A WORLD BANK
OPERATIONS
EVALUATION
STUDY

The Aga Khan Rural Support Program in Pakistan

AN INTERIM EVALUATION

Operations Evaluation Department

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The World Bank
Washington, D. C.

FOREWORD

This report by the World Bank's Operations Evaluation Department (OED) is the first evaluation by the OED of a non-Bank project. It was undertaken at the request of the Aga Khan Foundation and at their expense. Wide interest in the approach followed by the Aga Khan Rural Support Program, as well as the large number of donors involved, including four nongovernmental organizations, indicated the desirability of an independent evaluation of the program, which is now in its fifth year. This exercise provides an opportunity to disseminate information about an innovative and successful approach to rural development for the benefit of other public and private organizations working in this field, including the World Bank.

Operations evaluation in the World Bank provides a systematic, comprehensive and independent review of the Bank's development experience. The director-general, operations evaluation (DGO) has overall responsibility for the evaluation function. The DGO reports directly to the Bank's Board of Executive Directors, who represent its member governments, and has an administrative link to the president. The OED is the staff arm of the director-general. All its reports are made available to the member governments of the Bank, and those of general interest are published.

While preserving their statutory and professional independence, OED staff work with Bank staff and country officials so that all views, including dissenting views, are adequately reflected in OED reports. This practice has been followed in producing this report, which has been distributed to the executive directors. The opinions expressed in the report, however, do not necessarily represent the views of the government of Pakistan, the Aga Khan Foundation, the other donor agencies, or the World Bank.

This evaluation of the Aga Khan Rural Support Program was carried out by an OED team comprising Graham Donaldson, Julian Blackwood, Christopher Gibbs, Tawhid Nawaz, and Tariq Siddiqi.

We hope that this midterm evaluation will not only help the future operation of the Aga Khan Rural Support Program but also make a contribution to understanding an approach to development that could be applied more widely in certain areas where rural development efforts to date have had only limited success.

Yves Rovani
Director-General
Operations Evaluation

May 7, 1987

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PREFACE

i. The Aga Khan Rural Support Programme (AKRSP) was conceived as a new approach in institutional forms and techniques, to foster the development of the rural poor. It was established by the Aga Khan Foundation which provided seed funds.[1/] The purpose of the program is not only to involve the people living in the program area in their own progress, but also to serve as a model applicable in other rural settings. This interim assessment is viewed as an integral part of the experiment, permitting an independent judgement on the progress achieved by AKRSP in terms of its objectives, an analysis of the present and prospective problems faced or caused by the AKRSP approach and recommendations on future priorities, strategies and programs for AKRSP.

ii. From the outset AKRSP has maintained a comprehensive monitoring and evaluation process and has produced four Quarterly Reports and an Annual Review each year. In addition all meetings have been documented and numerous individual studies and assessments have been undertaken (see References). Further, separate reports have been made in fulfilling the individual reporting requirements of donor agencies.

iii. Nevertheless, in view of the importance and visibility of the program in this sensitive area of Pakistan, the varied interests of the many donors, and the experimental nature of the program content, AKF invited the Operations Evaluation Department of the World Bank to undertake an "independent mid-term evaluation of AKRSP activities in the Northern Areas of Pakistan". The Operations Evaluation Department (OED) undertakes audits and evaluations of Bank projects and programs. It is independent from Bank management as its Director-General reports directly to the Board of Executive Directors of the Bank.

1/ The Aga Khan Foundation is a private, non-denominational, philanthropic network established by His Highness the Aga Khan. It seeks to promote social development, primarily in low-income countries of Asia and Africa, by funding programs in health, education and rural development. Grantees and beneficiaries are selected without regard to race, religion or political persuasion. The Foundation is registered in Switzerland (1967) and has its Head Office in Geneva. It maintains branch offices in Pakistan (1969), the United Kingdom (1973), Kenya (1974), India (1978), Bangladesh (1980) and Portugal (1983), and has independent affiliates in Canada (1980) and the United States (1981).

iv. The OED evaluation team comprised a mission leader, two other OED staff members and two consultants. Their expertise covered the fields of management, institution building, economics, agriculture, resource management, rural development policy, cooperatives, credit and marketing. All had basic training in the social sciences. The combined development experience of the all-male team totalled some 95 years. All five had previously worked in Pakistan, and two were Urdu speakers. The team visited Pakistan for three weeks in September/October, 1986, during which time they visited 27 villages in the program area, at all stages of involvement with AKRSP, ranging from three months to four years. They interviewed all members of the senior staff of AKRSP, held discussions with public and private sector representatives in Gilgit and Islamabad, and exchanged views with Akhtar Hameed Khan, who has maintained an active interest as special adviser to AKRSP.

v. The team was charged with evaluating the performance to date of AKRSP, including, inter alia, an assessment of management, staffing, funding, and program implementation at the village level, as well as the program's effects and benefits and its monitoring and evaluation procedures. In particular, the team was invited to assess the principles, concepts and assumptions underlying the program's approach and activities and to suggest changes or modifications appropriate to ensure the effectiveness of AKRSP through the end of its ten year program period. It was noted that the major questions facing AKRSP required assessments that would be judgemental and qualitative in nature. Although the team was to make use of quantitative information where possible, it was also noted that, in almost all rural development efforts, benefits are not easy to quantify, or to attribute directly to program interventions.

vi. Accordingly, this report outlines the characteristics of the program (Chapter I), describes the features of the project area (Chapter II), documents its implementation (Chapter III), and reviews its performance to date (Chapter IV). It then evaluates in greater detail the elements and components of the program (Chapter V), and examines perceived implications for the future (Chapter VI). Special features of the program and program area are highlighted in boxes and the report is supported by annexes containing statistical tables, village case studies, reference lists and a map.

vii. A draft report was reviewed in Washington on December 12, 1986 with representatives of the main donors, AKF (Geneva) and AKRSP, and the report was modified where appropriate to take account of their comments.

SUMMARY AND RECOMMENDATIONS

Characteristics of the Program

1. The Aga Khan Rural Support Program (AKRSP) was initiated in December 1982 for the purpose of implementing a rural development program in the Northern Areas of Pakistan. The broad objective of the program is to increase the capacity of local people in the program area to make use of opportunities to improve their welfare and to overcome the problems facing them. The main focus of the development effort is on income-generating activities, toward meeting the program's stated objective of "a doubling of (rural) per capita incomes over a period of 10 years".

2. The central feature of the program is the establishment of effective Village Organizations (VO). Once established, the VO enters into a formal partnership with AKRSP under which technical and financial assistance is provided in the form of programs. Out of about 1,030 villages in the program area, some 526 now have an active VO. Another essential element of the strategy is the one grant-assisted Productive Physical Infrastructure Project (PPI) per VO. Once the partnership is established, the villagers select a PPI usually for the construction of irrigation channels or link roads (but storage tanks, flood protection works and pony tracks have also been chosen). Some 393 PPIs have been started and 226 completed. Engineering and costing (including payment of village labor from the grant) is done by AKRSP in conjunction with villagers and a project cost agreed with the VO. The VO is responsible for the execution of the project, with the grant being transferred by AKRSP to the VO in five installments. A large proportion of the wages, however, are saved in the VO's savings account and these savings subsequently serve as the collateral for short-term production and medium-term land development loans. Regular savings deposits by members of the VO is another key element and condition of the agreement between VOs and AKRSP.

3. Despite the broad range of programs and the extensive and logistically difficult area in which the project is working, AKRSP remains a relatively small program compared to many of the rural development projects financed by bilateral and multilateral sources. Total funding for the first four years has been Rs. 127 million ($8.3 million), provided by the Aga Khan Foundation network and other donor agencies namely CIDA, Alberta Aid, the Netherlands Government, USAID, ODA, OXFAM and the Ford Foundation.

4. Total expenditures in the first four years have been US$7.3 million of which 47 percent was in grants for PPIs, 27 percent for salaries, and 26 percent for operating costs, capital and other expenditures. This represents a cost per beneficiary household of about US$192, which is modest by most rural development project standards.

Features of the Northern Areas

5. The program area includes the three districts of Gilgit, Chitral and Baltistan in the Northern Areas of Pakistan. The area has a total population of about 750,000 located in some 1,030 villages. Program headquarters are in Gilgit, the largest town (population 32,000), which is about 280 km north of Islamabad by air and some 610 km by road. The region has been readily accessible by road only since the late 1970s, with the completion of the Karakorum Highway (KKH) through to China. The area comprises a series of interlinked narrow valleys (between 4,500 and 10,000 feet above sea level) among the peaks of the intersecting Karakorum, Himalaya, Hindu Kush and Pamir Mountains (ranging from 15,000 to 28,000 feet above sea level). The climate is that of a mountain desert (4-10 inches of annual precipitation) with bitterly cold winters and hot dry summers. Agriculture is dependent on irrigation except for high altitude natural summer pastures. Given the conditions and the resources available, agriculture is already fairly sophisticated, but there is considerable potential for increased production where more water can be brought to existing or available arable land, and methods can be improved. The KKH has already had a major stimulating affect on local economies, and the increased presence of government, military and commercial interests is widely evident. The great tourist potential of the region is beginning to be exploited.

6. The villages are green oases constructed on river terraces, the "fans" of river valleys or scree from the mountains (often terraced), watered by ingeniously constructed irrigation channels which tap streams flowing from the many glaciers as well as from springs and snow melt. The indigenous people have antecedents in Persia, Turkestan and Tibet and the various incursions of ancient times. Local dialects are numerous and reflect these antecedents, including Tibetan and Ancient Persian. The area is wholly Muslim, with the various sects all represented, generally in separate villages, and sometimes whole valleys. Although most villages away from the KKH can be reached by "jeepable tracks", some are still accessible only by travelling on foot for several hours or by helicopter.

7. Regional administration is provided by the Government of Pakistan (GOP) at the federal level, though the legal status of Gilgit and Baltistan Districts is "unresolved" following the de facto division of Kashmir between India and Pakistan. With borders on Afghanistan, USSR, China and India, the area, though impoverished, is "geopolitically sensitive". Until 1947 the area was administered as feudal "princely states", but this system declined and was ultimately abolished in 1974, leaving something of a "power vacuum" in terms of local administration. An aim of the program is to fill this gap by creating village level organizations.

Methods of Implementation

8. The purpose of the program is to support the commercialization of previously subsistence villages by creating village level organizations, building productive physical infrastructure, establishing deposits to

facilitate credit, providing production and marketing support systems and by training. The implementation model (village organization, savings deposits and grants for PPIs) has evolved from Comilla (Bangladesh) via other experiences in Daudzai (NWFP, Pakistan), Mahaweli Ganga (Sri Lanka) and elsewhere, under the guidance of Akhtar Hameed Khan and Shoaib Sultan Khan (AKRSP's General Manager). The VOs are fostered by 17 Social Organizers (all of whom are from the Northern Areas and have masters degrees - one to about 31 VOs), supported by a central team of engineers, agriculturalists, economists and other subject specialists (approximately 20). The program is people intensive, with a total of 86 professional staff employed by the program (10 senior, 18 middle, and 58 junior level staff). Professional salaries of the team are comparable with government salaries for people of the same calibre, but support facilities, including jeeps, are provided on a considerably more generous basis (the helicopter is currently out of action). The facilities are used to advantage and have enabled the formation of 526 village organizations in the first four years which, given the difficulties of terrain and seasonal conditions, is a tremendous achievement.

9. The program effect is to permit the VOs to internalize the externalities created by the building of the KKH and other access roads, by bringing a saleable surplus to market. The grant-assisted PPIs have the effect of greatly increasing the financial return to subsequent farm level expenditures (to levels probably in excess of 100 percent), which provides the very high incentives needed to encourage subsistence farmers' participation. That the program works can be seen by the flow of apples, apricots, seed potatoes and other produce moving down the roads and present in the market towns. The program is in this respect quite different in concept and timing from a World Bank project in that the increase of output was not the major emphasis at the beginning and is becoming significant only in the fifth year of the program, though it can be expected to grow at an increasing rate in future years. Also, implementation by an autonomous non-government organization (NGO) provides a degree of flexibility and responsiveness to changing needs that is usually not possible with government agencies.

10. The major programs of AKRSP include:

(a) the development of organizational skills and discipline;

(b) the first Productive Physical Infrastructure (PPI) project;

(c) land development and longer-term resource management planning;

(d) human resource development and training;

(e) agriculture and livestock development;

(f) savings and credit;

(g) marketing;

(h) women's development; and

(i) monitoring, evaluation and research (both socio-economic and technical).

Program Performance

11. By June 1986, a total of 526 VOs had been established, with a membership of 38,180 households (321 in Gilgit, 168 in Chitral and 37 in Baltistan). Some 110 separate Women's Organizations were started in Gilgit District, but recognizing that women do not function separately from the household, AKRSP now encourages Women's Organizations to merge with VOs, and various efforts for women are integrated with the overall programs of AKRSP.

12. In the first four years of the program a total of 393 PPIs were initiated and 226 completed. PPIs numbering 254 in Gilgit, 117 in Chitral and 22 in Baltistan were initiated, while 169 in Gilgit, 53 in Chitral and 4 in Baltistan were completed.

13. The agriculture program has three sections: field crops and orchards, livestock and forestry. There are two types of activity: (i) loss reduction and yield development for current production, and (ii) assistance for development of new lands irrigated by feeder channel PPIs. These activities are at an early stage. Fruit losses have been reduced by a training and spray kit distribution program. Fifteen courses have trained 152 VO specialists in plant protection. Demonstration plots in farmers' fields with improved crop varieties or fertilizer trials have been laid out in 45 villages. Improved nursery stock are being provided to improve fruit and meat production. Livestock development surveys have been conducted in 175 villages in Gilgit and 45 in Chitral. Training in livestock management and treatment has been provided for 207 VO specialists, and 134,000 livestock have been vaccinated. Establishment of forest plantations is underway with over 550,000 trees planted.

14. Total savings by VOs amount to Rs. 14.5 million (Rs. 10.6 million in Gilgit, Rs. 3.5 million in Chitral and Rs. 0.4 million in Baltistan). Short-term credit extended over the four years amounted to Rs. 9.8 million in Gilgit, Rs. 2.02 million in Chitral and Rs. 0.31 million in Baltistan. This has financed fertilizer, marketing, plants, seeds and other inputs. Medium-term credit has been provided to VOs totalling Rs. 6.4 million in Gilgit and Rs. 0.24 in Chitral in the four-year period. This has financed mainly land development and agricultural machinery.

15. Marketing is being improved for fresh fruit, dried fruit, livestock and grains. Some 73 VOs (85 specialists) have participated in training courses in improved harvesting, grading and packing, and 2,250 households have benefitted from AKRSP support for marketing operations. Grouping villages for transport and marketing purposes has been attempted, and the program will be broadened in future to include other products and other villages.

16. AKRSP is currently benefitting 45 percent of the rural population of the three districts. Analyses of costs and benefits attempted by AKRSP suggest that major components of the program are highly profitable for participants. While AKRSP has devoted substantial time to monitoring and reporting, detailed analyses of program efficiency have not yet been considered feasible.

Evaluation of the Program

17. The performance and achievements of AKRSP, as verified by the evaluation team, are impressive. The attitudes of villagers have changed significantly and provide a favorable environment for program activities. The reactions of other residents, including government officials and private sector representatives, are overwhelmingly favorable. These changed attitudes reflect four years of concerted effort and solid achievement.

18. The achievements are largely attributable to the effectiveness of the institution-building efforts at the village level. Several management principles are critical to this effectiveness. First is the principle of primacy of the VO. The VO is the focal point of all AKRSP activities but its sovereignty is sacrosanct, although AKRSP is firm in keeping to the agreed conditions of the partnership. The VO and AKRSP are seen as contractual partners where activities of the VO are supported but never undercut. Second is the principle of continued attention to innovations. Villagers and AKRSP staff alike are encouraged to innovate, using a trial and error approach that is carefully monitored. This creates a "learning environment" of active improvisation and innovation.

19. Pursuit of these principles is aided by the flexibility of AKRSP as a small, independent NGO, relatively free of fixed procedures, hierarchical clearance, or internal constraints on actions. This flexibility facilitates the "working" method of experimentation, adaptation, and trial and error innovation that is the hallmark of the program.

20. Several features of the Northern Areas have proven advantageous to the program: (i) institution-building proceeds without competition, in somewhat of a political and administrative vacuum; (ii) a tradition of cooperation in the villages is consistent with the VO approach; and (iii) the high proportion of Ismaili villages in Gilgit District, favorably disposed to an Aga Khan supported program, gave an initial impetus which was invaluable, though only about a quarter of the population of the program area is Ismaili.

21. Production program activities follow the institution and infrastructure-building phase. These are aimed at making productive use of the fixed capital in PPIs, the VOs capability and credit access, and the broader activities of production and marketing. However, the production-expanding activities of AKRSP seem to lack the direction and thrust characteristic of its institution-building activities. This is partly because production is: (i) a private household activity, one step removed from AKRSP involvement; (ii) more diverse technically than infrastructure-building; (iii) involves technology changes that have to be adapted to local conditions; and (iv) necessitates thousands of individual decisions and some risk to adopters.

22. However, the "production model" seems less well studied and conceptualized than AKRSP's "institutional model", and several changes are recommended for consideration in this area. Environmental and resource constraints are a major issue and, while much is being done, further attention to this issue is needed. Institutional development within and beyond the VO, especially relating to land and water use, warrants support.

23. Formalizing the VOs as legal entities, expanding their capabilities and reorganizing AKRSP into a "transition mode" need further consideration. Creation of separate marketing and credit institutions may prove worthwhile. Expansion of the program into more isolated areas of Chitral and Baltistan will pose further challenges for AKRSP.

24. Further expansion of the farming systems approach within the work of AKRSP deserves attention. This should focus on the household, and include understanding family goals and objectives, resource constraints, labor profiles and income and consumption patterns.

25. Since the agricultural development program is at an early stage there is scope for numerous initiatives in this field, in addition to the many worthwhile efforts already underway. Further agricultural research activities are recommended.

26. Irrigation system design in the area has evolved over centuries and finding ways to improve water management is bound to be difficult. Nevertheless, attention to optimal field layouts and water management to improve water use could have a high pay-off.

27. AKRSP has acknowledged the importance of women in the villages and households of the Northern Areas. This has created expectations among village women and observers, which AKRSP must address more concertedly. Focusing on the household would reveal family labor as a significant limiting resource and the dominance of activities performed by women. AKRSP should work to identify bottlenecks in the daily life of women and seek to relieve them, shift them in time, or shift them to men. All programs or actions proposed by AKRSP should be evaluated in terms of their impact on women.

28. AKRSP has made a constructive start on improving the marketing of farm produce. But the flow of "saleable surplus" is likely to increase dramatically in future years. Thus, this program should be strengthened, especially in helping villagers to understand, evaluate and test markets. Improved apple varieties and potato seed seem to merit special attention.

29. While the monitoring and reporting processes of AKRSP are outstanding by comparison with most programs, and many useful studies have been undertaken, further data collection and analysis is called for. Household labor profiles are needed for planning. Household income studies are needed for program evaluation and strategy formulation. Organizing data by agroecological niche and locational factors would be useful. Computerizing the data base would seem a logical future step.

30. AKRSP has excellent working relations with government agencies, private firms and other institutions working in the Northern Areas. However, AKRSP might further develop its links to other institutions and programs, both to involve them further in AKRSP activities and to influence their performance in delivering services to the people of the Northern Areas.

Implications for the Future

31. Given the already considerable success of this program, it seems appropriate to consider some broader implications of the AKRSP experience to date. To what extent is the program model replicable? What are the implications for the role of NGOs in development? How does this rural development program compare with government programs such as those funded by the World Bank?

32. In assessing the replicability of the program model, allowance must be made for local features and management characteristics which may make this program unique. The local factors include: pent-up development potential of a formerly isolated area; lack of institutional competitors due to the partial political and social vacuum; easy contacts and working relationships due to AKRSP's affiliation with the Aga Khan; existence of two sister organizations working in the area for many years; and unusual government support and attention due to the area's strategic and political significance, including road building and regional subsidies.

33. Many of these features are unique to this program, but others are less so. Villages that are socially well integrated by virtue of kinship and cultural factors, but are poor, poorly educated, isolated, lacking in physical infrastructure, unorganized, and poorly served by government agencies, are characteristic of most subsistence-oriented communities in developing countries. The demise of old institutions, leaving a tradition of cooperation, is typical of agrarian societies. The need for cooperative management of resources and cohesion in dealing with government agencies, merchants and expanding neighbors is a concern of most rural societies. Lack of access to education, improved technology and economic opportunities is common in most subsistence-oriented communities.

34. Thus there are many local features which seem unique but others that seem less so. It is not possible to judge the relative importance of these on a general basis. Planning for replication would need to take account of conditions which may not apply in any given situation, and objectives and activities devised accordingly.

35. The management features of AKRSP also need to be taken into account. These include: paying attention to both institutional and technical issues; building local institutions first; working with the newly formed institutions but respecting their sovereignty; planning with participants through an iterative process; balancing emphasis on efficiency and equity criteria; using a trial and error approach; making programs staff highly mobile; fostering open communication and information flows; providing incentives to attract high quality staff; and ensuring high calibre leadership. These factors do not seem impossible to replicate, and in this respect AKRSP may not only provide a model but have an important future role in training staff for other programs.

36. Further, the level of funding of the program and features such as payment of villagers who work on PPIs may be unacceptable on a broader scale. This aspect would certainly need to be examined further in the

ext of any project designed on the AKRSP model. But costs per benefi- in the Northern Areas program are well within the range typical of most development projects.

AKRSP appears to be developing its role as an NGO in a manner comparable with that of most NGOs. Its relationships with government agencies are congenial and numerous, and the work of AKRSP complements that of virtually all government programs. By so working, AKRSP manages to increase the effectiveness of government without making the VO or program entity dependent on government. This preserves the independence of the VO which is otherwise difficult to achieve. There are numerous examples of ways in which AKRSP and the VOs extend the capacity of government services.

38. Evaluation of the successful implementation record of AKRSP invites comparison with less successful rural development projects assisted by other agencies. First, the program is directly implemented by an independent company associated with the sponsoring agency which was also the original donor. This is rare in rural development. AKRSP can conduct its routine affairs without recourse to government authorizations by distant officials or the uncertainty of annual budget approvals. It can react flexibly to problems as they arise. It has staff familiar with the area who speak the local languages. It can attract high calibre staff. It can spend much more time in the field and less in reporting upwards, than any government program. Some of these characteristics may be attainable in semi-autonomous project entities, but few now in operation can compare with the effectiveness of AKRSP. Government agencies cannot function with the same flexibility or single-minded effort.

39. Second, the order of priorities and phasing of AKRSP is unique. The institutional model is well honed, and the early and almost exclusive emphasis on institution-building deserves special attention. In some respects the first four years of AKRSP correspond to the missing years in many "delayed" rural development schemes. The program horizon of 10 to 15 years is much longer than the typical five to six-year cut-off of most projects.

40. Third, village programs supported by AKRSP are planned from the bottom up. Infrastructure projects are selected by the villagers themselves. Later developments are similarly the village's choice. This is in contrast to most projects where standard packages are prepared and offered to rural communities with little if any prior consultation. Given a little insight into human motivation, it is not surprising that the AKRSP approach has been more successful.

Major Recommendations

41. A number of major recommendations for AKRSP to consider in the future, accompanied by many minor ones, have been made in the report, as follows:

- there is need for a "production model", based on integration of infrastructure, production and marketing components, that is as carefully conceptualized and crafted as the "institutional model", based on the integration of village organization, infrastructure and credit components (paras. 5.13-5.15);

- success of the program in the future will depend in part on addressing the area's resource constraints even more forcefully, especially the livestock feed and domestic fuel problems (paras. 5.16-5.17);

- explicit attention to building the village organization and its operating rules will help to ensure that PPIs are completed and maintained to benefit the village as a whole (paras. 5.18-5.21);

- continuing organizational development is needed in the program on two levels; (a) reorganization of AKRSP to expand its capabilities over the next five years and "to work itself out of a job" by the early 1990s; and (b) further VO development to develop VOs in unserved villages, consolidate and support existing VOs and establish the VOs as legal entities which can make their own contracts (paras. 5.22-5.30);

- consideration should be given to complementing work on agro-ecosystems analysis at the village level with a farming systems approach focussed on the household, in order to provide a framework for promoting household development activities in relation to resource constraints, income opportunities and consumption needs (paras. 5.31-5.34);

- several specific suggestions are made in reference to agriculture, dealing with field trials, potato seed production, improved fruit varieties, alternative cash crops and livestock (paras. 5.35-5.40);

- because of the importance of irrigation to village livelihoods and AKRSP's strategy, attention should be given to optimal layouts of irrigation systems and water management (paras. 5.41-5.42);

- AKRSP should seek to coordinate its activities more fully with the Jaglote research station and other research networks (para. 5.43);

- AKRSP needs to put renewed emphasis on the Women's Program both within the VOs and in tailoring the "production model" to meet the particular needs of women more directly (paras. 5.44-5.51);

- the Marketing Program should be strengthened by giving even greater attention to marketing beyond the farm gate, including assisting farmers to understand, evaluate and test markets, create market infrastructure, improve produce quality, and avoid exploitation (paras. 5.52-5.56);

- the information base should be augmented and more analysis undertaken, including household labor profiles, household income studies, and the grouping of data by farmer characteristics, agroecological zones and locational factors (paras. 5.57-5.61); and

- AKRSP should continue to build its relationships with government agencies in the program area by facilitating improvements in the delivery of public services and supplies and by continuing to encourage pooling of public funds with those it receives from other sources (paras. 5.62-5.63).

I. CHARACTERISTICS OF THE PROGRAM

Rationale and Objectives

1.01 The Aga Khan Rural Support Programme (AKRSP) was initiated in December 1982 to foster the development of the rural poor in the Northern Areas of Pakistan.1/ The program began its work in Gilgit District in late 1982, in Chitral District in the spring of 1983, and in Baltistan District in early 1985 (Map).

1.02 AKRSP was conceived as a new approach to institutional innovation, not only to bring about the active involvement of Northern Area people in their own development, but also to serve as a model appropriate to other settings. The broad objective of the program was to increase the capacity of local people to solve their own problems so that they could plan and implement their own development programs. A specific objective was "a doubling of (rural) per capita incomes over a period of ten years," without significantly increasing income inequalities.

