposed Rural Water Supply Unit of LB&RD to ensure the integration of health messages into the components of the Investment Plan. Both these approaches will be practiced.

The Health Education Unit within the Department of Health will be strengthened for defining the policy and for training and coordinating with field level staff. The infrastructure of the department at the village level will be used for the delivery of hygiene education messages. Additional support to this department will be provided by training and addition of equipment.

The female staff of the proposed Rural Water Supply and Sanitation Unit will be used to ensure integration of hygiene education messages with the components of the Investment Plan. It will implement the hygiene education program through its female staff and with close coordination with the Department of Health, the Aga Khan Housing Board, the Aga Khan Health Services Program, the Aga Khan Primary Care project and the Aga Khan Rural Support Program.

The experience of other development programs in the field, such as the Primary Health Care project, the Community Basic Services program and the past experience of the Department of Health, will be considered in designing a strategy for hygiene education. It is expected that the strategy will have the following elements:

- The Hygiene Education Program will begin with the identification of appropriate hygiene messages; the strategy for the delivery of these messages will depend on the content and target group for the messages.

- The focus of the Hygiene Education Program will be the villages with a basic level of water availability. This will include both those communities where the project has supported new water supply schemes and those which have already been adequately served.

- Hygiene education messages which encourage the use of specific inputs will be supported by the delivery of those inputs and credit for improved access to the inputs.

- Women will be the main target group of the hygiene education messages and as such the delivery of these messages will be through women field staff of line departments and NGOs.

- The support of the Traditional Birth Attendants, Lady Health Visitors, Women's Organizations and other female health workers will be enlisted in the dissemination of hygiene education messages.

- Hygiene education will be integrated with the other activities of line departments and development programs, and with other project components of new water supply schemes, drainage and sanitation.

- Selective use of the mass media will be made to provide a general level of awareness of issues in hygiene.

4.3.12. Operations and Maintenance Strategy

- For village level schemes with less than 2,000 population, a plumber will be selected by a cluster of 1-5 Village Organizations or User Group. This plumber will be provided with a kit and training and he will be responsible for operations and maintenance; he will be paid by the users of the scheme.

- A sub-engineer will be appointed to provide assistance to village level plumbers. The sub-engineer will be part of a two member team. The other person in this team will be a social organizer who will assist in focusing on management and other social aspects of scheme implementation and operation. This two member team will cover between 50 and 60 villages and will be based at the sub-division level.

- An assistant engineer will be provided at the district level to oversee the work of the sub-engineers and the plumbers. Regular monitoring reports will be submitted to the assistant engineer by the sub-engineers. There will be 3 such assistant engineers for all of the Northern Areas.

- Well-defined Terms of Partnership between the proposed Rural Water Supply and Sanitation Unit, the Village Organization and the plumber will specify the responsibilities of each (please see Annexure 6).

5. INVESTMENT PLAN

5.1. The Investment Plan Described in Brief

The Investment Plan[29] is for the next eight years, that is, for fiscal years 1990-91 to 1997-98. It covers the remaining three years of the Seventh Plan Period and the five years of the Eighth Plan period. The Plan is designed to meet some of the basic requirements of the Northern Areas in rural water supply, sanitation and health.

The total Investment Plan for the Northern Areas in constant 1988-89 prices is Rs 368.7 million. Table 5.1 gives a detailed cost breakdown by year. The total Investment Plan for the remaining three years of the Seventh Plan period is Rs 168 million and the amount for the five years of the Eighth Plan period is Rs 200.6 million.

Plan allocations are divided as follows:

Water supply schemes	63%
Institutional strengthening	23%
Operations and maintenance	6%
Rehabilitation of existing schemes	3%
Revolving credit	2%
Hygiene education, human resource development, sanitation and water quality testing	2%

A graphic illustration of the component slicing is presented in Figure 5.1.

Foreign technical assistance forms 31% of the institutional strengthening component.

5.2. Target Service Coverage

The Investment Plan for the coverage of water supply in the Northern Areas is driven by the enhanced institutional capacity of the implementing agencies. This capacity allows the achievement of 100% coverage in villages with a population of more than 2,000 population, and 70% coverage in villages with a population of less than 2,000. The total water supply coverage of the rural population in the Investment Plan period will be 78% (Figures 5.2 and 5.3). The coverage estimates incorporate the projected growth in population. A total of 164 small, 180 medium and 43 large water supply schemes will be implemented during the Investment Plan period.

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[29]Unless explicitly mentioned otherwise all costs are in constant 1988-89 prices.

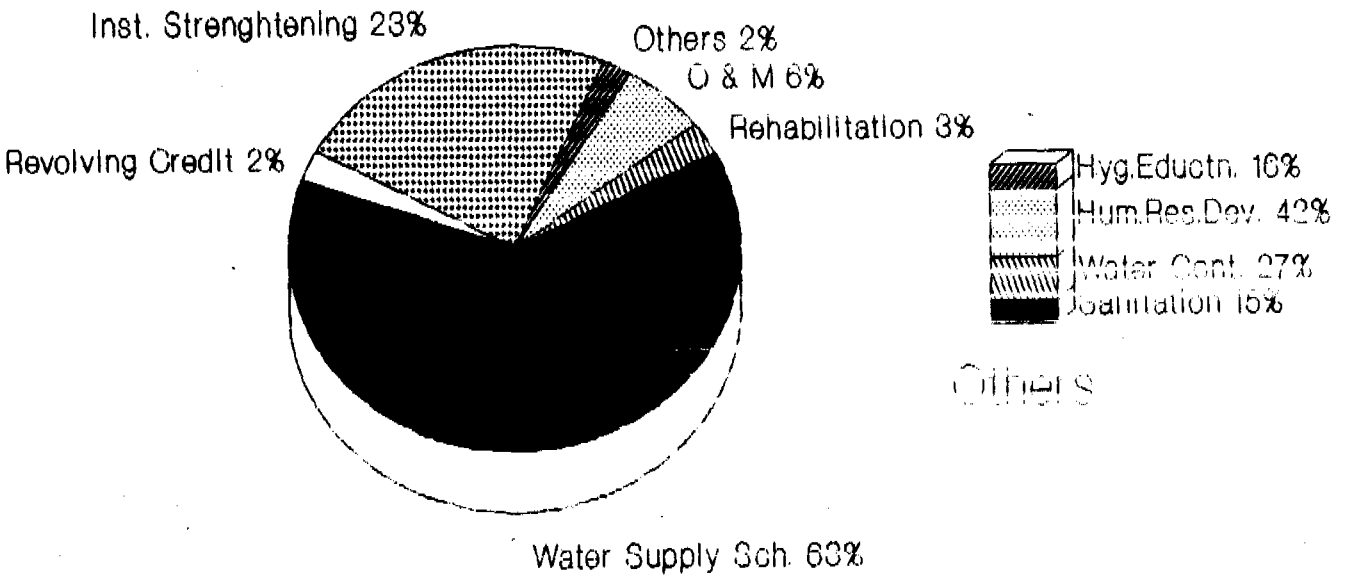
Table 5.1

Investment Plan For Northern Areas

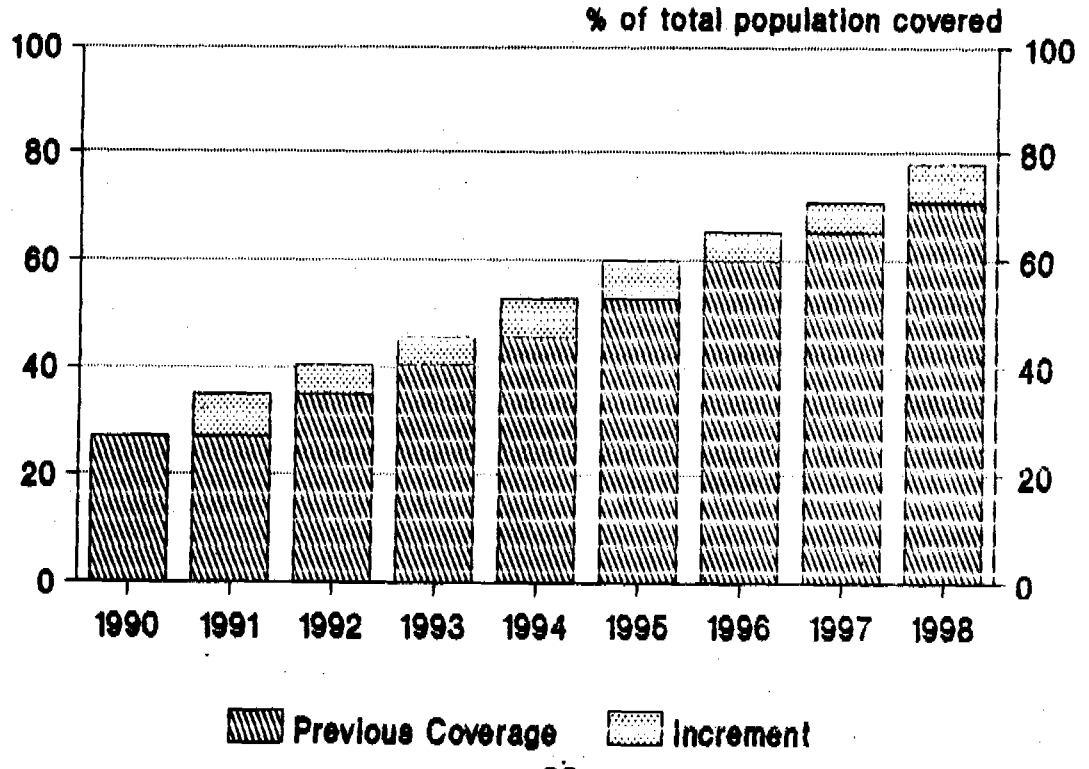
(Constant Prices 1988-89) (Rs.'000)

Sector Component	1990-91	1991-92	1992-93	Total 1990-93	1993-94	1994-95	1995-96	1996-97	1997-98	Total 1993-98	Total 1990-98
New Water Supply Schemes	32,336	32,336	33,876	98,548	34,830	35,154	20,664	20,988	22,572	134,208	232,756
Rehabilitation	2,606	3,943	3,560	10,109							10,109
Operation and Maintenance (O&M)	646	1,294	1,971	3,911	2,667	3,370	3,784	4,203	4,655	18,679	22,590
Sanitation	150	150	152	452	154	156	134	136	136	716	1,168
Water Control and Testing	1,440	40	40	1,520	40	40	500			580	2,100
Human Resource Dev.	856	641	536	2,033	278	278	228	228	218	1,230	3,263
Hygiene Education	170	140	190	500	180	140	190	140	140	790	1,290
Institutional Strengthening (LB&RD)	5,522	2,097	2,257	9,876	2,433	2,626	2,838	3,072	3,330	14,299	24,175
Institutional Strengthening (AKRSP)	910	360	360	1,630	360	360	360	360	360	1,800	3,430
Institutional Strengthening (PHEC & NAPWD)	2,828	2,078	2,078	6,984	1,678	1,678	1,678	1,678	1,678	8,390	15,374
Institutional Strengthening (DOH)	4,816	1,716	1,816	8,348	1,416	1,716	1,716	1,416	1,216	7,480	15,828
Institutional Strengthening (NA Polytechnic)					500	50	300	100	100	1,050	1,050
Institutional Strengthening (Foreign TA Proj.)	7,717	8,479	756	16,952	756	5,290	3,403			9,449	26,401
Revolving Credit	1,250	2,200	3,800	7,250	750	700	500			1,950	9,200
Total	61,247	55,474	51,392	168,113	46,042	51,558	36,295	32,321	34,405	200,621	368,734

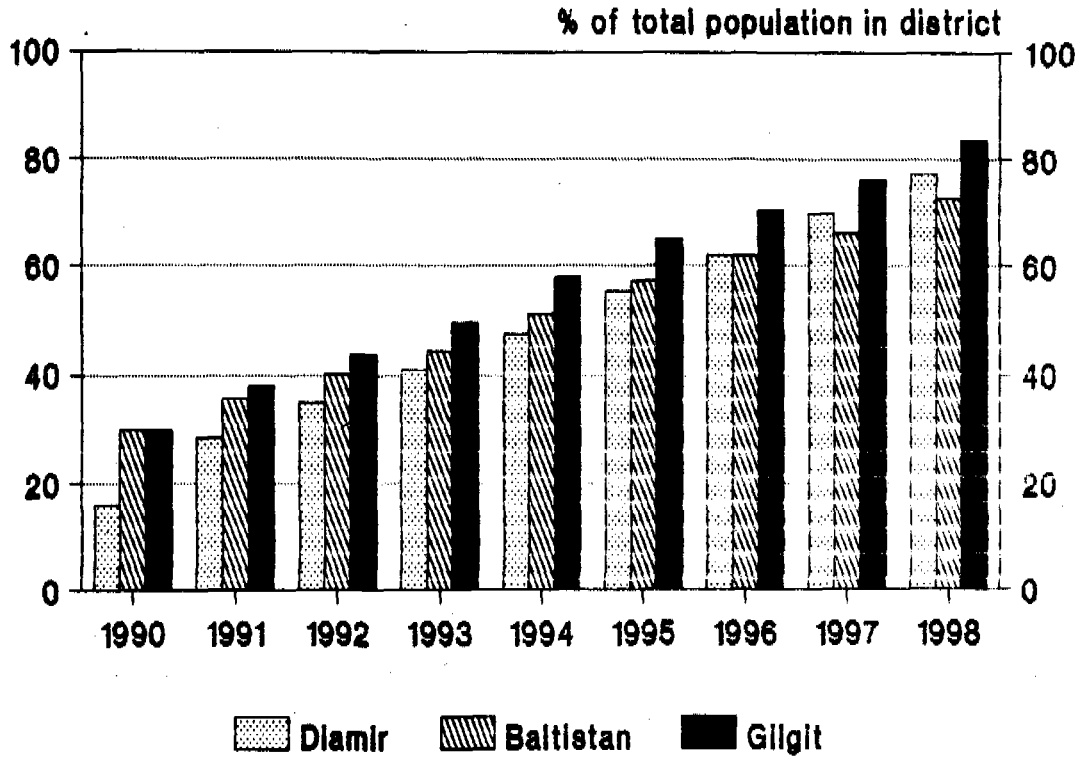
INVESTMENT PLAN FOR
The Northern Areas
Figure 5.1



