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**A WORLD BANK  
OPERATIONS  
EVALUATION  
STUDY**

# **The Aga Khan Rural Support Program in Pakistan**

**A SECOND INTERIM EVALUATION**



*The Aga Khan Rural Support Program  
in Pakistan*

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AGA KHAN RURAL SUPPORT PROGRAM IN  
PAKISTAN

CORRECTION

On page v, the penultimate  
paragraph should read:

"This evaluation of the Aga Khan  
Rural Support Program was carried  
out by an OED team comprising  
Graham Donaldson, Julian  
Blackwood, Peter Dart, John  
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# *The Aga Khan Rural Support Program in Pakistan*

## *Second Interim Evaluation*

*Operations Evaluation Department  
The World Bank  
Washington, D.C.*

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# Foreword

This is the second evaluation by the World Bank's Operations Evaluation Department (OED) of the Aga Khan Rural Support Program in Northern Pakistan. The report of the first evaluation was published by OED in May 1987. This is the only project not assisted by the World Bank that OED has evaluated. As before, the work 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, indicates the desirability of independent evaluation of the program, which is now in its eighth year. The report also provides an opportunity to supply fresh 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 has overall responsibility for the evaluation function. He reports directly to the Bank's Board of Executive Directors, who represent its member governments, and has an administrative link to the president. OED is the staff arm of the Director General. All OED reports are made available to the member govern-

ments 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 Bank's 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 Julian Blackwood (team leader), Peter Dart, John McNerney, and Tariq Siddiqi, under the general direction of Graham Donaldson.

We hope that this second evaluation will help the future operation of the Aga Khan Rural Support Program and make a further 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  
June 1990

# Prólogo

Esta es la segunda evaluación del Programa Aga Khan de apoyo al sector rural, en la región norte de Pakistán, que realiza el Departamento de Evaluación de Operaciones (DEO) del Banco Mundial. El DEO publicó el informe de la primera evaluación en mayo de 1987. Se trata del único programa o proyecto que el DEO ha evaluado que no ha recibido asistencia del Banco Mundial. Como en la ocasión anterior, el trabajo se ha realizado a solicitud de la Fundación Aga Khan y a sus expensas. El amplio interés que ha suscitado el enfoque adoptado en el Programa Aga Khan de apoyo al sector rural, así como el gran número de donantes que han participado en él —entre los que se cuentan cuatro organizaciones no gubernamentales—, indican la conveniencia de una evaluación independiente de este programa, que está en su octavo año de ejecución. El informe ofrece también la oportunidad de aportar información reciente sobre un enfoque del desarrollo rural innovador y que ha demostrado tener éxito, en beneficio de otras organizaciones públicas y privadas que trabajan en este campo, incluido el Banco Mundial.

La evaluación *ex post* de las operaciones, que se lleva a cabo en el Banco Mundial, hace posible realizar un examen sistemático, amplio e independiente de las actividades de desarrollo del Banco. El Director General, del Departamento de Evaluación de Operaciones, tiene la responsabilidad global de la función de evaluación *ex post*. Da parte directamente a los Directores Ejecutivos del Banco, quienes representan a los gobiernos de los países miembros, y tiene un vínculo administrativo directo con el Presidente de la institución. El DEO es el cuerpo de funcionarios que depende del Director General. Todos los informes del DEO

se ponen a disposición de los gobiernos miembros del Banco, y los que revisten interés amplio se publican.

El personal del DEO, sin perder su independencia reglamentaria y profesional, trabaja en contacto con los funcionarios a cargo de los países y demás personal del Banco, de modo que todas las opiniones, incluidas las discrepantes, queden adecuadamente reflejadas en los informes del DEO. Esta práctica se ha seguido en la elaboración del presente informe, el cual ha sido distribuido a los Directores Ejecutivos del Banco. Ahora bien, las opiniones expresadas en él no son necesariamente las del Gobierno de Pakistán, la Fundación Aga Khan, los otros organismos donantes o el Banco Mundial.

Esta evaluación del Programa Aga Khan de apoyo al sector rural ha sido realizada por un equipo del DEO integrado por Julian Blackwood (jefe del equipo), Peter Dart, John McNerney y Tariq Siddiqi, bajo la dirección de Graham Donaldson.

Confiamos en que esta segunda evaluación será de utilidad para el funcionamiento futuro del Programa Aga Khan de apoyo al sector rural y contribuirá asimismo a la comprensión más cabal de un enfoque del desarrollo rural que podría aplicarse más ampliamente en ciertas zonas en las que los esfuerzos en ese sentido han tenido hasta la fecha sólo un éxito limitado.

Yves Rovani  
Director General  
Departamento de Evaluación de Operaciones  
Junio de 1990

# Avant-propos

Le présent document constitue le deuxième bilan réalisé par le Département de l'évaluation rétrospective des opérations (OED) de la Banque mondiale du Programme de soutien rural de la Fondation Aga Khan dans le nord-est du Pakistan; le premier avait été publié en mai 1987. Ce programme est la seule opération ne bénéficiant pas de l'aide de la Banque mondiale à être évaluée par l'OED. Ce bilan, comme le premier, a été réalisé à la demande, et aux frais, de la Fondation Aga Khan qui pense qu'il est souhaitable de faire évaluer le Programme, maintenant dans sa huitième année, par un organisme indépendant vu le vaste intérêt suscité par l'approche qu'il a adoptée et le grand nombre de bailleurs de fonds qui y sont impliqués. De plus, cette évaluation permet d'offrir aux autres organismes publics et privés travaillant dans le même domaine, y compris à la Banque mondiale, de nouveaux renseignements sur une approche innovatrice et performante du développement rural.

L'évaluation rétrospective des opérations de la Banque mondiale permet de faire un bilan systématique, détaillé et indépendant des efforts de la Banque dans le domaine du développement. Le Directeur général chargé de l'évaluation rétrospective des opérations assume la responsabilité globale de cette fonction. Il relève directement des Administrateurs de la Banque qui représentent les pays membres et il existe, entre le Président et lui, un lien administratif. Il est aidé dans son travail par le Département de l'évaluation rétrospective des opérations. Tous les rapports de l'OED sont mis à la disposition des gouverne-

ments des pays membres de la Banque et ceux qui revêtent un intérêt général sont publiés.

Tout en préservant son indépendance statutaire et professionnelle, le personnel de l'OED travaille en collaboration avec les autres services de la Banque et avec les responsables des pays concernés pour que ses rapports reflètent toutes les opinions, y compris les opinions divergentes. Cette règle a été suivie dans la préparation du présent rapport qui a été distribué aux Administrateurs. Les opinions qui y sont exprimées ne reflètent pas nécessairement le point de vue du Gouvernement pakistanais, de la Fondation Aga Khan, des bailleurs de fonds ou de la Banque mondiale.

Cette évaluation a été réalisée par une équipe de l'OED composée de MM. Julian Blackwood (chef d'équipe), Peter Dart, John McNerney et Tariq Siddiqi, sous la direction globale de M. Graham Donaldson.

Nous espérons que cette deuxième évaluation aidera les futures opérations du Programme de soutien rural de la Fondation Aga Khan et permettra de mieux comprendre une approche qui pourrait être utilisée plus largement dans certaines régions où le succès des efforts de développement rural a été relativement limité.

Yves Rovani  
Directeur général  
Evaluation rétrospective des opérations  
Juin 1990

### ***Abbreviations and Acronyms***

<b>ACIAR</b>	Australian Centre for International Agricultural Research
<b>ADBP</b>	Agricultural Development Bank of Pakistan
<b>AKF</b>	Aga Khan Foundation
<b>AKRSP</b>	Aga Khan Rural Support Program
<b>ARINA</b>	Agricultural Research Institute for Northern Areas
<b>ARM</b>	Agriculture and Resources Management, AKRSP
<b>CIDA</b>	Canadian International Development Agency
<b>CIMMYT</b>	International Maize and Wheat Improvement Center
<b>DPO</b>	District Program Offices (for Gilgit, Chitral and Baltistan)
<b>DSP</b>	Director of Special Programs of AKF, Geneva
<b>EEC</b>	European Economic Community
<b>FAO</b>	Food and Agriculture Organization
<b>GM</b>	General Manager (AKRSP)
<b>GOP</b>	Government of Pakistan
<b>IDRC</b>	International Development Research Center
<b>IIMI</b>	International Irrigation Management Institute
<b>IUCN</b>	International Union for the Conservation of Nature
<b>KKH</b>	Karakoram highway
<b>LB&amp;RD</b>	Local Bodies & Rural Development Department
<b>MDC</b>	Ministry of Development Cooperation
<b>MER</b>	Monitoring, Evaluation and Research Unit
<b>NGO</b>	Non-governmental organization
<b>NWFP</b>	Northwest Frontier Province
<b>ODA</b>	Overseas Development Administration (UK)
<b>OED</b>	Operations Evaluation Department (World Bank)
<b>PARC</b>	Pakistan Agricultural Research Council
<b>PARD</b>	Pakistan Academy of Rural Development
<b>PPI</b>	Productive physical infrastructure
<b>PWD</b>	Public Works Department
<b>SO</b>	Social Organizer
<b>SOU</b>	Social Organization Unit
<b>UNDP</b>	United Nations Development Program
<b>USAID</b>	US Agency for International Development
<b>VO</b>	Village Organization
<b>WO</b>	Women's Organization

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# Preface

The Aga Khan Rural Support Program (AKRSP) was conceived as a new approach to fostering the development of rural people. It was established and is run by the Aga Khan Foundation (AKF)<sup>1</sup> with the support of numerous donor agencies. The purpose of the program is, first, to involve the people of the three districts in which it operates in their own development, and second, to provide a model of rural development applicable in other settings. This second interim evaluation by the Operations Evaluation Department (OED) of the World Bank is an integral part of the process, permitting an independent judgment on achievements by AKRSP in respect of both objectives.

From the outset AKRSP has maintained a comprehensive monitoring and evaluation process and has produced quarterly reports and an annual review each year. In addition all meetings have been documented and individual studies and assessments have been undertaken (see References). Further, separate reporting fulfills the individual reporting requirements of donor agencies.

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, AKF invited the Operations Evaluation Department of the World Bank to undertake a second evaluation of progress. The first interim evaluation team was in the field exactly three years earlier, during the fifth year of the program. Three members of that team formed the

core of the second team. Annex 1 of this report contains background material reproduced from that first report.

The evaluation was carried out by a team of six—three regular staff of OED and three consultants. On this visit the team placed particular emphasis on reviewing the women's program, agricultural and livestock technology, and the information program. The field visit was made from September 18 to October 13, 1989 during which the team went to district program headquarters and villages in each of the three districts of Gilgit, Chitral, and Baltistan. Sources used included AKRSP records, monitoring and evaluation reports, and interviews with AKRSP staff and officials in the area and in Islamabad. The team also, as before, exchanged views with Akhtar Hameed Khan, who continues to maintain an active interest in AKRSP as a special adviser. The draft report was discussed at a meeting held in London with representatives of the Aga Khan Foundation (AKRSP), the major donors, and the Government of Pakistan on January 9, 1990.