1.03 The main focus of the program has been the establishment of village-level institutions for managing development and the funding of essential local infrastructure projects, one per village, chosen by the villagers. Village Organizations (VOs) and productive physical infrastructure projects (PPIs) have in fact been established symbiotically: the forming of the new social infrastructure (the VO) being aided by the catalytic effect of the new economic infrastructure (the PPI) the VO is implementing. Together, the VO and the PPI become vehicles and stimulants for local income and employment generation.

1.04 The establishment of AKRSP as a private, non-profit company to serve as a catalyst for rural development was based on five premises:

(a) that government capacity for development was limited;

(b) that local opportunities and initiative exist but are hindered by lack of effective local organizations, skills, capital and appropriate infrastructure;

1/ AKRSP is at work in the three northernmost districts of Pakistan: Gilgit and Baltistan of the Northern Areas, and Chitral District of Northwest Frontier Province. While not technically accurate this region is referred to for convenience as the Northern Areas.

(c) that special attention needs to be paid to the long-term environmental impact of development both in the region and downstream;

(d) that public and private funds are available to support development; and

(e) that a small, private and flexible organization can make a significant contribution to the promotion of local initiatives and the mobilization of outside resources.

1.05 AKRSP was designed to promote development in an equitable and sustainable manner in the project area. AKRSP was also conceived, from the outset, to be a self-liquidating organization, able to work itself out of a job in any location within approximately ten years. AKRSP's aim is to leave in place local organizations and institutions capable of facilitating continued progress into the future. In all its activities, AKRSP was expected to complement and enrich the activities of government, not to duplicate or replace them. This meant that AKRSP should coordinate its programs closely with those of government agencies at all times.

1.06 In order to achieve its broad objective, AKRSP was initially expected to fulfil three basic functions:

(a) the organization of people at the village level to meet common needs and to provide or obtain services through collective action;

(b) the training of local people in a range of organizational and technical skills; and

(c) the mobilization of savings to support the development of PPIs and to serve as collateral for collective borrowing to expand further the capital available to the community.

As AKRSP progressed, two additional functions became important:

(a) the introduction of new activities and technologies to enhance net incomes; and

(b) the development of strategies for the productive and sustainable use of the natural resources in the project area.

In addition, throughout its activities AKRSP has undertaken technical and socio-economic research and studies to support program management (monitoring) and to measure progress and program effectiveness (evaluation). These objectives, premises and functions were largely established before the organization began work, based on the experience already gained in Pakistan and elsewhere in South Asia.

Program Concept

1.07 How to make these objectives, premises and functions of AKRSP operational has been learned through an implementation process that puts villagers and the management of AKRSP into close and frequent contact with each other, that is characterized by very open communication at all levels, that is prepared to learn from mistakes, and is driven by results. Based upon the previous experience of AKRSP's management, which provided the point of departure, and the lessons learned in the field, nine basic principles for action have been identified. All nine emphasize the development of organizational and institutional arrangements for village-level development. These principles include:

(a) small farmers in isolated communities require a village organization to overcome the disadvantages of small scale;

(b) village organizations can be used successfully to promote formal savings and credit by individuals and the group, provided that control of the savings and credit remains with the group as a whole;

(c) village organizations can be employed to promote genuine participation in planning and implementing development by villagers;

(d) villagers can be most effectively organized initially around economic, rather than social, sector activities;

(e) a PPI project is an effective entry point and catalyst for the organization of villagers;

(f) in order to implement a PPI efficiently and without exploitation, village labor employed should be paid;

(g) regular savings, however small, are an essential part of the discipline of collective management and finance of development;

(h) members of a village organization can acquire the necessary organizational and technical skills to serve themselves and their community, and for which other villagers are prepared to pay; and

(i) the village organization following these principles can take continuing responsibility for sustainable development of the resources at its disposal.

Employing and extending these principles, AKRSP has during its first four years emphasized the establishment of VOs, provision of assistance for PPIs, and the development of systems for training, extension, supplies and credit.

Characteristics of the Model

1.08 The model used in the implementation of the AKRSP has been developed carefully and has a distinguished history. The basic concept is drawn inter alia, from the experiences with rural cooperatives in 19th Century Europe. Additional elements have been adapted from versions of village organization and cooperation that were tried successfully in Taiwan and Korea in the post 1945 era and, less successfully, in the Village Development Program in India in the 1950s. The current model owes much to Akhtar Hameed Khan and his work at the Comilla Academy of Rural Development in Bangladesh during the 1960s and early 1970s. It has been further tried and modified to fit local conditions by Shoaib Sultan Khan (the General Manager of AKRSP) at both Daudzai (near Peshawar, in the Northwest Frontier Province, Pakistan) in the early 1970s and subsequently in the Mahaweli Ganga Development Project in Sri Lanka in the late 1970s.

1.09 The AKRSP model is one of "organization and cooperative management" at the village level. This is based on mass participation of villagers with relatively homogeneous resources, private ownership of cultivated land, group management of irrigation water and common grazing land, and cooperation for the purpose of commercial activities, including village level investment in and management of capital works, group access to credit and organized marketing. Ideologically the model lies between the socialist and capitalist models for agricultural development. It is idealistic in that it pursues economic development with a high degree of equity, and maintains the family farm concept while accepting the growth of non-farm employment and subsequent adjustments as the local economy diversifies.

1.10 The invaluable contribution of Shoaib Sultan Khan has been in refining the model and, above all, in making it operational by introducing a mode of implementation. Thus, the AKRSP model is not so much a concept but more a "working method". The process is to establish a VO with all families as participating members, partly by insisting that they all attend meetings and contribute to group savings. The VO's prime function initially is the collective implementation of a PPI project financed by a grant but collectively chosen by the VO. The viability of the VO is fostered through the provision of credit and other support services which enable all the members, individually, to exploit their existing resources through the improved infrastructure and various other technological advances that are made accessible to them. Within this process each village is treated as a separate case, with the rate of progress and the individual steps tailored in response to the villager's reactions. Similarly, the infrastructure and technology proposed is put to work on a trial and error basis so as to ensure that it will work effectively.

1.11 All villages are eligible to participate and receive the same support providing they agree to enter a contract with the project entity. The conditions of the contract are that:

The VO has to meet as a general body on a regular basis, preferably weekly or bi-weekly, so as to enable all members to review the performance and needs of their organization regularly. Initially at least, these functions cannot and may not be undertaken by individuals or committees.

All members must make savings deposits at their regular meetings. The accumulated funds are recorded in an individual pass book but are banked collectively. This "equity capital" is essential to the viability of the VO since it is the key which gives access to the formal rural financial system and its various services at a cost to the farm family significantly below that afforded by the informal credit system.

1.12 The basic planning tool is a series of diagnostic dialogues carried out with villagers. The General Manager initiates the first dialogue, explaining the objectives and methods of AKRSP and invites the villagers to identify a PPI that could be undertaken by the villagers for the benefit of the village as a whole.

1.13 The second dialogue explores the feasibility of the PPI under the technical supervision of the Program Senior Engineer or Program Senior Agriculturalist. Field operations are managed by the Social Organization Unit (SOU) and the products of the second dialogue are blueprints and cost estimates for a PPI or some other scheme (such as a VO-financed scheme or a livestock sub-project).

1.14 The third dialogue starts with discussion of the finalized scheme. The terms of a partnership between AKRSP and the villagers are also discussed: AKRSP describes the form and extent of assistance it can provide and villagers explain how they will plan and implement the scheme, develop skills, meet regularly and establish group savings. If successful, the third dialogue ends with the formation of a VO and the presentation of the first installment of a grant from AKRSP in support of the agreed PPI. The average grant made to VOs is Rs. 153,000 (or US$9,100 in 1986 dollars[2/]), paid in originally four, but now five, equal progress installments. The grant covers on average about 40 percent of the imputed cost of PPIs, when taking account of the village's labor contribution.

1.15 Planning is therefore inductive and location-specific. In practice, the dialogues are a series of open-ended discussions that not only identify a viable entry point for AKRSP but also develop the relationship between villagers and AKRSP personnel. In addition, through frequent meetings of villagers as an assembly of the whole, and through the preparation of written records, the business of the village in relation to AKRSP becomes public and open to all. In this way the rights of less powerful members of the community are protected and opportunities for individuals or small groups to appropriate the benefits are minimized.

2/ References for US$ are all in 1986 dollars, unless otherwise stated.

1.16 The PPI is implemented by the VO with occasional technical assistance from AKRSP. The grant generates local employment, initiates capital accumulation, as well as enables the construction of infrastructure of long-term value at financial costs well below those of comparable government schemes, largely because the output of self-help village labor greatly exceeds that of contractors hired by government agencies. Only one grant is provided to each VO, and all subsequent activities, including maintenance of the PPI, have to be financed by the VO or through credit.

1.17 AKRSP's Social Organizers (SOs) provide the program regular contact with villages, supported by frequent visits from members of the management group of AKRSP, often including the General Manager. The SOs' main task is to nurture the organizational and institutional development of the VO and to call upon expertise from AKRSP for technical services as and when required. As the VOs develop, VO managers are encouraged to emerge from the ranks of VO members.

Progress

1.18 Over four years, 526 VOs have been established with a total membership of 38,180 households (Annex 3, Table 1). Households participating in VOs range from 97 percent of total households in Gilgit District, to 36 percent in Chitral District, and 7 percent in Baltistan District where the program is the newest. In addition, AKRSP has assisted the formation of 110 Women's Organization separate from VOs (although more recently the strategy is to integrate women's activities within the VO).

1.19 In the project area as a whole, 948 PPIs have been identified over four years (two or more in some villages), with implementation costs estimated to be Rs. 134.3 million (US$8.0 million). Of these, 393 PPIs have been started and 226 completed. The costs of the PPIs initiated are Rs. 60.13 million (US$3.58 million), or Rs. 153,000 (US$9,100) per PPI (Annex 3, Table 2). Almost sixty percent of PPIs completed in the project area are for the construction, extension or rehabilitation of irrigation feeder channels, 16 percent are for link roads, 13 percent for protective works such as bunds and retaining walls, and 5 percent are for storage reservoirs (Annex 3, Tables 3 and 4).

Funding

1.20 Over a four-year period the funds received by AKRSP have been mobilized from a variety of sources and have grown to almost Rs. 127 million (US$8.3 million in current dollars) (Annex 1, Table 1). Contributions have come mainly in the form of grants from donors (96.8 percent); the largest single donor being the Canadian International Development Agency (CIDA) (Rs. 37.2 million or US$2.5 million in current dollars, about 29 percent of the

total). The four Aga Khan foundations in Canada, the United States, the United Kingdom and Pakistan have together contributed Rs. 50.1 million (US$3.4 million in current dollars), almost two-fifths of the total (37.3 percent). The Netherlands Government has provided Rs. 12.4 million (US$749,000 in current dollars) to initiate activities in Baltistan in 1985-86, equivalent to 9.8 per cent of total funds. Other contributors include Alberta Aid (Rs. 7.1 million), USAID (Rs. 7.2 million), UK ODA (Rs. 4.2 million), OXFAM (Rs. 2.7 million) and the Ford Foundation (Rs. 1.8 million).

1.21 Small but significant financial contributions have come from government sources in Pakistan (2.7 percent of the total), a tangible recognition of the complementarity that is growing between public agencies in the Northern Areas and AKRSP. These government funds include Rs. 178,000 of District Development Funds for Baltistan which were pooled with AKRSP funds, this being a condition and special feature of the expansion into Baltistan. No attempt has been made here to put a monetary value on the other resources provided to AKRSP by government agencies in the Northern Areas for the provision of training specialists, professional time, planting materials and other inputs, but these contributions have been critical to the achievement of program objectives. Additional funds have also come from interest income (Rs. 156,000), the sale of plants (Rs. 4,760), sale of scrap and lease of equipment (Rs. 437,240).

Staffing

1.22 AKRSP's staff resources total 191. There are 99 headquarters staff in the three program districts and 92 field staff (Annex 1, Table 8). Of the total, 86 (45 percent) are professional staff, with 28 in headquarters and 58 in the field. Eight of the ten senior professional staff are based at headquarters in Gilgit. Only a handful of staff are women, including only one senior professional.

1.23 Overall, AKRSP employs one staff member for every 2.8 village organizations, one professional for every 6.1 VOs, and one SO for every 31 VOs. There is one staff member for every 200 households served, one professional for every 444 households, and one SO for every 2,246 households. Taking all 58 professional field staff, an average of 9 VOs and 658 households are served by each professional staff member in the field. (For comparison, on rural development/extension projects financed by the World Bank, the ratio of farmers to professional field staff generally lies in the range 300-1,100, with each first level agent serving from 400 to 1,500 farms.)

II. FEATURES OF THE NORTHERN AREAS

Landscape and Environment

2.01 The Northern Areas form the northern crescent of Pakistan, comprising one district in North West Frontier Province and two districts created from parts of the former British-Indian state of Jammu and Kashmir that acceded to Pakistan in 1947 (see Box 1: History of the Northern Areas). This region is one of the most rugged in the world, formed where four mountain ranges meet: the Himalaya, Karakorum, Hindu Kush, and Pamir (see Map). Most elevations in the area are at least 1,500 m above sea level and more than half are above 4,500 m. The area contains 19 peaks higher than 7,600 m.

2.02 Through these mountains run the Indus River and its early tributaries. In the Northern Areas the Indus is a young river cutting deeply into young mountains, transporting enormous volumes of water and silt. Valleys are narrow and steep-sided, and places separated by 5,000m in elevation may be only a few kilometers apart on the ground. The mountains are still growing, and as a result the area is still geologically unstable, subject to seismic disturbances and mass wasting.

2.03 Like mountain areas throughout the world, the Northern Areas display great ecological variation over relatively short distances, both horizontally and vertically. Soils, rainfall and temperature vary with topography, elevation and aspect, shaping both the natural and the manmade environment. Temperatures are accentuated by the mass of the mountains and the aridity which limits the growth of vegetation that might otherwise insulate the rocky slopes. Below 3,000 m, precipitation is minimal, rarely exceeding 200 mm annually, but there is a strong gradient with altitude and at 6,000 m the equivalent of 2,000 mm a year falls as snow.

2.04 The mountain ecosystems tend to be relatively unstable, unresilient, and of low inherent productivity. The area is also subject to sudden mudslides and rockfalls that can cut roads and irrigation channels at any time (see Box 2: The Fragile Environment).

2.05 Within this fragile environment there are a great variety of ecological niches upon which people base their livelihoods. These include old river terraces and fans on valley floors where sparse inorganic soils have accumulated, unstable scree slopes on valley sides, and high-elevation forests and alpine meadows. Surface water supplies are available from seasonal river flow, springs, glacial streams and seasonal snow melt. Meadows and forests exist where snowfall, shade and terrain allow soils to retain some moisture, but the cultivated lands lower down depend on irrigation with water derived from melting glacial ice, snow and springs. Agriculture is therefore constrained by scarcity of land and irrigation infrastructure, but where these limitations can be overcome, pockets of high agricultural productivity are found.

Box 1: History of the Northern Areas

That part of Pakistan now known as the Northern Areas has been known to travelers on the Silk Route since the 2nd Century B.C. Hunza and Gilgit were important staging posts on the route between China and India for the carriage of silk and spices westward and wool and precious metals eastward (Adamson and Shaw, 1981). Buddhist pilgrims from China followed the same road in the 5th through 7th centuries on their journeys to Swat where Tantric Buddhism originated, and Marco Polo traveled the Silk Route eastward into China in the 13th Century. In the same century the first two Moslem missionaries, Shah Buria from Persia and Shah Wali from Badakshan, western Afghanistan, brought Islam to Hunza and Nagar (Staley, 1982). Both were teachers from the Shia sect of Islam and settled in Hunza and Nagar respectively. The burial place of Shah Wali is marked today by a memorial at Gulmit on the edge of the path that has now become the Karakorum Highway. In contrast, the southern valleys of the Northern Areas were converted to Islam by missionaries who were mainly Pathans belonging to the Sunni sect, and the religious sectoral patterns established seven hundred years ago are still dominant today.

The states that came through the Islamic conversion were subjected to further profound changes in the nineteenth century when they came under the influence of the rulers of Kashmir and then attracted the attention of the British in India during the era of the Great Game. At the beginning of the nineteenth century the feudal states that now comprise the Northern Areas were invaded by the armies of Kashmir, then part of the Sikh empire centered in Lahore. By 1841 a Sikh force had advanced as far as Gilgit, but when the British defeated the Sikh army in the Punjab in the First Sikh war of 1846, control of Jammu, Kashmir, Astor and Gilgit was purchased for a million pounds by Gulab Singh, the Raja of Jammu. Kashmir's control of Gilgit, although weak remained intact until 1947.

The first Europeans to reach Gilgit arrived in 1847, and throughout the middle of the nineteenth century the British explored the Karakorum from the south, prompted by the Russian advance to the Pamir in Central Asia and the fall of the kingdoms of Turkistan. The first British Political Agent was established in Gilgit in 1889 with the task of extending Kashmir's control up to the watersheds, and the campaign to control Hunza, Chitral and Chilas lasted until 1897. Twenty-four British Political Agents followed in succession until 1947 when Pakistan gained independence as a separate nation. Since the Gilgit Agency was still nominally Kashmir territory, it was due to become part of India when the Hindu Maharaja of Kashmir acceded to India in October 1947. However, since the population was predominantly Moslem, unrest spread, hostilities with Kashmir began and the local rulers of Hunza, Nagar, Punial, Yasin, Ishkoman and Gupis (current subdivisions of Gilgit district) all sent messages of accession to Pakistan on November 26, 1947. The power of these traditional rulers remained in effect until 1974 when the power of the Mirs was ended.

The Northern Areas today form part of Pakistan's border with Afghanistan, China and India. Soviet Central Asia is only 29 km away beyond the Wakhan Corridor. The people of the area display a variety of ethnic origins, characteristic of the regions which border the Northern Areas in all directions--Caucasian, Mongolian and Indian. A diversity of racial and cultural groups speaking five principal languages--Shina, Burushaski, Wakhi, Khowar and Balti--and representing Sunni and Shia (Ithna' Shari and Shia Imami Ismaili) sects of Islam coexist reflecting the cultural heritage of an area at the crossroads between Central, South and East Asia.

Box 2: The Fragile Environment

The area covered by AKRSP comprises part of the upper watershed of the Indus Basin in Gilgit, Chitral and Baltistan Districts of Northern Pakistan, amongst the largest concentration of high mountain peaks in the world. The combination of elevation, steep terrain and an extreme precipitation gradient in a region where mountain building is still occurring creates a very fragile environment within which man exists. The few remaining forests survive only where local sustained-yield practices continue; there are few roads, and the steep terrain makes commercial logging impractical.

The climate is continental, with temperatures alternating sharply between winter lows on the valley floor down to -10°C, and summertime highs above 40°C. When spring comes, ice and snow begin to melt at progressively higher elevations filling rivers and streams with water loaded with transported material ranging from fine sediments to large boulders. Water levels rise rapidly, overflowing banks of rivers and streams as they tumble down steep slopes. Avalanches, mudslides and rockfalls occur throughout the year but are most frequent following rainfall and the thaw, sweeping away sections of roads, irrigation channels, orchards and fields, and occasionally temporarily damming major rivers. Mass wasting occurs naturally as a result of climate, soils and topography, but is exacerbated where pastures and forests have been degraded and where steep slopes have been planted to foodcrops. Greater numbers of sheep than goats and of larger-hoofed cattle and buffalo have sped up erosion in alpine areas. All these processes have accelerated with improved accessibility to the mountains and the intensification of land-based production systems. Hunting, forestry and agriculture have reduced both wildlife numbers and habitat, endangering populations of ibex, mountain sheep, snow leopard and bear species.

2.06 Scarcity of land is the resource constraint most frequently associated with the Northern Areas, but land *per se* is not always the constraint it appears to be. The real scarcity is of flat land, adjacent to dependable water sources and accessible from villages. For example, agricultural census data indicate that for Gilgit District, while an estimated 20,400 ha were under cultivation in 1985, of which 80 percent was under annual crops, an additional 6,500 ha were cultivable but uncultivated, apparently largely because of lack of water and difficulty of access. (Investments are required to make land potentially productive and then to put it to use: where land is scarce but water is available, labor-intensive terracing, the deposition of silt from irrigation water, and the slow build-up of organic matter creates cultivable land from barren hillsides.)

2.07 The climatic feature most constraining agriculture is water supply. Except in the alpine pastures, virtually all crop production in the Northern Areas, both annual and perennial, requires irrigation derived from glaciers, snowfields and springs, as well as occasionally from rivers (see Boxes 3: Farming and the Seasons, and 4: Agricultural Technology). Groundwater sources are not generally used for either agricultural or domestic purposes. All of the sources of irrigation involve conveying water over relatively long distances in precarious channels and all show some degree of physical instability or unsustainability. The "snouts" of glaciers advance and recede over time, and every summer when the melting of ice and snow accelerates, flood flows associated with rocks, mud and very high sediment loads come down the previously dry streambeds (nullahs), breaching channels and inundating fields. Villages dependent on snowmelt are most vulnerable to water shortage, depending on the amount and timing of snowfall and the rate of melting. Rivers and streams fed by springs are the most dependable sources of water for irrigation, but since the level and intensity of river flow fluctuates dramatically, tapping rivers by gravity can pose major engineering problems at the intake and along river banks.

2.08 Soils are relatively low in organic matter, very free-draining, contain virtually no clay, and have low natural fertility. As a result, water and nutrient retention is very poor and nutrient losses are aggravated by frequent irrigation and exacerbated by over-watering. Northern Area soils need regular supplies of organic matter to improve both their structure and their nutrient-holding capacity. This has traditionally been supplied by leaving crop residues on the land and grazing animals on them, and by the application of dung collected from pens close to the house. At present yield levels of 2-2 1/2 tons of grain per hectare, annual applications of 20 tons of farmyard manure or equivalent are required per hectare to replenish nutrients.

2.09 Other factors constraining agriculture include summertime heat stress at elevations below 2,400 m, and the shortness of the growing season above that elevation, though local orographical effects create exceptions to this pattern that individual villages can exploit. One important overall effect of these conditions is that some local grain varieties only just mature in an average year, and one year in four, on average, cereal crops are harvested immature at elevations above 2,000 m. These constraints pose challenges for plant breeders and agronomists.

2.10 Though the documentation of these resources is limited, scarcities of wood fuel, forage, and minor forest products drawn from forest lands and alpine pastures are significant. At elevations over 2,300 m, where only single cropping is possible due to the shorter growing season, the importance of livestock in the farming system increases significantly, creating heavy demands for forage from trees, shrubs, and grasses that are highly seasonal in production. Poor animal nutrition in winter is reflected in the slowness with which animals reach their mature body weight and in the loss of up to one-third of their body weight over the winter.

Box 3: Farming and the Seasons

A typical family's livelihood is based mainly on the farm of 0.76 ha, various livestock, the common pasture and forest, and economic activities unrelated to the farm. Most follow farming practices evolved through generations of trial and error. Cultivated land managed by the family close to the house averages only 0.76 ha, of which one-fifth is under tree crops of apricot, apple, walnut, willow and poplar, and four-fifths is used for annual crops for food and forage (Annex 2, Table 4). Spring wheat of local varieties is the dominant food crop and, where double cropping is possible, maize and vegetables follow wheat. In the transitional zone areas around 2,300 m barley and maize replace wheat, and at the limit of cultivation close to 3,300 m only barley, peas, turnips and potatoes are grown. Forage crops include deep-rooted perennial alfalfa on screes and lower slopes below irrigation channels, and clover on fields within the village.

Seasons can be divided roughly into four: a cold winter with air frosts lasting up to 5 months at 3,000 m from November to March; a cool spring between March and May when there is typically acute food and fodder scarcity, rainfall is expected, and temperaures climb; a hot summer in areas below 2,400 m with peak temperatures above 40° C, no rain and intense evaporation; and autumn, beginning in late August, when temperatures drop rapidly over a two-month period until frost again signals the onset of winter.

The agricultural year begins in the spring when most of the sheep, goats, cattle and yaks are taken by representatives of the village to meadows at high elevations before the winter-sown wheat emerges in the unfenced fields close to the village. Shortly after this the villagers collectively perform preseason maintenance on the irrigation channels, or kuhls. During the summer, a second cleaning of the channel may be performed, along with the repair of any breaks in the channel wall.

Summer is a season of intense activity, with crops to plant and harvest, fruits to gather and store, and livestock to tend away from fields. Extreme labor peaks occur during weeding and harvest times, but by autumn people and animals are in their best condition--a condition that is gradually lost as the long, cold winter progresses. Food crops must be brought in and protected in the autumn before the animals come down from the high meadows, where the winter starts earlier, and begin to graze the fields as common pastures. As elevation increases and the growing season becomes shorter, the role of livestock and the interdependence of the components of the farm system becomes even more marked.

As snow and intense cold descend and the villages become isolated, family life becomes centered around the hearth in the one-roomed house. Few households produce enough wheat for the full year's consumption, and food becomes poorer and scarcer as the winter progresses. The traditional winter diet was based on two meals a day of soup made from dried apricots, chapatis, and vegetables, for as long as they lasted. Today, cash earned during the summer is used increasingly to buy flour and meat trucked from down-country, but in some families men must still go south to find wintertime wage employment and relieve pressure on family food stocks.

In Northern Area homes in winter a small central fire smoulders all day. Fuelwood collection in these areas is likely to be time-consuming and conducted over a wide area. Unlike those in some other mountain areas of South Asia, who rarely cut wood solely to heat their homes, Northern Area villagers are prepared to prune or fell fruit trees to meet their needs when fuel supplies dwindle. In Hunza, the onset of winter is referred to vividly as "the long nights," followed by the depth of winter known as "the extreme cold." Keeping the fire fed is obviously very important.

By February and March, when temperatures are still close to freezing and food supplies are close to their lowest ebb, active field work must start again since it is the beginning of the new farming year.

Box 4: Agricultural Technology

Altitude, aspect, access and irrigation source induce great variability in cropping and agricultural technology in the Northern Areas. At lower altitudes two cereal crops are possible during the spring and summer growing season. At higher altitudes the shorter growing season permits only one grain crop followed by a short season crop, but livestock numbers and dependence on livestock increases. Between these two basic systems there are transition zones and local variations. North and east facing slopes and even flat lands to the north or east of high ranges and peaks, receive much less direct sunlight in these deep valleys (topographical shading) and are therefore cooler, reducing water requirements but delaying crop maturity. The source of water affects its temperature (cold glacial water may slow spring growth) and its reliability (snow melt can be inadequate during the early growing season and in excess during the peak thaw in June/July), which influences crop choice in some villages.