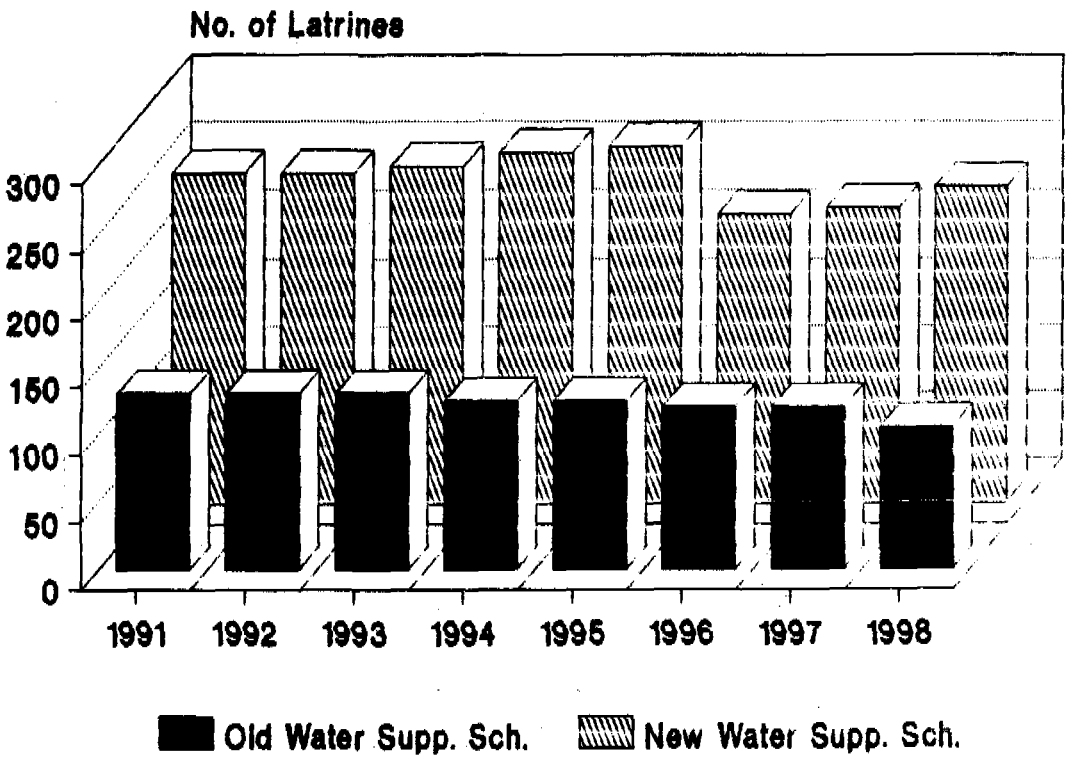
Rural Water Supply Coverage
in Investment Plan 1990-98
Figure 5.2



Rural Water Supply Coverage
in Investment Plan 1990-98
Figure 5.3



Sanitation Coverage Plan
for Old & New Water Supply Schemes
Figure 5.4



There is no specific target for the sanitation program in terms of overall coverage: this is a demand driven program that would depend on household demand. It is estimated that an additional 2.3% of the population will be covered as a result of the demonstration latrine program. The two-pronged strategy for villages with new and existing water supply schemes suggested in the sanitation strategy is reflected in Figure 5.4.

The recommended human resource development program of Rs 3.26 million has four major categories of training. The program includes management, technical, field and foreign training. The training of technical and field staff form the major share of investments in the human resource development program. Management and foreign training will take up 6% each of the human resource development component (Figure 5.5).

An amount of Rs 9.2 million has been allocated for revolving credit among four main categories (Figure 5.6). It is recommended that 68% of this revolving credit be given for household connections, 22% for investments in household level sanitation facilities, 9% for rehabilitation and 2% for hygiene education.

5.3. The Strategic Investment Plan by District

In view of the Government's concern with equity considerations in the investment between the three Districts the level of investment in Diamer for water supply coverage has been kept at a slightly higher rate.

The district wise coverage of the water supply schemes is presented in Figure 5.3. The percentage of the population covered in Baltistan and Gilgit is at the same level and much lower in Diamer at the beginning of the Investment Plan period. However, by the end of the Investment Plan period in 1998 the gap in the percentage of the total rural population covered in the Districts is much lower. The sanitation program is linked to the water supply program and as such a slightly higher effort in the implementation of the sanitation program is recommended for Diamer.

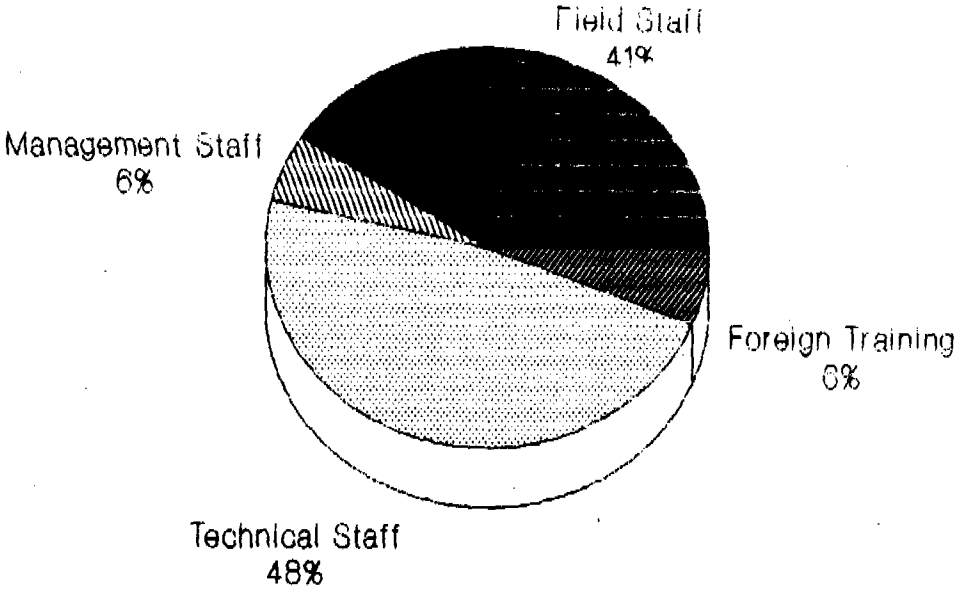
5.4. Alternative Scenario Analysis

The provision of water supply coverage of the rural population in the Northern Areas is most sensitive to two factors; scheme size and implementation rate. The first scenario evaluates the coverage attained at the current implementation rate of NAPWD and LB&RD. Considering the past trend, on average 8 large and 17 small or medium schemes are planned to be implemented by NAPWD and LB&RD respectively till 1998. The coverage attained at the end of the Eighth Five Year Plan is 50% at a cost of Rs 134.15 million. Thus, with the current implementation rate the coverage would be

Human Resource Development

Total Budget in the Investment Plan

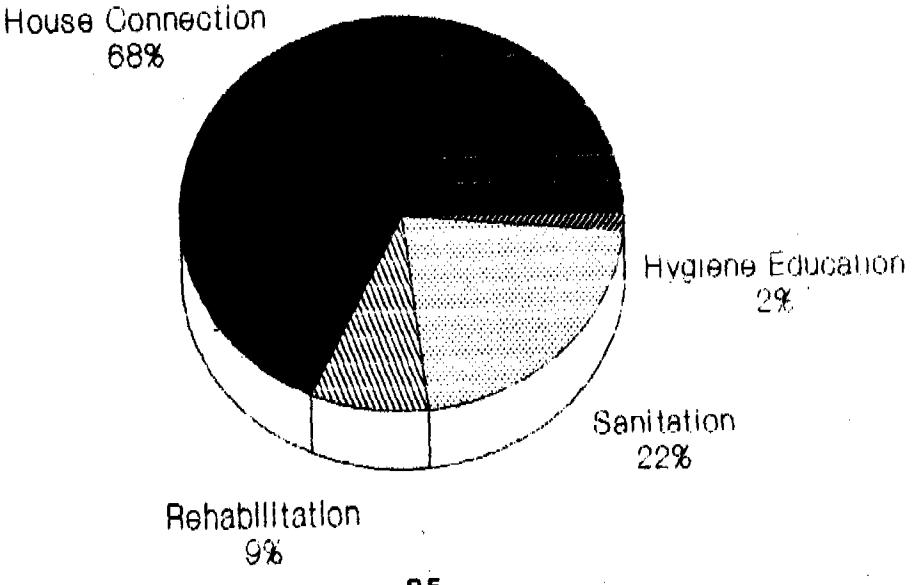
Figure 5.5



Revolving Credit

Total Budget in the Investment Plan

Figure 5.6



far below the 75% target set by the government.

Varying scheme size has an impact on cost and coverage. The larger schemes are more cost effective because they cover a larger number of people. If priority is assigned to large and small villages so that 100% population in these settlement sizes is covered by 1998, then 478 schemes are required at an estimated cost of Rs. 247.55 million. A comparison of this scenario with that recommended in the Investment Plan, shows that both the number of schemes and the unit cost of schemes increases but the coverage goes down to 68%. This fall in coverage is due to the fact that small villages constitute a very small percentage (approximately 15% in 1998) of the total population.

The third scenario was designed to achieve 100% coverage by the end of 1998. The plan proposes 565 schemes to be implemented in the next 8 years. The estimated cost of these schemes is Rs. 299.3 million. However, the actual cost might be higher as some of the villages are very small, scattered and remote. The cost of schemes in these villages will be very high and needs to be calculated on a village to village basis.

5.5 Plan Management and Implementation

5.5.1. Institutional Arrangements

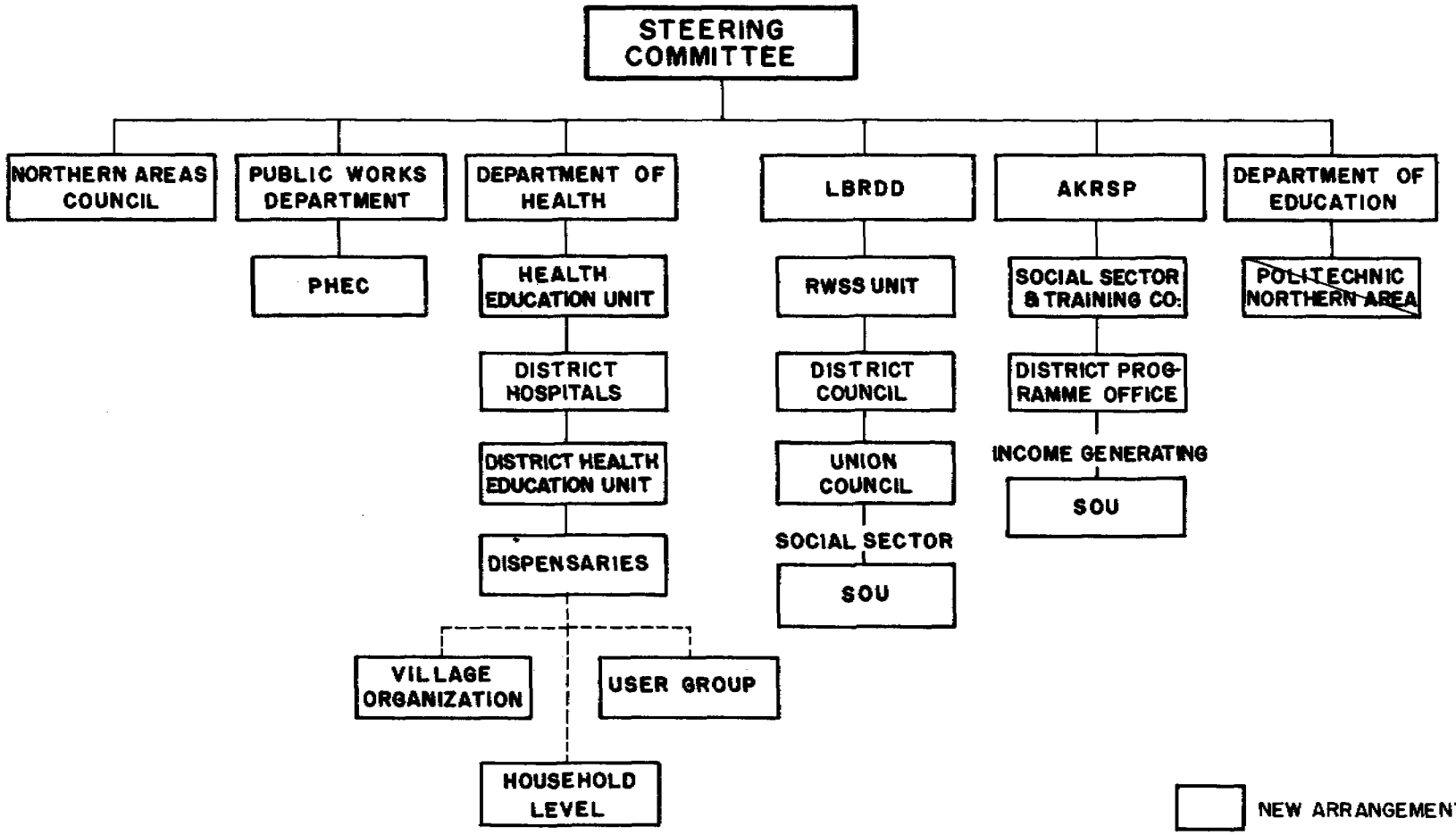
The institutional arrangements that are being suggested for the Northern Areas attempt to minimize expenditure on recurrent categories, build on the existing strength of existing institutions and encourage links between existing government departments and non-governmental organizations, and between the grass-roots level institutions and the government line departments. The institutional roles are premised on the strategic considerations presented in the preceding section on strategy.