This report introduces the framework for rural development, the approach to the evaluation (Chapter 1), reviews the program's status and performance (Chapter 2), describes the agricultural production program (Chapter 3), the women's program (Chapter 4) and the information program (Chapter 5), and discusses future directions that the program might take.

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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).

# Prefacio

El Programa Aga Khan de apoyo al sector rural se concibió como un nuevo método para fomentar el progreso de la población rural. Fue creado por la Fundación Aga Khan,<sup>1</sup> que lo administra con el apoyo de varios organismos donantes. El programa tiene por objeto, en primer lugar, lograr que la población de los tres distritos en los que se aplica participe en el proceso de su propio desarrollo y, en segundo lugar, convertirse en un modelo de desarrollo rural que pueda aplicarse en otros lugares. Esta segunda evaluación provisional preparada por el Departamento de Evaluación de Operaciones (DEO) del Banco Mundial contiene una opinión independiente y forma parte integral de la evolución hacia el logro de estos dos objetivos del programa.

Desde el principio mismo, se ha aplicado en el Programa Aga Khan un procedimiento de evaluación y seguimiento comprensivo y se han preparado informes trimestrales y un estudio anual. Además, se han documentado todas las reuniones y realizado evaluaciones y estudios individuales (véanse las referencias). Por otra parte, se preparan informes separados para cumplir con los requisitos de los organismos donantes.

Sin embargo, en vista de la importancia y visibilidad del programa en esta esfera delicada en el Pakistán, los diver-

sos intereses de los numerosos donantes y la índole experimental del programa, se invitó al Departamento de Evaluación de Operaciones del Banco Mundial a que efectuara una segunda evaluación de la marcha de las labores. El primer equipo de evaluación provisional había visitado la zona abarcada exactamente tres años antes, o sea en el quinto año del programa. Tres miembros de ese equipo constituyeron el núcleo del segundo equipo. En el Anexo I de este informe se reproduce material de antecedentes tomado del informe del primer equipo.

La evaluación fue realizada por un grupo de seis miembros—tres funcionarios de plantilla del DEO y tres consultores. En el curso de su visita, el equipo hizo especial hincapié en el examen del programa para las mujeres, las técnicas agropecuarias y el programa de información. La visita tuvo lugar entre el 18 de septiembre y el 13 de octubre de 1989 y en ese periodo el equipo recorrió las sedes del programa en los distritos y los poblados de los distritos de Gilgit, Chitral y Baltistan. Se utilizaron como fuentes los archivos del Programa Aga Khan, los informes de seguimiento y evaluación y se efectuaron entrevistas a funcionarios y personal del programa en la zona y en Islamabad. Al igual que antes, el equipo intercambió opiniones con Akhtar Hameed Khan, quien sigue desempeñándose en el programa en carácter de asesor especial. El borrador del informe se examinó en una reunión celebrada en Londres el 9 de enero de 1990 con representantes de la Fundación Aga Khan, de los donantes principales y del Gobierno de Pakistán.

En este informe se presentan el marco correspondiente al desarrollo rural y el enfoque utilizado en la evaluación (Capítulo 1), se examina la situación y los resultados alcanzados por el programa (Capítulo 2), se describe el programa de producción agrícola (Capítulo 3), el programa referido a la mujer (Capítulo 4) y se analizan los futuros rumbos que podría seguir el programa.

<sup>1</sup>La Fundación Aga Khan es una institución privada, sin denominación religiosa, filantrópica, establecida por Su Alteza el Aga Khan. La Fundación procura promover el desarrollo social, principalmente en países de Asia y África de bajos ingresos, por medio del financiamiento de programas de salud, educación y desarrollo rural. Los donantes y beneficiarios son seleccionados sin consideración a raza, religión o ideología política. La Fundación está registrada en Suiza (1967) y tiene su oficina principal en Ginebra. Las sucursales se encuentran en Pakistán (1969), el Reino Unido (1973), Kenya (1974), India (1978), Bangladesh (1980) y Portugal (1983), y mantiene afiliadas independientes en Canadá (1980) y en los Estados Unidos (1981).

# Préface

Le programme de soutien rural de la Fondation Aga Khan (PSRFAK), créé et administré par la Fondation Aga Khan<sup>1</sup> avec l'aide de nombreux organismes bailleurs de fonds, a été conçu comme une nouvelle approche pour promouvoir le développement des populations rurales. Ses objectifs sont d'abord, d'impliquer dans leur propre développement les populations des trois districts dans lesquels il est opérationnel et ensuite de servir de modèle de développement rural pour d'autres régions. Cette deuxième évaluation intérimaire par le Département de l'évaluation rétrospective des opérations de la Banque mondiale s'inscrit dans l'intégralité du processus et a pour but de formuler un jugement indépendant sur les résultats obtenus par le PSRFAK dans ces deux domaines.

Depuis son lancement, le PSRFAK dispose d'un programme très complet de suivi et d'évaluation et publie chaque année des rapports trimestriels et un examen annuel. En outre, toutes ses réunions sont entièrement documentées et des études et des évaluations spécifiques ont été faites (voir Références). De plus, des rapports séparés ont été préparés pour satisfaire les exigences des bailleurs de fonds dans ce domaine.

Néanmoins, vu l'importance et la visibilité du programme dans cette région importante du Pakistan, sa nature expérimentale et la diversité des intérêts des nom-

breux bailleurs de fonds, la Fondation Aga Khan a demandé au Département de l'évaluation rétrospective des opérations de la Banque mondiale de faire une deuxième évaluation de ses activités. La première avait été réalisée il y a exactement trois ans, au cours de la cinquième année du programme. Le noyau de l'équipe chargée de la deuxième évaluation était constitué par trois des membres de l'équipe de la première.

L'évaluation a été réalisée par une équipe de six personnes, dont trois employés du Département de l'évaluation rétrospective des opérations de la Banque mondiale et trois consultants, qui s'est plus particulièrement penchée sur les programmes à l'intention des femmes, les techniques d'agriculture et d'élevage et le programme d'information. Au cours de son séjour, du 18 septembre au 13 octobre 1989, la mission a visité le siège de district du programme et des villages des trois districts de Gilgit, Chitral et Baltistan. Pour préparer ce rapport, elle a utilisé les dossiers du PSRFAK, les rapports d'évaluation et de suivi, et elle a eu des entretiens avec des représentants du personnel du PSRFAK et des autorités régionales et centrales. Comme lors de la précédente évaluation, elle s'est également entretenue avec Akhtar Hameed Khan qui continue, comme conseiller spécial, à s'intéresser de près au PSRFAK. Le projet de rapport a été examiné lors d'une réunion qui s'est tenue à Londres le 9 janvier 1990, à laquelle participaient des représentants de la Fondation Aga Khan (PSRFAK), des principaux bailleurs de fonds et du Gouvernement pakistanais.

Ce rapport présente d'abord le cadre adopté pour le développement rural et l'approche utilisée pour l'évaluation (Chapitre 1); il examine ensuite l'état actuel et les résultats du programme (Chapitre 2), puis il décrit le programme de production agricole (Chapitre 3), le programme à l'intention des femmes (Chapitre 4) et le programme d'information (Chapitre 5); et il indique enfin les directions que le PSRFAK pourra prendre à l'avenir.

<sup>1</sup>La Fondation Aga Khan, un réseau privé, philanthropique, et n'appartenant à aucune dénomination religieuse, a été établie par Sa Majesté l'Aga Khan. Elle cherche à promouvoir le développement social, en particulier dans les pays économiquement faibles d'Asie et d'Afrique, par la fondation de programmes destinés à améliorer la santé, l'instruction, et le développement rural. Ceux qui bénéficient de ses subventions sont choisis sans égard pour leur race, leur religion, ou leur appartenance politique. La Fondation est enregistrée en Suisse (1967) et a établi son quartier général à Genève. Elle a des succursales au Pakistan (1969), au Royaume Uni (1973), au Kenya (1974), en Inde (1978), au Bangladesh (1980), et au Portugal (1983), et a des filiales indépendantes au Canada (1980) et aux Etats-Unis (1981).



# Summary and Recommendations

The Aga Khan Rural Support Program (AKRSP) in the Northern Areas<sup>1</sup> of Pakistan continues to be remarkably successful. This is not surprising since the program meets most if not all of the generally agreed-on requirements for a successful rural development program. It is achieving this in areas which possess many of the characteristics that are common causes of rural poverty—physical remoteness, poor infrastructure, and a restricted or declining resource base—and that rural development programs are designed to overcome or ameliorate. The number of households benefiting from village organization membership and from productive physical infrastructure implementation, resulting from AKRSP, had risen to about 53,000 by mid-1989, or 54 percent of the total rural households in the Northern Areas. At a time when “rural development” as a development strategy is out of favor, the AKRSP experience provides a hopeful prospect that rural development can be made to work, given half-way favorable circumstances.

## Introduction

*Rural Development: Conceptual Framework and Implementation.* Rural development programs can be explained in terms of an interdependent, three-part model comprising an economic or incentives model, a technical or production model, and a social/institutional model. AKRSP has followed this three-part model in designing and implementing its approach to the problems of the Northern Areas. The design and implementation of rural development programs can be a complex task. Careful planning and contin-

ued adjustment are required. In addition, program activities need to be coordinated with those of other entities with related responsibilities or activities. These tasks are evident in the AKRSP application of the three-part model.

The *economic or incentives model* underlies all the others. Poor villagers typically have a household system in which resources are stretched and incomes quite precarious. In consequence, they are risk averse. They require high returns from any innovation to offset the risk associated with its adoption and the extra effort often required of family labor. Thus, rural development programs work best where some changed circumstance has arisen which greatly increases resources (usually labor), where some positive externality has been created which can be internalized to participant households. The building of the Karakoram Highway and its related road network enhanced the prospects for transforming the conditions of the villagers in this backward, desolate, and once isolated area of Northern Pakistan. AKRSP helps to extend the potential benefits of these roads by building supplementary infrastructure.

The *social model* is concerned with adjustments in village organization and a growth in linkages that need to accompany the economic changes that occur. The social model requires special attention, since newly formed local organizations soon begin to develop their own initiatives and demands, and these emerging paths of village organizations may be threatening to some groups. Managing these emerging relationships between local organizations and others requires constant vigilance and good judgment. Local organizations quickly face new tests in the form of dealing with government staff and commercial operations. AKRSP has demonstrated superb competence in getting village organizations formed and functioning reasonably democratically.

Implementing the *technical model* also presents special problems. Numerous specialized and complex means are required to find new, appropriate technologies, adapt them

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

to the working environment, and convey them to large numbers of smallholders. Considerable resources are needed for this task, especially skilled technicians.

*Approach of the Evaluation.* The methodology of ex post project evaluation applied in this study is to identify the goals and objectives of the project and then to assess achievements against these goals and objectives. The assessment is partly quantitative and partly qualitative, since not all objectives can be expressed in quantitative terms. The indicators used for this evaluation are essentially those that are presented by AKRSP in its annual reports, with certain adjustments in some cases.