At lower altitudes the main crop is winter wheat followed by maize. As altitude rises a quick maturing spring barley substitutes for wheat (to retain the following maize crop), or winter wheat is followed by vegetables (such as peas, turnips and radishes) instead of the second grain crop. Crops may be harvested before maturity when growth rates have been less than usual, either to plant the following crop on time or to get the crop off the fields before livestock return to the village graze. Other crops of importance include potatoes, millets, pulses, buckwheat, spinach and perennial alfalfa, as well as other fodder crops. Farms at all altitudes have some tree plantings, often both fruit and nut trees (apricots, peaches, apples, mulberries, grape vines and almonds) as well as timber and firewood species, dominated by poplar.

Irrigation is generally by border strip method or furrow. Crop water requirements range, by location, for wheat and maize from 380-516 mm, but the current long irrigation intervals (10-15 days) and over-applications result in excessive leaching and consequent nitrogen deficiency. Village irrigation layout is largely traditional, without improved control structures and with frequent losses from leaks and some soil erosion on slopes. Trees are usually planted beside channels or even inside feeder channels, for stabilizing purposes. Areas irrigated per household average 0.75-1.0 ha in double crop zones and 1.5-2.0 ha in single crop zones, with about 20 per cent of the area in fodder and tree crops. On such farms grain yields of 2½ tons per hectare are necessary for subsistence, whereas perhaps a quarter of grain consumed is subsidized government wheat supplies.

In these mountain conditions with high solar radiation, however, very high yields from irrigated temperate crops are technically possible. Hence the agricultural potential exists to eliminate the need for down-country wheat. Potential new crops identified by the FAO/UNDP project include soyabean, sugar beet, fennugreek, chicory, saffron and, most importantly, vetch and rye for livestock feed.

Livestock comprise native cattle, sheep and goats, with some donkeys, poultry and decreasing numbers of horses (now mainly for polo as new tracks open up jeep transport). At higher altitudes the hardier yak replaces cattle (both as a pack animal and for farm work) and is crossed with cattle to produce a hardy hybrid. With more contact and trade with the outside, animal disease problems have increased.

In most areas livestock are free grazed or stall fed (in winter) while at the village, but from April/May to late September animals are taken to high summer pastures, often quite distant from villages. These native alpine summer pastures, which are usually on the cooler, more moist northeasterly slopes, are critical to the rural economy of the Northern Areas. Animal manure provides much of the essential organic matter which makes the otherwise poorish soils more productive and allows the use of modern cash inputs such as fertilizer, mechanization, and pest and disease control. Animals must be removed from the village during the cropping season because arable land is not enclosed and because there is inadequate summer feed potential from the small family farms, although much valuable manure is thus lost to the arable system. Over recent years fewer villagers have gone on the summer migration, and livestock are often trusted to a few village herders or to nomads who specialize in this task.

Box 4: (Continued)

Land preparation was traditionally by wooden ox plows, but contract tractor cultivation has increased. Sowing is by broadcasting, although seed drills are beginning to appear. Weeding is done by hand. Harvesting of grain crops is by hand, with sickles for wheat and barley. Threshing is traditionally done with animals as in much of the subcontinent, but tractor-powered threshers have recently become widely available. Grain is generally milled in water mills (which means that at higher altitudes all the flour for the winter must be milled in autumn before the streams freeze). Apart from the general arrival of tractors since the KKH opened, the use of mechanical power is relatively rare in villages. Biogas units have been introduced on a trial basis and wind power is being investigated, but solar and (except for flour mills) water power are not used.

The annual pattern of activities and the techniques used in the Northern Areas have been developed by trial and error over generations; in the absence of outside influences and inputs, these systems are relatively sophisticated means of dealing with the peculiarities of mountain climates. The systems that have evolved represent a series of compromises to deal with the problems posed by the climate and other natural conditions. For example, the silt-laden irrigation water is beneficial in sealing new channels, for building up soil in new terraces and contributing to fertility in the fields, but is also such a maintenence burden (where silted up channels must be cleaned once or twice a year) that some villages find investment in sedimentation tanks worthwhile. This investment has the secondary payoff of reducing the "capping" and "crusting" effect of excessive silt in the fields, which can hamper seedling emergence. The introduction of new technology in such delicately balanced situations must therefore be pursued with great care, noting that changing one factor can have ramifications throughout a system which may not be immediately obvious. A simple well known example of this would be increasing grain yields at the expense of straw, thereby reducing winter feed and subsequently the amount of animal manure which could be returned to the land, but villagers are known to guard against such double-edged improvements.

The importance of documenting, quantifying, analysing and understanding the intricacies of farming systems in the Northern Areas is apparent and points the way for further work which AKRSP should pursue itself or help to guide where others are active.

2.11 Pressure on forests for forage, fuel and construction materials has occurred at both the upper and lower tree lines, accelerating as the mountains have become more accessible, farming more intensive, and, particularly, where steep slopes have been planted to food crops. However, it is clear that massive erosive processes are at work in the mountains without the intervention of man.

2.12 The effects of natural forces and manmade changes on the environment are felt by both the communities in the mountains and downstream. Communities in the mountains must go increasingly far afield for forage and fuel and devote enormous energy to building soils and maintaining essential infrastructure. Many of their common practices, such as terracing and the planting of deep-rooted, perennial alfalfa on unstable slopes, help to conserve soil. Nevertheless, downstream the economic life of reservoirs vital for power generation and irrigation in the plains is being shortened by the silt-load from the fragile mountains. Through the growing economic ties between the lowlands and the uplands and the natural drainage of river systems, the positive and negative consequences of change in the environment of the Northern Areas are felt throughout Pakistan.

People

2.13 To survive in this rugged environment, villages and families have developed social institutions that promote interdependence in the management of limited resources and in coping with shocks. In Gilgit District, villages are found from 1,000 m to 3,000 m above sea level, and average temperatures range from -10° C in January to 40° C in July. Life is hard and risks arising from the natural environment and uncertain climate are great. Hardship for families and risks in production both increase with elevation and distance from the KKH (see below).

2.14 The population of the AKRSP project area is approximately 750,000, with close to 250,000 in each of the three districts. Population is scattered in 91,000 households and 1,030 mainly nuclear villages, spread over more than 66,000 square kilometers. Villages have an average of about 750 people, and a typical household has 8 to 9 members. Overall population density is low at 11 per square kilometer, compared with the Pakistan average of 109, but given the character of the land this figure can be misleading. Gilgit, 610 km north of Rawalpindi-Islamabad by road, has a population of 32,000 and is the largest urban center in the Northern Areas. Skardu, with 13,000 people, is the main town of Baltistan, and Chitral town, with a population of 12,000, is the urban center of Chitral District.

2.15 The population is a complex mixture of indigenous peoples (Box 1), speaking a variety of local languages. Urdu and, to a lesser extent, English, are used by a small educated minority and by villagers who have held employment "down country" or in non-farm occuption.

2.16 Forty-five percent of the population is under 15 years of age (Annex 2, Table 2). A typical household contains four children and has more males than females despite the outmigration of males (see below). Lower numbers of females may reflect high mortality rates among women of childbearing age and the shorter average life spans of women. Census data suggest that males outnumber females in both urban and rural areas (Annex 2, Table 2).

2.17 While reliable data are unavailable, the population of the Northern Areas is believed to be growing at three to four percent a year. Many women bear from four to eight children each and infant mortality is high, in the range of 150 to 200 per thousand births.

2.18 Adult literacy is believed to be 10 percent, but only two percent of women are said to be literate. In and around Gilgit, literacy levels are higher, believed to be 30 to 40 percent for men, and 10 to 12 percent for women.

Economy

2.19 The economy of the Northern Areas produces agricultural and horticultural crops largely for the subsistence of closed, corporate communities. However, for a decade, the Northern Areas have been in a state of rapid economic and social transition, from a relatively closed economy, isolated by both topography and culture, to an open economy. The main force for change is the dramatically improved transport and communication links between the Northern Areas and "down country", and between Pakistan and China. In particular, the KKH, completed in 1978 with Chinese assistance, and the KKH-Skardu Road into Baltistan, completed and paved in 1984, have opened up the Northern Areas significantly. Before the partition of India, the main track to Gilgit was from Kashmir, and this was cut in 1948. Between that time and the opening of the KKH thirty years later, access to Gilgit was either by air or, from 1958, by a seasonal jeepable track over the Babusar Pass, 4,100 m above the Kaghan Valley. Now, Rawalpindi-Islamabad is 15 hours away by bus or truck, and with the opening of road access to China for foreigners via the Khunjerab Pass, traffic on the KKH has taken on an international dimension that is bound to increase.

2.20 Most villagers of the Northern Areas still practice mixed mountain agriculture comparable to that found in the highland valleys of the Himalaya, the Swiss Alps and parts of the Andes. Villages tend to be closely-knit communities linked by language, kinship, and the ties that bind households whose livelihoods are based on the management of common property, notably hill irrigation systems. Cultivated land is privately owned by households, and irrigated by small, farmer-managed irrigation systems. Individual households have rights to water as members of villages who cooperatively built and maintain the systems that feed water to the fields. In addition, households have rights to alpine meadows and forests may also be managed as common property by villages or groups of villages.

2.21 Very few Northern Area villagers are landless, and in Gilgit District only five percent of farms, covering only six percent of the cultivable land, appear to have tenants of any form (Annex 2, Table 5). Farm land holdings are fairly equitably distributed, with 84 percent of all holdings being smaller than two hectares. Farms are typically fragmented, on average into five parcels (Annex 2, Table 3).

2.22 Plowing and sowing are done by men who also build and maintain irrigation channels. Almost all other work on the farm and in the household is done by women and children, or shared by men and women. A woman's working day is typically four to five hours longer than a man's, summer or winter.

2.23 Educated men are being increasingly drawn into the urban economy and into wage labor outside the Northern Areas. AKRSP estimates that from five to fifteen percent of all adult men are working or studying outside their villages at any one time. (Ismaili boys, in particular, are sent away for secondary and post-secondary education, many as far away as Karachi.) Twenty percent of all households already have one member earning a regular non-farm income, and 30 percent engage in short-term day laboring for cash wages. As wage employment increases, men cease to do the work they previously shared with women and the frequency of female-headed households increases. In areas where most men have migrated to find employment, women have taken up almost all the traditionally male functions.

Regional Subsidies

2.24 By virtue of its isolation, and because of its strategic importance, the Northern Areas enjoys numerous subsidies in addition to those generally available in the country. Many of these are related to the physical distance of the region from the nearest major cities and supply points. Transport is subsidized by not including the additional costs of freight to Gilgit in the prices charged for official supplies of essential commodities, including grain and fuel, and by charging submarket fares for bus and air travel (for example, as little as Rs. 160 or US$9.40, for the 65 minute flight to and from Islamabad). Beyond Gilgit freight transport costs are added in. Apart from commodities that are generally subsidized throughout the country, the government also supplies other essentials to Gilgit (at least) at reduced cost, e.g. live cattle to satisfy meat demand. There is a regional subsidy on electricity, with typical power generation schemes costing Rs. 0.80 per kWh, compared with consumer charges of Rs. 0.24 per kWh.

2.25 In combination, these subsidies considerably reduce the costs of imported food and production inputs such as fuel and fertilizers in the Northern Areas, but also have a distorting effect on local production incentives. Most obviously there is a lower incentive to grow grain for home consumption while cheap government grain is available, but a higher incentive to work off the farm or produce cash crops to earn income to buy the grain. Although the Northern Areas have the technical potential to produce much more grain, lack of incentive could be a major constraint. The same is also true of commercial livestock production.

Agriculture

Subsistence Production

2.26 Despite the increasing availability of wheat at subsidized prices in the market place, most households devote the bulk of their resources to producing cereals for subsistence (Box 3). The varieties planted are mostly local ones, chosen for their adaptability to local growing conditions, their high straw yields and their ability to tolerate water stress and trace-element limitations. Very few resources are used for pulses or vegetables and mixed cropping is limited, frequently not extending beyond potatoes and turnips even in areas unrestricted by climate. New wheat varieties were introduced into the Northern Areas in the early 1970s but have not spread far beyond Gilgit. To outperform the local varieties, they require high rates of fertilization and more precise water management.

2.27 At present, 20-30 percent of the wheat consumed in Gilgit District is imported by the Administration. Subsistence cereal production can be raised, allowing farm households the opportunity to expand the range of pulses and vegetables grown for family consumption. The potential exists for introducing more vegetables rich in protein (pulses) and vitamins (red and dark green vegetables).

Cash Crop Production

2.28 Various cash crops have potential in the Northern Areas. Tree fruits and nuts (including apricots, apples, cherries, pears, plums, almonds, and walnuts) are important crops for cash and subsistence at various elevations. As with livestock, very little management seems to be practiced and there is no selection.

2.29 The potential for seed potatoes was recognized recently, offering the opportunity to replace certified seed currently imported by Pakistan (largely from The Netherlands). Since potatoes can yield three times more calories per unit of land per season than wheat and demand no more labor, they have become popular, but are unlikely to replace wheat and barley because they do not yield the straw essential to feed livestock in the winter.

Forage and Livestock Systems

2.30 Livestock in the Northern Areas provide a broad range of important products and services: farmyard manure, fibers, milk products, draft power, and a store of wealth. They are only occasionally slaughtered for meat and then more for celebrations and rituals than for cash. (The expanding market for meat in Gilgit is satisfied largely by animals trucked up the KKH and sold at administered prices, limiting the opportunities for local farmers.)

2.31 The importance of livestock increases with elevation, as crop opportunities decline. Animal numbers are limited by the supplies of feed, which come from alpine meadows, forage trees (notably poplar, hyppothia and willows), alfalfa, autumn stubble and straw. All the alpine meadows appear to be used to capacity and a very high proportion of the winter diet comes from straw. Many animals fail to survive the winter, victims of poor nutrition and disease. Except for the crossbreeding of cattle and yaks at elevations above 3,000 m, animal breeding is not selective. Households maintain as many animals of both sexes as possible.

Managing Common Property

2.32 Hill irrigation and alpine pasture management both depend on high levels of cooperation between all households within villages if they are to be sustained. In the Northern Areas, such cooperation, coupled in the past with the sanction of the feudal rulers, the mirs, evolved to create local institutional arrangements that survived for generations.

2.33 While cropland in the villages is privately owned, the pastures, forests and irrigation systems are held collectively by villages or lineages. Hill irrigation systems in the Northern Areas require enormous investments of labor for their development and maintenance. Those who invest labor in developing the system acquire property rights in the works they have helped create (Dani and Siddiqi, 1986). At the same time, they acquire duties or responsibilities to operate and maintain the system in the interests of the user group as a whole. Similarly, those who own livestock in a landscape devoid of fences must take the animals away from cropland during the growing season, supervise them in alpine meadows, and limit their numbers in the meadows if their productivity is to be sustained from one season to the next.

2.34 The feudal mirdoms progressively declined in authority over several decades, especially after 1947, and were abolished in 1974. The effectiveness of village level institutions declined during and after this period. Property rights in water were largely maintained, but rules for water and pasture management based on the earlier arrangements were not generally enforced effectively. AKRSP has sought to reverse this situation with considerable success. The legacy of these pre-existing common property management systems in villages may have helped provide a social environment responsive to the cooperative endeavors proposed by AKRSP.

III. METHODS OF IMPLEMENTATION

Management Structure and Mode

3.01 AKRSP is a private company under Pakistani law, with its own Board of Directors. The Board has ten members with representation from business, government, the Northern Areas, and the Aga Khan Foundation, Geneva. The Board includes Ismailis, non-Ismailis and non-Moslems. The staff of the company is headed by a General Manager who reports to the Board. He is supported by a Deputy-General Manager and eight other senior management staff. Senior staff appointments are the responsibility of the AKRSP Board, but other appointments and the overall management of the program are handled by the General Manager (GM) from program headquarters in Gilgit. Senior staff include specialists in engineering, agriculture (crops and livestock), economics, marketing, training, women in development, social organization, finance and accounting. Senior staff include representatives of all major Islamic sects. All senior staff are well-qualified professionals, most with many years of experience in their area of specialization. Not all senior staff had extensive experience in the Northern Areas prior to joining AKRSP, but they are all recognized within Pakistan and most have had some international experience.

3.02 The current structure of management is shown in the Organization Chart attached to this report. As shown, the management structure of AKRSP seems unremarkable, except perhaps in its flatness, or lack of functional hierarchy. All seven members of the management group in Gilgit, plus the District Program Officers in Chitral and Baltistan, report directly to the GM. Even the Program Senior Engineer, who is also designated Deputy-General Manager, appears to have no more formal responsibility than any other member of the management group, except that he acts for the GM in his absence. The field organizations are similarly flat, with District Program Specialists reporting directly to the District Program Officers, while looking to program specialists in Gilgit for technical guidance.

3.03 Program implementation is managed directly by the GM assisted by the core management team of senior staff. Although some functions and responsibilities have been delegated as the program has expanded, the GM remains in close daily contact with progress and with all major issues that arise. The level of familiarity of the GM and core management team members with individual villages and issues is remarkable given that there are some 526 villages in the program. This is made possible by a system of regular senior staff meetings, a very high level of documentation of routine business, and an orientation to the field which is rarely if ever achieved elsewhere in projects of this type.

3.04 The management group at headquarters meets every week under the chairmanship of the GM. All senior staff are expected to attend and be able to present progress reports and problems encountered, and to respond to questions. Management group meetings appear to be characterized by their frequency, length and level of detail discussed. In addition to weekly

meetings of the management group, monthly review workshops are also held at headquarters, to which senior and junior management and technical staff are invited from all three districts. These are day-long meetings with an agenda that not only reinforces operating principles and reviews performance, but goes into great detail in the affairs of individual VOs. Every three months managers' meetings are held, to which the managers of VOs are invited. These meetings last for one day and bring the management group, field staff and VO leaders into direct communication at headquarters. Proceedings of the meetings in Urdu are regularly sent for VO office bearers. At these meetings implementation principles and practices are reinforced, progress is reviewed, experiences are shared, training lessons are repeated, and the concerns of villagers on any topic of their choosing are aired publicly. The proceedings of weekly and monthly staff meetings are available on file in English. All major dialogues with VOs are recorded on tape, and transcripts of the main points discussed are available on file. The net effect of the meetings and the extensive reporting is a system of written and oral communication that links managers, field staff and villagers effectively in both directions: from top to bottom, and from bottom to top. As a result, issues can be raised, discussed and resolved quickly.

3.05 Even though the number of villages is large, the GM has generally been present at the first dialogue, when initial contact was made, and at the third dialogue, when the check for the first installment of the grant funds for the PPI was handed over. Such close involvement with routine implementation by the GM was greatly facilitated by using a helicopter, and indeed it was said that the program in Chitral could not have started without a helicopter. The loss of the use of the helicopter, following an accident in early 1986, is contributing to the relative independence of the Chitral and Baltistan programs. However, with or without the helicopter, it is clear that the GM by his individual example influences program implementation considerably. He spends most of his time on frequent field visits, walking and talking with villagers, SOs and field engineers. The GM's example makes it clear to the staff that the practical needs of villagers come first, and that the focus of the program is the field, not the office.

3.06 AKRSP's flat management structure contributes to open communications. AKRSP's management style is described as being one of setting clear objectives, establishing well documented and understood procedures and then, provided that the objectives are being met, not being unduly concerned with the details of implementation. This does not mean that management is not fully aware of significant details of how the program is being implemented in individual villages, nor of problems as they are encountered. But there is a clear policy that project staff should not become involved in the details of resolving village-level problems or disputes, especially where these relate to matters such as land and water allocations. AKRSP's role is to build local problem-solving capabilities, permit them to function, and protect them from forces that would weaken them during their formative stages if necessary. AKRSP's role is not to protect VOs from making mistakes, but to encourage them to take decisions and be accountable. Similarly the management does not concern itself unduly with the minority of villages that have not embraced the project concept nor welcomed AKRSP assistance; most of the

project's energies are directed towards the majority of VOs, which with appropriate assistance are making steady progress. The importance of this working principle has been heightened in the period since April 1986 when the helicopter became inoperable and mobility of the management group was reduced.

3.07 Management has relied successfully on the demonstration effect to spread support and participation in the program rather than devoting resources to difficult cases. The appropriateness of this strategy is indicated by there being no shortage of villages seeking AKRSP's assistance. The demonstration effect of the PPIs is considerable given that the majority are readily visible irrigation channels, often providing irrigation water for new land, or link-roads which connect villages for the first time by vehicle with the nearest jeepable road or with the KKH. All PPIs are well signposted at prominent places on roadsides, advertising the AKRSP and acknowledging the relevant donor support.

3.08 One notable reason why the GM can devote so much of his time to program management in the project area is that major responsibility for international fund-raising rests with the Director of Special Programs (DSP) of the Aga Khan Foundation in Geneva. The GM and the DSP, who visit the project area frequently, appear to complement each other very well by being mutually very supportive but agreeing to an effective division of labor. If the GM had to play a more prominent fund-raising role, it would detract considerably from his program management functions. In this role, he is ably supported by his senior staff. The Monitoring, Evaluation and Research (MER) Section of AKRSP actively supports the DSP in the preparation of proposals for donor support, routine reports to donors and grant evaluations.

Functions of Social Organizers

3.09 The twenty Social Organizers (SOs) in the program are the key contact staff with the village organizations. The staff are mainly from the Northern Areas, have masters degrees and all speak the local languages. (Language ability is also a key selection criterion for engineering field staff). Language ability is most important as in many villages, especially those distant from the main highways, Urdu is not widely understood. Social organizers are grouped in two tiers, with the senior ones, who have four-wheel drive vehicles, supervising a number of "satellite SOs". SOs without transport rely on jeeps and microbuses which operate along jeepable tracks, even to distant villages. On average, one SO services about 31[3/] villages and expects to visit each village about once a month. Although most of the time of SOs is spent travelling in the field, this schedule might appear impracticable at first sight. In practice, such a visiting program is possible because a few VOs are dormant or do not require such frequent visits, a number of PPIs are joint projects between two or even several villages, and villages are sometimes clustered quite close together requiring little travel time between visits. Managers and SOs also appear to prefer

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3/ Currently there are 17 SOs and three trainee SOs.

frequent contacts of short duration, to infrequent contacts of longer duration.

3.10 The SOs perform a number of functions, initially to create the VO and equip it with the basic organizational skills it needs to function, and then to develop various specialist functions. The SOs employed at the start of the program were recruited from NWFP where they had worked as SOs for the GM in Daudzai or the Pakistan Academy for Rural Development (PARD), Peshawar. They were therefore familiar with techniques for mobilizing rural villagers in cooperative groups and with the style of management practiced by the GM. These original SOs have now been promoted to managerial positions in all three districts.

3.11 Although distance and the spread of the program makes close field supervision of SO activities quite difficult (particularly now that the helicopter is out of service), adequate contact is provided by the frequent field visits by members of the core management team, the participation of the General Manager in most of the critical dialogues with the VOs, and the monthly workshops for professionals in Gilgit. In addition, SOs all keep detailed diaries of their monthly activities which are read by the GM and discussed at regular meetings. Diaries prepared by social organizers in a variety of settings have been shown to be a useful mechanisms for informing technical and managerial staff about the local reaction to, and consequences of, actions taken in support of rural development or strengthened resource management.

Implementation of Capital Works

3.12 Implementation of the PPIs is clearly understood by the VOs to be their responsibility. Project technical staff, especially engineers, are available as needed to provide technical input, but day-to-day organization and execution of the construction work is carried out entirely by the VOs under the village managers. Technical input consists mainly of discussing the concept, agreeing on the main features of the construction after simple field surveys by project staff (for example, of the point of offtake of a channel and its general alignment) and being available to advise on technical problems as construction proceeds. Details such as scheduling work, sharing work, and arranging communal labor inputs are left entirely to the VOs. Grant funds are used by the VOs mainly to finance all or a part of the labor input, but explosives, compressors and packages of handtools are also purchased as needed from AKRSP. AKRSP has also facilitated the provision of inputs such as steel pipe, wire and construction materials not available in Northern Area markets.

3.13 The skills needed for the construction projects to date have been largely available locally (see Box 5: Infrastructure Building). Stone masonry, for example, is usually the most common skill among village men. The project's technical role has been to introduce a very few well-selected technical inputs such as compressors and explosives to make traditional work

Box 5: Infrastructure Building

Coping with the topography and climate in the Northern Areas requires levels of engineering skills which are not found in more benign environments. Early settlements could not have survived without caravan tracks along precipitous mountainsides and across unstable scree slopes. The most conspicuous of these old tracks is the Silk Route which was used for centuries. Arable land and reliable irrigation water are seldom in close proximity requiring the laborious construction of feeder channels, sometimes several miles long, along steep valley sides. Rock drills and explosives have reduced construction time and modern surveying instruments have eliminated some of the guesswork, but even today the construction of roads and channels depends on local skills, especially in masonry work, the basic form of construction for buildings, channel sides on steep slopes, field walls, tracks and road edges, and for terrace retainer walls. These walls use no cement but are made from carefully fitted rough-hewn stones. Without this technique, travel and irrigation in much of the area would be difficult if not impossible.

The engineering of tracks, including cable suspension bridges, is an indigenous skill dating back centuries. Tracks suitable for foot traffic and pack animals connect all communities where there are no roads. Before major bridges were built the main barrier to communication was the torrential rivers rather than high mountain passes which were routinely crossed. The two major communities of Hunza and Nagar were separated until modern times only by the Hunza River, but have developed separately with different languages and religious affiliations. Up to ten years ago vehicular traffic was limited to "jeepable tracks" which allowed slow, precarious travel among some of the main centers. The opening of a two-lane sealed road from Islamabad to the Khunjerab Pass on the Chinese border, the KKH, and most recently the sealed road from Gilgit to Skardu, have changed communications radically. These roads pass through such difficult terrain that the heavy loss of life during construction is estimated at about one death per kilometer of road. Truck traffic now is fairly reliable, although washouts and mudslides during the summer thaw, and rockfalls at any time, can close roads for several days.Linked to these major roads, unsealed truck roads are being built into some of the valleys. AKRSP is financing the construction of jeepable tracks to link villages with the new roads. Much of road engineering skill in these areas is selecting alignments to minimize construction problems and costs, and to avoid areas threatened by rock falls, washouts and mudslides. The selection of bridge sites is especially critical. In the past, cable bridges were usually sited high above rivers, well clear of these threats. In contrast, some of the modern low-level masonry bridges on the KKH have already been destroyed by mudslides or high flood waters.