A survey of the institutions in the Northern Areas indicates that several of the departments which are involved with the implementation of the water supply, sanitation and health sector in the rest of the country do not exist in the Northern Areas. For example, there is no Public Health Engineering Department and no Health Education Unit within the Department of Health. This has made it difficult for the line departments to have access to the rural population.

The institutional arrangements that are being proposed for the execution of the Investment Plan are presented in Figure 5.7. From this graphic representation it becomes clear that administrative reform is being proposed at three levels:

- A second administrative tier is being created in the existing organizational structure. This new tier is being created with the understanding that the increased

INSTITUTIONAL ARRANGEMENTS IN NORTHERN AREAS
NEW & EXISTING



level of community participation envisaged in the implementation of the targets in the sector requires a more responsive administration.

- Arrangements are being proposed to secure direct contact with village level organizations through the creation of a field unit called the Social Organization Unit for social sector programs.

- A government line department will be actively associated with the task of developing village level organizations for the implementation of development programs.

The institutional arrangements suggested here concern the Public Works Department, the Local Bodies and Rural Development Department, the Aga Khan Rural Support Program, the Department of Health, the proposed polytechnic planned for the Northern Areas by the Education Department, the Village Organizations formed by men and women in the districts of Gilgit and Baltistan, and the User Group for the District of Diamer[30].

The Northern Areas Public Works Department

It is recommended that a Public Health and Engineering Circle (PHEC) be created within the existing NAPWD. The creation of this Circle is being recommended keeping in mind that once 100% coverage of water supply and sanitation is achieved in the large villages (projected by the end of the 1994-95 financial year) the orientation of the PHEC should be with the efficient management of its schemes. The orientation of the NAPWD as a whole is with construction of roads, bridges and irrigation channels. A high level of investment in the transport and communication sectors is projected for the NAPWD in the future. This concentration on the achievement of physical targets will not allow it to play an efficient management role in the water supply and drainage schemes in the present administrative structure. With the growth in the urban population in the Northern Areas and the resulting increase in the number of villages of population above 2,000, the nature of the problem of water supply and drainage in areas where NAPWD is currently operating will also change. A NAPWD with a Public Health Engineering focus will be more relevant to meet some of these changing needs. The recommendation of a PHEC is being made to secure this clear demarcation of responsibilities.

The PHEC will have five main responsibilities under the proposed strategy in the Investment Plan:

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[30]Annex 5 gives the conceptual underpinning of the participatory strategy recommended for the implementation of the Investment Plan.

- Responsibility for the construction of water supply and drainage systems in towns and in villages with a population of more than 2,000;

- The maintenance of water supply and drainage systems in towns and villages with a population of more than 2,000 people;

- Collection of user charges from all the consumers of water supply. This user charge will meet the cost of scheme operations and maintenance and some of the cost of capital works and minor repairs.

- A greater responsibility for water quality and control of its schemes in collaboration with the Department of Health.

- Collection of data pertaining to water resources in the Northern Areas along with a reference for the special design criterion and engineering skills required in these areas.

The Local Bodies and Rural Development Department

The Local Bodies and Rural Development Department is recommended as the leading implementing agency in all villages. Where Village Organizations exist, this role will involve coordination, monitoring, and providing assistance in key areas. Where Village Organizations do not exist, this role of coordination will have to be preceded by efforts at institution development at the village level. This institution could be the entry point for income-generating programs at a subsequent stage. LB&RD will not implement schemes itself in any village.

A Rural Water Supply and Sanitation Unit has been proposed within LB&RD for the implementation of schemes through the Village Organizations and User Groups (see Figure 5.10). The main responsibility of the RWSS Unit within LB&RD will be the following:

- To conduct diagnostic surveys with Village Organizations (VOs) in Gilgit and Baltistan, and User Groups (UGs) in Diamer to assess the need for water supply and sanitation components.

- To coordinate the implementation of the water supply schemes through the VOs and UGs by contracting the services of the Aga Khan Rural Support Program or private contractors for preparing scheme feasibilities, design and cost estimates.

- To ensure the participation of women in the diagnostic

process so that the concerns of the women in villages are reflected in scheme identification, planning, implementation and management.

- To initiate a sanitation program by motivation and demonstration of appropriate technology in villages.

- To coordinate the provision of inputs and access to credit for sanitation through contact with private contractors, credit institutions and development projects.

- To coordinate the training of village masons, plumbers, female hygiene education workers and others involved in the sector by organizing short, basic refresher courses through development projects and non-governmental organizations working in the sector (Aga Khan Foundation, AKRSP, etc).

Aga Khan Rural Support Program

The Aga Khan Rural Support Program has indicated a strong interest in supporting the proposed RWSS Sector Investment Plan. This support is premised on two main tenets of AKRSP's Second Phase Strategy: (i) to involve the Village Organizations in a wider range of activities, particularly in the social sector; and, (ii) to ensure the sustainability of the Village Organization by encouraging its acceptance by the Government as a grass-roots development organization for village projects. AKRSP has repeatedly emphasized that the Village Organization should be seen as a village level institution through which all development agencies, not only AKRSP, can have effective and sustainable access to the village. As such, it is relevant to reiterate the following:

- The sustainability of local institutions requires that the VOs initially sponsored by AKRSP should develop the maturity and confidence to reach beyond AKRSP for access to resources for on-going development;

- AKRSP's functional mandate is in the income-generating sector; the VOs sponsored by it and organized around income-generation represent the forum through which agencies other than AKRSP can obtain sustainable, broad-based community participation.

The main roles envisaged for AKRSP in the Investment Plan are the following:

- AKRSP will facilitate the RWSS Unit in its access to the Village Organizations by providing orientation sessions and information to the staff of the RWSS Unit:

- AKRSP will assist the Local Bodies and Rural Development Department by providing engineering staff for technical surveys;

- AKRSP will assist in the coordination for credit and the supply of inputs to Village Organizations. AKRSP will organize workshops to enable input suppliers, staff of the RWSS Unit and representatives of other line departments who understand the system of banking and credit which the AKRSP has initiated at the village level;

- Organizing training sessions for the members of the RWSS unit in community organization and development through field assignments of 6-12 months and through their participation in the program planning process at AKRSP.

- AKRSP will assist in the training of the female staff of the RWSS Unit by arranging 6-12 month field assignments with the field coordinators.

The Monitoring and Evaluation Unit

The Monitoring and Evaluation Unit which was envisaged as the monitoring arm of the Community Basic Services program but was left without a clear mandate since the discontinuation of the CBS program, can be merged with the RWSS Unit and entrusted with the Monitoring and Evaluation responsibility for the RWSS sector. The specific responsibilities of the M&E unit will be the following:

- To establish a monitoring system which provides up to date information on scheme implementation, operations and maintenance.

- To provide feedback to the principal line departments and agencies on the constraints and bottlenecks in the sector and suggest means of alleviating these.

Department of Health

The Department of Health will be the lead agency in water testing and in the prevention of water borne diseases through its district hospitals and village level dispensaries. The Rural Water Supply and Sanitation Unit will work closely with these village level dispensaries in the delivery of hygiene education messages and in ensuring the supply of essential inputs like water filter bags, oral rehydration salts, iodized salts etc. The specific responsibilities of the Department of Health will be the following:

- To conduct a comprehensive survey of water quality in

the Northern Areas. This survey will help to identify the areas where special efforts need to be made to reduce infant morbidity and mortality, prevent goitre and reduce the other ailments (skin and eye infections) among women.

- To establish three laboratories in the Northern Areas, one in each of the present district headquarters. These laboratories will, upon the request of the Public Works Department, Rural Water Supply and Sanitation Unit, other line departments and individual households, conduct water tests on samples given to them. The laboratories will charge an appropriate fee for such tests. Where the contamination level is high or where more sophisticated tests are required the laboratories will arrange to have the water quality tested in the more sophisticated facilities (e.g., Risalpur) in the country.

- The 103 dispensaries of the Department of Health will be provided simple water testing kits. These dispensaries will conduct water tests upon the request of Village Organizations, individual households and any village group requesting such a test. The dispensaries will charge an appropriate fee for the tests.

- Whenever such water tests are conducted by the district laboratories and the dispensaries, appropriate recommendations will be made on measures to improve the quality of the contaminated water.

- The women staff of the Rural Water Supply and Sanitation Unit will closely coordinate with the Traditional Birth Attendants mid-wives, and other staff of the Health Department for the delivery of hygiene education messages, supplies for the improvement in water quality and medicines for water borne diseases, etc.

Department of Education

The establishment of a polytechnic for the Northern Areas has been recently approved at a total cost of Rs 45 million. The polytechnic will offer a three year post matric diploma course in the three fields of civil, mechanical and electrical engineering. It will have the capacity to train 30 students in each field per year. This polytechnic will be the training institute for engineers for the Northern Areas in the future. For the short term, the responsibility for training will be handled by the polytechnic in Peshawer, the Aga Khan Rural Support Program, and the Local Bodies and Rural Development Department.

The Union Council

The Union Council is not being given a direct role in

implementation. However, the institutional arrangements suggested here do not exclude members of the Union Council. In fact the Union Council members can play an active part in village level development by coordinating the disbursement of funds at their disposal and by using their influence to encourage scheme implementation. The main point regarding the role of the Union Council members is that their position in the Village Organization or User Group should not be dictated from above but should be decided internally by the community they are serving.

Village Organizations

The Village Organizations will be the lead implementing agency for water supply and sanitation programs in Gilgit and parts of Baltistan District. These organizations will collaborate with the LB&RD, the AKRSP and the private sector in the implementation and management of these schemes. The process of community participation is given in Annex 5 and detailed Terms of Partnership between LB&RD and the Village Organizations are given in Annex 6. The specific functions of the Village Organization are outlined below:

- The Village Organization will be the lead implementing agency for water supply schemes in Gilgit and Baltistan District. The Village Organization will identify the need and communicate it to the Rural Water Supply and Sanitation Unit of the LB&RD.

- The Village Organization will implement the scheme in accordance with the Terms of Partnership reproduced in Annex 6.

- The Village Organization will operate and maintain the scheme and be fully responsible for the costs of these functions.

- The Village Organization will act as the financial intermediary in coordinating the credit needs of its members for the extension of household water connections, latrines, etc.

- The Village Organization will select village men and women for training in skills required to operate and manage the water supply schemes and for other components of the package. The Village Organization will be responsible for putting in place a system which ensures that the trainees are remunerated for services and reimbursed for the supply of crucial inputs.

The User Group

The concept of the User Group is being advanced for the

implementation of schemes in Diamer where Village Organizations do not exist. The same approach of participatory development which has been so successful in the formation of Village Organizations is being recommended for the formation of a User Group. The major distinction between a Village Organization and the User Group is that the Group is not created with the specific objective of developing the institutional infrastructure at the village level but for the short term purpose of implementation of the scheme. The Management Group of the Aga Khan Rural Support Program felt confident that this approach would succeed in Diamer District and felt that the User Groups could be the precursor to the formation of sustainable institutions at the village level.

5.5.2. Organization

Coordination at the Northern Areas Level

It is proposed that a Steering Committee be constituted for overall coordination and collaboration of the Investment Plan (Figure 5.8). The Northern Areas Administrator will be the Chairman of this Committee, and the Development Commissioner will be the Deputy Chairman. The representatives of the Planning and Development Cell, NAPWD, LB&RD, the Departments of Health and Education, AKRSP, the Aga Khan Foundation and the donors would be members of the Committee.

The Steering Committee will meet once a month to discuss progress in implementation, future targets and the coordination needs for effective implementation of the Investment Plan. The Monitoring and Evaluation Unit under the guidance of the RWSS Unit will take a lead role in following progress and in keeping detailed records of the decisions of the Steering Committee.

Inter-agency linkages for the achievement of the targets of the Investment Plan are shown in Figure 5.9. This is an illustrative figure showing the institutions involved in the sector and their responsibilities.

Coordination at the District Level

A District Coordination Committee will be formed with representatives of the major departments on the same pattern as the Steering Committee. These meetings will discuss coordination needs at the district level. Periodic meetings of the staff of the Rural Water Supply and Sanitation Unit in the districts will be held for sharing the lessons learnt during the implementation process.