### Program Status and Performance

With some variations from year to year, the program has continued to expand and grow on most fronts. A summary of the main program indicators is given in Table S.1. Growth is consistently strong with respect to the establishment of village organizations, the identification and completion of productive physical infrastructure projects, savings deposits, marketing participation and the number of village organization members trained in production tech-

niques. Issues requiring further examination include the annual fluctuations in the number of new organizations, the large infrastructure construction program still ahead, the rapid growth of savings deposits compared with credit, and the steady decline in group membership, which implies increasing unit costs. Notably, the rate of growth toward full coverage by village organizations has been faster in Gilgit than in Chitral or Baltistan, implying that in Gilgit attention can now shift to other activities, whereas in Chitral and Baltistan a large organizational work load remains.

*Beneficiaries.* About 53,000 households were benefiting from program activities in mid-1989, or 54 percent of the estimated total rural households in the Northern Areas. The average number of members per village organization has declined, however, from 80-90 in the early years to about 50—reflecting the formation of smaller-sized village organizations. Credit activities expanded to 61,000 loans in 1988, or an average of over one loan per village organization member household. Some 8,500 families benefited from marketing activities in 1988.

*Village Organizations and Productive Physical Infrastructure.* AKRSP reports that 1,087 village organizations and 271

**Table S.1: Summary Data on AKRSP Program Performance, 1983–June 1989**

(cumulative, unless stated)

	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>
<i>Village Organizations Established</i>	131	379	477	571	762	993	1,087 <sup>b</sup>
<i>Women's Organizations Established<sup>c</sup></i>	10	72	100	133	174	248	271
<i>Productive Physical Infrastructure Projects</i>							
Identified	363	706	826	1,045	1,249	1,346	1,426
Completed	23	114	195	256	375	514	560
<i>Savings and Credit (Rs. millions)</i>							
Deposits by Village & Women's Organizations	0.8	6.4	11.9	18.0	34.3	51.3	66.1
Credit Disbursed/year <sup>d</sup>	1.0	3.2	8.3	12.5	25.7	34.6	30.8
<i>Marketing</i>							
Village Organizations Participating/year <sup>e</sup>	11	8	45	164	191	215	73
<i>Training</i>							
Number of courses/year <sup>f</sup>	4	8	14	16	24	37	19
<i>Beneficiaries</i>							
Village Org. Members/Infrastructure Project	12.1	31.0	35.8	40.0	45.2	51.3	53.0
Percent of Rural Households <sup>g</sup>	12	32	36	40	46	52	54
Average Members per Group	92	82	75	70	59	52	49
Women's Organiz. Membership (thousands)	.6	4.2	5.4	6.8	8.3	9.7	10.3
Average Members per Group	60	58	54	51	48	39	38
Agricultural Credit/year <sup>h</sup> (thousand households)	4.7	13.1	12.2	39.4	40.3	61.0	36.1
Marketing/year (thousand households)	0.5	0.3	1.1	4.4	6.6	8.5	2.8
First-time Trainees/year	91	179	275	347	401	770	370

<sup>a</sup>To June 30.

<sup>b</sup>Includes 50 village organizations in Gilgit formed since 1987 by members splitting off from existing village organizations.

<sup>c</sup>Includes women's sections of village organizations.

<sup>d</sup>Short and medium term.

<sup>e</sup>Includes repeat participation of village organizations.

<sup>f</sup>Also, 57 refresher courses have been held, making a total of 179 courses and 2,433 trainees attending.

<sup>g</sup>Total number of rural households is 98,200.

<sup>h</sup>Includes double counting of short- and medium-term lending to VOs.

women's organizations had been established by mid-1989. This represents a substantial investment in organizational and institutional development over a long period. Over half the estimated total number of rural households in the three project districts were members of village organizations as of mid-1989.

A total of 1,426 productive physical infrastructure projects have been identified and 560 (39 percent) have been completed. Some 57 percent of identified projects are under construction, which means that there is still a large program of construction to be grant funded and supported by AKRSP staff. The rate of construction of infrastructure projects has accelerated satisfactorily. Over 60 percent of projects are irrigation feeder channels and 22 percent are link roads or bridges.

*Savings and Credit.* From the time of the first Operations Evaluation Department (OED) interim evaluation of AKRSP in 1986 up to mid-1989, village organizations savings have grown from Rs. 14.5 million to Rs. 60.2 million (\$0.72 to \$3.0 million) and women's organizations savings from Rs. 1.6 million to Rs. 5.9 million (\$80,000 to \$290,000). The savings rates of both types of groups have accelerated rapidly since 1986. The broad-based pattern of savings throughout most village organizations attests both to the soundness of the savings element underpinning the basic AKRSP concept and to the seriousness village organizations attach to their obligations under their agreement with AKRSP. It also verifies the continuing validity and functioning of the village organizations as village-level institutions. The broader perspective on village savings behavior provided by a sample survey of ten villages in Gilgit District (Khan 1989) shows that village organizations' savings are only a small part of the villages' total savings pattern. Some of these savings may be transfers from other traditional types of savings rather than additional savings. This has significance for AKRSP's future savings and credit strategy.

Credit outstanding has grown at a slower rate than savings, reaching Rs. 43.9 million (\$2.2 million) by the end of 1988. AKRSP's credit operations with village organizations are based on onlending of funds borrowed by AKRSP or received from donors. These credit operations have been successful when measured in terms of the very high repayment rates and negligible default rates. Fertilizer and marketing operations have accounted for 87 percent of the short-term credit provided by AKRSP. Medium-term credit is dominated by land development and agricultural machinery loans. As is the case with savings, however, sample survey data for Gilgit District indicate that AKRSP's credit activities are only a small part of the total credit operations of the villages. This broader context needs to be taken into account in planning the future role of credit

in the program.

AKRSP, with the assistance of consultants and widespread discussions with village organizations, has given considerable thought to future arrangements for agricultural credit. The outcome has been a proposal known as "village organizations banking" which is under consideration. Under this system, AKRSP would assist clusters of village organizations in getting loans for onlending to members. Several aspects of this proposal need further review.

*Marketing.* The number of village organizations involved in annual program marketing operations has increased from less than a dozen in the early 1980s to 215 in 1988, for a cumulative total of 707 by June 1989. Marketed volumes have risen steadily as well; but the amount is small in relation to the growth in production in the Northern Areas or to the much larger and increasing volumes being marketed outside the program. Nevertheless, a good start has been made and valuable lessons for the future have been learned.

AKRSP's initial marketing operations involved mainly bulking up and direct marketing down-country to avoid dealing with private traders; they have had mixed results. The strategy has now been abandoned, and the emphasis has shifted toward a concentration on a few products which are perceived to have real potential and on exploiting market niches.

The current marketing strategy is dictated by production strategy, in the sense that only products that are generating regular surpluses as a result of production increases are being actively marketed or considered for marketing. At a later stage, market requirements can be expected to influence production more directly. The key to success is to link marketing strategy and production strategy, at least at the planning stage. Production expansion must take into account market constraints and opportunities, and marketing plans must relate to realistic projections of marketable surpluses. In this context, there is a need for a change in the production planning approach away from a simple import-substitution strategy toward an assessment of what constitutes the best production and marketing options within various environments of the Northern Areas—given their particular resource constraints such as land shortage and seasonal variations in water supply, and family labor (including women).

*Training.* AKRSP has sponsored 179 training courses and 57 refresher courses, with a total of 2,433 trainees. Courses have covered mainly agriculture, livestock, and marketing.

*Program Staffing.* Given the expanding work load in all districts, staffing levels have increased remarkably little

over the last three years, and then only in support categories. Despite recruiting difficulties, a core of high quality and long-serving professional staff has been retained intact. This has been a source of considerable strength in the program and is a credit to program management. Significant staff increases are proposed by AKRSP for the future, especially to accommodate a proposed increase in emphasis on training as a means of technology transfer.

AKRSP has had difficulty recruiting properly qualified technical staff. AKRSP's shortage of certain critical technical staff is of concern, and ways must be found to attract and hold such staff.

*Program Resources and Expenditures.* The program has been successful in attracting an unusually large number of donors. In consequence, AKRSP has to devote considerable time to meeting the needs of different donors, including their visits to the program areas. Back-up support is provided by the Aga Khan Foundation (AKF, Geneva). Each donor has its own areas of program interest and has earmarked its funding accordingly, which creates some difficulties in administration.

Program annual costs and the number of village organizations both doubled from 1985 to 1988, while the number of member households rose by only 44 percent. This resulted in an increase in nominal terms in annual costs per beneficiary household of 39 percent (from Rs. 1,005 to Rs. 1,399). All cost categories rose except "research, survey and demonstration", which fell by 58 percent. The largest cost increase was the quadrupling of staff costs over the last three years, which have risen from 11 percent to 25 percent of program costs.

### **Agricultural Production Program**

In the introduction of new agricultural production technologies to the Northern Areas AKRSP has done a creditable job with limited resources. For the future, AKRSP will need to continue its role as the main technology broker until government line agencies can adequately fulfill their appointed roles. AKRSP has recognized that village organizations are an excellent vehicle for technology transfer, and other agencies should build on this opportunity as well. Collaboration with other agencies in this regard is also recommended; AKRSP has already operated effectively with, among others, the Pakistan Department of Agriculture and the Food and Agriculture Organization (FAO) technical team on seed production.

*Production Technology and Technical Change.* The opening up of the Northern Areas has brought with it rapid change, including increased diversification of the household economy (especially through remittance income), increased

availability of fertilizer, new possibilities for marketing farm produce, increased farm mechanization (especially for cereal production), and a greater willingness on the part of farmers to change the farming system. The program specifically has been responsible for a great increase in the availability of improved seeds and planting material and for much of the rapid growth in the 1980s of fertilizer use in the Northern Areas (through credit and supplies).

Virtually all crops and agroforestry production in the region are dependent on irrigation. About 60 percent of the AKRSP-sponsored productive physical infrastructure has been concerned with increasing the water supply through new irrigation feeder channels or renovation and enlargement of existing ones. With the completion of a large number of these investments, however, comes the need for large-scale land development. Appropriate irrigation methods have to be developed to realize the full benefits of these engineering investments.

*Crops.* Cereal cropping is the major farm activity in the Northern Areas and will remain so for some time to come. Wheat is grown on about half the farm area. AKRSP has had a major impact on wheat production by promoting the adoption of the new wheat variety, PAK-81. Progress with maize as a fodder or grain crop has been less spectacular. Barley and triticale are grown in the high-altitude single-cropping area. Further attention to these lesser crops is likely to prove worthwhile.

Livestock feed production is a critical component of the farming system of the Northern Areas. There are many options for improving fodder production so that year-round, good-quality feed will be available. This would greatly increase animal production and reduce grazing pressure on high pastures and areas around villages. Much could be gained from improving animal nutrition.

The production potential for fruits and nuts and other horticulture products in the Northern Areas is high. AKRSP has played a key role in distributing new planting material, establishing nurseries, and training staff in new technology. A large new supply of fruit will shortly become available and will require marketing.