Some of the engineering required to bring irrigation water to arable land is quite remarkable, with channels often traversing almost vertical rock faces. Compressors and rock drills are used to cut a five-foot wide path in a notch across the rock face. Behind the blasting a stone wall is built along the outer edge of the path. Silt-laden water then flows and seals the channel as well as provides a means of checking the level as work proceeds.

Stone walls along the face of terraces allow silt-laden water to deposit soil behind the wall. Dry stone walls enclose vegetable plots and livestock pens as the stones are removed from arable land. Cement and concrete are used for sediment tanks, reducing laborious desilting of channels, and for irrigation tanks to store night water where channel flows are too small to supply sufficient water during the day.

Spur bunds made of rock are used to protect river terraces from undermining erosion and surface flooding and to divert torrents away from arable land and villages. AKRSP has introduced gabions (heavy-gauge wire mesh "boxes") in which rocks are placed as a a means of increasing the strength and longevity of bunds.

Although there is a shortage of electricity throughout the area, small-scale hydroelectric schemes have not proven viable. The electrification of the valleys offers a future major technological advance in the region, since besides industrial, domestic and social uses, electricity could be used to pump water. Regional electricity demand is likely to be met in the future by medium-scale hydro schemes, for which there are numerous suitable sites especially in the Indus Gorge, but distribution costs will be high as demand for electricity is relatively dispersed outside the major towns.

methods more productive, or to add technical innovations, such as gabions for bunds, to improve the effectiveness and longevity of the work (see Box 3). However, even here some villagers have extensive experience working with explosives, compressors, or managing work crews gained from service in the Pakistan Army. The intricate water channels are still designed and constructed largely by traditional methods based on the preexisting arrangement of property rights that the farmers themselves acknowledge. The levels are surveyed by project staff, but thereafter the villagers use the water level to judge and check on the alignment as work progresses ("water is the best engineer"). A feature of PPIs is that they can be built mainly with locally-available materials and well-understood technologies. Completing PPIs, that are dramatically visible as products of village enterprise in the space of a few months, helps to establish the VOs as viable institutions. Sustaining VOs that undertake multi-year or multi-village PPIs, or use non-conventional materials, is a more difficult task for SOs and engineering field staff.

3.14 Grant funds from AKRSP are paid out to VOs in installments as work proceeds. These funds are used mainly to pay village labor a daily wage related to the going rate for such work but usually below it. In fact, these funds finance perhaps only half to three-quarters of the real labor input, given the longer hours such labor works and the fact that the villages also contribute free labor en masse, when tasks need large quantities of labor or when timeliness is important (200-400 people making a track to provide tractor access in a few days to a channel site is an example). Estimates of total labor required to complete a PPI and the wage rate for work on the PPI, hence the amount of the grant, are generally negotiated between AKRSP and the VO. Use of the wages once received (whether consumed or saved) is decided by the VO. The general economic condition of the village and the season of the year PPI work is undertaken both influence this decision. In many VOs, grant funds for wages have been saved in whole or in part and added to the VO's "equity capital" account. In others, where budgeted amounts for wages were exhausted, VO members worked without compensation to complete PPIs. The tradition of providing unpaid communal labor for the building and maintenance of major physical works has facilitated the remarkable progress made on PPIs (see Chapter IV).

Follow-on Activities

3.15 In addition to the PPIs, AKRSP is promoting and supporting other activities that complement PPIs directly, or increase the economic and social welfare of villages. These other activities include: (a) irrigation; (b) land development; (c) crop development; (d) livestock improvement; (e) training of village specialists; (f) marketing; (g) credit provision; and (h) women's activities.

3.16 Like the design of irrigation systems, water allocation tends also to follow traditional arrangements, and is decided upon by the VO (or VOs, if the interests of more than one are concerned). Land development and allocation decisions are also made by the VOs, with assistance from AKRSP on how to

accelerate the accumulation of soil and soil organic matter by controlling livestock, encouraging seeding of grasses and herbs, and early planting and proper spacing of trees as windbreaks. AKRSP also provides guidance on low-cost land development methods and helps to obtain planting material. How parcels are demarcated, to whom they are allocated and when, are all decisions of the VO.

3.17 Crop development activities focus on: increasing the productivity of staples (cereals, root crops, and tree fruits) by introducing and testing new varieties, increasing the use of fertilizers, and by improving crop protection to reduce losses; expanding the production of cash crops (seed potatoes); expanding the production of forage crops (vetch, alfalfa) to complement the livestock improvement efforts; and tree planting for multiple purposes (fuel, forage, construction materials, and erosion prevention). Livestock improvement focuses on: improving the genetic quality of cattle by artificial insemination with improved breeds (begun in 1985) and the introduction of superior crossbred heifers (to begin in 1987); improving livestock health through disease prevention and treatment; and improving animal nutrition, with special attention to increasing levels of protein and energy in the diet, and expanding the production of winter feed.

3.18 Upgrading human skills is an important aspect of AKRSP's small farmer development strategy. Given the low level of literacy, and technical and other skills in the Northern Areas, the role for skills training is critical, and training has a high pay-off. The Human Resource Development Division (HRD) of AKRSP organizes village-oriented training through Extension, Training and Supplies Centers in each of the three districts. HRD also organizes training for AKRSP staff, and in recognition of the importance of all training and the need for improved coordination, the training function is to be regrouped under a new training specialist. Training concentrates on the development of the technical skills of VO members, improvement of simple organization skills and on broader managerial skills. AKRSP's training resources are limited and consequently about half the training is conducted by government specialists who receive honoraria from AKRSP.

3.19 Villagers compensate those trained for services rendered, and the potential willingness of villagers to pay for a service is a condition of HRD organizing specialist training. Technical services for which training is provided include livestock development, plant protection and production, and marketing. In addition, VO office-bearers are taught simple organizational skills such as bookkeeping, preparation of agendas, meeting procedures and reporting. Broader managerial skills, including identifying and solving problems, have been less rigorously pursued at this early stage of program implementation. Villagers have responded best to training where new skills result in clearly visible pay-off, especially livestock skills where disease and animal mortality decline rapidly after veterinary services became available.

3.20 Once training has been completed and the equipment made available, this skilled resource should remain available to villages and require only minimal further outside technical support to keep specialists in touch with new techniques and materials. However, for veterinary and plant protection

supplies, public or private sector supply lines comparable to those established for fertilizer distribution, have yet to be developed in the project area.

3.21 Although some of the additional production arising from project activities, such as cereal grains, will contribute to village self-sufficiency, the bulk of future production gains can be expected to enter the market place. A significant amount of fruit is already sold in the market. Consequently the project has given initial emphasis to providing guidance on processing and marketing activities for perishable fruits such as apricots and apples. Improved drying techniques for apricots in particular are being introduced successfully and the marketing of the improved varieties of apples is being pursued. Emphasis is being placed on joint or cooperative marketing operations, to facilitate bulking-up of small individual surpluses, and the project is already working towards introducing marketing structures which go beyond the village and individual valleys. Progress to date has been at the trial and demonstration level and clearly there is now scope to proceed quickly into self-financing and larger-scale marketing operations for the longer term.

3.22 Regular savings, collected at the weekly VO meetings, are an essential feature of the AKRSP approach. These savings are deposited either with commercial banks, or sometimes with the post office savings bank, and are intended to be the foundation of the village credit operations. Savings deposits of VOs in the project area reached Rs. 14.5 million by 1986, equal to Rs. 27,890 per VO, or Rs. 384 per participating household. In the event, the greater part of credit is provided through AKRSP, or with AKRSP's additional guarantee, and then on-lent to VOs.

3.23 The importance of women in the village economy and the need for a deliberate focus on women's activities became apparent as the early implementation of the project proceeded. It is now recognized that since increased production, as well as most of the innovations being introduced, imply an additional work load for women, labor-saving techniques for women have to be introduced if labor shortage is not to limit the economic benefits from the PPIs. Dealing with this issue is complicated by the purdah traditions of the different sects, but the program has already moved away from a strategy of establishing separate women's organizations parallel to the male-dominated VOs (which could emphasize the purdah effect) towards the realization that the purdah constraint, as it applies to outsiders (in non-Ismaili villages), does not warrant treating the activities of women separately from the village economy as a whole. The approach now is directed more correctly towards viewing women's work in households and villages as an integral part of the local economy, and deals with purdah by using trained female AKRSP staff and training local women (see also Chapter IV).

3.24 AKRSP has avoided explicit use of the terms "cooperatives" and "cooperation" in program implementation in view of the checkered record of the cooperative movement elsewhere in Pakistan. However, the main features of the implementation strategy are cooperative in nature. Cooperation among villagers is a local tradition not only in the form of communal labor

but also in the more recent and conventional form of cooperative purchasing of goods and cooperative retail shops. Similarly, cooperative ownership of major assets, such as tractors and threshers, is springing up. AKRSP is not relying too much on formal cooperation as a means of achieving village objectives but is supporting such initiatives when they arise within villages. AKRSP is considering the possiblity of formal cooperatives, however, at the regional and sub-regional levels, as the longer-term legal entities to take responsibility for input and marketing services.

Problem Solving Methods

3.25 AKRSP has rejected a "blueprint approach" to rural development, a "learning approach." Whereas blueprints specify detailed plans of action that skilled technicians can follow to replicate exactly the concepts of designers, the learning approach recognizes that designing rural development is a social process that must be learned by the beneficiaries themselves and those who assist them, if it is to be sustainable. AKRSP brings to this process a number of objectives, premises and preconceptions about development, but an overriding belief that their role is to enable VOs to be sustainable mechanisms for solving problems locally. To that end, AKRSP seeks to create VOs and equip them with the principles, methods and skills they will need to make decisions effectively in the interests of village-level development.

3.26 AKRSP's approach combines well-tested principles with trial and error. The principles are described in paragraphs 1.08 et seq of this report: the trial and error approach is embodied both in the design of PPIs through rounds of dialogue, and in the open communication processes and reporting that characterizes all of AKRSP's actions. Diagnostic dialogues and open reporting are communication mechanisms for linking players in the development process. If the mechanisms transmit information reliably and quickly, AKRSP management learns what the consequences of its actions are and can modify or adjust them quickly. Because AKRSP's senior management goes to the field, frequently in groups including the GM, villagers can learn about AKRSP directly from the senior staff. As time passes, confidence in AKRSP grows and the level of information shared by VOs and AKRSP also grows. Over time, the VO has opportunities to test its collective decision-making skill, and AKRSP management has opportunities to reinforce the principles it believes in and to show its responsiveness to new opportunities or past error. By working incrementally, neither the VO nor AKRSP makes commitments that would prove fatal to their mutual confidence in the event the commitment cannot be fulfilled. The SOs are key players in this communication process, since they spend more time with villagers than all other AKRSP staff and transmit more signals in both directions. The conduct of the GM makes it clear that next to the VOs themselves, SOs are perhaps the most important participants in the village development process.

IV. PROGRAM PERFORMANCE

Institution Building

Establishment of Village Organizations

4.01 AKRSP began its activities in December 1982 when the first VO was established in Gilgit District. By April 1983, 30 VOs were functioning in Gilgit. The Chitral program began in the second quarter of 1983, and in the first three months six VOs were established. Its rate of expansion has been less remarkable than the Gilgit operations but has still been rapid, at an average of about 50 VOs a year, especially given the lower level of effort AKRSP has made in the district, with five active social organizers compared to eleven in Gilgit. In 1984 it was decided to respond to the request of the people of Baltistan and local authorities and extend AKRSP activities into Baltistan District, initially on an experimental basis for 25 VOs. The program began in the spring of 1985, after a six-month delay.

4.02 By June of 1986, a total of 526 VOs, with a membership of 38,180 households, had been established in the three districts (see Table 4.1). Almost all the VOs are still active, with 86 percent undertaking PPIs.

Table 4.1: GROWTH OF VILLAGE ORGANIZATIONS, 1983-86
(Cumulative)

	1983	1984	1985	1986 /a
Gilgit				
Number of VOs Established	131	289	316	321
Membership (Households)	12,050	23,120	24,590	25,000
Percent of Rural Households	46	89	95	96.5
Chitral				
Number of VOs Established	n.a./b	90	139	168
Membership (Households)	n.a.	7,920	9,800	10,988
Percent of Rural Households	n.a.	27	34	38
Baltistan				
Number of VOs Established			31	37
Membership (Households)			1,791	2,192
Percent of Rural Households			6	7.3

/a As of June 1986
/b n.a. = data not available

Establishment of Women's Organizations

4.03 AKRSP's women's program began with the goal of establishing separate Women's Organizations (WOs), independent of the VOs. The first of these was established in Sherqilla village in June 1983, and by June of 1986, 110 WOs had been established in Gilgit District with a membership of 5,619. Table 4.2 shows the growth of WOs.

Table 4.2: GROWTH OF WOMEN'S ORGANIZATIONS
GILGIT DISTRICT
(Cumulative)

	1983	1984	1985	1986 /a
Women's Organizations	10	72	108	110
Membership (Households)	347	4,156	5,559	5,619

/a As of June 1986.

In Chitral the women's program has proceeded more slowly than in Gilgit, and in Baltistan the women's program started only in September 1986.

4.04 As was noted in Chapter III, it has been recognized that since women do not function independently of the household, the desirability of separate WOs is doubtful. Whereas the program originally focused on developing additional sources of income (and therefore additional work) for women, it became clear that increasing the efficiency and output of female labor by introducing labor-saving inputs and techniques (such as nutcrackers and spinning wheels) was essential if women's time was to be released for more productive new enterprises, and unnecessary drudgery relieved. Consequently, the women's program underwent a change in January 1986, both in substance and direction. First, within AKRSP a formal link was forged between the women's program and the various professional sections of AKRSP's management structure through the creation of a coordination cell. This cell facilitated the second change: integration of the various efforts for women within the overall development strategy of AKRSP. Thus AKRSP began encouraging women's organizations to merge with VOs. Some women's organizations have done so, but others chose to maintain their separate identity as a Women's Section of the VO or to defer the decision.

Progress with Productive Physical Infrastructure

4.05 Progress with PPIs has been closely associated with and preceded by the establishment of VOs. Table 4.3 shows PPI cumulative numbers to date.

Table 4.3: PROGRESS WITH PRODUCTIVE PHYSICAL INFRASTRUCTURE PROJECTS (PPIs) (Cumulative)

	1983	1984	1985	1986 /a	Percent
Gilgit					
Number of PPIs initiated	80	177	232	254	59
Number of PPIs completed	23	93	148	169	39
Number of projects identified	n.a./b	n.a.	432	432	100
Chitral					
Number of PPIs initiated	40	53	87	117	29
Number of PPIs completed	5	21	46	53	13
Number of projects identified	n.a.	n.a.	274	406	100
Baltistan					
Number of PPIs initiated	-	-	9	22	20
Number of PPIs completed	-	-	1	4	4
Number of projects identified	-	-	22	110	100
Total					
Number of PPIs initiated	120	230	328	393	41
Number of PPIs completed	28	114	195	226	24
Number of projects identified	n.a.	n.a.	728	948	100

/a As of June 1986.
/b n.a. = data not available.

These data indicate that much has been achieved, only 24 percent of PPIs have been completed and only 41 percent started. There is still a major widely dispersed construction program to be completed with AKRSP's assistance, which will require considerable staff resources for the next few years.

4.06 In Gilgit, PPIs were initiated rapidly from the beginning of 1983 when AKRSP operations took off, with 80 projects being started in the first year, of which 23 were completed in that year. After four years of operations, there are now 254 projects in Gilgit, at a total cost of Rs. 37.4 million. Most projects (154) have been small irrigation works, mostly feeder channels, accounting for 55 percent of the total costs of PPIs in Gilgit. Sixty-six (43 percent) of these channels are new and 88 were old channels requiring extension, expansion and rehabilitation. Other major PPIs

undertaken were link roads (40 projects), protective works (including river erosion control and bunds to divert torrents and small-slides) (24 projects) and storage reservoirs (19 projects). A few bridges, boundary walls, sedimentation tanks and pony tracks complete the list of PPIs. Ten PPIs where progress is behind schedule are classified as "slow moving" and receive special attention from AKRSP staff.

4.07 In Chitral, 40 PPIs were started in 1983, followed by only 13 in 1984 because of a shortage of funds. In 1985, 34 new projects were started and another 30 were added in the first six months of 1986. To date, 117 PPIs have been financed in Chitral at a cost of Rs. 18.7 million. Fifty-three projects (45 percent) have already been completed. As in Gilgit, the majority of PPIs were irrigation channels (72 projects), accounting for 65 percent of the total costs. Other PPIs funded in Chitral include protective works (23 projects and 18 percent of total costs) and link roads (19 projects and 16 percent of total costs). Fourteen PPIs are classified as "slow moving".

4.08 In Baltistan, in the first year, nine PPIs were initiated and another 13 projects were started in the first six months of 1986. The total cost of these projects has so far been about Rs. 4.04 million. Four of the 22 projects have been completed. Small irrigation works (ten projects) and protective works (six projects) have been the most common PPIs. Construction of a few link roads, storage reservoirs, pony tracks and footbridges has also been undertaken.

4.09 In addition to the PPIs financed by AKRSP since the beginning of 1985, a number of advanced VOs in Gilgit District have undertaken 16 additional infrastructure projects with their own resources and commercial bank loans. For these projects AKRSP has provided engineering and other non-financial support. Project records also indicate regular maintenance by VOs. For example, in 1986, 54 flood-damaged PPIs were repaired by VOs at an average cost of Rs. 7,400.

Plans and Achievements

4.10 AKRSP's plans for PPI construction have been optimistic (see Table 4.4), especially for Chitral and Baltistan. In January 1985, 631 PPIs were forecasted for the three districts by the end of 1986. However, these forecasts were substantially reduced in January 1986, to 481 PPIs (76 percent). As of June 1986, 393 PPIs had been initiated and about 450 were projected to have started by the end of 1986. Thus, of the overall PPI target set in January 1985, 71 percent is expected to be achieved by the end of 1986. Of the revised target set in January 1986, about 94 percent is expected to be achieved by the end of 1986. The revisions of the initial targets and the shortfalls in achievements are due to a combination of shortage of funds and overoptimistic projections. Achievements in Gilgit came closest to both the initial and the revised targets. In Baltistan, both the initial and revised targets were considerably off the mark, partly because of the six-month delay in initiating the Baltistan program.

Table 4.4: COMPARISONS OF FORECAST AND ACTUAL PROGRESS WITH PPIs (Cumulative)

A. Forecast January 1985

	1983	1984	1985	1986
	Actual			
Gilgit	80	177	277	350
Chitral	32	52	127	201
Baltistan	-	2	27	80
Total	112	231	431	631

B. Forecast January 1986

	Actual			
Gilgit	80	176	232	266
Chitral	30	50	94	150
Baltistan	-	2	9	65
Total	110	228	335	481

C. Actual as of June 1986

	Actual			
Gilgit	80	177	232	254
Chitral	40	53	87	117
Baltistan	-	-	9	22
Total	120	230	328	393

Agricultural Development

4.11 The agriculture program consists of three sections: field crops and orchards, livestock, and forestry. There are two types of general activity: first, loss reduction and yield increase for current production; and second, assisting with the agricultural development of new lands to be irrigated by the feeder channel PPIs. Whereas a number of initiatives have been underway to increase current production, the program for developing newly irrigated lands has not yet been as thoroughly prepared or pursued as the social and PPI programs, although the need is recognized. About 60 outline sketch plans for village development have been completed and some

detailed agricultural development plans are being drawn up. Sixty-three medium-term loans have been made for agricultural development purposes, mostly for land development and machinery. In support of this approach, AKRSP undertook in late 1984 (in conjunction with the Agriculture Research Institute, Tarnab) a very broad-scale soil survey (some 218 samples) to improve fertilizer recommendations, and conducted crop cutting surveys of wheat and maize to improve the production data base.

Field Crops and Orchards

4.12 Losses in orchards, especially to codling moth and leaf miner attacks, have been successfully reduced by the training and spray kit distribution program. Eight plant protection and production courses (and seven refresher courses) were given in which 152 specialists were trained. In collaboration with the Government's Agriculture Department field staff, VO plant protection specialists sprayed all the apple trees in the affected VOs. The costs of materials and remuneration for the services provided were paid by VO members. Supplies for controlling pests and diseases are sold to VOs by the Agriculture Extension Training Centre.

4.13 Production improvement efforts concentrate on a demonstration plot program, distribution of improved seed and nursery stock, and a mixed farming package. Demonstration plots in farmers' fields with high-yielding varieties of wheat, maize, chickpea, sugarbeet, potato and vegetables were laid out in 1986 in 14 villages in Gilgit. Over 600 farmers received demonstration packages for PAK81 wheat in 1985/86. Fertilizer trials with wheat were set out in three villages in the single-crop area of Gilgit. At present, demonstration and trial treatments are limited mainly to current farming practices and do not include improved practices because of limited resources and staff to supervise the work (but staff are budgetted to increase). In Chitral, 16 maize demonstration plots were laid out in 1986 and 11 new strains of wheat were tested. In Baltistan, the program is underway with improved vegetable trials in two VOs. Production of seed potatoes is being promoted at higher altitude, beginning with a collaborative effort with Jaffer Bros., a major supplier, in one VO in Gilgit.

4.14 Expansion of fruit and nut production is promoted by assisting interested VOs to produce improved nursery stock from existing government nurseries (several thousand plants annually) and by the establishment of two new AKRSP nurseries in Gilgit and Chitral for mother stock. Supplies of improved disease-free stock are being obtained from government sources. Village level nursery development is in the early stages of promotion. Technical packages for vegetable production are being developed especially for women, and one successful women's vegetable garden has been assisted.

Livestock

4.15 The livestock program is gaining momentum in Gilgit and Chitral and has just started in Baltistan. In order to plan the livestock development effort, AKRSP conducted surveys in 175 villages in Gilgit District, in 39

villages in Chitral District and has started a survey in Baltistan. The results of this work are used to plan medicine and vaccine procurement, to design the vaccine and treatment campaign in selected VOs and to determine the general strategy. The three prongs of the livestock strategy (disease prevention, feed improvement and breed improvement) are being pursued concurrently.

4.16 Estimates of coverage indicate that for Gilgit District alone, compared with an estimated population of cattle, sheep and goats in the range 48,000-77,000, treatments in 1985 were 92,000 and vaccinations 134,000. Data for the early part of 1986 indicates that treatment and vaccinations appear to be increasing. These data indicate that the livestock disease control program in Gilgit is having considerable impact, as was confirmed by village interviews. The picture for Chitral and Baltistan is less clear, but can be expected to follow similar paths as these two district programs develop. The loss prevention program is now concentrating on training more livestock specialists, improving the data base on livestock population and diseases in the different regions (partly by better record keeping by specialists), and using this information to improve the vaccine and medicine supply system.

4.17 Extensive efforts will be required to improve feed and fodder for livestock. Work to date has concentrated on the winter feed quality and quantity problem, but the role of summer pastures is to receive increasing attention. Following on UNDP/FAO work, vetch is proving to be a good fodder crop for double-cropped areas. AKRSP has been developing this fodder in conjunction with the PARC research station at Jaglote, with about 50 farmers cultivating it on a trial basis. Demonstrations of improvement of low nutrient fodder, such as wheat straw and maize stalk with urea, are being carried out in 13 villages to test the acceptability of the technique to villagers. Similarly the technique of preparing maize silage both with hand and motor-generated silage choppers is being tried in a few villages. Traditional alfalfa growing and harvesting practices have also been examined, since the present practices apparently sacrifice the protein content of the fodder for greater roughage. The results of this work will be distributed to VOs.

4.18 Breeding work is concentrating on the introduction of improved milk production genes in the form of Jersey semen under the artificial insemination program and Jersey crossbreeds from down country with the support of Heifer Project International. The artificial insemination program was started in June 1985, and a total of about 130 cows were inseminated through mid-1986. The first Jersey/local-breed offspring was delivered at the end of July 1986. In view of the risks, it was decided that further insemination would be restricted to cattle in areas where technicians would be available to assist with any problems. The cross-breed heifers have not yet started arriving, but some concern is evident about their performance under local conditions and management.

Afforestation

4.19 Willow, Russian olives, hyppothia, rubinia and poplar trees are the most commonly planted trees in the villages, but the rate of new planting does not keep pace with the rate of cutting. In an effort to reverse this trend, AKRSP originally prepared a proposal for planting one million trees in the Northern Areas, but this was not pursued. Currently, the on-going program includes: (i) arranging suitable plant species from government forest nurseries for VOs; (ii) promoting village level sapling nurseries; (iii) encouraging plantation development on newly reclaimed and marginal land that is unsuitable for annual crops; and (iv) planting tree saplings along irrigation water channels. Forestry plantings to date include 490,000 trees in Chitral and 60,000 in Baltistan. To achieve the goals of this afforestation program a number of steps have been taken: AKRSP field engineers are being trained in afforestation; tree saplings from the government forest nurseries have been made available for purchase by interested VOs; and a number of VOs have already developed tree plantations. In addition, the Agricultural Section is considering the possibility of introducing and adapting new fodder trees on marginal lands. The new varieties, such as the quick-growing variety of mulberry, would be suitable for varying agro-ecological conditions, and would provide fodder for livestock as well as timber and fuelwood for households.

Savings and Credit

4.20 Payment to villagers for construction work on the PPIs has been valuable to VOs in generating increased savings. Households in most cases have been able to save a large part of this cash income, depositing it mainly in commercial banks via the VO savings campaign. The results of savings are not immediately manifest in increased output, but villagers are now well aware that collective savings enable them to borrow for productive purposes such as fertilizer purchase, land development and for tractor purchase. Table 4.5 shows the rapidity with which savings deposits of VOs have increased in VOs and in women's organizations.

Table 4.5: SAVINGS DEPOSITS
(Thousand Rs., Cumulative)

	1983	1984	1985	1986 /a
Village Organizations				
Gilgit District	663	5,140	8,100	10,590
Chitral District	70	730	2,200	3,500
Baltistan District	-	-	-	389
Total	733	5,870	10,300	14,479
Women's Organizations	24	520	1,380	1,580
Grand Total	757	6,390	11,680	16,059

/a As of June 1986.