Coordination at the Village Level

Coordination between the Village Organizations and User Groups for exchange of information and sharing of experiences is

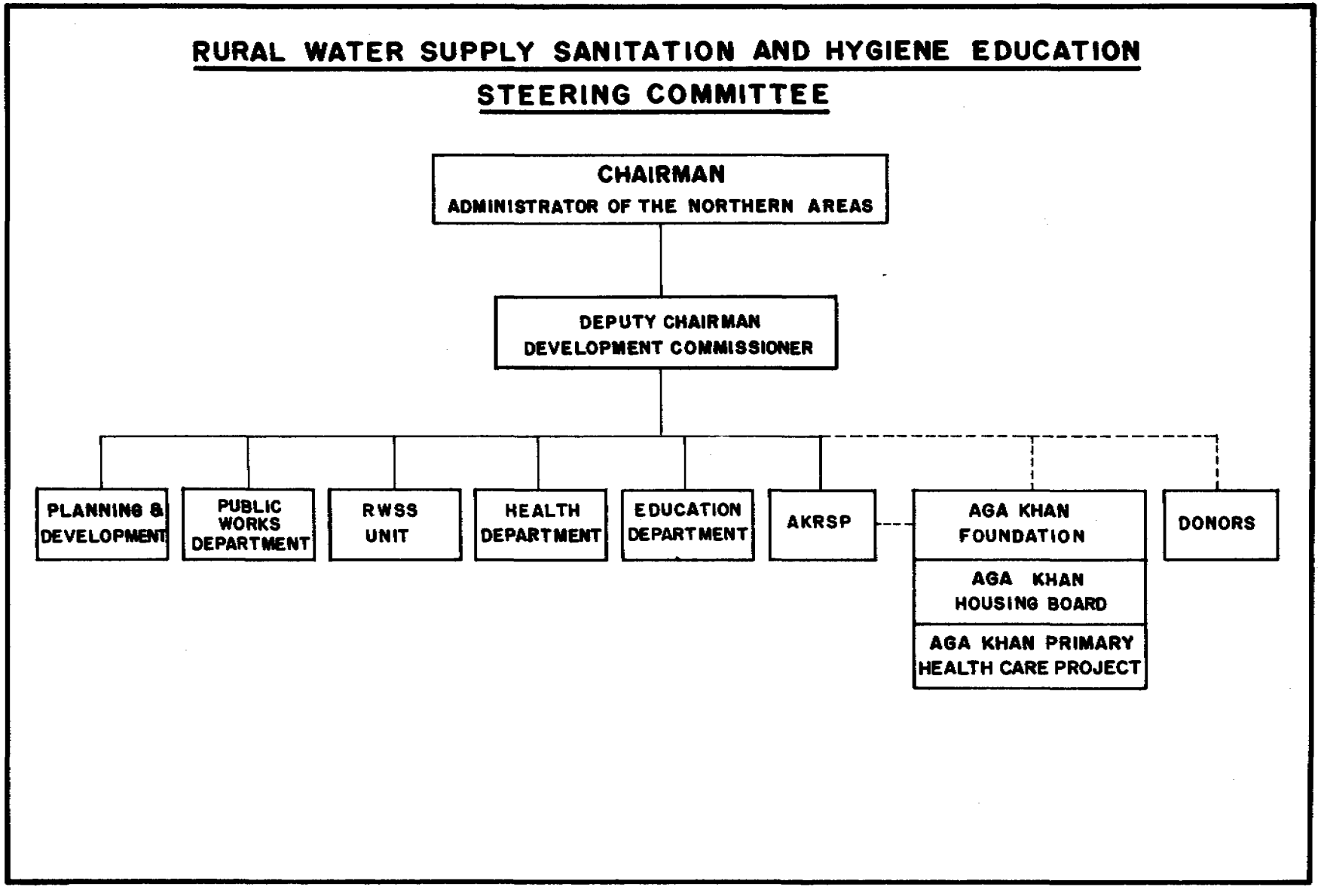
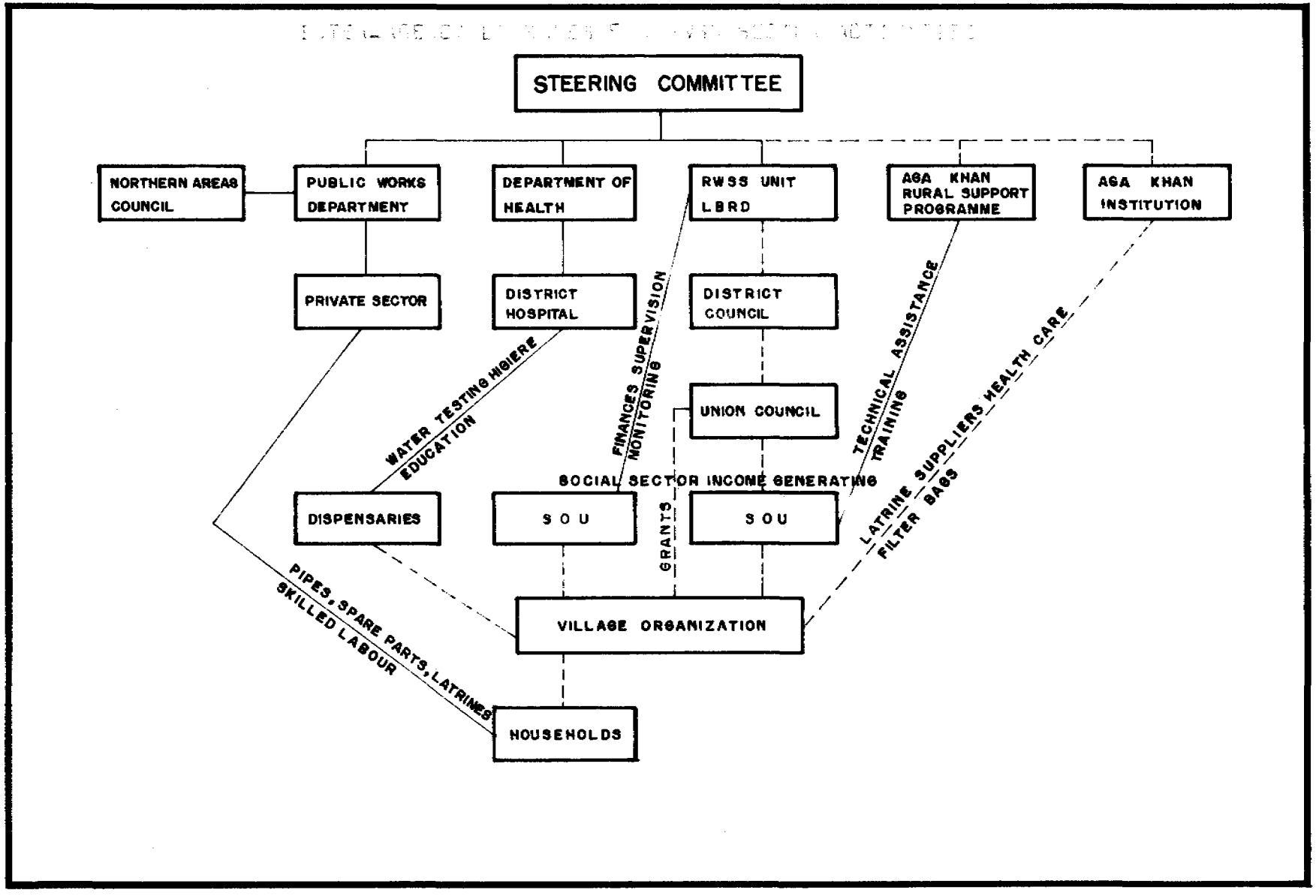

RURAL WATER SUPPLY SANITATION AND HYGIENE EDUCATION
STEERING COMMITTEE
CHAIRMAN
ADMINISTRATOR OF THE NORTHERN AREAS
DEPUTY CHAIRMAN
DEVELOPMENT COMMISSIONER
PLANNING & DEVELOPMENT
PUBLIC WORKS DEPARTMENT
RWSS UNIT
HEALTH DEPARTMENT
EDUCATION DEPARTMENT
AKRSP
AGA KHAN FOUNDATION
AGA KHAN HOUSING BOARD
AGA KHAN PRIMARY HEALTH CARE PROJECT
DONORS

Figure 5.6


STEERING COMMITTEE
NORTHERN AREAS COUNCIL
PUBLIC WORKS DEPARTMENT
DEPARTMENT OF HEALTH
RWSS UNIT LBRD
AGA KHAN RURAL SUPPORT PROGRAMME
AGA KHAN INSTITUTION
PRIVATE SECTOR
DISTRICT HOSPITAL
DISTRICT COUNCIL
UNION COUNCIL
WATER TESTING HGIERE EDUCATION
FINANCES SUPERVISION MONITORING
TECHNICAL ASSISTANCE TRAINING
LATRINE SUPPLIERS HEALTH CARE FILTER BAGS
SOCIAL SECTOR INCOME GENERATING
DISPENSARIES
S O U
S O U
GRANTS
PIPES, SPARE PARTS, LATRINES SKILLED LABOUR
VILLAGE ORGANIZATION
HOUSEHOLDS

essential for the effective implementation of the targets of the Investment Plan and for training the community to manage village level development projects. The Aga Khan Rural Support Program arranges a monthly conference of the managers of Village Organizations. This has proved to be an effective forum for information sharing between Village Organizations, future village level planning and for introduction of new programs. The National Fertilizer Corporation, commercial banks and government line departments have used this forum effectively. It is recommended that the AKRSP forum established in Gilgit and Baltistan be used for the implementation of the Investment Plan. A similar forum should be established in Diamer.

5.5.3. Implementation Methods

The Diagnostic Approach

A Diagnostic Process will be adopted for the implementation of those components of the Investment Plan which involve community participation. This Diagnostic Process will be a series of interactive dialogues with Village Organizations and User Groups (see Annex 5). The purpose of these dialogues will be to establish the felt needs of the village population.

The Diagnostic Process is particularly useful in determining the micro-variations in both the technical and social features of a village and in refining the policy to suit the particular needs of the village. Flexibility in the implementation approach makes it possible to make these refinements in accordance with the needs and capacities of the users. It is recommended that the Rural Water Supply and Sanitation Unit and all the other agencies which are involved in the implementation of the Investment Plan adopt this diagnostic approach.

The Diagnostic Survey will start with visits by the Social Organization Unit of the Rural Water Supply and Sanitation Unit to a village whose residents have agreed to meet with the RWSS staff. The AKRSP Social Organization Unit, the Union Council member or representatives of other development agencies in the field (the Aga Khan Primary Health Care Project, the Aga Khan Housing Board, etc.) can identify villages which have made requests for a component provided for in the Investment Plan. The Social Organizer will initiate the first dialogue by explaining the objectives and methods of the Rural Water Supply and Sanitation Program to the members of the Village Organization or members of the User Group. He will then invite them to identify a project within the mandate of the RWSS Unit that would benefit all or most of the households in the village. Such a project could then be undertaken by the villagers themselves. The result of the first dialogue will be the IDENTIFICATION of a project by the residents of a village.

The identification of a project is followed by the second series of dialogues. The first step here involves a FEASIBILITY SURVEY of the proposed scheme. Supervisory responsibility for this technical assessment will rest with the District Engineer. Responsibility in the field will devolve on the Social Organization Unit. This unit will work with informed village residents to assess the feasibility of proposed inputs and to obtain data on prices of locally available material to be used as inputs. It will be on the basis of information obtained locally that BLUEPRINTS and COST ESTIMATES will be prepared by the field unit and sent to the District RWSS Unit for finalization. Selection of components like sanitation, hygiene education and training will follow a similar Diagnostic Process with appropriate modifications.

The finalized scheme will be taken to the villagers by the Social Organization Unit and discussed with them. This will start the third dialogue, in which RWSS and the residents of the village explore the TERMS OF PARTNERSHIP that would assign specific obligations to each of the two entities. If willing, villagers demonstrate their ACCEPTANCE of these terms by convincing RWSS about the manner in which they would organize to plan, implement, manage and maintain specific projects that could involve physical works, skill development, new technology, loans and collective savings. At this stage, a User Group will be defined for villages where a Village Organization does not exist consisting of all the beneficiaries of the project. This will be followed by an ASSESSMENT OF PROJECT BENEFITS, to assure that the project will benefit all or most villagers, and that there will be no dispute over the proposed project. With the acceptance of the Terms of Partnership by the new or existing organization the Diagnostic Survey will be completed.

The execution and maintenance of the project will be the responsibility of the User Group or Village Organization, and technical and financial assistance will be provided by the LB&RD, the AKRSP or the private sector as discussed in the Terms of Partnership. Monitoring the project will be the responsibility of each villager as well as the Village Organization or User Group. During project implementation, all beneficiaries will have to meet every week as the General Body of the VO: there will be no project committee and no decision making by elected or self-appointed representatives. The General Body, in open village meetings, will assign responsibility for specific tasks, daily labor allocations for the project, operation of project accounts, maintenance, etc. Those assigned tasks will have to report to the General Body: accounts will be presented, progress will be reviewed and problems will be resolved. Once a specific scheme has been executed, the responsibility for its management will become completely vested in the Village Organization or User Group: villagers will be responsible for all aspects of managing the scheme they had identified, helped plan and executed.

RWSS's Social Organization Unit, consisting of a Social Organizer and an engineer, will supervise the project, check physical progress and the functioning of the Village Organization and User Group, and will make recommendations to management for the payment of installments and the provision of support services. The continuous monitoring of Village Organizations and the ongoing processes of training and supervision, together with follow-up visits, will provide the Management Group of RWSS with the information it will need for evaluation.

A similar implementation approach will be followed for all components implemented by the RWSS Unit. It is recommended that all government line departments, development organizations and private sector institutions which are considering community involvement in schemes should follow this process. This approach is also recommended for projects involving women. The User Group and the Village Organization should involve women in projects which are designed for women.