Potato (especially for seed) is a crop poised for expanded production in the Northern Areas. AKRSP has played an important role in fostering the development of seed potato production, following on the early work of the Department of Agriculture and the FAO technical team. AKRSP has also been successfully testing and introducing new varieties of vegetables, especially through the women's organizations. The Northern Areas could probably produce vegetable seed for the rest of Pakistan and for export.

*Animal Production and Health.* Animals play a vital role in the economy and farming system of the Northern Areas,

with even greater importance at higher altitudes. Grazing populations, however, are increasing in most areas along with human populations, leading to continuing degradation of the high pastures and grasslands around villages. In addition, free grazing of animals around villages constrains crop production, particularly during the period in late summer after the animals return from the high pastures.

Animal health was quite correctly the early focal point for AKRSP's livestock efforts as part of its original loss-reduction strategy. Many village specialists have been trained in animal health care, and villages are now willing to pay for prophylactic treatment. However, animal coverage by vaccination programs has been disappointing so far, and the uptake of vaccinations has varied between villages. There is also some concern about the potency of some of the vaccines used because of improper handling and storage. AKRSP has invested much effort in animal breed improvement to little or no avail, both through artificial insemination and by introducing new breeds: the success rate of the artificial insemination program for cattle has been low. More important to the success of animal production efforts is a change in attitude and wider adoption of the view that a smaller number of better fed animals can increase production and income and reduce pressure on the local environment. As nutrition levels improve and management systems change, it may then be worthwhile to focus again on breed improvement in selected situations.

*Agroforestry and Timber Production.* A tree planting tradition is well developed in the program regions, and a commitment to tree planting on a village organization level could serve as a model for other development and reforestation programs. Although there is a history of good management of tree resources in the region, in some areas population pressures have resulted in loss of natural stands around villages. AKRSP has supported widespread tree planting and has also helped to increase the variety of trees planted. The number of trees planted is very impressive by any standards.

*Technology, Research, and Development.* Technology has rightly received high priority in the program, and AKRSP has done a creditable job in assembling and testing new technologies. Much work is underway to find new technology suitable to the region. With respect to results, however, there is evidence that there has been insufficient monitoring of technology adoption activities, including failures.

Research and development in the Northern Areas require greater attention. As a result of communication changes and other factors, technology has advanced rap-

idly in recent years. But with the growth in incentives and pressures for crop diversification, there is an urgent need to undertake research and development specifically for the Northern Areas farming systems. AKRSP has attempted to start this process, but the effort to date has been rather ad hoc. AKRSP has encouraged outside agencies to develop cooperative research projects, and more such collaboration would be appropriate.

The Pakistan Agricultural Research Council's station at Jaglote is not functioning effectively. AKRSP should continue to press, through collaboration, for an upgrading of the station. In the interim, AKRSP has no option but to expand its own research program.

*Training and Extension.* Training is a key function for AKRSP and should be expanded. Above all, training requires specialist skills in trainers, and AKRSP should invest in enhancing its capability to train the trainers. Regular visits by Agriculture and Resources Management (ARM) staff to village organizations and women's organizations to discuss problems and reinforce judgments made by the specialists is a very necessary but somewhat neglected part of the training process. This neglect results, in part, because there are too few ARM staff. The extension of information at the village level requires continual updating of the skills and knowledge of social organizers (specialists in village organizations) and of engineers and agricultural staff.

*Environmental and Sustainability Issues.* A sustainable agricultural production system is most likely to be protective of the environment. Currently, the most serious problems arise from the increasing pressure of growing human and livestock populations. Some of the production systems which were valid in the past are no longer sustainable. Increasing need for fuelwood for towns and increasing grazing pressure on the high pastures and around villages are the main problems. While pollution from chemical fertilizers or pesticides is unlikely to be a problem in the Northern Areas, a continuing education program is required to develop villagers' awareness of the dangers from indiscriminate and excessive use of agricultural chemicals.

*Wildlife and Tourism.* AKRSP has recognized that wildlife is also under threat in the Northern Areas and has encouraged an awareness of the long-term benefits from maintaining these natural populations.

## **The Women's Program**

Women play a major role in the economic activity of the Northern Areas. They are substantially involved in crop and livestock production, and they are key actors in many

aspects of natural resource management. Information on social indicators for the Northern Areas is slight, but the isolation of the region would suggest that women's status and social indicators are probably below the already low levels for the nation as a whole. The low social indicators for women are explained, in part, by women's heavy work burden, the lack of government interest in women's issues, and low budgets for education and health programs.

*Program Implementation.* AKRSP has increased its activities with respect to women, with the objective of increasing women's productivity, reducing their work load, and developing institutional capacity. Progress in each of the three districts has been remarkable, given the very low social indicators for women and the difficult operating conditions for female staff in the Northern Areas. The main emphasis has been on the introduction of labor-saving technology and the promotion, through training and input supply, of improved poultry management and disease control and of vegetable production for household consumption and sale. A major achievement of the women's program has been to provide women, for the first time, with access to agricultural production credit.

The most significant weakness of the women's program has been the low impact of the labor-saving packages. Given the heavy work burden of women, this is an urgent issue requiring attention. In general, the technologies introduced were not appropriate or had not been adequately adapted to local circumstances. Promotion of the original labor-saving packages ceased after 1987, and no new packages have been introduced.

### **Information Program**

*Information and Data Resources.* The information needs of AKRSP are met through its Monitoring, Evaluation, and Research (MER) section. From the outset, MER has collected much detailed data. As AKRSP's activities have become more diverse, the amount of data collected has correspondingly increased. This database is impressive in its detail, content, breadth, and precision. The AKRSP operations can claim to be one of the best documented rural development programs anywhere.

The data collection framework was revised in 1988 to present a clearer picture of the program to management, donors, and readers of AKRSP's regular reports. However, AKRSP's approach to information collection and analysis, like the development program itself, has not yet broken out of its first phase. The framework was under review again in late 1989.

Following the first OED interim evaluation of AKRSP, MER developed a computer-based management information system. Most of the data for Gilgit's operations have

been entered, and data for the other two districts will follow.

AKRSP has issued an impressive number of reports, including routine progress reports, evaluation reports, statistical notes, case studies, conference papers, research reports, and various other papers and outputs from research visits, consultancies, and internships.

*Evaluating Program Performance.* MER's work load has been somewhat unbalanced. Its monitoring has been assiduous, but its evaluation activities have been less ambitious. Until recently, MER appears to have placed primary emphasis on building its capacity to answer questions that fall into the "what?" category, while giving much less attention to the "why?" and "how?" of its operations.

There are two weaknesses in current evaluations of program performance. First, no baseline data have been collected. While the lack of such data collection efforts may have been understandable early in the program, the conscious decision not to establish such a baseline over the past six years is harder to justify. The recent impact survey in Gilgit District (Khan 1989) is the first broad-based survey which could provide a baseline for the future. Second, MER has concentrated on documenting inputs into the program rather than on economic outputs, although a number of partial evaluations have been undertaken. Few of these studies, however, have yielded useful information for decision-making, because each has had a narrow focus. Only in one or two instances has an appropriate concept of the "without-project" situation been clearly identified for purposes of evaluating program outputs.

The AKRSP program is moving beyond its individual village development strategy and toward a strategy for the economic development of the Northern Areas as a whole. To measure and evaluate the impact of a development program, a clear conception of the change process being initiated is needed. Until the recent Gilgit District work, AKRSP had made no effort to gather information on the overall structure of resources and resource use (especially labor), or of other inputs and outputs at the village and family level. More work in this area is clearly needed.

### **Future Directions**

*Evolution of Village Organizations.* Recent developments indicate that the village organizations are taking on the functions of central institutions in local government of the valleys. In this context, important aspects of the program's future include the evolution of the village organizations, fragmentation of village organizations (some 50 of the new village organizations in Gilgit district have split off from larger groups), codification and arbitration processes, membership decline, the failure of collective production

enterprises, the clustering of village organizations, the independence of village organizations, and the formation of village-level management cadres.

*Evolution of the Program.* AKRSP continues to use to great advantage its approach based on innovation, testing, and assessment on a trial and error basis. This approach allows AKRSP to be highly flexible in implementing its program. The substantial independence of the three district programs from one another and from AKRSP's core management is a desirable new development, consistent with the long-run devolution of AKRSP responsibility. In this regard, the expansion of the training program has been significant and is expected to continue.

The fact that village organizations are independent local entities, at least in practice, is not well understood outside of AKRSP. It is important that AKRSP continue to point out that the village organizations can be contacted directly and can make contracts with others. The effective use of the village organization network by other agencies and programs can only strengthen the role and effectiveness of these village institutions.

As implementation of AKRSP's programs progresses, staff requirements will expand and change. Some future attention to the issues of coordinating the phasing of activities across districts and the effectiveness of broadening staff roles seems warranted. This process is complicated by the difficulty of getting good professional staff to come to the Northern Areas.

Certain subsets of activities and concerns in the AKRSP program might be better addressed and managed—and might attract additional donor support—if they were packaged into explicit subprograms. These are high altitude production systems, land and irrigation system development, and livestock nutrition and management.

*Development of External Relations.* AKRSP has a strong program of fostering public and external relations. This is consistent with the need to attract funding on a regular basis and with the second major objective of the program to promote the program as a workable model for government-sponsored rural development programs elsewhere in Pakistan and in other countries. The strength of this publicity program is reflected in AKRSP's documentation and reporting. One of the consequences of this renown is the continual and growing stream of visitors to AKRSP. These visits are already costly in terms of senior management time and interruptions to program work. One solution would be to establish a visitors center which would provide a degree of protection for senior staff. Typically, such centers look after other aspects of external relations as well, including producing and mailing reports, pamphlets and other materials, and answering various enquiries.

*Transition of the Program.* The long-term goal of AKRSP is to phase itself out of direct involvement in rural development in the Northern Areas. The time may now be opportune for AKRSP to withdraw from involvement at the field level, starting in Gilgit where the program has been in place longest. Ultimately, the village organizations have to have their own apex organization, and perhaps even intermediate-level organizations as well, such as valley-level clusters. Such organizations need to be self-governing and self-financing. Other institutional issues deserving attention are the desirability of establishing a rural development academy and a marketing company, and the form of future rural finance arrangements.

*Program Replication.* Program replicability was a major concern of the evaluation because one of AKRSP's objectives is to formulate and demonstrate a general model for rural development programs. At this stage, the model has been refined, a working method has been established and documented, and the program has been effectively spread, with good success, over three districts under different management. While it can now be claimed that the model provides a good basis for pursuing rural development, the question remains whether this approach can be used elsewhere and by governments. Replication is already underway in two adjacent areas of Pakistan, and the potential seems good for replication elsewhere in Pakistan as well. However, because of inadequate government services, AKRSP has had to involve itself in areas that are normally the responsibility of government, most notably in research and development. Such inadequacy of government services may limit replication in other areas. Few programs are likely to be able to find the money, expertise, or time to mount such substitute programs. World Bank experience suggests that lack of sufficient farm-level technology is one of the most common problems encountered by rural development projects.