4.21 AKRSP has extended both short and medium-term credit to VOs. Short-term credit is interest-free (by government policy) and is for a period of 6-9 months, while medium-term credit is extended for 3-5 years with an interest rate between 5-7.5 percent. The recovery profile for short-term credit indicates that 70 percent is recovered by the due date and 90 percent within the grace period of three months after the due date. Total recovery of short-term credit has been high, at over 95 percent. Most of the medium-term credit is not yet due for repayment.

4.22 Short-term credit, amounting to Rs. 9.8 million from 840 VO loans, was extended to 45,475 loanees (including multiple loans) in Gilgit District during 1983-86. About 86 percent of the short-term credit has been for fertilizer credit extended both in cash and in kind. Credit for marketing accounts for a further 12 percent of short-term credit. Small amounts of short-term credit have been extended for plants, seeds and to Women's Organizations. The average size of a fertilizer credit per village is about Rs. 11,316 or 53 beneficiaries receiving an average credit amount of about Rs. 214. Similarly, the average size of a marketing credit per village is about Rs. 18,200 or 74 beneficiaries receiving an average credit amount of Rs. 244 (Annex 3, Tables 5 and 6).

4.23 Medium-term loans from commercial banks with AKRSP's guarantee amounting to Rs. 6.68 million have been extended to VOs in Gilgit and Rs. 0.24 million to VOs in Chitral during the 1983-86 period. VOs in Baltistan have not yet received any medium-term loans. Forty-one of the medium-term loans (64 percent of the funds) have financed land development. Nineteen medium-term loans for agricultural machinery accounted for another 33 percent of funds. The remaining two percent of the medium-term funds have been used for five loans for nursery development, all in Gilgit District (Annex 3, Table 7).

Training

4.24 AKRSP's Human Resource Development Division (HRD) has been responsible for coordinating the activities of the Extension, Training and Supplies Centers in the three districts. Most of this work relates to improving villager skills. In all, 30 regular courses and 19 refresher courses have been undertaken (Annex 3, Table 9). Most of the regular courses complement the agricultural development program, such as for livestock development (10 regular and 8 refresher courses), plant protection and production (8 regular and 7 refresher courses) and poultry development (6 regular and 2 refresher courses). In addition, five marketing and one accounting course have been given. The normal duration of a regular course is about 10-12 days and a refresher course lasts for about 3-4 days. The number of participants in regular courses varies, but averages around 20 villagers per course, with costs of Rs. 16,000-20,000 per course. A total, of 619 specialists have been trained in technical skills and 424 equipment kits have been distributed to the livestock, plant protection and poultry specialists as of June 1986. In general, women have not participated in these training courses, although a few have been trained in poultry

management skills. Eventually it is planned to train at least one women per VO in poultry management.

4.25 The Extension, Training and Supplies Centers have also disseminated large numbers of case studies, leaflets, profiles and managers' conference reports.

Marketing

4.26 Marketing is being pursued for four categories of produce: fresh fruit (mainly apples), dried fruit, livestock and grains. In June 1985, a marketing strategy and package was finalized which is currently being implemented with the active participation of farmers belonging to VOs. Closely neighboring villages are being clustered together to facilitate the collection, grading, packaging and transport of their produce and to help integrate the marketing process.

4.27 Through the identification and training of Marketing Specialists operating in individual or clusters of villages, AKRSP expects to facilitate improvements in different stages of marketing as well as to reduce the risks associated with highly perishable commodities. The achievements of the marketing program are reported in Table 4.6 and in Annex 3, Tables 8 and 9.

Table 4.6: MARKETING OPERATIONS
(Rs. thousands)

	1983	1984	1985	1986 /a	Total
Number of VOs participating in marketing	11	8	26	28	73
Quantity of output marketed (kg)	45,500	22,290	108,410	151,500	327,700
Gross sales	324.3	158.9	457.2	742.1	1,682.5
Marketing expenses	55.1	27.0	50.8	103.3	236.2
Farmgate income to farmers	269.2	131.9	406.4	638.8	1,446.3
Beneficiaries of marketing operations (households)	514	251	305	1,180	2,250

/a As of June 1986.

4.28 Since 1983, 73 VOs have participated in five marketing training courses organized by AKRSP, in which 85 specialists have been trained in improved methods of harvesting, grading and packaging. Two refresher courses have also been given for 32 specialists.

4.29 Beginning in 1984, marketing loans have been extended to interested VOs. So far, Rs. 1.22 million has been disbursed through 67 such loans, and 99 percent of this amount has been recovered.

4.30 The participating VOs have marketed a total of 327,700 kg of fresh/dry fruit and agricultural products using improved practices, bringing in revenues of about Rs. 1.68 million, with associated marketing expenses of about Rs. 236,200. Thus, the farmgate income of the 2,250 participating households during the 1983-86 period was around Rs. 1.44 million. Marketing activities are concentrated in the period May to December of each year. For 1985, 96 percent of the AKRSP marketing target for fresh fruits was achieved, but only 42 percent of the target for dry fruits was achieved due to a lack of good quality produce. In 1985, about 67 percent of the fresh/dry fruits, agriculture products and livestock marketed by weight was for local consumption and about 33 percent of the same (mainly fruits) by weight was for markets "down country". By sales and revenues to farmers, the above percentages were about 75 percent and 25 percent respectively. AKRSP's records also show that 45 percent of the cooperative gross sales come from dried fruits, 25 percent from fresh fruits, and 15 percent from livestock products. Marketing expenses relative to gross sales are highest (30 percent) for fresh fruits and lowest (7 percent) for dry fruits.

4.31 The VOs have accepted AKRSP's role as guide and facilitator for their marketing operations. Such marketing operations have been broadened from only fruit to include vegetables, vinegar, timber, and livestock as well as some crop products. The marketing features of each of these commodities differ depending on their perishability. Some other problems still remain. For example, farmers typically expect to receive Gilgit town prices at their farm gate, not being fully aware of transport costs or of the opportunity cost of time spent in carting the goods to Gilgit town. Furthermore, some of them have been unwilling to remunerate the VO Marketing Specialist for services rendered and are hesitant about the concept of creating a marketing reserve fund.

4.32 The VOs have exercised varying degrees of quality control when farmers bring their products to a central location. In some cases, the products were sent out directly by the VOs without checking quality, and in others, some quality control was exercised before sending the products to market. AKRSP was satisfied with the agreement made with a private company for transporting the goods between Gilgit town and Rawalpindi, but arrangements for hauling the goods from the villages to Gilgit town have been unsatisfactory, resulting in an increased demand for tractors by VOs. Arrangements for distributing the marketing income have varied: the participants have sometimes been given an advance, either paid at the time the product was collected or after the product was sold.

Program Expenditures

4.33 Expenditures by AKRSP are detailed in Annex 1, Tables 2-7, with a summary and further breakdown by village organization and household participants in Table 4.7. AKRSP expenditures since 1983, including amounts budgeted for 1986, total Rs. 113.2 million (US$7.3 million). If these expenditures are viewed in terms of the population served by the program,

AKRSP's total expenditures over its four years to date average Rs. 215,210 (US$13,950) per VO, or Rs. 3,460 (US$215) per household.

4.34 Program grants to VOs represent 47.6 percent of expenditures to date. Operating costs took 37.2 percent and capital expenditures 8.3 percent (some small items listed as 'Other' (6.9 percent) are also operating costs). Staff salaries and benefits, at 26.7 percent of total costs, is the major operating cost. Capital expenditures are almost all for field vehicles, and 6.0 percent of total costs is vehicle operating costs.

Table 4.7: EXPENDITURES SUMMARY (1983-86)

	Expenditures		Average Cost/Beneficiary	
	Rs. Million	Percent	Village Organization (Rs. '000)	Household (Rs.)
Total	113.2	100.0	215	3,460
Program Grants to VOs	53.8	47.6	102	1,645
Capital Expenditures	9.4	8.3	18	287
Operating Expenditures	42.1	37.2	80	1,287
Salaries & Benefits	30.2	26.7	57	923
Operation of Vehicles	6.8	6.0	13	208
Office Rent & Costs	5.1	4.5	10	156
Other	7.9	6.9	15	241

4.35 Program grants per VO have averaged Rs. 102,360 (US$6,686), with operating expenditures of Rs. 80,000 (US$5,143) per VO. Operating costs average Rs. 1,287 (US$83) per household. Since short- and medium-term credit is not a program expenditure *per se*, it should be recognized also that a share of management expenditures can be attributed to AKRSP's credit services. Viewed in this way, with credit of Rs. 16.4 million taken up, AKRSP's accounts indicate that for every Rs. 100 of grant or credit delivered to beneficiaries, AKRSP has used Rs. 84 of capital, operating and other expenditures. (Such a high proportion of disbursements direct to beneficiaries is rare in rural development projects, which are generally very service intensive.)

Program Benefits

Program Beneficiaries

4.36 As noted at the beginning of this chapter, AKRSP is currently benefiting about 38,180 households, or 45 percent of the rural population of the three districts. The most extensive coverage is, of course, in Gilgit

(96.5 percent), followed by Chitral (36 percent) and Baltistan (7.3 percent). Taking 8.3 members as the size of the average household, Table 4.8 shows the number of beneficiaries for the different program components.

Table 4.8: PROGRAM BENEFICIARIES

VOs (Households)	38,180
PPI (Households)	32,713
Women's Program (Households) /a	5,619
Short-term Credit (VO loans)	1,181
Of which	
- Fertilizer and other production credit	1,043
- Marketing credit	138
Medium-term credit (VO loans)	63

/a Data available for Gilgit only.

4.37 PPIs have been initiated in 75 percent of the VOs, benefiting about 86 percent of the total membership of VOs. The total number of PPI beneficiary households in the three districts is 32,713, of which 22,098 are in Gilgit, 9,255 in Chitral and 1,360 in Baltistan. In terms of the costs per beneficiary household of the PPI component, indicative figures can be suggested with the qualification that only 58 percent of 393 PPIs initiated to date have been completed and the remaining PPIs under construction may incur costs in subsequent years. In addition, PPIs comprise a variety of infrastructure projects, the nature of the benefits of which vary with different projects. Given these qualifications, the PPI grant cost per beneficiary household is currently about Rs. 1,838 or about US$108 (in 1986 current US$). Total program costs per beneficiary household are currently Rs. 2,965 (US$176).

4.38 Although the members of the Women's Organizations may also be beneficiaries of the VOs and PPIs, the women's program has so far directly benefited 5,619 households in Gilgit, mostly through various forms of short and medium-term credits for various productive activities.

4.39 Others who have benefited extensively have been those VO households who have received short-term credits. As noted above, short-term loans have been made to 1,181 VOs and on-lent in about 63,000 individual loans of about US$14 apiece, mainly for fertilizers and marketing activities. Sixty-three VOs received medium-term loans on-lent as 4,500 individual loans for land development, agricultural machinery and nursery development.

Financial Returns

4.40 The Monitoring, Evaluation and Research (MER) section has attempted broad cost-benefit analyses of irrigation and livestock activities.

Preliminary attempts are also being undertaken to quantify benefits from fertilizer credit operations and link-road projects. Data problems limit the rigor of these analyses, and this particularly applies to the livestock sub-sector where the need to make very general assumptions as substitutes for data on most parameters invalidates the analyses by normal standards. (AKRSP is attempting to improve the livestock data base.) In the circumstances, the irrigation scheme cost-benefit analyses are reasonably realistic and in line with the observations of the evaluation team in the 27 villages visited. The results, however, would have been more meaningful if typical actual schemes were analysed, rather than normalizing data to cover all irrigation PPIs.

4.41 The irrigation scheme analyses covered 154 small irrigation schemes, 97 of which had completed at least their feeder channel at the time the study was undertaken. Hence, the analyses are essentially ex-ante feasibility studies, but with the actual costs of a major capital item known for 63 percent of the schemes. The total costs of the irrigation program comprise the costs of constructing the channels and of land development as well as various management costs of AKRSP. The costs of constructing the irrigation channels included costs to AKRSP such as the PPI grant for material and labor, engineering charges and land development implements. Costs to VOs included their own contributions to construction costs, sometimes in excess of AKRSP specifications, and maintenance costs. Benefits of the irrigation schemes were based on wheat survey data, informal field investigations and projections of land development rates and production. The average life of a scheme was assumed to be 21 years, for which period maintenance costs were projected.

4.42 Although data are available, or could be collected on individual schemes, and there are several different categories of schemes (comprising rehabilitated, expanded or extended channels serving existing irrigated land, through to new channels to increase supplies to irrigated land and new channels to bring new land under irrigation), a combined average profile of benefits from old and new channels was derived based on various assumptions. A typical channel was assumed to bring 66 ha of undeveloped land under cultivation. It was assumed that the cropping pattern and net returns would not change with the introduction of new crops. Expected yields on new land were computed and cross-checked from various sources and farm gate prices were used to estimate financial benefits from the new land. A typical channel was assumed to increase water availability on about 100 ha of existing irrigated land. Total water availability in the village was assumed to increase by 20 percent and cropping intensity by 134 percent. The effect on crop yields was estimated from yield-response-factor information provided in "Yield Response to Water" (Doorenbos, Kassem, et. al., 1979). Benefits were projected to accrue one year after completion of the feeder channel.

4.43 The average financial rate of return for these 154 channels was calculated to be 37 percent. Sensitivity analysis based on reducing project benefits by 20 percent and project costs separately by 20 percent, reduced the financial rate of return to 33 percent.

4.44 Attempts to estimate the financial return to fertilizer credit have also demonstrated positive results. Costs of the fertilizer credit program are those that are privately incurred by farmers for purchase of fertilizer and wages paid to labor for its application. In addition, program operating costs included salaries for program staff, and fertilizer transport, storage and unloading costs. Benefits of the fertilizer program derive from converting non-users to users and raising application rates, as well as reducing constraints on alternative use of funds. Preliminary normalized estimates show a financial benefit-cost ratio of about 3.3, although the approach used for these calculations needs refining. Initial attempts are currently being undertaken by MER to perform a similar analysis for link-roads projects, and preliminary estimates of cost and benefit streams reveal positive financial returns to these investments as well.

Reporting

4.45 AKRSP staff have devoted considerable time to reporting the progress of program activities to management and donors. This work is done mainly by MER. To date, 14 quarterly Progress Reports have been issued including Annual Reviews (three to date) made at the end of each year, and incorporating that year's fourth quarterly report.

4.46 AKRSP also produces other documents on a regular basis including conference and workshop papers on topics as varied as agro-ecosystems, principles of small farmer development, and wheat production techniques (see References). MER also produces regional statistical notes on population, demography, land, livestock and cropping patterns in the Northern Areas. Program evaluation notes are also produced; these review both the overall program and also specific topics such as evaluation reports on irrigation projects, fertilizer credit, livestock development and link roads. In addition, discussions are usually documented. A number of village case studies have also been prepared. AKRSP has hired some consultants and interns whose reports are on file in MER. Finally, MER maintains a computerized data bank for various survey data and publishes a list of topics of ongoing work and future research plans.

V. EVALUATION OF THE PROGRAM

5.01 The activities of AKRSP, as detailed above, have clearly me significant success. The day-to-day functions of the AKRSP team have pursued with considerable zeal, working long days, in all kinds of weather and often in hazardous conditions. This drive has been balanced by a level of painstaking care that gives the team an image of professionalism that is impressive to observe. In combination these characteristics of AKRSP activities have produced outstanding results. The significant progress with PPIs and other program components as documented by AKRSP staff, and verified by the evaluation team, bears excellent witness to this.

5.02 Less easily documented are the effects of AKRSP activities on the attitudes of villagers and local observers, including government officers. Discussions with educated members of village families, locally based merchants, bank managers and army officers, and with government officials give at least some sense of this. Generally, the attitudes of villagers toward AKRSP are judged to have changed significantly, from a mixture of outright suspicion, alienated disinterest, or guarded curiosity at best, to a combination of willing acceptance, enthusiastic cooperation or unqualified endorsement. These changing perceptions are reflected in actions of villagers, including attendance at regular meetings, making regular deposits, working on PPIs, paying for livestock vaccination and so forth.

5.03 The reactions of other observers appear to have changed similarly, from varying degrees of scepticism to widely held respect. As a consequence, the working relationships of AKRSP with other locally based organizations and agencies are generally harmonious. This is not to say that there are not some critics or detractors, nor that any relationship is without occasional tensions, but the general impression held of AKRSP appears to be overwhelmingly favorable, a factor which can only augment its effectiveness. These changed attitudes are, of course, no accident since they are based on four years of concerted effort and solid achievement.

The Institutional Model

5.04 Much of AKRSP's achievement is attributable to the effectiveness of the institution building efforts at the village level. This success has been, in turn, assisted by a number of factors. Most important among these is the strength of the institution building model. The approach employed has been carefully conceptualized and refined through many applications. The three part process of establishing the Village Organization, giving it corporate strength through group savings, and making it work through the implementation of a grant-aided infrastructure project, obviously works. Because it has been well tried and tested, the responsibilities of the respective AKRSP staff are clearly specified, which makes for smooth teamwork. This builds the confidence of both the VOs and the AKRSP team, and permits considerable flexibility and use of imagination.

Management Principles

5.05 Several of the management principles that are part of the model are critical to its effectiveness. First among these is the principle of primacy of the VO. The VO is the focal point of all activities, but its sovereignty is regarded as sacrosanct. The AKRSP team may make suggestions or present options but they do not make decisions for the VO nor make demands of them, nor do they get involved in their internal problem solving. This builds a partnership between the VO and AKRSP whereby the VO management is supported but never undercut. While this principle of "sovereignty of the village organization" is logical, sensible, and may even seem obvious, it is ignored in most rural development programs, invariably to their detriment.

5.06 A second management principle is that of continued attention to innovation. This principle fosters a learning environment within AKRSP, within and among the VOs and effectively for the whole program. When one VO proposed building an irrigation tunnel rather than a much longer open channel they were given the same support despite the tunnel's inherent difficulties and risks. When another VO from an isolated outlying village used part of its grant funds to buy a shop in the Gilgit bazaar this was watched as an interesting experiment. Similarly, the use of new equipment or new varieties is observed carefully, whether proposed by AKRSP or originating from another source, and the experiences discussed in meetings at various levels. Thus both program staff and village leaders learn from the experience. The effect is to create a "learning environment" of active improvisation and innovation.

Flexibility in Operation

5.07 Pursuit of these principles is greatly aided by the flexibility and freedom of operation AKRSP enjoys as a small, independent non-government organization. It does not have to adhere to set plans and procedures, nor to institutional controls on its staff as larger entities find it necessary to do. There are virtually no hierarchical clearance procedures, only information sharing. If program management has to ship in fertilizer or vaccines for onward sale to the VOs in order to ensure availability, there are no institutional prohibitions, procurement procedures nor project rules that restrict this. Similarly, if another agency offers support for an activity or can provide an input it can be welcomed and the program adjusted to accommodate it. This flexibility, carefully husbanded by AKRSP management, greatly facilitates the "working method" of experimentation, adaptation and trial and error innovation that is a hallmark of the program.

Special Features of the Program Area

5.08 In addition to these many strengths, three features of the Northern Areas have proven advantageous in implementing the program. First, AKRSP institution building proceeds in what is to a large degree a political and administrative vacuum. The unnresolved status of the region, together with the decline and ultimate abolition of the mirdoms, left a situation almost devoid of effective local-level institutions or organizations. Thus the newly formed VOs do not compete or conflict with existing bodies.

5.09 Second, and despite the foregoing, there is a tradition of cooperative association in the villages which is consistent with the concept and practice of the VO (as modified by AKRSP to suit the circumstances). The terrain, climate and history of the area have resulted in villages that are well integrated, made up of families which are equally well integrated. This provides a socially cohesive village environment in which AKRSP can work most effectively.

5.10 Third, the high proportion of Ismaili villages in the Gilgit District has given the program considerable leverage. AKRSP is not predominantly an Ismaili program. Only a small proportion of the Board, of the program team and of funding is provided by Ismailis. The model is not Ismaili in concept and is manifestly just as effective in other villages. However, the fact that AKRSP began in Ismaili villages favorably predisposed toward an Aga Khan-supported program, and was bolstered by a visit from the Aga Khan himself in the first 18 months, gave the program an initial impetus that was undoubtedly invaluable. AKRSP has shrewdly built on this early break.

The Production Model

5.11 Once the VO has been formed, the PPI executed, and the savings process begun, the next step is to increase or adjust production to make use of the added capacity. The grant-aided PPIs have an initial impact by adding to village income while the project is under construction. This can be especially useful when the work is carried out and payments received in the off-season, when household reserves of food or cash are low. However, the longer-term benefit of most PPI projects comes only from their employment as fixed capital in the broader processes of farm production and marketing. In this sense, the irrigation channel PPIs are only a part of a productive system of infrastructure, including primary and secondary distribution and on-farm irrigation channels, land clearance and levelling, terracing and access, all of which must be developed before the investment can become productive. Thereafter, improved varieties and appropriate techniques can ensure that the infrastructure generates production benefits. The savings deposits created by the VO also need to be mobilized, directly or as collateral, to acquire the additional resources necessary to put the PPI to work.

Fostering Agricultural Innovation

5.12 AKRSP has responded to this recognition by assisting technically with the on-farm development of the land and by fostering innovation in crop and livestock production, and in processing and marketing. AKRSP has also acted as an intermediary between the banks and the VOs for the provision of credit for these purposes. However, the program's production-expanding activities appear to lack the direction and thrust that characterize its institution-building activities. This is perhaps partly because of the more diffuse character of the processes, and partly because of the lack of a clear concept of what is needed. Production is a household activity rather than a

cooperative or VO activity, so that production activities are one step further removed from direct VO management and AKRSP involvement. Such farm production activities are also far more diverse in character, and the technology more variable from place to place, than is the infrastructure technology. Further, technology changes suited to different locations have to be adapted or selected, requiring an active process of field trials and applied research. AKRSP's earlier assumption that technology packages could be put together from existing knowledge by appropriate experts is now tempered by the realization that agricultural technology travels badly and must be tested, adapted and refined (or rejected) on site. Once available, proposed technology changes have to be adopted by individual households involving large numbers of separate decisions and some risk to adopters. Thus implementation of this component of the program will perhaps inevitably be a less organized and a slower process, especially compared with the rapid implementation of the PPIs.

Need to Integrate Infrastructure, Production and Marketing

5.13 However, these activities seem also to be less well conceptualized than AKRSP's institutional model. The process is pursued largely as an organic extension of the institutional model, in the form of a sequential follow-on. Yet, if the program's goal is increased productivity and incomes, there is need for a "production model" as carefully conceptualized and crafted as the "institutional model". This must treat the three components of infrastructure, production and marketing as an integrated whole.

5.14 The interdependencies between these three components are as complex and as critical as the VO, PPI and savings components of the institutional model. Thus marketing comes at the end of the production chain, but the results of market research and testing need to be fed into the early decision-making process of the farm system. It is not clear yet that this is happening either at the AKRSP or the village level. Fruit trees are being planted in thousands, even though the area is surplus in fruit. New (highly competitive) markets will have to be entered if these plantings are to pay off. Some useful marketing work has been done (see Chapter IV), but in the process AKRSP has been merely offsetting the real need for longer-term sustainable market systems. This needs to be addressed very soon with the establishment of a more comprehensive marketing strategy. Some thought has been given to this need by AKRSP, but firm proposals now have to be developed and discussed and steps taken towards implementing a long-range marketing development plan.

5.15 Similarly, parts of the production system have not yet been fully analyzed and their function fed back into the strategy. The importance of livestock in the farming system is well appreciated by AKRSP and program content is focusing on this part of the system. However, the critical role of women's labor as a dominant constraint on production and welfare improvements has become apparent more recently. The new women's component of the program is still not fully functional, neither in terms of specific activities for women and nor in taking into account the role of women in all aspects of assistance to the villages. Just as there is a successful

institutional model, revolving mainly around men, there may need to be an explicit element dealing with women's issues, within the AKRSP implementation system as a whole.

Addressing Environmental and Resource Constraints

5.16 The program has already made a major contribution to reducing resource constraints by supporting the construction of channels to bring distant water to irrigable lands. Thus it is not water shortage *per se* which is the constraint, but inadequate irrigation infrastructure to bring distant abundant water to irrigable land. Given that irrigable land as well as access to water is a constraint in many areas, it is somewhat surprising that there have been no land development PPIs, especially for terracing, although AKRSP is assisting with credit for land development. The constraints resulting from the cold winters, inadequate supply of animal feed and domestic fuel, are being addressed by the production developments that follow the construction of irrigation channels. Perennial fodder crops are being planted and fuelwood trees have been supplied and planted. The work on livestock feed follows the initial work by the UNDP/FAO project and concentrates on the introduction of vetch to the farming system. Very little has been done in connection with the summer pastures, although more work is planned. The constraints imposed by the rugged terrain and rivers have been eased in critical areas by a number of the road and bridge PPIs. In many cases villages can now be reached for the first time by wheeled transport and the impact on village life and welfare of these link road projects and bridges is considerable. Not only is travel time reduced and the possibility of marketing produce made more practicable, but road access permits visits from agencies servicing villages and allows easier evacuation of the sick.

5.17 The success of the program in the future will depend in part on addressing the area's resource constraints even more forcefully, especially the livestock feed and domestic fuel problems. Attempts to help villages make use of available natural energy such as hydro-electric and solar power have only been on a small scale so far, but possibly offer future potential. There is one hydro-electric PPI scheme, and solar energy is being used to assist air drying of fruit. Clearly, if the capital costs of solar energy collecting systems decrease, there could be further potential for exploiting this energy source in the Northern Areas.

Institutional Development

5.18 Through the creation of VOs, AKRSP has provided an organizational arrangement through which decisions about collectively managed resources can be made. Property rights in land and water continue to be based on pre-existing patterns and customs. Rights to water and new land are acquired through the investment of labor in the development of irrigation channels and new level land, as they have been for generations. Rights-of-way for

channels ry sharing arrangements for land and water are still generally as are the rights, roles and duties of individuals within gr urce users, and between groups. Where villagers failed to respec ventions, irrigation channels were not maintained, and forests and pastures were degraded through open access ('the tragedy of the commons'). While many irrigation systems fell into disrepair, the rules for their operation and maintenance are still understood.