The Diagnostic Survey is summarized below:

The Diagnostic Survey

Activity	Responsibility
First Dialogue: Project Identification	
(a) Explanation of RWSS Methods and Objectives	Social Organizer
(b) Identification of Projects	Villagers
Second Dialogue: Project Preparation	
(a) Feasibility of Physical Infrastructure Works	Soc. Org. Unit,
(b) Preparation of Blueprint or Objective Plan	with villagers,
(c) Cost Estimation	approval by Senior Engineer
Third Dialogue: Project Appraisal	
(a) Explanation of Terms of Partnership	Social Organizer
(b) Acceptance/Rejection of Terms of Partnership	Villagers
(c) Assessment of Benefits and Equitability	Management

5.6. Sector Mobilization and Development for the Investment Plan

This section describes projects for donor funding. A brief projection description, with targets, phasing, geographical

coverage and institutional roles has been given for each potential project.

As far as possible, an attempt has been made to make each of these projects integrated projects; but the nature of the sector is such that it would be advisable to combine one or two projects into integrated projects and to fund them simultaneously.

A recommendation on projects which should be financed together is indicated by *****.

5.6.1. Water Supply Schemes

Brief Project Description

*****

The Project involves the implementation of 164 small and 180 medium water supply schemes through Village Organizations and User Groups in the three district of Gilgit, Baltistan and Diamer. The small schemes cover an average of 340 people, and the medium sized schemes, on average, cover an estimated population of 1,200. An estimated total population of 271,760 in all three Districts will be covered by these schemes by the end of the Investment Plan Period. With the completion of these schemes an estimated 70% of the population in villages less than 2,000 will be covered by the end of the Investment Plan period in 1997-98.

Institutional Responsibility

The proposed Rural Water and Sanitation Unit under the Local Bodies and Rural Development Department will be the implementing agency for these schemes. In Gilgit and Baltistan, Village Organizations will be used for the implementation of the schemes and in Diamer User Groups will be formed for scheme implementation. The operation and maintenance of these schemes will be the responsibility of the community. The costs for the creation of the RWSS Unit are presented below.

Targets

- To construct 94 small and 60 medium water supply water supply schemes in Gilgit, 35 small and 64 medium in Baltistan, and 35 small and 56 medium in Diamer District. in the next eight years.
- To involve the community in scheme planning, implementation and operations and maintenance in order to enhance the long term sustainability of schemes.
- Village level masons and scheme operators will be given training during the implementation of the project.

- To provide Rs 6.25 million as revolving credit to households through collective loans to Village Organizations and User Groups for investments in installing house connections.

- To provide Rs 0.8 million as revolving credit to Village Organizations for the rehabilitation of water supply schemes.

Budget

The total cost of constructing these schemes is Rs 155.5 million (after deducting local taxes and duties). The Government is expected to provide the funds for the local taxes and duties. The community will pay part of the capital cost of these schemes for land and a small amount for local materials. The total cost of training of village level plumbers and scheme operators will be Rs 1.3 million (Annex 8, Table 12). The financial phasing of these schemes is given in Table 6.5. An amount of Rs 7.05 million will be required for the credit component of the project.

5.6.2. Sanitation Program

Brief Project Description

A demand driven sanitation program is planned for donor investment for all three Districts of the Northern Areas. This demand driven approach recognizes (i) that the low level of incomes in the Northern Areas are the principal reason for the inadequate sanitation facilities at the household level; and, (ii) that social and cultural factors inhibit the wide spread use of some existing latrine models. The recommended sanitation program consists of three phases: motivation, construction of demonstration latrines in private households by financing the cost of skilled labor, and wider adoption by individual households (with loan facility). The implementation of the phased sanitation strategy (see section 4) is presented in Figure 5.4.

Objectives

- To ensure that effective demand for improvement in household level sanitation facilities in the Northern Areas is satisfied.

- To conduct research into the existing technologies and to disseminate appropriate and affordable technologies.

- To coordinate the provision of inputs and credit where demand for them exists for the installation of household level latrines.

Institutional Responsibility

The proposed sanitation program will be implemented by the new Rural Water Supply and Sanitation Unit of LB&RD. The program and Women Field Coordinators will play an active role in the development and implementation of this component in close coordination with the Aga Khan Housing Board and other development agencies.

Targets

- Motivation and introduction of the package will be started in 584 villages over the next eight years.
- A total of 2,920 demonstration latrines are planned for the Investment Plan. The cost of skilled labor will be paid under the donor project to encourage investments in the sector.
- It is proposed to make Rs 2 million available in credit for household level investments in sanitation facilities.
- Masons and plumbers from the private sector will be trained in latrine installation and construction during the implementation phase.

Phasing

The detailed phasing of the sanitation program is presented in Annex 8, Tables 9 and 10.

Budget

The total cost of the sanitation program proposed in the Investment Plan for donor funding in constant 1988-89 prices is Rs 1.168 million. The annual allocation in constant and current prices is given in Table 6.5 and Annex 11, Table 1. An additional amount of Rs 2 million will be required as revolving credit.

5.6.3. Water Quality Control and Testing

Brief Project Description

A component for testing water quality is proposed in the Investment Plan in view of the high incidence of water borne diseases in the Northern Areas. The main reason for this high incidence of diseases is water contamination. The absence of a Public Health Engineering Department and a Health Education Unit oriented towards public health has aggravated the situation.

Water testing will be conducted in urban areas and in villages upon request of the consumers. A small fee will be paid

to village dispensers and district laboratories by the users of the service. Recommendations for improvements in the water management system will be made to ensure against unacceptable levels of contamination. The Department of Health which is technically responsible for the subject in other provinces accepts the need for the project in the Northern Areas and has indicated its support for it.

Objectives

- To reduce the high incidence of water borne diseases in the Northern Areas.

Institutional Responsibility

The Department of Health will be the implementing agency for this project. A new Health Education Unit is being proposed in the Investment Plan which will be responsible for overall implementation. At the field level, the 103 existing village dispensaries will be involved in water testing for villages.

Targets

- To conduct a comprehensive survey of water quality in selected villages in the Northern Areas in 1990-91 and 1995-96 to identify improvements in water quality.
- To establish three laboratories, one in each of the District headquarters, to conduct tests on water quality.
- To provide water testing kits to the 103 dispensaries of the Health Department to conduct simple water tests in villages.
- To train village dispensers and laboratory technicians in water testing techniques.

Budget

The total funds required for this component after deducting taxes and duties are Rs 1.98 million. The annual breakdown of costs is provided in Annex 8, Table 11. The cost of training under this component is Rs 215,000 (Annex 8, Table 12).

Phasing

There will be two surveys to test water quality; one in 1990-91 and the second in 1995-96. The establishment of the district laboratories will be completed in the first year. The distribution of water testing kits will be completed over a five year period.

5.6.4. Hygiene Education Program

Brief Project Description

There are four components of the hygiene education program which is being recommended for donor investment. The first component involves a series of village and management level workshops. The second component is for training at the village level, in-service training of project staff and training of line department staff. The third component is for the supply of inputs at cost and at subsidized rate to encourage the use of recommended inputs. A small amount of credit will also be made available for purchase of inputs like filter bags and other recommended inputs. The last component is message development and monitoring for feedback and refinements of the hygiene education strategy.

Objectives

- To improve the health status of the population and reduce the high rate of infant and maternal morbidity and morbidity.

Institutional Responsibility

The Rural Water Supply and Sanitation Unit of LB&RD is being given the implementation responsibility for the hygiene education program. This is being done because of the need for the hygiene education program to be closely integrated with other components of the Investment Plan and with close coordination in the field. Integration of this component can best be achieved by giving the implementation responsibility to the same agency responsible for the implementation of the water supply schemes.

Budget

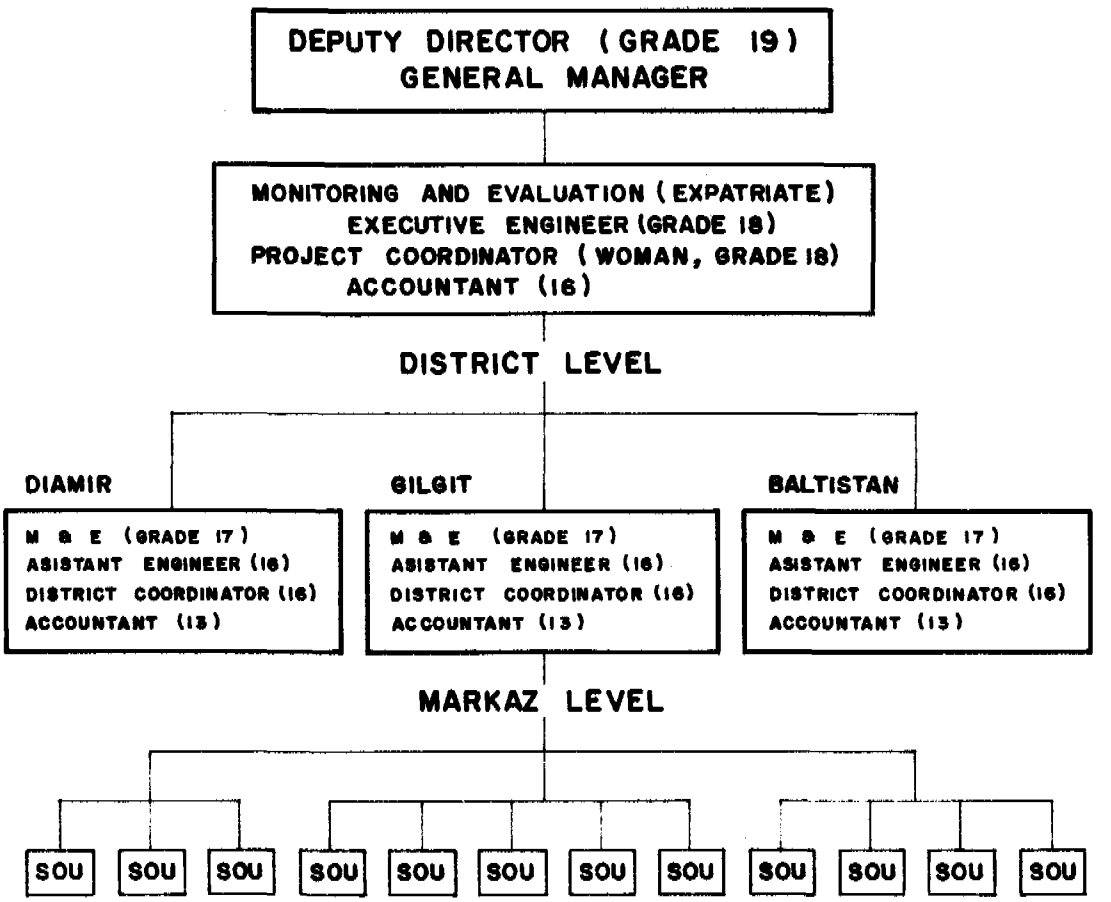
The total amount of funds required for Investment in the Hygiene Education Program is Rs 1.29 million. The detailed breakdown of costs and annual phasing of financial requirements is given in Annex 8, Table 14.

5.6.5. Creation of a Rural Water Supply Unit within LB&RD

Brief Project Description

It is proposed that the Rural Water Supply and Sanitation Unit (Section 5.5) be funded by donor assistance. This Unit will be the main implementing agency for rural water supply schemes (in villages of less than 2,000 population), sanitation, and hygiene education program proposed under the Investment Plan. The Unit will also be the main coordinator for the human resources development program. Figure 5.10 gives an organizational chart for the proposed Rural Water Supply and Sanitation Unit. The Unit will

RURAL WATER SUPPLY AND SANITATION UNIT



FIELD STAFF

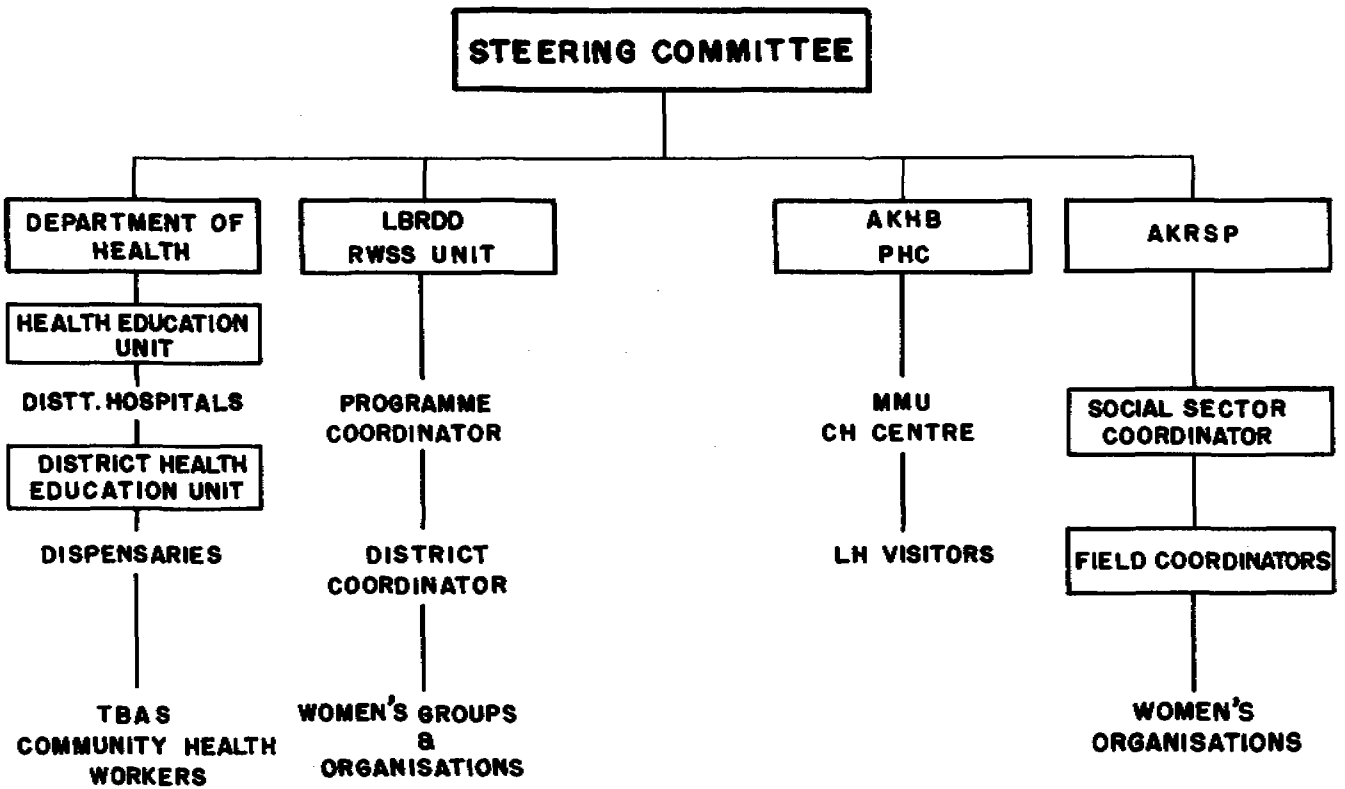
SOCIAL ORGANIZER (GRADE 13)	12
OVERSEER (GRADE 11)	12

SUPPORT STAFF

COMPUTER OPERATORS (GRADE 12)	5
DRIVERS (GRADE 4)	10
LDC (GRADE 1)	5

INTER-AGENCY LINKAGES IN

HYGIENE EDUCATION



have three main sections at the headquarters and district level: Engineering, Program Coordination, and Monitoring and Evaluation. The most significant institutional arrangement of the Unit will be to establish a link with village development institutions for social sector programs.