Government policies and procedures with respect to subsidized farm production inputs may also constrain rural development initiatives. In Pakistan and elsewhere, normal marketing channels are squeezed out by the subsidized supply, which tends to result in the rationing of materials and services in favor of the more fortunate. Another potential concern with respect to replicability is whether government agencies have sufficient independence and flexibility to implement the AKRSP model. AKRSP achieves these qualities through its independent status and broad-based financing. Experience shows that the most successful government-sponsored rural development programs have been run by autonomous but accountable parastatal bodies. Pakistan, however, has no tradition of using such independent bodies. Given the existence of these constraints in Pakistan, it would seem that any ex-

pectation of replicability there should be tempered by caution.

The program approach could be replicated fairly widely in other countries, however, provided certain prerequisites are met. These include the existence of appropriate government policies; an adequate regulatory system for finance, natural resources, and commerce; and sufficient support services, including research and development, education, health care, and family planning. Once a government decides to pursue local-level programs of rural development, AKRSP can provide a proven approach, complete with a workable model and implementation method.

## Recommendations

*Staffing.* A recurring recommendation of this evaluation that touches on nearly every area of AKRSP activity concerns the need to review and revise its staffing patterns and projections. AKRSP has already identified the need to greatly expand its training capabilities as a means of strengthening its technology transfer capabilities and it is in this context that AKRSP should review all its staffing activities and needs.

In general, it appears that program staffing needs to be adjusted to more adequately reflect changing work loads and new priorities. In particular, given the need to identify, test, and develop new technology, the technical staffing of the agricultural section seems especially weak. Similarly, staffing of the women's program activities would benefit from improved technical services to identify women's program packages, especially production packages and new labor-saving packages, and provide appropriate follow-up support. Staff resources allotted to monitoring, evaluation, and reporting also require review and strengthening in some areas.

The understaffing in some areas, especially the unmet need for agricultural technicians, emphasizes the importance of finding new ways to recruit and retain good technical staff. A staffing review should logically be conducted within the context of an overall review of the changing priorities of the program, especially in relation to the different development stages reached in the three districts. Attention to program phasing and the benefits of shifting staff among programs as each district reaches a new phase in its development are likely to help make the most efficient use of scarce program staff.

*Other Recommendations.* To some extent, staffing patterns in the future will depend on how several of the matters raised in the following summary checklist of other major recommendations are resolved and handled.

- Savings and credit issues, especially the proposal for

village organizations banking, need to be viewed in the wider context of the total rural financial services available to Northern Area villages, not merely those introduced by the program.

- With respect to marketing services, the most immediate priority is to develop productive links with existing marketing channels within Pakistan rather than to attempt the riskier and more difficult task of introducing a separate and parallel marketing system in competition with existing channels. In the future, there may also be a need to establish a separate, perhaps semi-autonomous marketing entity.
- In crop production, the need is to give even greater emphasis, including increased resources, to the identification, testing, and demonstration of new technologies. Areas requiring special attention include irrigation methods (particularly for steep lands) and research relating to maize, alfalfa, fertilizer use, various aspects of horticulture, and the prospects for developing a vegetable seed industry in the Northern Areas.
- In animal production, the need at this stage is to improve animal nutrition and the coverage and effectiveness of vaccination programs rather than to increase herd size or introduce new breeds. The program should search for new plant species appropriate for high pastures and for fodder crop production around villages.
- Continued efforts to introduce new varieties of multi-purpose trees for agroforestry are warranted, and research is needed on silviculture management systems, including after-planting care and fertilizer recommendations.
- Given the urgent need to increase the research and development efforts appropriate for the Northern Areas, and in the absence of adequate government-supported efforts in this area, AKRSP must continue to perform this role. Consequently, as long as the government research station at Jaglote remains ineffective, AKRSP may need to establish a research and training center to support its own efforts. Research and development activities need to be more closely integrated; to achieve this, staff skills will need to be upgraded and more qualified staff will be required as well.
- AKRSP could seek additional international donor support for its research and development activities, including collaborative research projects.
- AKRSP's extension effort needs to focus more on the quality of messages and of technology transfer than on the quantity, with improved follow-up and monitoring.
- Training is a key function for AKRSP and should be expanded. Above all, training requires specialist skills in trainers, and AKRSP should invest in enhancing its capability to train the trainers.
- The women's program needs to identify appropriate la-

bor-saving packages, to improve the women's program technical/production model (including the introduction of specific productive physical infrastructure for women), and to expand the subjects covered under the training program. Stronger follow-up of the production packages is also needed. Substantially increased investment in the women's program appears justified, given women's substantial involvement in economic activity, their low social indicators, and increased work burdens.

- The changing information needs to support AKRSP's evolving operation suggest a need for a concomitant re-focusing of the functions of the Monitoring, Evaluation, and Research section. A clear monitoring role must inevitably remain, but this must go beyond simply recording and documentation. There is a need for a clearer conception of the development process, including an expansion of the AKRSP model into a "regional model". Further surveys of the type recently carried out in Gilgit District are justified and will provide baselines for the future evaluation work.
- In considering the future directions the program might take, the evaluation findings suggest that certain aspects of the program are of particular importance: although the splitting of village organizations into smaller groups need be of no great concern, there is a strong need to

codify an arbitration process at the village level that does not involve AKRSP; AKRSP should avoid collective management of production activities; the legal independence of the village organizations needs to be established and preserved; the financial independence of the program itself also needs to be preserved, especially as AKRSP moves into the transition phase toward less direct involvement; training is likely to be a major feature of the transition phase, as AKRSP has already identified.

- AKRSP should continue to emphasize and engage in cooperation with other agencies; one of its priorities should be the strengthening of local line agencies.
- The expanded and expanding involvement of AKRSP in external relations, including the many planned and unplanned visits to its program sites, suggest the need for establishing a small visitors' center.
- AKRSP could consider establishing a rural development academy as a vehicle through which AKRSP could continue to provide residual services to the Northern Areas.
- Replication of the program within Pakistan is already occurring and should be successful where prerequisites are in place. Similarly, the AKRSP approach provides an appropriate model for rural development outside Pakistan, where the identified pre-conditions are met.

# Resumen y Recomendaciones

El Programa Aga Khan de apoyo al sector rural sigue dando extraordinarios resultados en la región del norte del Pakistán,<sup>1</sup> lo que no resulta sorprendente puesto que el programa reúne casi todas, si no todas, las condiciones generalmente aceptadas para que un programa de desarrollo rural sea provechoso. Tiene éxito en las zonas que exhiben muchas de las características que son causa común de la pobreza rural —lejanía, infraestructura deficiente y una base de recursos limitada o en disminución— y las que los programas de desarrollo rural procuran superar o mejorar. Para mediados de 1989, el número de unidades familiares que se beneficiaba de la participación en las organizaciones comunitarias y de la creación de infraestructura física productiva como consecuencia del programa se había elevado a 53.000, cifra equivalente al 54% del total de unidades familiares rurales de la zona norte. En momentos en que el “desarrollo rural” no goza de plena popularidad como estrategia para el desarrollo, los resultados del programa en cuestión permiten confiar en que puede resultar provechoso si las circunstancias son medianamente favorables.

## Introducción

*Desarrollo rural: marco conceptual y ejecución.* Los programas de desarrollo rural se pueden explicar en función de un modelo de tres partes interdependientes consistentes en un modelo económico o de incentivos, otro técnico o de producción y uno social/institucional. El diseño y la aplicación del método del Programa Aga Khan ha seguido

<sup>1</sup>El Programa Aga Khan se aplica en los tres distritos del extremo norte de Pakistán, a saber: el de Gilgit y Baltistan en la zona norte y el distrito de Chitral en la provincia fronteriza del noroeste. Por razones de conveniencia, esta región en la que se desarrollan las actividades del programa de apoyo al sector rural se denomina zona norte, lo que no se conforma a una definición técnicamente precisa.

esta estructura para la solución de los problemas de la zona norte. El diseño y la ejecución de los programas de desarrollo rural pueden ser tareas complejas, que requieren una minuciosa planificación y un ajuste constante. Además, es preciso coordinar las actividades del programa con las de otros organismos con funciones o actividades afines. Todo ello se cumple en el Programa Aga Khan mediante la aplicación del modelo de tres partes.

El modelo económico o de incentivos es la base de los otros dos. Los habitantes pobres de los poblados suelen tener un sistema familiar que impone exigencias sobre los recursos y con ingresos bastante inciertos y, por lo tanto, no son partidarios de los riesgos. Exigen que cualquier innovación produzca un elevado rendimiento que compense el riesgo que trae aparejada su aplicación y el esfuerzo adicional que suele requerir de los trabajadores familiares. Por consiguiente, los programas de desarrollo rural dan mejores resultados cuando se produce un cambio de circunstancias que origina un gran aumento de los recursos (normalmente, de la mano de obra), o cuando se crea un factor externo positivo que puede ser internalizado por las unidades familiares participantes. Con la construcción de la Carretera de Karakoram y de su red vial conexa mejoraron las perspectivas para transformar las condiciones de vida de los pobladores de esta zona atrasada, desolada y alguna vez aislada del norte de Pakistán. El programa contribuye a ampliar los posibles beneficios de estas carreteras mediante la construcción de una infraestructura complementaria.

El modelo social se refiere a la modificación de la organización de los poblados y al aumento de los vínculos que necesariamente deben acompañar a los cambios económicos que se producen. Es preciso prestar especial atención a este modelo, puesto que las organizaciones locales de reciente formación pronto comienzan a plantear sus propias iniciativas y exigencias, y esta nueva actitud de las organizaciones comunitarias puede ser una amenaza para

algunos grupos. El manejo de las nuevas relaciones que surgen entre las organizaciones locales y otras entidades exige una constante vigilancia y un buen criterio. La relación con los funcionarios del gobierno y las operaciones comerciales ponen muy pronto a prueba a las organizaciones locales. El programa ha demostrado ser extremadamente eficaz para la formación y el funcionamiento razonablemente democráticos de las organizaciones comunitarias.

La aplicación del modelo técnico también plantea problemas especiales. Se necesitan numerosos medios especializados y complejos para hallar tecnologías nuevas y adecuadas, adaptarlas al ambiente de trabajo y ponerlas al alcance de un gran número de pequeños agricultores. Para ello hacen falta bastantes recursos, en particular técnicos especializados.

*Método empleado para la evaluación.* La metodología de evaluación ex post que se aplicó en este estudio consiste en identificar las metas y los objetivos del proyecto para luego evaluar la medida en que se concretaron. Como no todos

los objetivos pueden expresarse en términos cuantitativos, la evaluación es en parte también cualitativa. Los indicadores utilizados para esta evaluación son los que figuran en los informes anuales del Programa Aga Khan, en algunos casos con ciertos ajustes.