5.19 However, some VOs are experimenting with the allocation of rights to new land and water created through PPIs, as well as with new arrangements for routine maintenance of channels. While some VOs could be criticized for over-emphasizing construction issues, the VO does provide the mechanism for addressing ongoing operation and maintenance issues also. Perhaps the greatest challenge to the VO will be for those that have initiated very long channels but do not have a strong history of water management, such as in Sildhi, Baltistan District. Very significant investments of labor will be required to build and maintain this channel in a high-risk location by a community which has not managed a system of this scale in the past. AKRSP may have to recognize explicitly that developing new hill irrigation systems will be much more difficult in areas where irrigation is an introduced technology.

Institutions and Techniques

5.20 AKRSP clearly recognizes that technologies such as irrigation have institutional and technical components which must complement each other. Through the formation of VOs around PPIs designed to produce collective goods, institutional and technical issues are tackled simultaneously. Irrigation channels, link roads, protective bunds and bridges, which form the majority of PPIs, are all collective goods. The VO provides the mechanism for gaining information about the collective good, reaching agreement on its use, and enforcing agreement when necessary.

5.21 By establishing VOs as "committees of the whole" that meet regularly and often, and make decisions by consensus, every household acquires rights to the collective goods provided by the VO and duties to respect the rights of others. However, because AKRSP has also proposed the normative operating principle that the benefits of VO activity be shared as equally as possible, a further guideline is added to promote the equitable distribution of VO/PPI benefits. Explicit attention by AKRSP to building the VO and its operating rules helps to ensure that PPIs are completed and maintained to benefit the village as a whole.

Formalizing the Organizations

5.22 Continuing organizational development is needed in the program on two levels:

(a) reorganization of AKRSP to expand economic development capabilities over the next five years and "to work itself out of a job" by the early 1990s; and

(b) further VO development to: (i) develop new VOs in unserved villages, (ii) consolidate and support the existing VOs, and (iii) establish the VOs as legal entities which can make their own contracts.

5.23 The self-liquidating objective of AKRSP needs to be pursued in earnest over the next five years so that by the early 1990s the strategy is realized, with AKRSP then reduced to an advisory, technical assistance, research and monitoring role. This will require considerable extra management effort, some additional skills and cooperation with several government agencies, but is a reasonable and necessary target.

5.24 The principal AKRSP activities which need to be institutionalized are input supply, credit intermediation and marketing and processing. Sub-regional or regional apex institutions (cooperative or corporate) are proposed for these purposes. Whether these functions should all fall to multi-purpose institutions, or to several bodies has yet to be determined.

5.25 AKRSP plays an important role in mobilizing inputs for farmers, from improved seed and fertilizer through to agricultural chemicals and veterinary supplies. This activity is meeting a critical need during this early stage of rural development but care should be exercised so that farmers do not become dependent on AKRSP as a source of agricultural inputs. Whatever happens, AKRSP's input supply activities should not be allowed to substitute for or crowd out the development of alternative longer term channels. AKRSP needs to find ways and means of supporting the establishment of alternative input supply systems for the long term. This could be both through an apex institution as well as by commercial channels, as is already happening.

5.26 Similarly, AKRSP's current activities in supporting credit flows should be phased out gradually in favor of long-term arrangements. To some extent the position of AKRSP as the intermediary between commercial banks and the VOs (or the guarantor of VO loans) is in conflict with the original objective of building up savings deposits from the villagers. These deposits were to act as security for credit, but in most cases they are not serving that purpose so long as AKRSP acts as the main borrower or guarantor of VO loans. Establishing a legal identity for the VOs will pave the way for their greater independence in that they will be legally accountable and presumably creditworthy. A new institution (which might also be a main input supplier or market outlet) should take over credit responsibilities from AKRSP if some intermediary, between sources of credit and VOs, continues to be needed.

5.27 If market disappointment is to be avoided, as more irrigation channels come into operation, further work is urgently needed to identify and test markets. Fortunately, in the case of tree crops there will be some respite before recent plantings come into heavy bearing, but as there is already a surplus of tree products, efforts must be accelerated to establish new markets. AKRSP will have to continue doing this work in the short term,

but efforts need to be increased to establish and bring into operation an apex marketing organization to take over this task, to bulk produce and to negotiate from strength with down country buyers.

5.28 With respect to village level organization, existing VOs will require continuing support over the next five years to maintain their functional cohesiveness in a period when the local economy is opening up rapidly, when experiments in income generation (not all of which will be successful), based around the VO, are underway, and when pressure to recognize women's roles more explicitly and strongly has to be applied. The VO will no longer have the "drama" of a PPI or the grant assistance of AKRSP to bind it together. The VO must move into areas where the appropriate skills and experience of its members are newly acquired (e.g., managing group savings), or are sometimes not long established (e.g., managing water). This in turn, implies that the SOs and others who will support villagers, will also require some new skills.

5.29 Formalizing the VO and giving it a legal identity is essential, but will not necessarily protect it from the types of risks inherent in the next stage of development. Perhaps the best service AKRSP can perform for existing VOs is to promote the retention of the basic premises and principles on which the VOs are founded, i.e., regular meetings of VOs, representation of all households, decision-making by VO consensus, good record keeping and public reading of records.

5.30 Developing new VOs in parts of the project area not yet served will require the continued application of AKRSP's proven approach, in Chitral and Baltistan in particular. In the absence of a helicopter, AKRSP should consider strengthening the staff in these two areas by the addition of senior staff from Gilgit. While AKRSP follows a set of well-defined principles, it does not apply a blueprint, nor does it have an institutional "package on the shelf" on offer. Especially in the early stages (as in Chitral and Baltistan), VO development and PPIs are worked out in the village through dialogues. Conducting these successfully requires skill, experience, authority and frequent contact. Achieving levels of success in new areas comparable to those previously achieved in Gilgit District will require comparable levels of effort and leadership. While experience gained to date is a plus, Chitral and Baltistan will pose their own challenges.

Scope for a Farming Systems Approach

5.31 Farming systems approaches are based on the assumption that rural households operate unique farming systems.4/ The approach is to describe these systems, whenever possible to group them, and to identify the constraints that are keeping households from achieving their goals or implementing change (Norman, D. et. al, 1982). Farming systems have three major elements: the natural environment; the economic and policy environment; and the farm household itself. The natural environment includes the climate,

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4/ "Farming systems" in the generic sense.

soils, water and other natural resource endowments upon which the farm is based. The economic and policy environment includes the institutional and organizational arrangements for resource use, level of commercialization, access to markets, government policy and other socioeconomic factors beyond the control of the farm household. The third major element is the farm household itself and the resources over which it has control, including land, labor, capital and the skill and productivity of the members of the household as workers and decision makers. Viewed in this way, with the household at the center, it is possible to identify the constraints that limit the household and to trace the possible consequences of approaches to relieve such constraints. AKRSP may want to consider complementing its work in agroecosystems analysis at the village level with a farming systems approach focused on the household.

5.32 Application of a farming systems approach to the work of AKRSP should begin with an understanding of the goals and objectives of the farm household and the time frame within which the household operates. What do the households aim for when they employ the resources they control? To date AKRSP has worked to identify village-level goals and objectives as articulated by men, but household goals and objectives (e.g., subsistence, cash, prestige and education) have not been clearly recognized.

5.33 In a farming systems context, the creation of VOs can be seen as a significant new element in the economic and policy environment of the household. Some PPIs, such as link-roads and bridges, also contribute in this area by improving access to markets and fostering commercialization of rural areas. Other PPIs directly influence the environment for crop production by increasing the amount and reliability of irrigation water supplies. Where new land is irrigated through PPIs, the land resource base of individual households is expanded. How newly irrigated land is used will depend largely on the goals and objectives of the household and the other resources under its control. The most important of these is family labor. However, very little is known about labor resources and their utilization in the project area. Understanding labor profiles, when peaks, deficits and surpluses occur throughout the farming year for men, women and children, would be invaluable additions to AKRSP's information base for planning technological change.

5.34 Focus on the household also permits an improved understanding of income and consumption patterns. What constitutes household income (in cash or kind)? Where does it come from (on-farm or off-farm)? How and when is it used (for food or non-food needs)? Finding the answers to these questions would help to reveal what motivates household members and what are the consequences of deficiencies in household income.

Observations on Agriculture

5.35 A number of specific observations can be made on AKRSP's agriculture program related to food crops, cash crops, livestock, tree crops, and links to national agricultural research programs in the Northern Areas. With

respect to improving food crops, AKRSP should continue selecting and testing a small number of crops appropriate to single- and double-cropping areas. This could include "low cost packages" that demonstrate the value of improved seed selection and closer attention to planting date, seed depth and plant population (spacing). In addition, simple trials that match local and new varieties under traditional and improved management would be appropriate in all villages where plant production specialists have been trained. Four plots, side-by-side, would be required to demonstrate: local variety with local management; local variety with improved management; improved variety with local management; and improved variety with improved management as recommended by Whiteman (1985). Cereal trials should cover both wheat and barley, measuring physical and financial performance for both grain and straw.

5.36 With respect to cash crops, the development of seed potato production in the AKRSP area deserves further attention since: the economic potential appears to be very significant; the production risks are high; and the marketing problem (discussed later) illustrates the difficulty of producing bulky, perishable commodities in a remote area, distant from markets. Moreover, unless the seed to be multiplied is healthy, and unless the farmers rotate potato production systematically with other crops, viral diseases associated with nematodes and aphids will arise. All seed production enterprises require a high degree of collective grower discipline, and the development and maintenance of this new industry will provide a significant test to village plant production and protection specialists, and to the VOs as forums for growers.

5.37 AKRSP's efforts to introduce improved tree fruit varieties with improved flavor and keeping quality, for both domestic use and marketing, look promising. The program of codling moth and leaf miner control implemented by village specialists has paid off handsomely with bigger crops of sounder fruit. The emphasis on improving tree fruits as part of a home garden, a strategy less risky and less difficult to manage than the establishment of formal orchards, also puts the benefits of AKRSP's activities within the reach of most families. The introduction of dwarf rootstocks and the establishment of commercial orchards will be attractive to some progressive farmers with access to the required capital. Progressively "top-working" existing trees, using grafts of improved stock, would also enhance the quantity and quality of fruit production in ways requiring limited capital and skills easily transmitted to farmers. As with livestock, in an area with traditional production systems subject to high levels of risk in production, it may be preferable to look for incremental improvements to existing farming systems rather than to promote large leaps in production technologies. More will be said about tree fruits in the section below on marketing (para. 5.52 et seq).

5.38 Other cash crop opportunities exist in the Northern Areas, including both fruits and vegetables to supply local and down country markets. To adopt them successfully, households need to understand how this will affect their livelihood system, and how (and how profitably) the new crops can be marketed. This means that AKRSP must hold dialogues with rural households,

both men and women, on present production systems, preferences, and the effects of change, and trace the consequences through to the wholesaler or consumer.

5.39 AKRSP's strategies for improving livestock focus mainly on improving: animal health through vaccination programs; forage production from annuals, notably vetch, and perennial alfalfa; and cattle breeding through artificial insemination and the introduction and dispersal of crossbred heifers to create village breeding centers. AKRSP's vaccination program appears to be very successful, and the expanded production of alfalfa on unstable slopes will prove very valuable. AKRSP acknowledges that improving the local gene pool must be accompanied by improved forage production, especially for winter feed, and animal health maintenance. The emphasis of AKRSP's program here is on expanded milk production. For lower elevation villages close to "urban" areas, like Gilgit or Hunza, and for progressive farmers, this sophisticated strategy may pay off. However, for higher elevation areas, where livestock are already a more important component of the farm system and the forage base is poorer, improving dairy goats and yak crossbreeds may be a better strategy than improving regular cattle.

5.40 Goats are well-adapted to the Northern Area's environment. They thrive on the coarse feed available, and are more efficient converters of feed to milk than are dairy cattle. The emphasis on cattle and the plan to improve livestock through the introduction of exotic breeds should be closely examined because of the inherent risks and the very high levels of management required to make most exotics thrive in stressful environments.

Irrigation System Design and Water Management

5.41 The irrigation systems developed in the Northern Areas have evolved over centuries and provide the foundation of the household production systems. Finding ways to improve these systems is, therefore, bound to be difficult and tinkering with existing arrangements is bound to be risky. Nevertheless, a number of comments must be made because irrigation is so important to village livelihood and to AKRSP's strategy. Very large efforts go into acquiring water that may be applied inefficiently. In areas of new land development, there are optimal layouts for irrigation systems to take maximum advantage of the head available, to distribute the available water throughout the system efficiently, to maximize infiltration, and to minimize evaporation losses and maintenance. Northern Area farmers need to be made aware of these methods and assisted to adapt them to their existing practices.

5.42 Northern Area farmers have accumulated generations of practical experience in managing water, but there may still be some ways in which water can be used more effectively. In both new and old irrigated areas, water tends to be abundant relative to land, especially early in the season, and there is a tendency to apply water infrequently, in large doses. The results of this are to use more water than necessary, to flush nutrients out of the root zone unnecessarily, and to cause water stress towards the end of the

irrigation interval. This wastage should be reduced in areas where, and at periods of the year when, water is in short supply. The interaction between irrigation and fertilizer use is also very important now that use of purchased inorganic fertilizer is common. Large, infrequent water applications combined with a single dose of inorganic nitrogen (in porous, inorganic soils) can lead to the wasteful loss of expensive nutrients. AKRSP could contribute to expanding the benefits from the operation of irrigation PPIs by encouraging research, in cooperation with farmers in farmers' fields, to increase the combined efficiency of water and fertilizer use.

Links to Agricultural Research

5.43 Farming systems approaches to research, and on-farm research, are typically linked to national and international programs of agricultural research. In the Northern Areas, the Pakistan Agricultural Research Council (PARC) has recently established an agricultural research station at Jaglote, south of Gilgit, but the intensity and scope of the program should be expected to remain limited for the forseeable future. (The current program of PARC is limited by staff, budgets and mobility, and an absence of a field orientation.) AKRSP thus should now carry out its own evaluation of the area's farming systems and design its own interventions. However, AKRSP should seek to coordinate its activities more fully with the Jaglote research station, particularly to assist the station to orient its on-station trials more towards observed farmer problems, and should complement this work with its own expanded trial and demonstration program in farmers' fields. The addition of an outstation in the single cropping zone would also improve the relevance of research results to more of the project area.

Emphasis on the Women's Program

5.44 From the outset, AKRSP has acknowledged the importance of women in the villages and households of the Northern Areas. Their role in local farming systems is clearly spelled out in AKRSP's First Annual Review (1983), and a number of surveys to understand women's roles in the farm household and in decision making have been implemented since late-1983. Formal and informal dialogues were held with women early on in the program to identify income-generating opportunities. At the same time, it is clear that activities for women have still not gathered momentum, and even where there is progress, some of the stereotypes in programming for women recognized in the First Annual Review have not been avoided. Also, an expectation for innovative and effective programming for women has been created which AKRSP must strive to fulfil. How has this happened, and what can be done about it?

5.45 Part of the answer rests on the emphasis on the village, the almost exclusively male VO and the consequent PPI, and failure to focus on the household as the basic production/consumption unit. By adding a farming systems approach, focused on the household's goals and resources, interventions can be identified that highlight women's roles, use unemployed or underemployed resources, or remove constraints. Focusing on the village and PPIs has correctly highlighted land and water as limiting resources and

stressed activities performed by men. Focusing on the household would reveal inter alia (para. 5.57 et seq) the dominance of activities performed by women and consequent female labor constraints, and how and when family income is used, especially in meeting the needs of women and children. Studies of this kind could help to identify ways in which the welfare of women could be improved without having to organize specific women's programs.

5.46 Background papers (Magrath, 1986) and field observation demonstrate that Northern Area women are already more than fully occupied, but even so most of the interventions proposed by AKRSP add to their burden. With variations between districts and sects, women work longer days than men throughout the year to keep the household and farm functioning. In addition, year by year, changes are occurring that draw men increasingly into the wage economy of the region and into daily, seasonal or permanent jobs outside the village. As a result of these changes, the demands placed on women to replace men in their former village occupations increase. With the possible exception of the introduction of nutcracking machines, almost every activity proposed for women by AKRSP creates additional new tasks without reducing existing ones, in an environment where women are already overworked.

5.47 There is little doubt that without a successful attack on the problem of women providing the greater part of village labor there can be little prospect of achieving significant production gains and thereby improving village welfare. Means of reducing labor bottlenecks need to be found.

5.48 By looking in detail at household labor profiles, and through village level dialogues with women, AKRSP should work to identify the bottlenecks in daily life faced by women so that these can be relieved, shifted in time, or shifted to men (para. 5.57). Which tasks are the most demanding for women - fetching water, gathering fuel, gathering fodder, or weeding? Which activities pose the greatest peak labor requirements - weeding crops or harvesting fruit? Which innovations have created the most additional work for women - tractor-powered threshing or fruit processing? Which innovations could have benefitted women most with slight changes in design - bringing dependable water supplies close to the village or developing tree nurseries close to the houses? AKRSP has to begin to address these questions as a matter of routine in order to enable women to do more for themselves, and to ensure that changes to the existing system do not, at a minimum, make women's lives more arduous.

5.49 AKRSP needs to put renewed emphasis on the Women's Program both in terms of expanding the number and representation of Women's Groups within VOs (or widen the scope of Women's Organizations) and in tailoring the "production model" to meet the particular needs of women more directly. To accomplish this, AKRSP should consider expanding the size of its professional and field staff concerned with women in development, making women's activities the responsibility of the management group as a whole, and improving the means whereby the needs of women are met in activites not specifically aimed

at women. Recommended improvements to information on labor utilization, family income and nutrition can contribute here. Through analysis of this information, specific interventions to break women's labor bottlenecks, provide incomes to women, or improve their nutritional status, and the nutritional status of children, may be identified. New incomes for women translate very directly into improved family consumption levels and may have particular benefits to children.

5.50 AKRSP should consider implementing procedures for VOs and AKRSP itself to assess routinely the implication of any recommended action on women. How and in what ways does the action affect women? To what extent does the action meet the expressed needs of women? How could the action be modified to bring increased benefits and reduced costs to women? Given the relatively more isolated existence of women, AKRSP may have to adapt a more activist role than customary in identifying needs, solutions and appropriate technologies than has been the practice to date. Even more so, therefore, every intervention must be carefully reviewed and tested with women and their implications analyzed, before widespread commitments are made.

5.51 AKRSP has successfully organized VOs around grant-assisted PPIs, largely through consultation with men. AKRSP should consider some comparable intervention for women. Women's Program initiatives should be considered, particularly for Baltistan District where the program is new, has a special emphasis on women, and where the promotion of activities for women in development will be quite difficult for cultural and logistical reasons. A major limitation to such a strategy may be that infrastructure of specific relevance to women's needs may be limited, but the effort should be made. Non-infrastructure "productive investment" could also be considered.

The Importance of Marketing

5.52 AKRSP's main thrust has been to develop local organizations around the financing and construction of significant additions to village infrastructure, mainly for expanded farm production. A complementary program element has focused on prevention of crop and livestock losses. Now AKRSP is being urged to give increased attention to farm production technology, putting to work the water and new land made available through PPIs. The result of these activities will be expanded volumes of higher quality produce for consumption and sale. Some of this expansion can already be seen in the form of fruits and vegetables in market places in the region and on trucks bound for down country markets. However, as is true for primary products everywhere, expanded volume does not necessarily mean higher returns to growers. When the products in question are highly seasonal, bulky and perishable, and when major markets are a minimum of 24 hours away by truck on roads that are not always open, additional marketing problems arise. It is clear that while AKRSP is aware of these realities, the program could be strengthened by giving even greater attention to marketing beyond the farm gate.

several other buyers could be encouraged to operate in the region, and growers could be encouraged to develop their own countervailing power through forming an association. The apple and seed potato marketing issues suggest that in the future new constraints faced by villages in the Northern Areas must be met through organizational arrangements and cooperation at a regional level.

Increments to the Information Base

5.57 Household labor profiles are needed to identify when work is performed (by month), by whom (family members, non-family members, men, women and children), for what purpose (farm or non-farm), and for which activity (land preparation, planting, weeding, harvesting, collecting fuel or water, minding livestock, etc.). If profiles are constructed in relation to crop calendars, peak labor activities can be pinpointed and strategies for relieving them can be considered.

5.58 Household income studies are needed to identify what income the household generates (as products or cash), how it is generated (on-farm or off-farm), how long it takes to earn it (in daily labor units), how it is used (consumed or saved), by whom (men, women or children), and for what (necessities, luxuries, or social and religious purposes). Until farm mechanization progresses, the health and nutritional status of the household and the draft animals will be a significant determinant of productivity. Income studies should therefore look at the food intake required to generate work and produce outputs.

5.59 The distribution of income within the village is also important, especially as incomes are likely to become more unequal as the village economy becomes more open. AKRSP should investigate the composition of the income of the poorest households and how this changes over time. Growing income inequality can lead to disparities in consumption, exploitation of poor groups by others and lower technical efficiency in production by poor groups. Support for VOs could also decline. Trends such as these would be especially important in the Northern Areas because the existing production systems are so dependent on cohesion at the village level.

5.60 To sharpen further the focus of AKRSP programs and to permit their generalization to other areas, new and existing data should be grouped increasingly by farmer characteristics, agroecological zone or niche, and locational factors. Existing village case studies could be used to check the reliability of any such groupings.

5.61 AKRSP should continue to emphasize cost-effectiveness and rapid results in making any additions to its information base. However, more women should participate in information gathering and special studies. AKRSP should also consider computerizing its information base and monitoring data. While data for special studies are computerized, considerable amounts of routine data are not. By taking this action AKRSP would in time improve

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access to its data bases, facilitate analysis and reduce the effort needed to produce standardized, routine reports.

Links to Other Institutions/Programs

5.62 As an NGO, AKRSP should continue to develop its relationships with government agencies in the program area by facilitating improvements in the delivery of public services and supplies and by continuing to encourage pooling of public funds with those it receives from other sources. Specific areas where AKRSP could improve the delivery of public services are in the provision of plant protection and veterinary materials, where an unsatisfied demand exists and where public channels are currently inadequate. The weakness of agricultural research, and measures to improve it, have already been mentioned.

5.63 AKRSP's relationship to other Aga Khan Foundation activities in health and education in the project area warrants special attention. It is clear that while there are areas of overlap and lessons to be learned by one program from another, each program has a distinct origin and history that must not be lost sight of. However, VOs and Women's Sections (or Organizations) may be able to contribute to more than the provision of economic services; villagers may choose to use their new organizational capabilities to provide social services. Dealing with the problem of the female labor constraint requires a coordinated approach between the various AKF agencies, and is one area where there is a clear need for closer association.

VI. IMPLICATIONS FOR THE FUTURE

6.01 As the program enters its fifth year it is tempting and perhaps appropriate to consider some of the broader implications of the experience to date. What is the potential for replication of the program model outside the Northern Areas, either in whole or in part? What does AKRSP experience suggest about the role of non-government organizations in development? What are the differences between this rural development program and government programs, such as those funded by the World Bank? And how might these insights gained from the AKRSP experience be useful in the design and implementation of other rural development programs?

Replicability

6.02 The replicability of the program, in other parts of Pakistan or in other countries, is likely to be affected by particular characteristics of the program area, program management, or the resources available.

Location

6.03 Several features of the Northern Areas favored the rapid implementation and effectiveness of the AKRSP program. These included:

- the formerly isolated existence of the population, implying pent-up development initiative and energy waiting to be released and channelled;
- the partial political and social vacuum, which made villages ripe for new village institutions;
- the implementing NGO's religious and social affiliations with the area, which made initial contacts and working relationships relatively easier;
- a 30-year history of work in the area by sister agencies of the NGO in education and health services; and
- the area's strategic and political significance, which justifies unusual government support and attention, including rapid development of a new road system and an array of regional subsidies.

The lack of institutions to provide competition with the program, combined with a tradition of cooperative activity and a relatively high degree of economic equality among villagers, undoubtedly created a favorable environment for AKRSP to work in. This set of circumstances seems at first glance unique. Underlying it, however, are features which are much less unique. The villagers are socially well integrated by virtue of kinship and cultural factors including religion. They are poor, poorly educated, isolated,

lack physical infrastructure, disorganized from a collective management viewpoint, more or less alienated from existing government agencies, and perhaps even despairing, at least of perceived opportunities in their immediate location.

6.04 These features characterize most subsistence-oriented villages in Asia and Africa. The decline of feudal, tribal and colonial institutions leaving a relative power vacuum but a tradition of cooperation, is a common pattern in many regions. Similarly, the need for cooperative management of common property, including communal land, and infrastructure such as roads or canals, is typical of agrarian societies. Their need for cohesion and organization in dealing with merchants, government officials and encrouching neighbors is a concern of virtually all rural societies. The lack of access to education, improved technology and alternative economic opportunities is a common frustration for most subsistence-oriented farmers. In these respects, the Northern Areas seem far from unique.

6.05 As agrarian economies become more open and commercialized, the socio-economic features of villages begin to change. Incomes and wealth become more unequal, and the collective interests of the village may become relatively less important for some (especially the natural leaders), given the broader economic opportunities. This phenomenon may reduce the attractiveness to villagers of participation in VOs and hence undermine the effectiveness to cooperative management. But experience with the AKRSP approach, as it has been applied in situations characterized by such inequalities, suggests that this does not necessarily happen. The future experience of VOs in areas near major towns and tourist centers on the KKH may prove instructive, in that the broader economic opportunities for these villagers are likely to be significant. In this respect, it would seem folly to hope that agriculture will be the major source of change in the villages along the main roads, to the exclusion of non-farm activities. Such a strategy might cause tourism and other service and commercial activities emerging along the highway to become the preserve of immigrants from outside the Northern Areas.

6.06 The other features, religious affiliations, previous NGO experience and government commitment, are certainly special if not unique. The occurrence of all of these characteristics together is certainly fortunate. Planning for replication would need to take account of the conditions which may not apply elsewhere, and devise objectives accordingly.