To ensure the involvement of women in the achievements of the target of the Investment Plan, a woman program coordinator will be based in the main office of the RWSS in Gilgit. District program coordinators will be based in the district offices of the RWSS Unit. These women staff members will ensure the involvement of women in the Diagnostic Process. Special efforts will be made to ensure coordination with women in other programs. A woman social sector coordinator is recommended for AKRSP to help achieve this coordination.

A training program is planned for the new staff of the Rural Water Supply and Sanitation Unit to orient the staff in community approaches and to strengthen the technical and management capacity of the staff of the proposed Unit. AKRSP will train Social Organizers and Women Coordinators for a 6-12 month period. Training of Overseers, senior and LB&RD staff is also provided for under this program. Short-term foreign training for senior and mid-level LB&RD officials is also proposed. Details of the training program are given in Annex 8, Table 12.

Long-term technical assistance is recommended for the first two years of the Investment Plan period to strengthen the Monitoring and Evaluation aspects of the Unit. Short-term technical assistance is recommended by the addition of a Public Health Engineer and a Hygiene Education Specialist in the RWSS Unit. Details of the technical assistance are given in Annex 8, Table 21.

Geographic Coverage

The Unit will have headquarters in Gilgit and district offices in Gilgit, Baltistan and Diamer Districts.

Objectives

- To establish an efficient institution for the implementation of schemes in the water supply, sanitation and hygiene education sector for villages with less than 2,000 population in the Northern Areas.

Targets

- To establish and implement a water supply program in villages with less than 2,000 population in the Northern Areas.

- To establish a demand driven program for the introduction of household latrines and the introduction of new sanitation technologies.

- To coordinate the delivery of inputs and credit for the water supply and sanitation programs.

- To orient staff in community participation approaches to facilitate communications with the Village Organizations for scheme planning, implementation and maintenance.

Budget

The total cost of establishing and financing the recurrent expenditure of the RWSS Unit for the eight years of the Investment Plan period is Rs 23.65 million in constant 1988-89 prices. The cost of training is Rs 1.15 million and the cost of the foreign technical assistance component is Rs 10.8 million. The total cost of donor Investment in this project will be Rs 35.6 million.

5.6.6. Creation of PHEC within NAPWD

Brief Project Description

The NAPWD is currently responsible for the implementation of water supply schemes in the Northern Areas. This department has a large mandate including the construction of roads, bridges, power generation and transmission, large irrigation channels etc. The department has a long and checkered history; since its creation in 1948 it has undergone administrative restructuring several times. Its other responsibilities do not allow it to pay adequate attention to the water supply sector. A separate water section previously existed within NAPWD, but it was amalgamated within the Works Department. It is proposed that a new Public Health Engineering Circle be created within the existing NAPWD. This circle will be responsible for the implementation of large water supply schemes and water quality monitoring and improvement. The proposed mandate of the PHEC circle is described in section 5.5 in detail.

Training will be provided to senior and mid-level staff of NAPWD under this project. The foreign technical assistance component of the project involves the services of a short-term Public Health Engineer in two periods of three months each. This Public Health Engineer is expected to assist the new Public Health Engineer Circle in reorganizing and planning its policy.

Geographic Coverage

Gilgit, Baltistan and Diamer Districts.

Objectives

- To enhance the efficiency of the water delivery and drainage system to villages above 2,000 population in the Northern Areas.

- To provide a water supply coverage of 100% to the rural population living in villages with a population of more than 2,000.

Targets

- To establish a new PHEC within the existing Northern Areas Public Works Department with a public health orientation and a strengthened capacity for the monitoring of schemes for proper operation and maintenance.

- To implement 43 new water supply schemes during the Investment Plan period in villages with a population of more than 2,000 population.

- To undertake the rehabilitation of 22 existing water supply during the Investment Plan period.

- To establish a system of collecting consumer charges for the maintenance and operation of water supply schemes.

- The improvement of water quality in the Northern Areas by the use of appropriate water purification technologies and staff training in proper scheme operation and maintenance.

- To improve the system of monitoring of schemes for proper rehabilitation.

Budget

The total cost that will be incurred on institutional strengthening of a new Public Health Engineering Circle in constant 1988-89 prices is Rs 15.4 million. It is recommended that the donor finance the cost of equipment which will assist in upgrading the implementation and monitoring capacity of the Department. This cost is estimated at Rs 1.7 million. The total cost of training under this project is Rs 115,000. The cost of the foreign technical assistance is Rs 1.63 million. Annex 8, Table 17 gives the detailed cost breakdown of this component. The administrative and recurrent costs of the PHEC will be financed from the Government resources allocated for the Northern Areas.

5.6.7. Creation of a Health Education Unit within the Department of Health.

Brief Project Description

The Department of Health in the Northern Areas does not have a Health Education Unit. There is a need to establish such a Unit in the area in view of the lack of provision of basic health care for the population in the villages. This Unit will be responsible for water testing and control and will eventually take over the responsibility for hygiene education and for coordination with other agencies. During the Investment Plan Period an effort will be made to develop the Unit for its future role in the sector. The recommended donor investment in this project is limited to financing the cost of capital equipment like vehicles, mobile health units, computers, technical equipment and a foreign technical assistance component. Under the technical assistance program a hygiene Education specialist will be provided for a two year period. The recurrent costs for the Health Education Unit will be borne by the Government.

Budget

The total cost of the donor project after deducting taxes and duties is Rs 4.9 million. The cost of the technical assistance program is estimated at Rs 7.3 million. The annual phasing of financial costs is given in Table 6.5.

5.6.8. Strengthening AKRSP's role for the Implementation of Rural Water Supply

Brief Project Description

The Aga Khan Rural Support Program will be involved in coordinating with the Village Organizations, orienting the staff of LB&RD in participatory approaches, and conducting technical surveys and preparing cost estimates for the schemes which will be implemented through the Village Organizations in Gilgit and Baltistan District. AKRSP will also participate in the training of staff to establish User Groups through participatory approaches to development for Diamer District.

It is proposed that a female program coordinator for social sector activities and a middle management level staff member be appointed at AKRSP to assist in the implementation of the Investment Plan.

Geographic Coverage

Gilgit and Baltistan Districts.

Objectives

- To help village level organizations establish a link with the nation building departments of the Government for long-term sustainability.
- To enable the Village Organizations to make the transition from income-generating activities to the social sector.
- To enable the government line departments to fully utilize the community development, engineering, input supply, human resource development and credit models developed by the Aga Khan Rural Support Program.
- To provide field level training for female coordinators and social organizers for work with community organizations.

Budget

The total amount of donor investment required for this component is Rs 3.38 million. The annual financial phasing is given in Annex 8, Table 18.

5.6.9. Strengthening the Polytechnic planned for the Northern Areas

Brief Project Description

It is recommended that the capacity of this polytechnic to cater to the special engineering needs of rural water supply in high mountain valleys be developed by the addition of staff and curriculum development in civil engineering. Investment in the polytechnic will also cater to the future engineering needs of engineers. Donor investment in the polytechnic is recommended to help in the development of curriculum through a foreign technical assistance program and for upgrading the level of equipment and training materials.

Institutional Responsibility

Department of Education.

Objectives

- To assist in curriculum development of the civil engineering department to cater to the special engineering needs in high mountain valleys.
- To conduct research for appropriate technology for high mountain valleys, develop the existing traditional

technologies and document them for instructional purposes.

- To develop a roster of qualified local engineers who could be sponsored for helping build the resources by documenting their field experience in the Northern Areas.

- To allow qualified professionals from countries with similar experiences the opportunity to be visiting instructors at the polytechnic.

Budget

A total amount of Rs 1.03 million is recommended for investments in the project. The detail of the expenditure is given in Annex 8, Table 20. The foreign technical assistance component of the Plan is estimated at Rs 6.5 million.

5.7. Summary of Financial Investments

The total Investment Plan in constant 1988-89 prices is Rs 368 million (Table 5.1) and in current prices it is Rs 495 million (Table 6.4). The total donor investment in constant prices is Rs 233 million (Table 6.5) and in current prices it is Rs 315 million (Annex 11, Table 1). The gap between the total Investment Plan and donor investment in constant 1988-89 prices is Rs 135 million and in current prices it is Rs 180. The gap between the Investment Plan and the donor investment widens in current prices because the annual capital requirements of the Investment Plan gradually decrease and the recommended donor investment is maintained at a more or less constant level.

The cost of the Investment Plan (at the recommended exchange rate of US$ 1 = Rs 19.5) is US$ 18.9 million; the cost of the donor investment is US$ 11.96 million. The cost of the Investment Plan in current US$ is 19.5 million; the cost of the donor investment is US$ 12.4 million.

6. FINANCING

6.1. Financing Capital Costs

6.1.1. Sources of Financing

It is estimated that the four main sources of capital funds[31] for the sector will be:

- The allocations made to the Public Works Department and the Local Bodies and Rural Development Department in the Annual Development Plan for the Northern Areas.
- The People's Program and funds for Special Development Programs which have been channeled through the Annual Development Plan allocations in the Northern Areas.
- The funds made available by external donor agencies like UNICEF, the Aga Khan Housing Board and the Aga Khan's Primary Health Care Project.
- Community contribution towards the cost of capital and operations and maintenance costs.

6.1.2. Annual Development Plan

The Annual Development Plan for the Northern Areas is financed by the Federal Government entirely through grants. Hence, the availability of funds for the Annual Development Plan to the Northern Areas hinges precariously on the resources of the Federal Government. The present situation leads to the following assumptions:

- The Federal Government will continue to be the primary source of funds required to finance the annual development expenditures of the Northern Area's Administration.
- The trend in sectoral allocations for different sub-sectors will be broadly maintained throughout the period under review.
- Allocations for development expenditures are likely to remain constant in real terms due to the underlying inflationary pressures, high investments in the energy and communication sectors, and the limited ability to mobilize additional resources.
- An increasing amount of the resources of the Federal

[31] In constant 1988-89 prices.

Government for investments in the sector will be disbursed through special programs such as the People's Program.

- o An increase in the special programs for the Northern Areas is generally followed by a reduction in the funds allocated to the sector in the Annual Development Plan.

In the five year period 1985-90, the allocation in the Annual Development Plan to the Public Works Department and the Local Bodies and Rural Development Department for rural water supply and sanitation was Rs 33.9 million (Table 6.1). The average annual allocation to NAPWD and LB&RD for rural water and sanitation in this period was Rs 5 million and Rs 1.8 million respectively. The annual allocations for 1989-90 were Rs 6.8 million for NAPWD and Rs 1.5 million for LB&RD.

Table 6.1

Current Allocation of Development Expenditure For The Rural Water Supply And Sanitation Sector, Northern Areas.

(Constant Prices 1988-89) (Rs. million)

YEAR	ADP PWD	ADP LB&RD	SDP's & People's Programme	UNICEF	Community's Contribution in Capital Cost	Community's Contribution in Maintenance ** Cost	Total
1985-86	4.1	2.1		2.2	1.0	0.7	10.1
1986-87	4.5	1.8		0.1	1.0	1	8
1987-88	4	1.8		2.5	1.6	1.1	11
1988-89	5.6	1.7		5.7			13
1989-90	6.8	1.5	3				11.3
Sub Total	25	8.9	3	10.5	4.2	2.8	54.4

*market value of UNICEF purchased pipes 566,380 Rft of Pipes x Rs 10 per R.ft LB&RD Engineer.