### Estado y resultados del programa

Con algunas variantes de un año a otro, el programa ha seguido ampliándose y creciendo en casi todos los frentes. En el Cuadro 1 figura un resumen de los principales indicadores del programa. Se registra un fuerte y homogéneo aumento en materia de creación de organizaciones comunitarias, de identificación y terminación de proyectos de infraestructura física productiva, de depósitos de ahorro, de participación en la comercialización y en el número de miembros de las organizaciones comunitarias capacitados en técnicas de producción. Entre las cuestiones que requieren un mayor análisis se encuentran las variaciones anuales en el número de organizaciones nuevas, el gran

**Cuadro S.1 : Resumen de datos sobre los resultados del Programa Aga Khan de apoyo al sector rural, Pakistán, entre 1983 y junio de 1989**

(acumulados, a menos se especifique lo contrario)

	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>
Organizaciones comunitarias creadas	131	379	477	571	762	993	1.087 <sup>b</sup>
Organizaciones de mujeres creadas <sup>c</sup>	10	72	100	133	174	248	271
Infraestructura física productiva							
Identificada	363	706	826	1.045	1.249	1.346	1.426
Terminada	23	114	195	256	375	514	560
Ahorro y crédito (millones de rupias)							
Depósitos de las organizaciones comunitarias y de mujeres	0,8	6,4	11,9	18,0	34,3	51,3	66,1
Créditos desembolsados/año <sup>d</sup>	1,0	3,2	8,3	12,5	25,7	34,6	30,8
Comercialización							
Organizaciones comunitarias participantes/año <sup>e</sup>	11	8	45	164	191	215	73
Capacitación							
Número de cursos/año <sup>f</sup>	4	8	14	16	24	37	19
Beneficiarios (en miles de unidades familiares)							
Miembros de organizaciones comunitarias/proyecto de infraestructura	12,1	31,0	35,8	40,0	45,2	51,3	53,0
Porcentaje de unidades familiares rurales <sup>g</sup>	12	32	36	40	46	52	54
Promedio de miembros por grupo	92	82	75	70	59	52	49
Participación en las organizaciones de mujeres	0,6	4,2	5,4	6,8	8,3	9,7	10,3
Promedio de miembros por grupo	60	58	54	51	48	39	38
Crédito agrícola/año <sup>h</sup>	4,7	13,1	12,2	39,4	40,3	61,0	36,1
Comercialización/año	0,5	0,3	1,1	4,4	6,6	8,5	2,8
Participantes en los cursos de capacitación/año	91	179	275	347	401	770	370

<sup>a</sup>Hasta el 30 de junio.

<sup>b</sup>Esta cifra incluye 50 organizaciones comunitarias en Gilgit formadas a partir de 1987 por miembros que se separaron de otras organizaciones similares existentes.

<sup>c</sup>Incluidas las secciones femeninas de las organizaciones comunitarias.

<sup>d</sup>A corto y mediano plazo.

<sup>e</sup>Se incluye la participación reiterada de las organizaciones comunitarias.

<sup>f</sup>También se dictaron 57 cursos de actualización, con los cuales hubo un total de 179 cursos a los que asistieron 2.433 participantes.

<sup>g</sup>El número total de unidades familiares del sector rural es de 98.200.

<sup>h</sup>En este renglón se incluye el cómputo doble de los préstamos a corto y a mediano plazo otorgados a las organizaciones comunitarias.

programa de construcción de infraestructura aún pendiente, el rápido aumento de los depósitos de ahorro en comparación con el crédito, y la constante disminución del número de miembros de los grupos, lo que entraña mayores costos unitarios. Es notable que el ritmo de aumento de la participación hacia una cobertura total haya sido más rápido en las organizaciones comunitarias de Gilgit que de Chitral o Baltistan, lo que supone que en Gilgit es posible prestar ahora atención a otras actividades, en tanto que en Chitral y Baltistan aún queda por cumplir gran parte de la tarea de organización.

*Beneficiarios.* A mediados de 1989 se beneficiaban aproximadamente 53.000 unidades familiares con las actividades del programa, cifra equivalente al 54% del total estimado para la zona norte. Sin embargo, el número medio de miembros que tenían las organizaciones comunitarias se redujo a unos 50 respecto de los 80 ó 90 que tenía cada una de ellas en los primeros años, lo que obedece a la formación de organizaciones más pequeñas. Las actividades crediticias se ampliaron hasta llegar a 61.000 préstamos en 1988, o sea un promedio de más de un préstamo por unidad familiar miembro de una organización comunitaria. En 1988 se beneficiaron unas 8.500 familias con las actividades de comercialización.

*Organizaciones comunitarias e infraestructura física productiva.* Según datos del programa, para mediados de 1989 se habían creado 1.087 organizaciones comunitarias y 271 organizaciones de mujeres. Ello representa una inversión considerable en el desarrollo orgánico e institucional en un prolongado período. A mediados de 1989 más de la mitad del número total estimado de unidades familiares rurales de los tres distritos del proyecto eran miembros de organizaciones comunitarias.

Se ha identificado un total de 1.426 proyectos de infraestructura física productiva y se han terminado 560 (el 39%). Está en la etapa de ejecución un 57% de los proyectos identificados, lo que significa que aún queda un gran programa de construcción por financiar con donaciones y para el que se requiere el apoyo del personal del Programa Aga Khan. El ritmo de ejecución de los proyectos de infraestructura se ha acelerado en forma satisfactoria. Más del 60% de los proyectos corresponden a canales de distribución de riego y el 22% a puentes o carreteras de enlace.

*Ahorro y crédito.* Desde 1986, fecha en que el Departamento de Evaluación de Operaciones preparó la primera evaluación provisional del Programa Aga Khan de apoyo al sector rural hasta mediados de 1989, el ahorro de las organizaciones comunitarias había aumentado de 14,5 a 60,2 millones de rupias (US\$0,72 a US\$3,0 millones) y el ahorro de las organizaciones de mujeres de 1,6 a 5,9 millo-

nes de rupias (US\$80.000 a US\$290.000). La tasa de ahorro de ambas clases de agrupaciones aumentó rápidamente a partir de 1986. La amplitud de la composición del ahorro en la mayoría de las organizaciones comunitarias demuestra tanto la solidez del factor de ahorro que sirve de sostén a la idea básica del Programa Aga Khan, como la seriedad con que esas organizaciones asumen sus obligaciones cuando se incorporan al mencionado programa. También corrobora que estas organizaciones siguen siendo válidas y pueden funcionar como instituciones comunitarias. La perspectiva más amplia del comportamiento del ahorro a nivel de los poblados que aparece en la encuesta realizada por muestreo en diez poblados del Distrito de Gilgit (Khan 1989) demuestra que el ahorro de las organizaciones constituye tan sólo una pequeña parte de la composición total del ahorro de los poblados. Parte de este ahorro puede obedecer a transferencias de otras formas tradicionales de ahorrar y no a su intensificación. Ello reviste importancia para la estrategia que aplique en el futuro el programa en materia de ahorro y crédito.

El crédito desembolsado ha aumentado a un ritmo más lento que el ahorro, y llegó a ser de 43,9 millones de rupias (US\$2,2 millones) para fines de 1988. Las operaciones de crédito con las organizaciones comunitarias del Programa Aga Khan se basan en el empréstito de fondos obtenidos mediante préstamos o recibidos de los donantes. Medidas en términos de la elevadísima tasa de reembolso y de la insignificante tasa de incumplimiento que registraron, dichas operaciones fueron fructíferas. El 87% del crédito a corto plazo otorgado con arreglo al programa se utilizó en operaciones relacionadas con los fertilizantes y la comercialización. Los créditos a mediano plazo se otorgan fundamentalmente para el acondicionamiento de tierras y la compra de maquinaria agrícola. Sin embargo, tal como sucede con el ahorro, los datos de la encuesta del Distrito de Gilgit señalan que las actividades crediticias del programa constituyen sólo una pequeña parte del total de operaciones de crédito de los poblados. Para planificar la función que en el futuro le cabrá al crédito dentro del programa se debe tener en cuenta este marco más amplio.

Con la ayuda de consultores y a través del diálogo generalizado con las organizaciones comunitarias, en el Programa Aga Khan se ha considerado con gran atención el futuro régimen de crédito agrícola. Como resultado de ello ha surgido la propuesta conocida como "banca de organizaciones comunitarias" que se está considerando. Con arreglo a este sistema, el programa ayudaría a grupos de organizaciones a obtener fondos para prestarlos a sus miembros. Es preciso hacer un examen más exhaustivo de varios aspectos de esta propuesta.

*Comercialización.* El número de organizaciones comunitarias que participa en las operaciones anuales de comer-

cialización del programa ha aumentado de menos de una docena en los primeros años de la década de 1980 a 215 en 1988, registrándose un total acumulado de 707 en junio de 1989. También hubo un firme aumento de los volúmenes comercializados, aunque son reducidos en comparación con el aumento de la producción en la zona norte o con las grandes y crecientes cantidades que se comercializan fuera del marco del programa. No obstante, es un buen principio y se han aprendido valiosas lecciones para el futuro.

Las primeras operaciones de comercialización del programa, que consistieron principalmente en aumentar las cantidades comercializadas y actuar directamente en el país para evitar los comerciantes privados, tuvieron resultados diversos. Ya no se aplica esta estrategia y ahora se le atribuye más importancia a la concentración en unos pocos productos en los que se han percibido potencialidades reales y en el aprovechamiento de las ventajas del mercado.

La actual estrategia de comercialización está determinada por la de producción, en el sentido de que sólo se comercializan activamente, o se consideran posibles de comercialización, los productos que generan constantemente superávit como consecuencia del aumento de la producción. Cabe esperar que más adelante las necesidades del mercado influyan en forma más directa en la producción. El secreto del éxito consiste en vincular la estrategia de comercialización con la de producción, al menos en la etapa de planificación. Para aumentar la producción se deben tener en cuenta las oportunidades y las restricciones del mercado y los planes de comercialización deben ajustarse a proyecciones realistas de los superávits comercializables. En este ámbito es necesario que cambie el enfoque de la planificación de la producción y que, en lugar de aplicarse la estrategia simple de sustitución de importaciones, se evalúen cuáles son las mejores opciones de producción y comercialización en las distintas coyunturas que se dan en la zona norte, teniendo en cuenta las particulares restricciones de recursos a las que se hallan sujetas como, por ejemplo, la falta de tierras y las variaciones estacionales del suministro de agua y la situación de la mano de obra familiar (incluida la de las mujeres).

*Capacitación.* El programa ha patrocinado 179 cursos de capacitación y 57 cursos de actualización a los que asistieron 2.433 participantes. Los cursos versaron fundamentalmente sobre agricultura, ganadería y comercialización.

*Dotación de personal del programa.* Teniendo en cuenta el incremento del volumen de trabajo en todos los distritos, es notable el escaso aumento de personal —sólo de apoyo— que se registró en los últimos tres años. A pesar de los problemas de contratación, se mantuvo intacto un grupo de profesionales muy competente y que había pres-

tado servicios durante mucho tiempo. Este ha sido uno de los grandes pilares del programa y un mérito de su gestión. El programa prevé un aumento considerable de personal en el futuro, especialmente teniendo en cuenta la mayor importancia que se ha propuesto atribuir a la capacitación como instrumento de transferencia de tecnología.

Ha resultado difícil para el programa contratar personal técnico debidamente capacitado. Preocupa la falta de determinada clase de personal técnico esencial y debe encontrarse la manera de atraerlo y retenerlo.