Management

6.07 Any attempt to reproduce the AKRSP experience would also need to take account of a number of management factors relating to program planning which characterize AKRSP and may be difficult to emulate. These factors include:

- giving equal attention to institutional and technical issues;

- building local institutional capabilities before attempting to introduce technical change;

- building local institutional arrangements progressively, on the foundation provided by a recognized, preexisting arrangement;
- relying on the village-level institution to identify its priority needs;
- planning the design and implementation of interventions jointly with the prospective beneficiaries;
- planning with beneficiaries through an iterative process that focuses on specific local requirements and builds mutual respect and confidence between villagers and the development agency;
- giving as much consideration to the effects of interventions on equity as on productivity;
- recognizing as far as possible the stability and sustainability effects of projects from the outset;
- searching experience actively for development principles that are appropriate to the project area and making them operational;
- adopting a trial and error approach and being prepared to acknowledge failure and learn from it;
- making program staff mobile and taking senior management to the field frequently;
- fostering very open communications within villages and between villagers and program staff;
- doing everything possible to ensure that program activities serve the needs of village-level organizations, not vice versa;
- offering incentives sufficient to attract very high-caliber staff into rural development in a remote area; and
- when outside help is needed, employing the best assistance to be found.

6.08 At first glance the effectiveness of AKRSP seems directly attributable to the high quality of leadership and the high caliber of its professional staff. This prompts the question as to whether its success is attributable to personal characteristics of the staff which make it difficult if not impossible to replicate. Broken out into its component characteristics, as above, the management approach of AKRSP seems far from superhuman.

Unquestionably, the standard of management skill is very high but the principles could all be pursued by the managers of a similar project, particularly once these principles are documented. In this respect, AKRSP might not only provide a model for replication of rural development programs, but may have an important future role as a training ground for the management and staff of other projects.

6.09 Finally, the level of funding, the size of the PPI grant per village, the level of salaries, and the provision of transport, including a helicopter, may be considered above the cost level acceptable on a broader scale or in less "special" areas. The level of communications facilitated by generous access to jeeps and to a helicopter is certainly unusual. This is undoubtedly a feature that would have to be examined further in the particular context of any project being designed on the AKRSP model. However, as outlined in Chapter IV, the total costs per beneficiary are quite modest and well within the range found in rural development projects in many countries.

AKRSP's Relations with Government

6.10 Non-governmental organizations exist in a variety of forms to perform a broad range of functions. Those concerned with socioeconomic development tend to stress self-reliance and people's participation. NGOs have shown their ability to mobilize communities around a common objective, typically a concrete, short-term project. Completing the project dramatically increases people's confidence in their ability to help themselves further. It is at this stage that the NGOs usually need to link fledgling local organizations to larger sources of financial and technical support, which are normally found in the public and private sector. Most NGOs begin by working independently of government agencies, advocating greater political power for the poor as a deliberate counterweight to that of the rich and well-organized (Masoni, 1985). However, NGOs are becoming increasingly effective, not simply by replacing governments but by eliciting better performance from public agencies through critical yet constructive collaboration.

6.11 AKRSP appears to be developing its NGO role very successfully in a sequence comparable to that outlined here. Initially, AKRSP focuses all expertise focuses on the VO and the initial PPI, and most of this activity is independent of government. Through the combination of the VO and the PPI, and through the sequence of dialogues held between villagers and AKRSP management, local capacity for self-help is built where the people become the prime agents of their own development. AKRSP catalyzes this process and offers not only a significant financial incentive early on, but also provides expertise on organizational issues (how to conduct meetings, keep minutes and maintain accounts) and technical matters (surveying and estimating engineering works for channels, link-roads and bridges), and access to materials (opening supply lines for construction materials, tools and equipment).

6.12 On completion of the PPI, when the VO has reached a certain level of confidence and organizational skill, activities are begun that focus on human resource development (training of livestock specialists, plant production and protection specialists) and on the development of supply lines (vaccines, pesticides and fertilizers) that become closely linked to government agencies. Government officers (veterinarians and agriculturalists) are called upon to provide most of the training of village specialists in AKRSP's training centers. AKRSP itself attempts to establish dependable supply lines, through commercial channels where possible, for essential materials that are typically absent from the shelves of government warehouses, or only available in very small quantities that would often find their way to larger farmers close to the source of supply. The training of village technicians significantly complements the work of government officials who cannot service remote and inaccessible communities due to staff limitations and poor transport. Government officers make use of AKRSP's significantly greater mobility by riding in jeeps, and the helicopter when it was available, to visit the villages they are required to serve but cannot reach if they have to rely on their own transport. AKRSP's supplies of commonly-required vaccines and pesticides also appear to be the only such supplies available in the Northern Areas for much of the year.

6.13 By working closely with government agencies, AKRSP manages to increase the effectiveness of government activities without making villages dependent on government services. For example, AKRSP's land development activities quickly increased villagers' demands for fertilizer. To meet this demand, AKRSP initially established a system for bulk purchase of fertilizer, creation of depots, and village collection and distribution. Once the system was functioning well, bulk supply was handed over to the National Fertilizer Corporation which now maintain it. Similar opportunities exist for supplying vaccines, pesticides, semen for livestock improvement and other agricultural inputs. A further example of the way AKRSP and the VOs extend the capacity of government is provided by their response to anthrax outbreaks near Gilgit in 1985 and 1986. Trained villagers recognized the disease, AKRSP provided the vaccine, and village livestock specialists performed hundreds of vaccinations under the supervision of government veterinarians. Hence Government, an NGO and villagers cooperated to combat a very serious human and animal health problem.

Projects Compared

6.14 Much of the success of AKRSP can be attributed to the particular environment and the timing of the program's initiation just after the area was opened up to the outside world. But even so, evaluation of the successful implementation record invites comparison with less successful rural development projects assisted by the World Bank and other multilateral institutions. Even given the special environment and timing of the program, why are AKRSP results so impressive? What distinguishing features can be identified that might be replicable elsewhere?

.15 Firstly, the program is directly implemented by an independent ompany associated with the sponsoring agency, which was also the original onor. This is very unusual in rural development. AKRSP can conduct its outine affairs, in its capacity as a Pakistani NGO, without reference and ecourse to government but with support from its parent AKF in Geneva and ister foundations in donor countries. Thus it is not bound by the civil ervice rules and procedures typically applicable to many implementing gencies and it is not staffed by civil servants who may have little experi- nce of, and motivation for, this type of work. AKRSP is not subject to the ncertainty of annual budget approvals, although it did suffer a shortage of onor funding at one stage. AKRSP can react flexibly to problems as they rise, including providing additional critical resources when needed. Often he staff of many rural development projects are strangers to the project rea and even sometimes to the country, whereas AKRSP has Pakistani staff almost without exception) and has recruited the first-level contact staff the Social Organizers) from among qualified local people who speak local anguages in addition to the lingua franca, Urdu. AKRSP has freedom to hire nd fire its staff, since it is not bound by civil service procedures and all taff are on contract. Financial incentives and a professional working nvironment combine to attract exceptionally good staff from both the public nd private sectors; turnover is low. Time spent by AKRSP management and taff in the field on well-structured and fully recorded work programs is ell above that normally found in such rural programs, despite the sometimes ifficult and hazardous conditions. Some of these characteristics may be ttainable in semi-autonomous project entities (and indeed these are the main rguments for setting up such project-specific agencies), but few such enti- ies now in operation can compare with AKRSP and its implementation success.

.16 The open management style, free and easy communication along the anagement chain, and comprehensive record keeping, review and exchange, all ontribute to a dynamic and responsive problem solving process which is lmost the reverse of the typical behavior of more bureaucratic organiza- ions. In such organizations the tendency is to be wary of disclosure, not o seek out problems and failures, but where these are found, to suppress uch information. In the typical public sector environment mistakes and prob- ems are often not openly debated until they can no longer be ignored, and hen solutions are more difficult to find. AKRSP is willing, however, to learn from its mistakes and has the self-confidence to discuss them openly and on-the-record. Thus solutions are easier to come by, and at an early stage, before real damage is done. AKRSP then has the flexibility to apply a wide range of pragmatic responses to problems.

6.17 Secondly, the Northern Areas program was set up in a small but dynamic way, with room to expand and develop year-by-year, according to a statement of general objectives (quantitatively the targets were very ambi- tious at the outset and exceeded initial funding). The main features of the implementation mode had been well tested elsewhere, including by the General Manager, such that AKRSP could be characterized almost as the follow-on operation to pilot phases elsewhere. Even so, the early implementation

bjectives were institutional development and infrastructure construction, nd not, as in many comparable projects, incremental production from Year 2 r so. In some respects, the first four years of the AKRSP program corresponded to the missing years in many "delayed" rural development plans, where there is often frustration as institutions are established and essential infrastructure is constructed, but production targets are missed. AKRSP's program horizon, originally around ten years and now stretching out to fifteen years, is much longer than in more traditional rural development projects. Thus the patient pursuit of much longer term institutional and social objectives is possible in AKRSP, compared with the typical five to six year cut-off of secured funding in other projects, which can lead to frenzied pursuit of money-consuming infrastructure construction, with less emphasis on careful introduction of permanent institutional and social changes.

6.18 Thirdly, village programs are planned from the bottom up. The infrastructure projects, which act as the catalyst for institution building, are identified by the beneficiaries themselves with assistance from AKRSP. Later developments for which credit is supplied are similarly the villages' choice. Nothing is imposed upon the village as part of an externally determined master plan, and since villages have to implement and maintain the PPIs, the projects chosen are likely to be of very high priority. This approach differs from the approach used in many other projects, where a standard package of works and improvements may be offered to rural communities (or even implemented and then offered) with limited prior consultation, on what resembles a take-it-or-leave-it basis. To wit, with any insight into the nature of human motivation, it is not surprising that the AKRSP approach has been successful.

PROGRAM RESOURCES

Table 1: SOURCES OF INCOME (1983-1986)
(Thousand Rs.)

	1983	1984	1985	1986	Total /a	Total /d (US$ '000)	Percent
I. Grants from Donors	22,781	22,951	36,211	40,623	122,565	8,058	96.7
1. AKF (Pakistan)	10,960	7,160	5,901	11,200	35,221	2,382	27.8
2. AKF Canada	1,420	2,357	1,398	1,170	6,344	433	5.0
3. AKF USA	1,328	-	3,193	-	4,521	301	3.5
4. AKF UK	1,143	531	2,327	-	4,001	271	3.2
5. CIDA	5,439	9,246	11,240	11,232	37,157	2,446	29.3
6. The Netherlands Government	-	-	4,109	8,260	12,369	749	9.8
7. USAID	-	-	1,426	5,760	7,186	432	5.7
8. Alberta Aid	236	2,192	3,486	1,170	7,084	462	5.6
9. UK ODA	327	913	2,091	831	4,163	271	3.3
10. OXFAM	603	552	544	1000	2,699	179	2.1
11. Ford Foundation	1,325	-	496	-	1,820	132	1.4
II. LB&RD (Skardu) /b	-	89	89	-	178	12	0.1
III. Pak. Govt. Sources	-	-	-	3,450	3,450	205	2.7
IV. Other Income /c	33	188	127	250	598	39	0.5
Total (I-IV)	22,814	23,228	36,427	44,323	126,791		100
Total (US$ '000)/d	1,739	1,654	2,287	2,635		8,314	

/a Figures may not add up to 100 percent due to rounding.
/b Local Bodies and Rural Development.
/c Other Income includes interest income, sale of plants, etc.
/d Period Average Exchange Rate figures from International Financial Statistics (IFS) were used for the 1983-86 period. These are (Rs/US$): 1983 13.117; 1984 14.046; 1985 15.928; and 1986 16.820.

Source: AKRSP, September 1986.

PROGRAM RESOURCES

Table 2: EXPENDITURE BY MAJOR COMPONENTS (1983-1986)
(Thousand Rs.)

	1983	1984	1985	1986/a	Total	Total /f (US$'000)	Percent
Program Grants to VOs /b	7,204	12,753	13,714	20,169	53,840	3,517	47.6
Capital Expenditures	1,792	1,992	2,673	2,947	9,404	622	8.3
Operating Expenditures /c	4,665	7,485	11,043	18,886	42,079	2,703	37.2
Office Rent	65	178	236	378	857	55	0.8
Office Expenditure	461	766	1,268	1,705	4,200	270	3.7
Operation of Vehicles	799	1,228	1,669	3,078	6,774	435	6.0
Staff Salaries & Benefits	3,340	5,313	7,870	13,725	30,248	1,943	26.7
Other Expenditures /d	466	833	2,580	3,996	7,875	494	6.9
Total	14,127	23,063	30,010	45,998	113,198 /e	7,336	100.0
Total (US$'000) /f	1,077	1,642	1,884	2,735	7,338		

Figures for 1986 are budget estimate.
Includes expenses for agriculture and rural development.
Helicopter costs are not included. Helicopter O&M is a separate project of AKF which is made available to AK institutions operating in the Northern Areas.
Includes expenses for start-up, surveying, spare parts, legal charges, audit fees, training kits, women's programs, artificial insemination, A.V. supplies, agriculture marketing and engineering research.
The difference between income and expenditure statements represents a carry forward to 1987, mainly for PPI projects already initiated.
Period Average Exchange Rate figures from International Financial Statistics (IFS) were used for the 1983-86 period. These are (Rs/US$): 1983 13.117; 1984 14.046; 1985 15.928; and 1986 16.820.

Source: AKRSP, September 1986.

PROGRAM RESOURCES

Table 3: CATEGORIES OF EXPENDITURE (1983-1986)
(Thousand Rs.)

	1983 (Actual)	1984 (Actual)	1985 (Actual)	1986 (Budgeted)	Total /a	Percent
Office Rent	36	131	141	177	485	0.4
Office Expenditure /b	312	491	1,000	1,116	2,919	2.6
Capital Expenditure	1,792	1,992	2,673	2,947	9,404	8.3
Operation of Vehicles	264	341	577	953	2,135	1.9
Travelling & Conveyance	485	471	742	1,078	2,777	2.4
Staff Salaries & Benefits	1,798	2,577	3,893	7,473	15,741	13.9
Books & Periodicals	58	74	29	40	201	0.2
Program Grants to VOs /b	7,179	12,083	13,665	20,169	53,095	46.9
Agriculture & Rural Dev.	26	670	50	--	745	0.7
Training Program Grant/b	296	913	2,752	4,960	8,921	7.9
Research & Survey Prog./b	1,726	3,258	4,432	7,029	16,445	14.5
Surveying & Spare Parts	26	51	10	29	116	0.1
Preliminary Expenses	130	--	--	--	130	0.1
Legal & Prof. Charges	--	--	42	20	62	0.1
Audit Fees	--	10	5	8	23	---
Total	14,128	23,062	30,011	45,999	113,199	100.0

/a Figures may not add up to 100 percent due to rounding.
/b Breakdown of expenditures provided in subsequent tables.

Source: AKRSP, September 1986.

PROGRAM RESOURCES

Table 4: EXPENDITURES ON TRAINING PROGRAM GRANT (1983-1986)
(Thousand Rs.)

	1983 (Actual)	1984 (Actual)	1985 (Actual)	1986 (Budgeted)	Total /a
Office Rent	10	26	54	77	167
Printing and Stationary	25	37	86	210	356
Telephone Expenditure	0	2	6	33	41
Heat, Light and Water	1	7	5	36	49
Workshop	49	94	396	560	1,099
Training Center Maintenance	35	5	48	40	129
Training Center Salaries	12	31	376	1,027	1,446
Training Center Allowances	79	290	261	614	1,245
Honoraria to Trainers	9	22	24	48	104
Training Kits	41	308	539	950	1,839
Miscellaneous Expenses	31	26	--	56	114
Cartage and Conveyance	--	65	98	140	303
Women's Program Expenses	--	--	513	590	1,103
Operation of Vehicles	--	--	47	154	201
Artificial Insemination	--	--	298	425	723
Total	292	913	2,751	4,960	8,919

/a Figures may not add up exactly due to rounding.

Source: AKRSP, September 1986.

PROGRAM RESOURCES

Table 5: EXPENDITURES ON PROGRAM GRANT TO VILLAGE ORGANIZATIONS (1983-1986)
(Thousand Rs.)

	1983	1984	1985	1986 /a	Total	Percent
Irrigation	4,555	7,052	9,751	7,144	28,502	63.1
Feeder Channels	4,275	6,378	8,043	6,268	24,964	55.2
Storage Reservoirs	183	586	819	788	2,376	5.3
Sedimentation Tanks	97	88	33	0	218	0.5
Syphon Irrigation	-	-	802	88	890	2.0
Mud Removal	-	-	54	-	54	0.1
Transport	1,395	2,262	2,276	2,980	8,913	19.7
Link Roads	1,311	1,957	2,085	2,202	7,555	16.7
Bridges	84	305	191	778	1,358	3.0
Other	1,229	2,769	1,637	2,141	7,776	17.2
Protective Bunds	1,179	2,733	1,624	2,121	7,657	17.0
Hydel Stations	50	36	-	-	86	0.2
Boundary Walls	-	-	13	-	13	-
Land Dev. Implements	-	-	-	20	20	-
Total	7,179	12,083	13,664	12,265	45,191	100.0

Actuals as of Sept. 30, 1986. However, budgeted expenditure for program grant to village organizations for all of 1986 is Rs. 20,169,000.
May not add up exactly due to rounding.

Source: AKRSP, September 1986.

PROGRAM RESOURCES

Table 6: OFFICE EXPENDITURES (1983-1986)
(Thousand Rs.)

	1983 (Actual)	1984 (Actual)	1985 (Actual)	1986 (Budgeted)	Total /a
Printing and Stationary	41	98	477	400	1,016
Postage, Telegrams, Telephone	31	88	106	151	376
Heat, Light and Water	20	53	51	125	248
Entertainment	15	39	22	40	116
Newspapers and Magazines	4	8	5	20	37
Bank Charges	2	20	40	20	82
Office Repair and Sanitation	109	106	149	170	534
Board Meeting Expenses	56	32	90	50	228
Freight and Cartage	2	10	34	40	86
Miscellaneous Expenses	31	39	22	90	182
Insurance	--	--	4	10	14
Total	311	493	1000	1,116	2,919

/a Figures may not add up exactly due to rounding.

Source: AKRSP, September 1986.

PROGRAM RESOURCES

Table 7: EXPENDITURES ON RESEARCH AND SURVEY (1983-1986)
(Thousand Rs.)

	1983 (Actual)	1984 (Actual)	1985 (Actual)	1986 (Budgeted)	Total /a
Office Rent	19	21	41	124	205
Office Expenditure	64	154	143	270	632
Camping Material	11	13	6	15	45
Miscellaneous Expenses	54	27	-	80	161
Travelling & Conveyance	422	639	696	1,375	3,132
Operations of Vehicles	113	248	349	596	1,306
A.V. Supplies	14	29	77	43	164
Photography Development	15	49	48	110	222
Staff Salaries	955	1,921	2,573	3,485	8,934
Coordination with Other Agencies	23	14	18	40	95
Nurseries	1	15	-	-	16
Agriculture, Mktg., Engg. Research	34	127	482	537	1,180
Honorarium to Village Supervisors	-	-	-	354	354
Total	1,725	3,257	4,433	7,029	16,446

/a Figures may not add up exactly due to rounding.

Source: AKRSP, September 1986.

PROGRAM RESOURCES

Table 8: AKRSP STAFF STRENGTH

	Gilgit	Chitral/Baltistan	Total
A. Headquarters Staff /a	69	30	99
General Manager	1	-	1
Management Staff	7	2	9
Junior/Middle Level Professionals	11	7	18
Support Staff	14	4	18
Secretaries/Typists	8	4	12
Drivers	16	4	20
Auxiliary Staff	12	9	21
Field Staff	53	39	92
Social Organizers /b	11	9	20
Field Engineers	7	7	14
Extension Staff Support (HQs)	14	10	24
Drivers	14	5	19
Auxiliary Staff	7	8	15
TOTAL	122	69	191

B. Of Which Professional Staff: (Gilgit, Chitral, Baltistan)

1. Headquarters	28
Senior	10
Middle/Junior	18
2. Field	58
Junior	34
Extension Support	24
3. Total	86

/a Headquarters staff include Regional offices.
/b Includes three interns.

Source: AKRSP, August 1986.

PROGRAM AREA DATA

Table 1: PROGRAM AREA SOCIAL DATA:
GILGIT, CHITRAL AND BALTISTAN DISTRICTS

	Gilgit	Chitral	Baltistan	Total
Area (sq. km.)	28,500	12,300	25,587	66,387
Population (1985 est.)	255,000	240,000	251,000	746,000
Population (urban)	32,000	12,000	13,000	57,000
No. of Households (approx.)	30,617	28,811	31,400	90,828
No. of Villages (approx.)	306	500	244	1,050
Potential VOs/a	(350)	(500)	(370)	(1,220)
Average Population/VO	728	480	678	611
Average No. Households/VO	87	58	85	74

/a Large villages establish more than one VO.

Source: Based on Northern Areas Census 1981,
AKRSP Regional Statistics Note No. 2.

PROGRAM AREA DATA

Table 2: DEMOGRAPHIC CHARACTERISTICS: GILGIT DISTRICT, 1985

A. TOTALS

No. of Villages: 295
No. of Households: 26,685

B. AGE-SEX STRUCTURE OF RURAL POPULATION

	Average per Village	Average per Household
Children (under 15 years)	339	3.75
Boys	(173)	(1.91)
Girls	(166)	(1.84)
Adults	414	4.58
Men	(217)	(2.40)
Women	(197)	(2.18)
All members	753	8.33

C. POPULATION BY RURAL-URBAN DISTRIBUTION

	Urban	Rural	Total	Percent
Female	12,405	107,144	119,549	47%
Male	20,349	115,145	135,494	53%
Total	32,754	222,289	255,043	100%
	13%	87%	100%	

D. POPULATION BY SECT

		Percent
Shia Imami Ismailis	109,668	43
Shia Ithna' Sharis	99,467	39
Sunnis	45,908	18
TOTAL	255,043	100

Source: : Northern Areas Census 1981.
AKRSP Regional Statistics Note No. 2.
LB & RD Survey 1978.
Pakistan Economic Survey, 1984.

PROGRAM AREA DATA

Table 3: SIZE AND DISTRIBUTION OF LAND HOLDINGS: GILGIT DISTRICT

A. Size of Holdings (Ha) /a

Hectares	% Farms	% Area	Average Area (Ha)
Less than 0.40	11	2	0.23
0.40-0.99	43	22	0.64
1.0-1.99	31	33	1.32
2.0 and above	16	43	3.33

B. Size of Holding (Ha) /b

	% Farms	
	AKRSP Cropcut Survey	LB&RD Survey
Less than 0.5	24	43
0.5-0.99	33	21
1.0-1.99	31	23
2.0 and above	12	13

/a Source: Northern Areas Census of Agriculture, 1980.

/b Source: AKRSP Cropcut Survey, 1983; LB&RD Survey of 1978.

PROGRAM AREA DATA

Table 4: LAND UTILIZATION PATTERN: GILGIT DISTRICT (1985 Est.)

A. Aggregates for Individual and Communal Lands

	Area (Ha)	Percent of Total
Cultivated Area	20,392	43
Orchards	3,874	8
Annual Crops	16,518	35
Uncultivated Area	26,612	57
Cultivable Waste	6,474	14
Uncultivable Forest	3,672	8
Uncultivable Other	16,466	35
Total Area	47,004	100

B. Individually-Operated Holdings

	Area (Ha)			Percent of Total
	Total	Per Village	Per Farm	
Cultivated Area	20,392	69.1	0.76	71
Orchards	3,874	13.1	0.15	14
Annual Crops	16,518	56.0	0.61	57
Uncultivated Area	8,492	28.8	0.32	29
Cultivable Waste	6,474	22.0	0.24	22
Uncultivable Area	2,018	6.8	0.08	7
Total	28,884	97.9	1.08	100

Source: AKRSP, "Regional Statistics Note No. 3: Estimates of Land Utilization and Distribution, 1985".
Agricultural Census, 1980 and LB&RD Survey, 1978.

PROGRAM AREA DATA

Table 5: LAND OWNERSHIP AND FRAGMENTATION: GILGIT DISTRICT

A. Land Tenure

Land Ownership status	% Farms	% Area	Average Area (Ha)
Owner	95	94	1.21
Owner-cum-tenant	4	5	1.46
Tenant	1	1	0.93

B. Fragmentation

Size of holding (Ha)	% of Farms Fragmented	Fragments per Farm	Average Fragment Area (Ha)
Less than 0.	56	2.6	0.08
0.4-0.99	86	3.9	0.16
1.0-1.99	96	5.3	0.24
2.0 and above	97	6.9	0.48
All Farms	88	4.8	0.28

Source: Based on Northern Areas Census of Agriculture, 1980.

PROGRAM PERFORMANCE DATA

Table 1: SOCIAL ORGANIZATIONS AND SAVINGS DEPOSITS

	Gilgit	Chitral	Baltistan	Total
A. Village Organizations				
No. of Village Organizations (VOs)	321	168	37	526
Membership of VOs	25,000	10,988	2,192	38,180
Rural Households covered by VOs (%)	96.5	36.0	7.3	45.0
Savings Deposit of VOs (Rs. million)	10.59	3.5	0.58	14.67
Average Savings per VO (Rs. thousand)	33.0	20.8	15.7	27.9
B. Women's Organizations				
No. of Women's Organizations (WOs)	110			
Membership of WOs	5,619			
Savings deposit of WOs (Rs. million)	1.58			
Average Savings per WO (Rs. thousand)	14.4			

Source: AKRSP, June 1986.

PROGRAM PERFORMANCE DATA

Table 2: PRODUCTIVE PHYSICAL INFRASTRUCTURE PROJECTS

Gilgit District	
Total No. of Projects Identified	432
Estimated Cost of Projects Identified (Rs. million)	57.70
No. of Projects Initiated	254
No. of Beneficiary Households	22,098
Cost of Projects Initiated (Rs. million)	37.39
Physical Progress of these Projects	77%
No. of Projects Completed	169
Chitral District	
Total No. of Projects Identified	406
Estimated Cost of Projects Identified (Rs. million)	59.8
No. of Projects Initiated	117
No. of Beneficiary Households	9,255
Cost of Projects Initiated (Rs. million)	18.7
Physical Progress of these Projects	54%
No. of Projects Completed	53
Baltistan District	
Total No. of Projects Identified	110
Estimated Cost of Projects Identified (Rs. million)	16.8
No. of Projects Initiated	22
No. of Beneficiary Households	1.360
Cost of Projects Initiated (Rs. million)	4.04
Physical Progress of these Projects	54%
No. of Projects Completed	4
Total All Districts	
Total No. of Projects Identified	948
Estimated Cost of Projects Identified (Rs. million)	134.3
No. of Projects initiated	393
No. of Beneficiary Households	32,713
Cost of Projects Initiated (Rs. million)	60.13
Physical Progress of the Projects	70%
No. of Projects Completed	226

Source: AKRSP, June 1986.