**estimates of community's contribution on capital and maintinance costs under the CBS program.

In view of the assumptions listed above, it is estimated that the allocations to NAPWD and LB&RD will remain constant in real terms. It is estimated that allocations to NAPWD for the sector will remain constant at Rs 7.5 million and to LB&RD at Rs 1.5 million in each year of the Investment Plan period (Table 6.2). The total amount available from the ADP for the Investment Plan period is Rs 72 million.

Table 6.2

Projected Allocations of Resource Availability for the Rural water Supply and Sanitation Sector

(Constant Prices 1988-89) (Rs. million)

YEAR	ADP PWD	ADP LB&RD	SDP's & People's Programme	UNICEF	Community's Contribution in Capital Cost	Community's Contribution in Maintenance Cost *	User Charges	Total
PROJECTED								
1990-91	7.5	1.5	3.0	1.0	0.5	0.4	0.2	14.1
1991-92	7.5	1.5	3.0	1.0	0.5	0.8	0.5	14.8
1992-93	7.5	1.5	3.0	1.0	0.5	1.2	0.8	15.5
1993-94	7.5	1.5	3.0	1.0	0.5	1.6	1.0	16.1
1994-95	7.5	1.5	3.0	1.0	0.5	2.0	1.3	16.8
1995-96	7.5	1.5	3.0	1.0	0.5	2.4	1.3	17.2
1996-97	7.5	1.5	3.0	1.0	0.5	2.9	1.3	17.7
1997-98	7.5	1.5	3.0	1.0	0.5	3.3	1.3	18.1
Total	60.0	12.0	24.0	8.0	4.0	14.6	7.7	130.3

* Based on experience and estimates of community contribution on CBS and AKRSP Projects.

6.1.3. Special Development Programs

Under the Prime Minister's Five Point Program and the funds made available to the Northern Area's Council, an additional Rs 62 million on average has been provided for in the ADP. The amounts spent from these on rural water supply is negligible. An allocation of Rs 30 million has been made for the Northen Areas under the People's Program for 1988-89. These funds are for the financing of water supply schemes, health and sanitation, rural roads and for pilot development projects. In view of the experience with Special Development Programs in the Northern Areas, it is estimated that, on average, not more than Rs 3 million will be spent upon rural water supply schemes during the Investment Plan

period. The total amount for the 8 year period expected from this source is Rs 24 million.

6.1.4. Existing Donor Agencies

The Aga Khan Foundation and UNICEF are the two principal agencies involved in the rural water supply and sanitation sector in the Northern Areas. The Aga Khan Housing Board has directly been involved with subsidising the costs of latrines and filter bags for household level purification. However, due to the limited level and area of operation of the Living Conditions Improvement Program of the Aga Khan Housing Board it is expected that there will not be any significant financial contribution from the board which could meet the targets of the Investment Plan.

From 1981 to 1987 UNICEF financing in the sector was mainly through the framework of the Community Basic Services Program. UNICEF has made a contribution of Rs 4.8 million in the three year period from 1985 to 1987. It is estimated that it will provide water pipes worth Rs 5.7 million in 1988 for an additional 33 schemes. Its future plans for investments do not have a framework after the termination of the CBS Program in 1987. An amount of Rs 8 million has been estimated as the projected allocation of UNICEF during the Investment Plan period (Table 6.2).

6.1.5. Community Contributions

A two-pronged approach is being suggested for the financing of the capital costs by the community. For villages larger than 2,000 population, it is suggested that the community should not pay any capital costs. For villages less than 2,000 population in which schemes will be implemented by the Village Organisations and the User Group, it is recommended that the community finance a small part of the capital cost. This capital cost will be for the purchase of land and small amounts of local materials. The price of land for small and medium schemes has not been included in the Investment Plan as this cost will be borne by the community.

During the three year period from 1985 to 1987, community contribution in the capital cost of schemes under the CBS Programme was Rs 4.2 million (Table 6.1). It is estimated that this community contribution towards financing the capital costs of the Investment Plan over its eight year period, will be Rs 4 million. This figure is kept at a much lower level than the past experience with community contribution would suggest in order not to compromise the rate of implementation of schemes which invariably slows down if the community is excessively burdened with the capital costs.

6.1.6 Expected Total Financing from Available Resources

The total amount of funds available from the Annual

Development Plan, Special Development Programs, UNICEF and from Community's contribution for the Investment Plan period is expected to be Rs 130.3 million (Table 6.3). From this amount, the funds available for capital investment are expected to be Rs 108 million (Table 6.2). All of these funds are expected to be for water supply. There have been no public sector investments in drainage, hygiene education or sanitation in the villages of the Northern Areas.

Table 6.3

Capital Requirements of The Proposed Investment Plan
Without New Donor Assistance

(Constant Prices 1988-89) (Rs. '000)

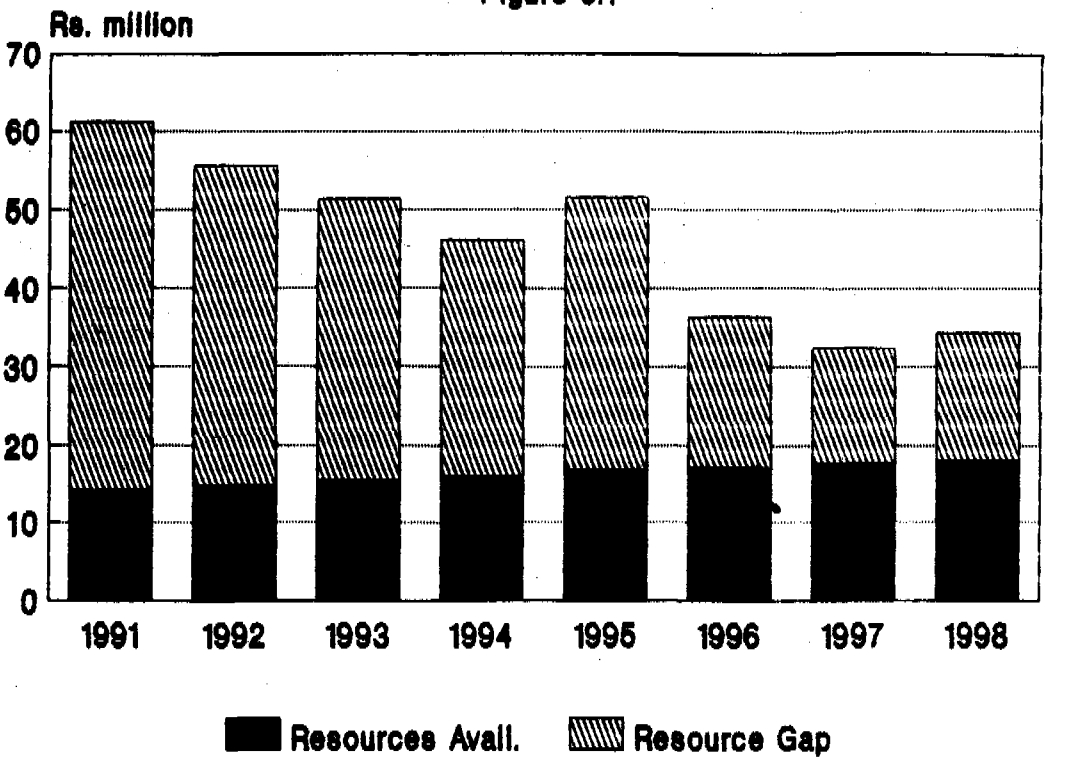
Balance of 7th Plan	Capital Requirements of Investment Plan	Resources Available (1)	Resource Gap (2)
1990-91	61,247	14,100	47,147
1991-92	55,474	14,800	40,674
1992-93	51,392	15,500	35,892
EIGHTH PLAN			
1993-94	46,042	16,100	29,942
1994-95	51,558	16,800	34,758
1995-96	36,295	17,200	19,095
1996-97	32,321	17,700	14,621
1997-98	34,405	18,100	16,305
TOTAL	368,734	130,300	238,434

Private sector contributions to the expansion of coverage through household level installation of latrines have not been taken into account while deriving the estimates of total investment in this sector.

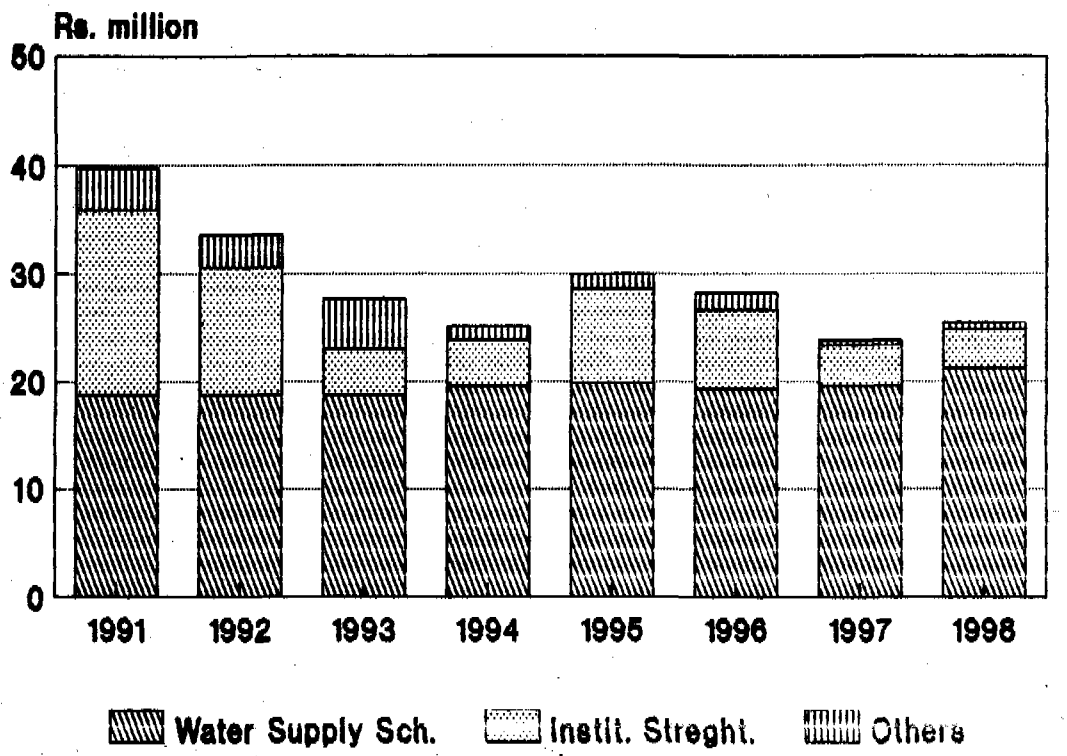
6.1.7. Resource Position After Considering Available Resources

The capital requirements of the Investment Plan and the available resource position are presented in Figure 6.1. There is a total resource gap of Rs 238.4 million in 1989 prices. In current prices, this resource gap is Rs 315.4 million (Annex 11, Table 6.4). The annual breakdown of the resource gap in constant

Resource Gap
Without New Donor Investment 1990-1998
Figure 6.1



Donor Investment Plan
for Northern Areas 1990-98
Figure 6.2



and current prices is also presented in Table 6.3 and Table 6.4, respectively. The financial plan of the investment proposed leaves a relatively larger resource gap in the first three years of the Plan period. This gap gradually decreases in the remaining years of the Investment Plan period except for 1994-95 when an additional investmment is proposed for the recommended polytechnic in the Northern Areas.

Table 6.4

Capital Requirements of The Proposed Investment Plan
Without New Donor Assistance

(Current Prices 1988-89) (Rs. '000)

Balance of 7th Plan	Capital Requirements of Investment Plan	Resources Available (1)	Resource Gap (2)
1990-91	71,432	16,445	54,988
1991-92	67,933	18,124	49,809
1992-93	66,080	19,930	46,150
EIGHTH PLAN			
1993-94	62,157	21,735	40,422
1994-95	72,042	23,475	48,567
1995-96	52,483	24,871	27,611
1996-97	48,385	26,497	21,888
1997-98	54,807	28,833	25,974
TOTAL	495,319	179,910	315,409

6.1.8. Recommended New Donor Investment

The recommended New Donor Investment Plan is presented in Figure 6.2. The donor contribution to the Investment Plan is Rs 233.3 million in constant 1988-89 prices and Rs 315.5 million in current prices (Table 6.5 and Annex 11, Table 1). All local taxes and duties (Igra surcharge, import license duties) have been subtracted from components which were recommended for donor investment as these items are normally not funded by donor agencies (Annex 11, Table 2). In constant 1988-89 prices, there is a 1% gap in resources after the new donor investment. Local and foreign costs of the Investment Plan are presented in Figure 6.6. and Annex 11, Tables 7 and 8.