*Recursos y gastos del programa.* El programa ha logrado interesar a un número extraordinariamente grande de donantes. Por consiguiente, debe dedicar mucho tiempo a la atención de sus exigencias, incluidas sus visitas a las zonas abarcadas. Se cuenta con el respaldo de la Fundación Aga Khan de Ginebra. Cada donante tiene interés en una determinada área del programa a la que en consecuencia destina específicamente el financiamiento que suministra, lo cual crea algunos problemas de administración.

Si bien tanto el costo anual del programa como el número de organizaciones comunitarias se duplicaron entre 1985 y 1988, el número de unidades familiares participantes sólo aumentó en un 44%. Ello dio lugar a un incremento del costo anual por unidad familiar beneficiaria del orden del 39% en términos nominales (de 1.005 a 1.399 rupias). Aumentaron todas las categorías de gastos, salvo la de "investigación, estudio y demostración", que disminuyó en un 58%. El mayor aumento de costos obedeció a la cuadruplicación del gasto en personal en los últimos tres años, que del 11% pasó a representar el 25% de los gastos del programa.

## Programa de producción agropecuaria

El Programa Aga Khan ha cumplido una tarea loable, con limitados recursos, en materia de introducción de nuevas tecnologías de producción agropecuaria en la zona norte de Pakistán. En el futuro el programa deberá seguir cumpliendo el papel de principal intermediario de tecnología, en tanto los organismos públicos sectoriales no puedan cumplir adecuadamente con las funciones que les fueron asignadas. El programa ha reconocido que las organizaciones comunitarias son un medio excelente para la transferencia de tecnología, y otros organismos también deben aprovecharlas. En este aspecto también se recomienda colaborar con otros organismos; el Programa Aga Khan ya ha trabajado eficazmente en forma conjunta con el Departamento de Agricultura de Pakistán y con el equipo técnico sobre producción de semillas de la Organización de las Naciones Unidas para la Agricultura y la Alimentación (FAO), entre otros organismos.

*Tecnología de producción y cambios técnicos.* La apertura de la zona norte a estos adelantos ha producido un cambio rápido, incluida una mayor diversificación de la economía familiar (especialmente a través de los ingresos provenientes de remesas), una mayor disponibilidad de fertilizantes, nuevas posibilidades de comercialización para los productos agrícolas, una mayor mecanización de las explotaciones agrícolas (especialmente para la producción de cereales) y una mayor disposición por parte de los agricultores para cambiar el sistema de explotación. La mayor disponibilidad de mejores materiales de siembra y gran parte del rápido aumento que se registró en el decenio de 1980 en el uso de fertilizantes en la zona norte obedecieron específicamente a la labor del programa (créditos y suministros).

Prácticamente todas las cosechas y productos de la agrosilvicultura de la región dependen del riego. Aproximadamente el 60% de la infraestructura física productiva que patrocinó el programa está orientado a aumentar el suministro de agua mediante nuevos canales de distribución de riego o renovación y ampliación de los existentes. Sin embargo, al concretarse un gran número de estas inversiones surge la necesidad de acondicionar las tierras en gran escala. Se deben aplicar métodos adecuados de riego para que estas inversiones en obras de ingeniería rindan todos sus frutos.

*Cultivos.* La cosecha de cereales es y seguirá siendo por algún tiempo la principal actividad agrícola de la zona norte. Aproximadamente en la mitad de la superficie total que ocupan las explotaciones agrícolas se siembra trigo. El Programa Aga Khan ha tenido gran influencia en la producción de este cereal, al promover la adopción de una nueva variedad llamada PAK-81. No fueron tan extraordinarios los logros alcanzados con el maíz como forraje o alimento. En la zona de monocultivo a gran altura se siembra cebada y triticale y es probable que valga la pena prestarles más atención.

La producción de piensos es un componente esencial del sistema de explotación agrícola de la zona norte. Hay muchas opciones para mejorar la producción a fin de que durante todo el año haya pienso de buena calidad. De esa manera aumentaría mucho la producción pecuaria y disminuiría la presión de pastoreo a que se encuentran sometidas las zonas altas y las que rodean a los poblados. El mejoramiento de la nutrición animal podría reportar grandes beneficios.

La zona norte tiene un gran potencial de producción de frutas y nueces, y otros productos hortícolas. Ha sido fundamental el papel desempeñado por el Programa Aga Khan en la distribución de nuevos materiales de siembra, en la creación de viveros y en la capacitación de personal para manejar la nueva tecnología. Pronto se dispondrá de

un gran volumen de frutas que deberán ser comercializadas.

El cultivo de patatas (especialmente las de siembra) es uno de los que se prevé ampliar en la zona norte. El programa ha cumplido una función muy importante en el desarrollo de la producción de patatas de siembra, al continuar la tarea que habían cumplido previamente el Departamento de Agricultura y el equipo técnico de la FAO. El mencionado programa también ha logrado probar e introducir nuevas variedades de hortalizas, en especial a través de las organizaciones de mujeres. Probablemente la zona norte podría producir semillas de hortalizas para el resto del país y para exportación.

*Producción pecuaria y sanidad animal.* Los animales cumplen una función vital en la economía y en el sistema de explotación de la zona norte, de mayor importancia aún en las grandes alturas. Sin embargo, el número de animales está aumentando con la población humana, lo que se traduce en una constante degradación de los prados y pastizales que rodean los poblados. Además, el libre pastoreo de los animales en estos lugares restringe la producción agrícola, especialmente durante el período final del verano cuando los animales vuelven de las pasturas de las zonas altas.

La sanidad animal fue, acertadamente, el primer centro de atención de las actividades del programa relacionadas con la ganadería como parte de la estrategia original para la reducción de las pérdidas. Se ha capacitado en veterinaria a muchos especialistas de los poblados y en la actualidad los poblados están dispuestos a pagar por los servicios profilácticos. Sin embargo, la cobertura de los programas de vacunación hasta el momento ha sido desalentadora y ha variado en los distintos poblados. También preocupa un poco el estado de algunas de las vacunas utilizadas debido a que la manipulación y almacenamiento han sido inadecuados. En el programa se ha puesto mucho empeño, en vano o con pocos resultados, en el mejoramiento genético, mediante inseminación artificial e introducción de nuevas razas; la inseminación artificial ha tenido poco éxito. Para que rindan los esfuerzos relacionados con la producción pecuaria es más importante un cambio de actitud y que se generalice la opinión de que un número más reducido de animales mejor alimentados puede hacer aumentar la producción y los ingresos y reducir las presiones a que se encuentra sometido el medio ambiente local. Cuando mejoren los niveles de alimentación y cambien los sistemas de explotación, tal vez valga la pena concentrarse otra vez en el mejoramiento de las razas en determinadas situaciones.

*Agrosilvicultura y producción maderera.* Hay una tradición

muy difundida de plantar árboles en las regiones comprendidas en el programa, y el empeño mostrado en esta tarea a nivel de las organizaciones comunitarias podría servir de modelo para otros programas de desarrollo y reforestación. Si bien hay antecedentes de una buena ordenación de los recursos arbóreos de la región, en algunas zonas la presión ejercida por la población ha dado lugar a la pérdida de los rodales naturales que rodean los poblados. El Programa Aga Khan ha contribuido a que se plantaran árboles en todas partes y a que hubiera una mayor variedad de especies. Cualquiera que sea el criterio que se utilice, la cantidad de árboles que se plantaron resulta notable.

*Tecnología, investigación y desarrollo.* La tecnología ha recibido, justificadamente, una gran prioridad del programa, y éste ha desarrollado una labor digna de reconocimiento en materia de montaje y comprobación de nuevas técnicas. Se está trabajando mucho para encontrar nuevas técnicas adecuadas para la región. Sin embargo, los resultados indican que la aplicación de la tecnología no ha estado sujeta a una adecuada supervisión y que incluso hubo fracasos.

La investigación y el desarrollo de la zona norte requieren mayor atención. Como consecuencia de los cambios en materia de comunicaciones y de otros factores, en los últimos años se han producido rápidos adelantos tecnológicos. Sin embargo, el aumento de los incentivos y las presiones para que se diversifiquen los cultivos hace indispensable la urgente iniciación de actividades de investigación y desarrollo específicamente para los sistemas de explotación de la zona norte. El programa ha procurado dar inicio a este proceso, pero hasta la fecha sólo se han tomado medidas ad hoc. También ha alentado a organismos externos para que prepararan proyectos de investigación cooperativa, y sería conveniente una mayor colaboración al respecto.

La estación de Jaglote del Consejo de Investigaciones Agrícolas del Pakistán no está funcionando eficientemente. Trabajando en colaboración, se deberá seguir instando al mejoramiento de la estación a través del programa, pero mientras tanto no queda otra opción que ampliar las propias actividades de investigación.

*Capacitación y extensión.* La capacitación es una función clave del programa y debe extenderse. Sobre todo, para la capacitación hace falta que los instructores tengan conocimientos especializados y el programa debe invertir en el mejoramiento de la formación de instructores. Las visitas periódicas de personal de Dependencia de Agricultura y Ordenación de Recursos a las organizaciones comunitarias y de mujeres a fin de examinar los problemas y reforzar las opiniones de los especialistas constituyen una parte muy necesaria del proceso de capacitación que se ha des-

cuidado un poco, descuido que en parte se debe a la escasez de personal de dicha dependencia. Para la divulgación de la información a nivel de los poblados hace falta una constante actualización de los conocimientos y aptitudes de los promotores sociales (especialistas en organizaciones comunitarias) y del personal especializado en tecnología agrícola.

*Cuestiones ambientales y de viabilidad a largo plazo.* Es muy probable que un sistema sostenible de producción agrícola proteja también el medio ambiente. En la actualidad, la creciente presión que ejerce el aumento de la población y el ganado plantea los problemas más graves. Algunos de los sistemas de producción que eran válidos en otros tiempos ya no lo son. Los principales problemas que existen son la necesidad cada vez mayor de leña para los pueblos y la creciente presión del pastoreo en las zonas altas y alrededor de los poblados. Si bien no es probable que en la zona norte haya contaminación producida por fertilizantes químicos o pesticidas, hace falta un programa de educación constante para que los habitantes de los poblados se den cuenta de los peligros del uso indiscriminado y excesivo de productos químicos agrícolas.

*La flora y la fauna silvestres y el turismo.* El programa también ha reconocido que la flora y fauna silvestres se encuentran amenazadas en la zona norte y ha procurado que se conozcan los beneficios a largo plazo que se derivan de la conservación de estos recursos naturales.

### **Programa para la mujer**

La mujer cumple un papel fundamental en la actividad económica de la zona norte. Interviene en medida sustancial en la producción agrícola y pecuaria y es un agente clave en muchos aspectos del manejo de los recursos naturales. Se tiene poca información acerca de los indicadores sociales de la zona norte, pero el aislamiento de esta región sugeriría que la condición social de la mujer y los indicadores correspondientes probablemente sean inferiores a los niveles ya bajos de toda la nación. El deprimido nivel de los indicadores sociales que se refieren a la mujer se explica, en parte, por su pesada carga del trabajo, por la falta de interés del Gobierno en los problemas de la mujer y por los escasos presupuestos de los programas de educación y de salud.