PROGRAM PERFORMANCE DATA

Table 3: PRODUCTIVE PHYSICAL INFRASTRUCTURE PROJECTS COMMITMENT, DISBURSEMENT AND COMPLETED PROJECTS GILGIT DISTRICT

Type of Project	No. of Projects	Cost Rs.'000	Disbursement Rs.'000	Disbursement As % of Cost	Completion No.	Completion Percent
1. All Irrigation	178	24,308	20,323	84	118	67
Feeder Channels	151	19,865	16,746	84	105	70
Syphon Irrigation	1	520	448	86	--	0
Pipe Irrigation	1	295	268	91	1	100
Lift Irrigation	2	245	235	96	1	50
Storage/Reservoir	19	2,952	2,226	75	8	42
Sedimentation Tank	2	242	242	100	2	100
Tunnel	1	189	158	84	1	100
2. Transport	49	8,524	7,039	83	31	63
Link Roads	40	6,984	5,790	83	27	68
Bridges	5	993	802	81	2	40
Pony Track	2	343	262	76	1	50
Bridge/Link Road	2	204	185	91	1	50
3. Other	28	4,567	4,094	90	20	71
Protective Works	24	4,231	3,912	92	18	75
Mud-flow Control	1	54	54	100	1	100
Boundary Walls	2	192	101	53	1	50
Nursery	1	90	27	30	--	0
Total	255	37,399	31,456	84	169	67

Source: AKRSP, June 1986.

PROGRAM PERFORMANCE DATA

Table 4: PRODUCTIVE PHYSICAL INFRASTRUCTURE PROJECTS: CHITRAL AND BALTISTAN DISTRICTS

A. CHITRAL DISTRICT

Type of Project	No. of Projects	Cost (Rs '000)	Disbursement		Completion	
			Rs '000	As % Cost	No.	Percent
1. Irrigation	71	12,090	8,523	70	21	30
Feeder Channels	70	11,066	7,551	68	20	29
Syphon Irrigation	1	1,024	972	95	1	100
2. Transport	22	3,170	2,170	68	14	64
Link Roads	19	2,987	1,995	67	12	63
Bridges	3	183	175	96	2	67
3. Other	24	3,445	3,025	88	18	75
Protective Works	23	3,356	2,936	87	17	74
Hydel Scheme	1	89	89	100	1	100
4. Total	117	18,705	13,718	73	53	45

B. BALTISTAN DISTRICT

Type of Project	No. of Projects	Cost (Rs '000)	Completion	
			No.	Percent
1. Irrigation	12	2,114	1	8
Feeder Channels	7	1,013	0	0
Storage Reservoir	2	344	1	50
Pipe Irrigation	3	757	0	0
2. Transport	4	629	1	25
Link Roads	2	272	1	50
Pony Tracks	1	104	0	0
Foot Bridges	1	253	0	0
3. Other	6	1,309	2	33
Protective Works	6	1,309	2	33
4. Total	22	4,052	4	18

Source: AKRSP, June 1986.

PROGRAM PERFORMANCE DATA

Table 5: PRODUCTION, MARKETING AND OTHER SHORT-TERM CREDIT: GILGIT /a

	1983		1984		1985		1986		Total	
	Amount (Rs. '000)	No. of VO Loans /b	Amount (Rs. '000)	No. of VO Loans	Amount (Rs. '000)	No. of VO Loans	Amount (Rs. '000)	No. of VO Loans /c	Amount (Rs. '000)	No. of VO Loans
Fertilizer	850	79 (4,686)	2,404	197 (12,297)	2,854	244 (12,616)	2,302	223 (9,462)	8,408	743 (39,061)
In Kind	481	57 (2,848)	1,515	126 (8,468)	1,753	169 (8,718)	963	104 (4,334)	4,712	456 (24,368)
Cash/Check	369	22 (1,838)	887	71 (3,829)	1,101	75 (3,898)	1,339	119 (5,128)	3,696	287 (14,693)
Marketing	--	--	196	8 (579)	813	47 (3,541)	211	12 (875)	1,220	67 (4,995)
Women's Org. Credit	--	--	10	2 (44)	54	11 (446)	27	3 (87)	91	16 (577)
Plants	--	--	--	--	8	2 (70)	6	2 (103)	13	4 (173)
Seeds	--	--	10	1 (150)	31	5 (380)	10	4 (139)	51	10 (669)
Total	850	79 (4,686)	2,619	208 (13,070)	3,760	309 (17,053)	2,554	244 (10,666)	9,782	840 (45,475)

/a Short-term agricultural credit to VO in Chitral District is about Rs. 2.02 million from 177 loans and in Baltistan District it is about Rs. 307,000 from 20 loans to WOs up until June 1986.

/b Figures in parentheses are number of loanees.

/c Figures for 1986 are as of June 1986.

Source: AKRSP, June 1986.

PROGRAM PERFORMANCE DATA

Table 6: AVERAGE LOAN SIZE AND BENEFICIARIES OF MARKETING AND FERTILIZER CREDIT: GILGIT DISTRICT

	1983	1984	1985	1986 /a	Total
A. Marketing Credit					
1. Ave. size of VO Loan (Rs.)	--	24,500	17,298	17,542	18,201
2. Ave. size of Loan/Beneficiary(Rs.)	--	339	230	241	244
3. Number of Beneficiaries/VO Loan	--	72	75	73	74
B. Fertilizer Credit					
1. Ave. size of VO Loan (Rs.)	10,761	12,195	11,694	10,322	11,316
2. Ave. size of Loan/Beneficiary(Rs.)	181	195	226	243	214
3. Number of Beneficiaries/VO Loan	59	62	52	42	53

/a As of June 1986.

Source: AKRSP.

PROGRAM PERFORMANCE DATA

Table 7: MEDIUM-TERM CREDIT TO VOS

	Amount of Loan (Rs. '000)	No. of Loans to VOs	No. of Loanees
Gilgit	6,683	57	4,120
Land Development	4,403	37	2,510
Agric. Machinery	2,135	15	1,178
Nursery Dev.	145	5	432
Chitral	239	6	n.a.
Land Development	89	4	n.a.
Agric. Machinery and Other	150	2	n.a.
Total (Gilgit+Chitral)/a	6,922	63	n.a.

/a No medium-term credit has so far been extended to Baltistan District.

Source: AKRSP, August 1986.

PROGRAM PERFORMANCE DATA

Table 8: MARKETING OPERATIONS BY VILLAGE ORGANIZATION: GILGIT DISTRICT

No. of VOs participating	73
Beneficiary families (No.)	2,255
Quantity marketed (kg)	327,700
No. of marketing specialists trained	85
Costs and Returns	
Gross sales (Rs. Thousand)	1,683
Marketing expenses (Rs. Thousand)	236
Farmgate income to farmers (Rs. Thousand)	1,447
Credit	
No. of VO loans	67
Total Amount of Loans (Rs. Thousand)	1,220
Amount Overdue to date (Rs. Thousand)	10
Total amount of loans recovered to date	99%

Source: AKRSP, June 1986.

PROGRAM PERFORMANCE DATA

Table 9: EXTENSION, TRAINING AND SUPPLIES

A. Training Courses

Course Title	No. of Courses	Specialists Trained	Kits Distributed	Refresher Courses
Livestock Dev.	10	207	207	8
Plant Protection and Production	8	152	152	7
Poultry Dev.	6	152	65	2
Accounting	1	23	--	--
Marketing	5	85	--	2
TOTAL	30	619	424	19

B. Extension Material Distributed (Copies)

Case Studies	Leaflets	Profiles	Managers' Conference Reports, etc.
5,900	15,600	7,800	16,900

C. Marketing Training Courses

Course Title	No. of Participants	No. of VOs	Duration of Course (days)	Course Expenses (Rs.)
Regular Course 1:	n.a. /a	n.a.	n.a.	n.a.
Regular Course 2:	22	11	15	22,067
Regular Course 3:	16	16	8	8,700
Regular Course 4:	22	22	11	19,282
Regular Course 5:	25	25	12	14,240
Refresher Course 1:	18	18	3	6,200
Refresher Course 2:	14	14	4	3,110
TOTAL	117	106	53	73,599

/a Village-based demonstration on fruit packing, picking and grading.

Source: AKRSP, June 1986.

VILLAGE CASE STUDY 1: SHAHTOTE

Shahtote is located about 60 km from Gilgit on the Skardu road at an altitude of about 1,300 meters. The inhabitants of the village are originally Kohistanis. Their native language is Shina and they belong to the Sunni sect of Islam. They had earlier settled in the village of Sassi a few miles away. Eventually, a few of the poor migrated from Sassi to Shahtote. Shahtote still remains economically dependent on Sassi where villagers find wage employment.

Shahtote is one of the poorest villages in the Northern Areas. It has 25 households of which six were landless until recently. Total irrigated land belonging to the village is about 2.9 ha, an average of 0.15 ha per land owning household. Wheat and maize are the main cereals, and some potatoes are cultivated. The cultivable land is double-cropped where one field is reserved for wheat and maize while the other grows vegetables and has a few fruit trees. Wheat planted by the end of December is harvested in June. Maize planted soon afterwards is harvested at the end of September. Vegetables planted in April are consumed up until November. The villagers own 117 head of cattle, 490 goats and 62 sheep which are taken during summer months to village-owned pastures at higher elevation a few miles from the village. In the winter there is an acute scarcity of food, feed and other resources. Some measure of relief was provided during the construction of the Gilgit-Skardu road when villagers earned daily wages by working for road contractors. The construction of the road also provided other income opportunities to villagers who were able to collect and sell firewood to wayside hotels. The main source of income dried up when army engineers took over the construction of the road although the villagers were still able to sell firewood.

The VO was formed on December 16, 1984. Currently it has 33 members, including a President and a Manager. Total VO savings deposited in a commercial bank was about Rs. 6,500 in September 1986. There are limited women's activities in this VO and women do not participate in VO meetings.

The experience in this village has raised a number of important issues: i) it has shown that village level cooperative development can take various forms and that individual ownership is very important particularly where there is landless labor; ii) as a result of a case study of the implementation delay of this project AKRSP revised its financial disbursements plan from four to five installments to provide the VO with more liquidity during the critical construction phase of the project; iii) the role played by an activist VO manager is critical in making the project a success; iv) differing opinions between the VO and AKRSP of whether land development loans taken by the VO should be disbursed to the villagers based on membership or household; and v) differing perceptions of collective development held by the VO and AKRSP.

The VO of Shahtote identified the widening and extension of an irrigation channel which would help irrigate about 38 ha of uncultivated land seven km from the village. The new channel is about 1,950 meters long with widening of another 335 meters of existing channel of three cusecs capacity. The source of the channel is a spring, with a minimum discharge of about one cusec, augmented by two to three cusecs of snowmelt in two to three summer months. The project was designed to help increase the capacity of the channel from one to 3.5 cusecs. The estimated cost of the project was about Rs. 105,500 of which the VO received a grant of Rs. 90,970 from AKRSP (funded by CIDA). The villagers attempted to construct the channel earlier by themselves, but it was not completed due to technical and financial problems.

Construction of the channel was started in December 1984 and completed in May 1985. Work had slowed down considerably after the VO had spent all of the third installment funds. The villagers paid themselves Rs. 30 as daily wages but as VO funds ran out they became reluctant to provide free labor services. The VO manager played an active role in mobilizing resources and became a guarantor of villagers' debt with the local shopkeepers. The manager was finally able to reimburse the shopkeepers from the final installment. As a result of the experience in this village, the financial disbursement plan followed by AKRSP has been revised from four to five installments to provide the VOs with more liquidity during the critical construction phase of the PPI.

After the channel was completed the VO hired a chowkidar (watchman) for routine maintenance. The chowkidar is paid in wheat and maize. If major damage to the channel occurs, the chowkidar alerts the villagers, and the villagers then make arrangements to repair the damage. Households which do not help in the repair work are fined Rs. 30 each per day. The channel has been damaged and repaired on three separate occasions, most recently in 1986. To complete the repair works the villagers employed five permanent workers, paying them a total of Rs. 115 per day, in addition to volunteers from each household. It took them 25 days to repair the damage.

The channel has brought 38 ha of land under irrigation. AKRSP engineers helped the VO to prepare an elaborate five year land development plan. The plan was prepared in consultation with the villagers and assumed that the land would be developed as one large farm, but collective plans have now been put aside and the land has been divided into 25 plots and allocated to households including the six landless. The villagers' perception of collective development is more in line with simultaneous development of the new land rather than collective ownership. Distribution of benefits in this village stressed that individual ownership was very important, specially since six landless families existed prior to opening up of the new land. Adjustments for land quality were made by the VO in distributing the new land. Villagers work on their own land individually as well as provide labor for each other. Because of the availability of this new land, villagers are no longer thinking of migrating from the village. They are planning to grow a mix of crops, fodder and trees. Four or five households, particularly the landless, are planning to construct houses on the new land. The VO has

planted 8,000 trees, including 1,500 fruit trees, on the land, alfalfa has been grown on about 2.5 ha, and first crops of wheat, potatoes and vegetables have been harvested by a few households.

The development of the new land is the immediate concern of the villagers. Land development loans have been taken by the VO and raise an interesting question. The issue is whether the loans should be extended on the basis of memberships or households, since membership in the VO was not restricted to one per household. The VO decided that land development loans would be extended on the basis of membership, not-households, despite AKRSP suggestions to the contrary. If a household has more than one member it is entitled to larger amount of loans. AKRSP had initially been concerned about equity questions arising from extending loans on the basis of membership. However, monitoring of the situation has revealed that the VO management has guarded against the tendency of households to register more than one member simply to be eligible for more loans.

The VO has obtained fertilizer credit amounting to Rs. 13,066 and has repaid the entire amount. In addition, it has taken out a loan for planting trees. The VO has a resident livestock specialist trained by AKRSP who has vaccinated about 575 animals. The VO is making plans to undertake marketing operations and AKRSP has trained a marketing specialist.

VILLAGE CASE STUDY 2: PASSU

Passu is located on the KKH, 160 km north-east of Gilgit town at an altitude of 2,440 meters. It is wedged between the swift flowing Shimshal and Khunjerab rivers and two massive glaciers, Batura and Passu. The village of Passu is believed to have been settled some 400 to 1,000 years ago according to local folklore. The inhabitants of Passu originally came from Badakshan, now part of Afghanistan and USSR. They speak the Wakhi language, a derivative of Persian and the inhabitants belong to the Shia Imami Ismaili tradition of Islam. The village was very prosperous and about a hundred years ago 300 households lived there. About 70 years ago the Passu glacier slid down unexpectedly and released the water of the lake which had formed behind it destroying a large part of the village. In addition, the constant pounding of the Shimshal and Khunjerab rivers has eroded the land to such an extent that the remaining land can now support only 61 households (490 people).

Agriculture is the traditional occupation of Passu and households farm their own land. There are no tenants or landless workers. Passu falls on the single cropped agro-ecological zone. Passu had 52.3 ha of cultivable land before the new land was developed. Each household used 0.33 ha of land on average for cereals and although wheat is the primary crop, villagers still need to buy some wheat flour. Lucerne for fodder is a major crop. Almost all the villagers own fruit trees and pasture land. The introduction of seed potatoes through the FAO/UNDP project has been the most important innovation in recent years. The villagers own 1,148 goats, 525 sheep, 172 cows, 100 bulls and 83 yaks. A large number of the adults travel out of the village for employment. There are about 60 students studying in Karachi. The level of education and migration is higher than the adjoining areas of Central Hunza which is itself an exceptional area in the Northern Areas.

There were two tractors and a thresher in use in the village before its association with AKRSP. These were privately owned. One of the tractors was bought by taking out a loan from ADBP. The other tractor and the thresher were bought by two brothers with savings earned in Saudi Arabia. The thresher is driven by a tractor. The tractors are used for plowing, threshing, timber carrying and transporting/marketing purposes. Another Middle-East returnee owns a shop and operates a jeep as taxi service.

The major issue that the experience of this village highlights is that its close proximity to the KKH and the surrounding peaks and alpine scenery have created competition for traditional agriculture from alternative employment sources. The opening of the KKH has contributed to tremendous opportunities for non-farm activities and generated cash income for Passu residents, many of whom are involved with trade, tourism and service related activities. The experience of this village thus raises the broader issue of what should be AKRSP's role for the Northern Areas as a whole vis-a-vis increasing off-farm employment that has been drawing people and labor away from traditional agriculture.

The people of Passu have had a tradition of solving management problems collectively. However, their development efforts were sporadic until AKRSP provided them with much needed impetus. The VO was formed on April 17, 1983. The VO's function is not restricted to the implementation and maintenance of the PPI. It has designed a five year village development plan in consultation with the engineering unit of AKRSP. The VO has 61 members representing every household and has a President and Manager as its office bearers. It has Rs. 160,000 in savings deposits. A women's organization was also formed in February 1984 with a membership of 85.

The VO of Passu opted for an irrigation channel as their PPI after having shown initial interest in a protective bund. The Batura glacier to the north of the village, is the source of the water for Passu's irrigation channel. The channel was designed to be 3,656 meters long with an expected discharge of 7 cusecs. Seven attempts had previously been made by the villagers to construct a channel, but because of inadequate technology and the movement of the glacier such attempts had failed. More recently, during the construction of the KKH, Chinese experts studied the movement of the glacier. With this additional information on the anticipated movement of the glacier, a safe site for the channel head was identified. The capital cost of Rs. 384,230 for the project was funded entirely by a grant from CIDA.

Work on the channel was started in June 1983 and was 95 percent complete in September 1986. The implementation of physical works has been delayed due to acute labor shortage as a result of temporary migration of people for jobs in "down country" as well as the availability of higher paying non-farm jobs in the area. AKRSP was caught unaware by this labor shortage problem in planning such a large scale PPI. Had AKRSP been more aware during the dialogue phase of the PPI that such a situation would have arisen, some special arrangements for construction (and later land use)could have been specified to address the labor shortage problem. In any case, the experience in Passu illustrates the point made in the main text that MER should be more involved in putting together a labor profile for the household and the village as routine background data. In the meantime, in Passu at least, agricultural practices will have to generate increasing income in order to encourage villagers to stay on the farm.

About 273 ha of new land is becoming available as a result of the channel. The channel has increased the aggregate land holding of the village by five times, providing each household with an additional 4.5 ha of land. Three different terraces can be distinguished on this new land with the second and third having the best potential for development.

The VO has taken out a land development loan of Rs. 122,000. As part of a five year village development plan 12,000 forest trees and 750 fruit trees have already been planted. In addition, the VO has taken out three fertilizer loans totaling Rs. 51,833 and has repaid the first two. A marketing loan of Rs. 3,000 was taken out by the VO and has also been repaid.

The VO has a livestock specialist. In the past villagers have been reluctant to pay for his services but now understand the real benefits of para veterinary services. In a recent VO meeting, the villagers pledged to vaccinate all the livestock and to pay the livestock specialist for his services. A plant protection specialist has been trained and two women have been trained as poultry specialists.

VILLAGE CASE STUDY 3: RISHT

Risht is located in the center of Chapurson Valley at an altitude of 3,048 meters. The valley is remote and isolated in the northern tip of the Northern Areas and at places is within 10-15 miles from the Wakhan Corridor of Afghanistan. The valley is out of bounds to foreigners. The valley is linked to the KKH via a jeepable road starting about 194 km northeast of Gilgit town. The 69 km of jeepable road was constructed two years ago by the Northern Areas PWD. Risht lies 42 km inside the valley and it takes an hour and forty-five minutes to reach the village from the KKH. Before the jeep road was built in 1982-83, most of the men had never ventured outside the valley. Even today, almost all the women remain isolated from the outside world. The language spoken is Wakhi and the inhabitants belong to the Shia Imami Ismaili tradition of Islam.

The village has 27 households with average cultivable land holdings of about 1.5 ha per household. The inhabitants of the village are settled over a dispersed area. Being extremely isolated and being located at an elevation where the agricultural growing season is very short, Risht is among the poorer villages in Gilgit District. The village lies in a single-crop area and the main crops are wheat and barley. Vegetables grown include peas, potatoes, carrots and cabbage. The village had only three fruit trees before AKRSP arrived. Senior village inhabitants report that in earlier times Risht was a dense forest with cropping in forest clearings.

The village of Risht has had two important changes in the last three years that have dramatically affected the lives of people living in the village. The first was the jeepable road. The government paid handsome compensation to those villagers whose land was taken for the road. The second major change has been the arrival of AKRSP to complement the opening of communications between the village and the outside world. These important changes will significantly improve the future development prospects of Risht. Although it is difficult to disentangle the benefits of the road and the arrival of AKRSP, the future of Risht now looks much brighter than three years ago.

The VO was formed on December 31, 1983 with all 27 households joining. The VO had collective savings deposits of Rs. 61,281 as of June 1986. In addition, a Women's Organization exists with 44 members whose savings deposits total Rs. 10,585. The Women's Organization has not yet decided on a development program.

The lesson to be learnt from this village is how the opening of communications, the building of critical infrastructure and some appropriate interventions can relieve the sense of desolution faced by a very poor village. The experience in this village raises a number of interesting points: (i) a high savings rate out of the compensation villagers received for land used to build the jeepable road; (ii) the application of village fines on those households not working on the PPI, particularly on two members

who received negative income as a result; (iii) the initiative of the VO in purchasing fertilizer when AKRSP stores ran out of supplies; and (iv) the issue of compensating the VO President and the Manager for their work.

The VO of Risht selected an irrigation channel as their PPI. Construction started in March 1984 and the channel was completed by April 1985. The channel is 2,300 meters long, has a discharge of three cusecs and has brought 12.5 ha of previously barren land under cultivation. The new land has been distributed equally among the 27 households of the village, each receiving just under 0.5 ha.

The estimated cost of the channel was Rs. 100,115, funded by grants from AKF UK and OXFAM. The construction was expected to cost Rs. 78,030 in labor payments and Rs. 21,305 in material costs. Actual labor payments made by the VO were Rs. 46,251, only 59 percent of the estimated labor charges. The channel is expected to incur annual maintenance costs of Rs. 8,803 to be borne entirely by the villagers.

All households except two benefited in varying degrees from the labor payments, receiving an average of Rs. 1,713 per household. Villagers were paid at the rate of Rs. 20 per day worked. Many households were also fined for not working on the channel, also at the rate of Rs. 20 per day. The imposition of the fines implied that it cost a villager a net penalty per day of Rs. 40 for not working on the village irrigation channel. Thus the labor payment together with the threat of a penalty provided a sufficient disencentive for villagers not to work on the PWD road project which was paying at the rate of Rs. 30 per day. The VO was serious about these fines and applied heavy penalties on two members, one of whom worked as a road construction worker for the PWD road project and another who was employed in the army. The fines meant the two received negative labor payments amounting to Rs. 145 and Rs. 1,216 respectively.

The VO had collective savings deposits amounting to Rs. 61,281, an average of Rs. 2,270 per household. The VO appears to have enforced mandatory savings on each member during the channel construction to the amount of Rs. 1,600 per member. The actual savings are about 32 percent higher than the gross labor payments received by the average household. In addition to these labor payments, in August 1985 GOP paid large amounts of compensation for land taken up for the construction of the jeepable road. Thirteen individuals in Risht received compensation totaling Rs. 215,000, with amounts varying between Rs. 1,000 and Rs. 45,000. Seventy-five percent of this money was deposited in a commercial bank in personal accounts. It is not clear how much of this land compensation money has been deposited as VO savings.

The VO members were enthusiastic about the fertilizer credit program of the AKRSP package. They indicated that higher yields were obtained from the use of fertilizer on wheat and barley. Two loans of Rs. 5,500 and Rs. 6,825 were taken out by the VO in 1984-85. Both have been fully repaid. A third loan of Rs. 7,370 has been taken out in 1986 and is

not yet due for repayment. Since then the VO itself has taken the initiative to purchase fertilizer from private sources at higher prices because there has not been enough fertilizer in AKRSP stores. The fertilizer credit has had other effects in diffusing new technology since the villagers have began to see the beneficial effects of HYVs of foodgrain. AKRSP's Agriculture Section has laid out demonstration plots for HYVs of wheat, vegetables, sugarbeet, chick peas, sunflower and vetch. The villagers have liked three of the seven HYVs of wheat they tried, mainly because they were pest-free and matured early.

The President and the Manager of the VO are well respected individuals and were selected to their offices after much persuasion by the villagers. The original Manager, who was a teacher, resigned under pressure from his employers, the AK Education Services (AKES). AKES did not want him to devote time to his additional responsibilities as a VO Manager. The Manager and the President are not reimbursed for their services as VO members are opposed to remunerating office bearers. The members feel that the office bearers should render voluntary services, a concept that has its roots in the Ismailia tradition of honorary service to the Jamaat. The President and the Manager are themselves opposed to the idea of receiving payment for the same reasons. On the other hand, the VO members are willing to remunerate the technical specialists for their services. The VO has retained livestock, poultry and plant protection specialists. The livestock specialist is the most active and has treated 79 heads of cattle, and 715 goats and sheep. In 1986, he carried out 700 vaccinations on livestock in Risht and an additional 300 vaccinations in an adjoining village.

The most important current concern of the villagers is to develop their new land. They decided that this would be over a five-year period, two phases of which have already been completed. In 1985, 7,500 forest trees were planted on 1 ha of land, and in 1986 another 300 forest trees have so far been planted on 0.3 ha of land. Since the new land is distributed on an individual basis, the collective concept is used only where it will not infringe on individual property right arrangements and in tasks that are conducive to group efforts. Each household takes its turn in sending a caretaker to the command area. Free grazing is not allowed on the new land and a wall around a section of the newly irrigated land is being constructed collectively to protect against livestock damage. The VO has obtained a land development loan of Rs. 54,000 which is not yet due for repayment.

The VO is currently opposed to the idea of taking out a loan to purchase a tractor since there are two underutilized tractors in Chapurson valley. The VO is planning to intensify its efforts for marketing its products which consist mainly of livestock. Efforts to market some sharma (goat hair rugs) are also underway.

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