Table 6.5

Recommended Donor Investment Plan For The Northern Areas

(Cons. 88-89) (Rs.'000)

Sector Component	1990-91	1991-92	1992-93	Total 1990-93	1993-94	1994-95	1995-96	1996-97	1997-98	Total 1993-98	Total 1990-98
Water Supply Schemes LB&RD	18,694	18,694	18,694	56,082	19,584	19,885	19,295	19,595	21,076	99,435	155,517
Sanitation	150	150	152	452	154	156	134	136	136	716	1,168
Water Control and Testing	1,339	36	36	1,411	36	36	500			572	1,983
Human Resource Development	856	641	536	2,033	278	278	228	228	218	1,230	3,263
Hygiene Education	170	140	190	500	180	140	190	140	140	790	1,290
Institutional Strengthening (LB&RD)	4,997	2,097	2,257	9,351	2,433	2,626	2,838	3,072	3,330	14,299	23,650
Institutional Strengthening (AKRSP)	855	360	360	1,575	360	360	360	360	360	1,800	3,375
Institutional Strengthening (PHEC)	1,003	357	357	1,717	0	0	0	0	0	0	1,717
Institutional Strengthening (DOH)	2,732	446	536	3,714	157	446	446	137	0	1,186	4,900
Institutional Strengthening (NA Polytechnic)				0	490	50	290	100	100	1,030	1,030
Institutional Strenghthening (Foreign Tecnical Asst. Program)	7,607	8,479	756	16,842	756	5,235	3,403			9,394	26,236
Revolving Credit	1,250	2,200	3,800	7,250	750	700	500			1,950	9,200
Total	39,653	33,600	27,674	100,927	25,178	29,912	28,184	23,768	25,360	132,402	233,329

Table 6.6

Donor Investment Plan For Northern Areas

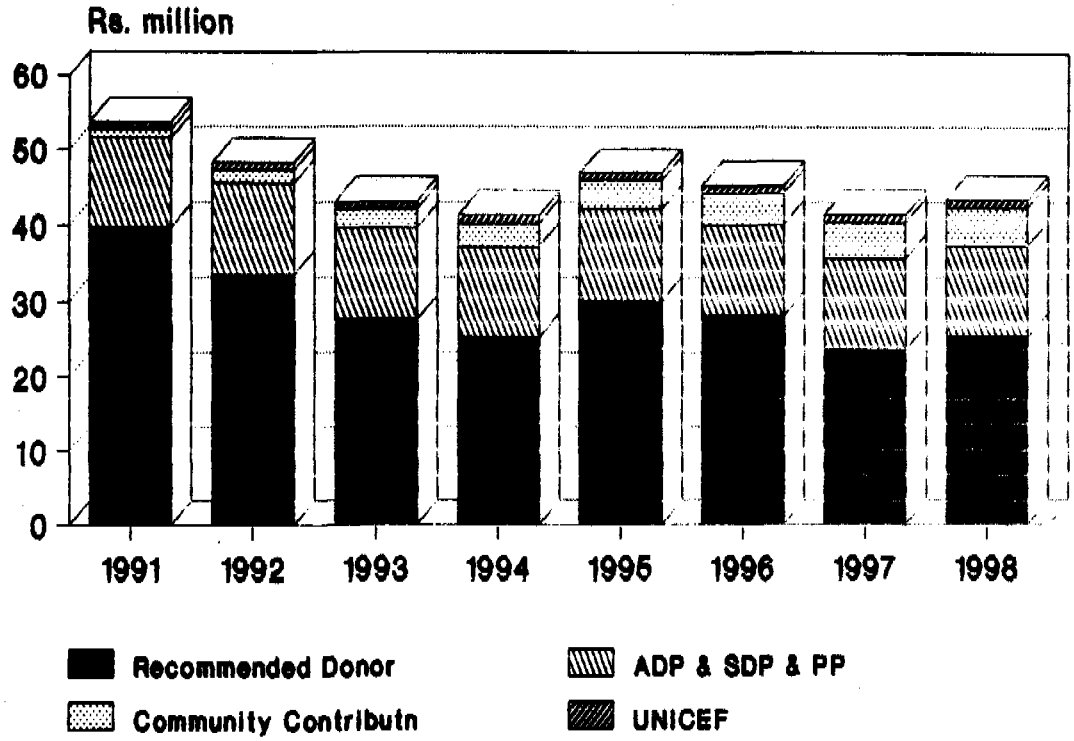
(Current Prices) (Rs.'000)

Sector Component	1990-91	1991-92	1992-93	Total 1990-93	1993-94	1994-95	1995-96	1996-97	1997-98	Total 1993-98	Total 1990-98
Water Supply Schemes LB&RD	21,803	22,893	24,037	68,732	26,438	27,785	27,901	29,334	33,574	145,032	213,764
Sanitation	175	184	195	554	208	218	194	204	217	1,040	1,594
Water Control and Testing	1,562	44	46	1,652	49	50	723			822	2,474
Human Resource Development	998	785	689	2,473	375	388	330	341	347	1,782	4,255
Hygiene Education	198	171	244	614	243	196	275	210	223	1,146	1,760
Institutional Strenghthening (LB&RD)	5,828	2,568	2,902	11,298	3,285	3,669	4,104	4,599	5,305	20,961	32,259
Institutional Strenghthening (AKRSP)	997	441	463	1,901	486	503	521	539	573	2,622	4,523
Institutional Strenghthening (PHEC)	1,170	437	459	2,066	0	0	0	0	0	0	2,066
Institutional Strenghthening (DOH)	3,186	546	689	4,422	212	623	645	205	0	1,685	6,107
Institutional Strenghthening (NA Polytechnic)				0	662	70	419	150	159	1,460	1,460
Institutional Strenghthening (Foriegn Tecnical Asst. Program)	8,872	10,383	972	20,227	1,021	7,315	4,921			13,256	33,484
Revolving Credit	1,458	2,694	4,886	9,038	1,013	978	723			2,714	11,752
Total	46,247	41,147	35,583	122,977	33,990	41,796	40,754	35,581	40,398	192,520	315,497

FINANCING

Recommended Donor versus Available Funds

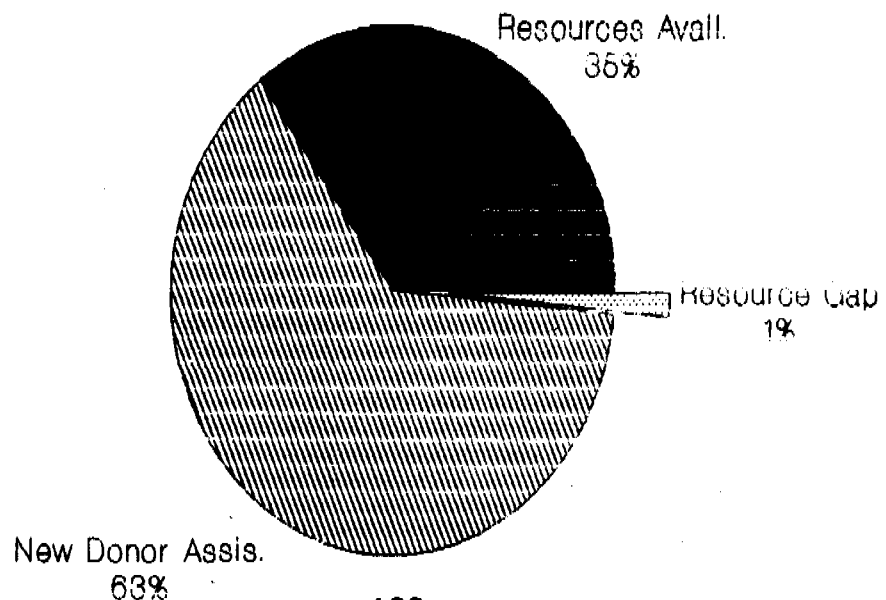
Figure 6.3



Resource Gap

After New Donor Investment

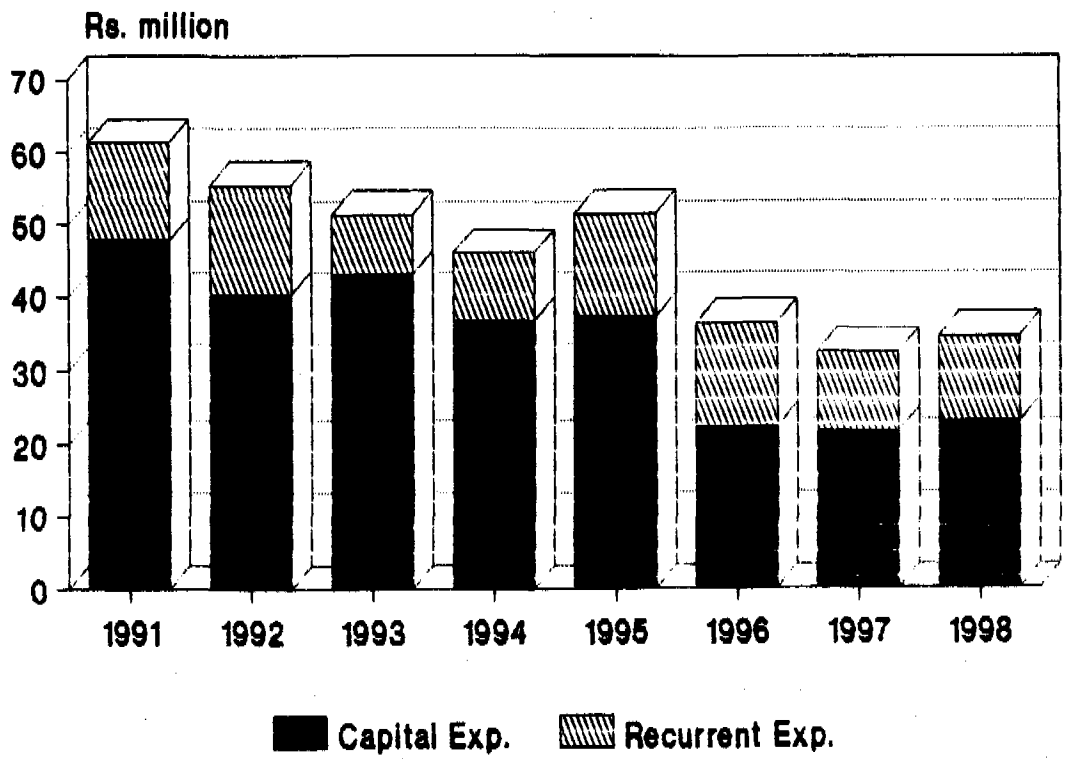
Figure 6.4



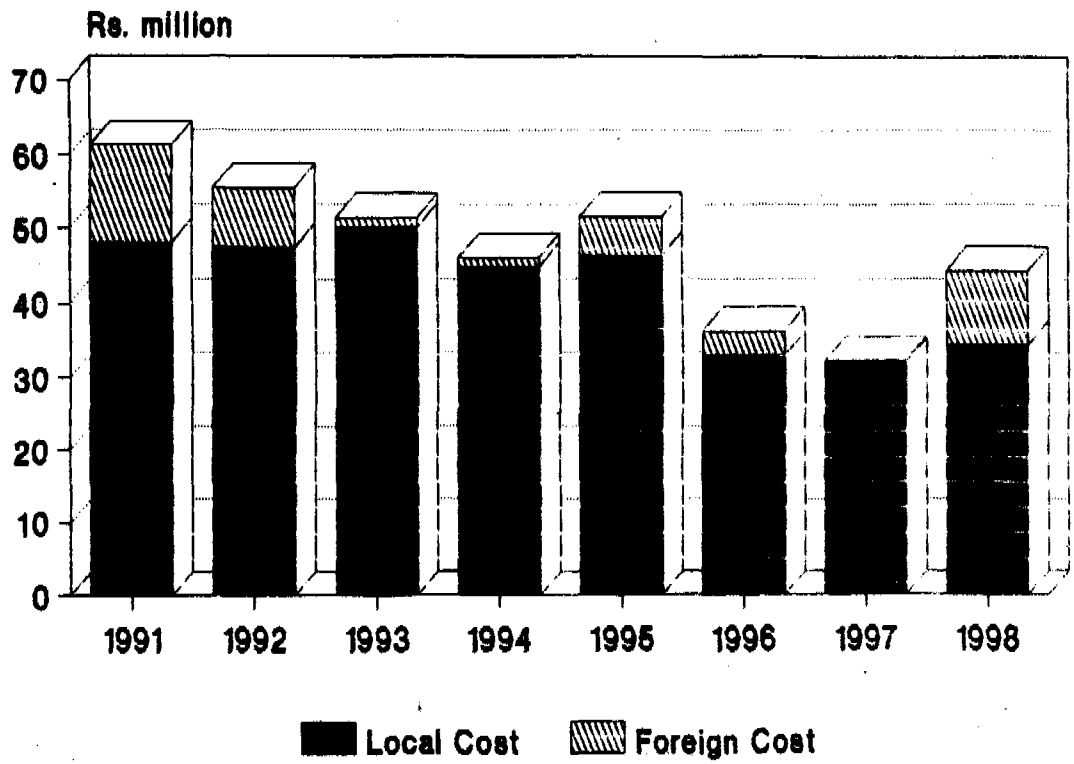
Capital versus Recurrent Expenditure

Investmant Plan 1990-98

Figure 6.5



Local and Foreign Cost
of the Investment Plan 1990-98
Figure 6.6



6.2 Financing the Recurrent Costs

6.2.1. Financing the Recurrent Costs

The total amount of funds required for the recurrent expenses of the Investment Plan is Rs 96.8 million in constant prices (Annex 11, Table 6). This is 26% of the total Investment Plan. Figure 6.5 gives a graphic illustration of the capital and recurrent expenditure breakdown of the Investment Plan. The major components of the Investment Plan which require recurrent funds are Institutional Strengthening of LB&RD, the Public Health Engineering Circle, the Department of Health and the Foreign Technical Assistance Program. A total of Rs 51 million is recommended for investment by the donors to meet the recurrent expenses. The Government will be expected to meet the remaining recurrent expenses of Rs 45.7 million.

6.2.2. Financing the Operations and Maintenance

A total amount of Rs 22.6 million is required for the operations and maintenance of water supply schemes constructed under the Investment Plan. It is expected that the Village Organizations and User Groups will contribute Rs 14.74 million towards scheme operations and maintainance during the eight year period. Past levels of community contribution towards the operations and maintenance of village level projects suggest that these costs will be covered by these contributions. An additional amount of Rs 7.9 million will be collected from users by the Public Works Department. There is currently no system of collecting any water tariff from users.

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