*Aplicación del programa.* El Programa Aga Khan ha aumentado las actividades relacionadas con la mujer, con miras a incrementar su productividad, reducir su volumen de trabajo y aprovechar las posibilidades en el ámbito institucional. Los progresos alcanzados en cada uno de los tres

distritos han sido notables, teniendo en cuenta los bajos indicadores sociales que se refieren a la mujer y las difíciles condiciones de la zona norte para la labor del personal femenino. Se ha hecho más hincapié en la introducción de técnicas que permitan ahorrar trabajo y, a través de la capacitación y del suministro de insumos, en la promoción de una mejor explotación avícola, de una lucha más eficaz contra las enfermedades y del mejoramiento de la producción hortícola para el consumo familiar y la venta. Uno de los principales logros del programa para la mujer ha sido el de permitirle, por primera vez, el acceso al crédito para la producción agrícola.

El punto más débil del programa para la mujer ha sido la escasa repercusión de las medidas de ahorro de trabajo. Dada la pesada carga laboral de la mujer, este es un tema que requiere urgente atención. En general, las técnicas que se introdujeron no fueron adecuadas o no se adaptaron bien a las circunstancias locales. Con posterioridad a 1987 dejaron de promoverse las medidas originales de ahorro de trabajo y no se aplicaron otras nuevas.

### **Programa de información**

*Información y datos.* La Sección de Seguimiento, Evaluación e Investigación satisface las necesidades de información del Programa Aga Khan. Desde un principio dicha sección ha recopilado con minuciosidad gran cantidad de datos, recopilación que fue en aumento a medida que se diversificaron las actividades. Es notable el detalle, contenido, cobertura y precisión de esta base de datos. El Programa Aga Khan probablemente bien puede vanagloriarse de ser uno de los de desarrollo rural mejor documentados del mundo.

En 1988 se revisó el sistema de recopilación de datos a fin de poder presentar un panorama más claro del programa a la administración, los donantes y los lectores de sus informes periódicos. Sin embargo, el método que se aplica en el programa para la recopilación y el análisis de información, al igual que el propio programa de desarrollo, aún no ha salido de la primera etapa. A fines de 1989 se examinó nuevamente el sistema.

Con posterioridad a la primera evaluación provisional del Programa Aga Khan que realizó el DEO, la Sección de Seguimiento, Evaluación e Investigación creó un sistema computadorizado, de información para la administración. Ya se incorporaron la mayoría de los datos sobre las operaciones de Gilgit y se hará lo mismo con los que corresponden a los otros dos distritos.

El Programa Aga Khan ha preparado un notable número de informes, incluidos informes de rutina sobre la marcha de sus actividades, informes de evaluación ex post, notas estadísticas, estudios de casos prácticos, documentos para conferencias, informes de investigación y varios otros do-

cumentos y material de visitas de investigación, tareas de consultoría y prácticas.

*Evaluación de los resultados del programa.* La Sección de Seguimiento, Evaluación e Investigación no ha tenido una actuación uniforme. Ha sido perseverante en su tarea de seguimiento, pero no así en su labor de evaluación. Al parecer, hasta hace poco esa Sección ha estado prestando gran atención a su capacidad de responder al interrogante del "qué hacer" y mucha menos a los "por qué" y a los "cómo" de sus actividades.

Las evaluaciones actuales de los resultados de los programas adolecen de dos defectos. En primer lugar, no se han recopilado datos básicos. Si bien puede entenderse que no se los recopilara en la primera etapa del programa, resulta más difícil justificar la decisión consciente de no crear esa base de datos en el curso de los últimos seis años. El reciente estudio de las repercusiones en el Distrito de Gilgit (Khan 1989) es el primero lo bastante amplio como para poder extraer una base para el futuro. En segundo lugar, si bien ha realizado una serie de evaluaciones parciales, la Sección de Seguimiento, Evaluación e Investigación se ha concentrado en la documentación de los insumos del programa en lugar de hacerlo en los resultados económicos. Sin embargo, fueron pocos los estudios de esta naturaleza que brindaron informaciones útiles para la adopción de decisiones porque todos han tenido una mira muy estrecha. Solamente en uno o dos casos se ha identificado con precisión qué hubiera pasado sin el proyecto para evaluar los resultados del programa.

El Programa Aga Khan está cambiando su estrategia de desarrollo de los poblados para adoptar una enfocada al desarrollo económico de toda la zona norte. A fin de medir y evaluar los efectos de un programa de desarrollo es preciso tener una idea clara acerca del proceso de cambio iniciado. Antes del reciente trabajo realizado en el Distrito de Gilgit, no se había tratado en este programa de recoger información sobre la estructura global de recursos y su utilización (especialmente de la mano de obra), ni de otros insumos y productos a nivel de poblado y de las familias. Es evidente que es necesario seguir trabajando en esta área.

### **Orientación en el futuro**

*Evolución de las organizaciones comunitarias.* Los últimos acontecimientos registrados señalan que estas organizaciones están asumiendo las funciones de entidades centrales del gobierno local de los valles. En este sentido, entre los aspectos importantes del programa en el futuro se encuentran el desarrollo de las organizaciones comunitarias, su fragmentación (de las organizaciones nuevas que se crearon en el Distrito de Gilgit, unas 50 se formaron se-

parándose de grupos más grandes), los procesos de codificación y de arbitraje, el descenso del número de miembros, el fracaso de las empresas colectivas de producción, el agrupamiento de organizaciones comunitarias, su independencia y la formación de cuadros administrativos a nivel de poblado.

*Evolución del programa.* En el Programa Aga Khan se sigue utilizando con muy buenos resultados el sistema basado en la innovación, la experimentación y la evaluación sobre la base del método de ensayo y error. Este sistema permite que la aplicación del programa sea muy flexible. La considerable independencia que tiene cada uno de los programas de los tres distritos y éstos, de la administración central del Programa Aga Khan, es una novedad favorable, consecuente con la delegación de sus funciones a largo plazo. En tal sentido, la ampliación del programa de capacitación ha sido considerable y se espera que continúe.

Fuera del Programa Aga Khan no se entiende bien el que las organizaciones comunitarias sean entidades locales independientes, por lo menos en la práctica. Es importante que el Programa Aga Khan siga haciendo notar que se puede tener contacto directo con las organizaciones comunitarias y que éstas pueden celebrar contratos con terceros. El uso eficaz de la red de organizaciones comunitarias por parte de otros organismos y programas no puede menos que fortalecer el papel y la eficacia de estas organizaciones.

A medida que se avance en la ejecución de los programas comprendidos en el de Aga Khan, aumentarán y cambiarán las necesidades de personal. Al parecer se justifica que en adelante se preste atención a la coordinación de las etapas de las actividades que se desarrollan en los distintos distritos y a la eficacia de las funciones cada vez más amplias del personal. La dificultad de atraer a personal profesional de buen nivel a la zona norte complica este proceso.

Se podrían abordar y manejar mejor algunos subgrupos de actividades e intereses del Programa Aga Khan —y tal vez obtener mayor apoyo de los donantes— si se enmarcaran dentro de subprogramas explícitos. Dichos subgrupos abarcan los sistemas de producción en las zonas de altura, el acondicionamiento de tierras y la mejora de los sistemas de riego, y la nutrición y gestión de los recursos ganaderos.

*Promoción de las relaciones exteriores.* El Programa Aga Khan también fomenta activamente las relaciones públicas y exteriores, lo que concuerda con la necesidad de atraer fondos en forma periódica y con el segundo objetivo principal del programa, a saber, de promocionarlo como modelo viable para los programas de desarrollo rural patrocinados por el Gobierno en otras regiones de Pakistán y en

otros países. La intensidad de las actividades de promoción se refleja en los documentos e informes del Programa Aga Khan y su renombre atrae un flujo constante y cada vez mayor de visitantes. Estas visitas ya son costosas en función del tiempo que le insumen a la administración superior y de las interrupciones que ocasionan en el trabajo. Una solución sería crear un centro de recepción de visitantes para desligar en cierta medida al personal superior de esa tarea. Dichos centros también suelen encargarse de otros aspectos de las relaciones externas, entre ellos la preparación y el envío de informes, folletos y otros materiales y la atención de consultas de distinto tipo.

*Transición del programa.* En el Programa Aga Khan se prevé abandonar gradualmente la participación directa en el desarrollo rural de la zona norte y quizás este sea el momento oportuno para hacerlo en el terreno, empezando por Gilgit, donde se lo ha aplicado durante más tiempo. En última instancia, las organizaciones comunitarias deben tener sus propios organismos principales, y tal vez incluso intermedios como, por ejemplo, grupos para los valles. Dichos organismos deben ser autónomos y autofinanciarse. Otras cuestiones institucionales dignas de atención son la conveniencia de crear una academia de desarrollo rural y una empresa de comercialización y la configuración que tendrán los futuros mecanismos de financiamiento rural.

*Repetición del programa.* Una de las principales preocupaciones de la evaluación fue la posibilidad de aplicar el Programa Aga Khan en otros lugares, puesto que uno de sus objetivos es formular y demostrar un modelo general para programas de desarrollo rural. En esta etapa, se ha perfeccionado el modelo, se ha establecido y documentado un método de trabajo y se lo difundió eficazmente con buenos resultados en los tres distritos bajo distintas administraciones. Si bien ahora puede afirmarse que el modelo constituye una buena base para aplicar un programa de desarrollo rural, sigue vigente el interrogante de si este método podrá emplearse en otras partes y si podrán aplicarlo los gobiernos. En dos zonas colindantes del Pakistán ya se lo está repitiendo y también hay buenas posibilidades de repetirlo en otras regiones de este país. Sin embargo, debido a la insuficiencia de los servicios públicos, el Programa Aga Khan ha tenido que intervenir en esferas que por lo general corresponden al gobierno, fundamentalmente las relacionadas con la investigación y el desarrollo. La mencionada insuficiencia de los servicios públicos puede limitar su aplicación en otras zonas. Es probable que no haya muchos programas que puedan hacerse del dinero, la experiencia o el tiempo que requiere montar programas sustitutivos. De acuerdo con la experiencia del Banco Mundial, la falta de suficiente tecnología a nivel de

las explotaciones agrícolas es uno de los problemas más comunes que se plantean en los proyectos de desarrollo rural.

Las políticas y los procedimientos oficiales relacionados con los insumos subvencionados de producción agrícola también pueden frenar las iniciativas de desarrollo rural. Tanto en Pakistán como en otros países, las vías normales de comercialización se ven desplazadas por la oferta subvencionada, que tiende a resultar en racionamiento de materiales y servicios en beneficio de los más afortunados. Otro posible motivo de preocupación en torno de la posibilidad de volver a aplicar este modelo en otros lugares es que los organismos públicos tengan suficiente independencia y flexibilidad. El programa lo puede hacer porque es independiente y cuenta con una amplia base de financiamiento. Lo ocurrido hasta ahora demuestra que los programas de desarrollo rural patrocinados por el gobierno que obtuvieron mejores resultados fueron los administrados por organismos paraestatales autónomos pero que debían rendir cuentas. Sin embargo, en la historia de Pakistán no se ven con frecuencia estos organismos independientes. Dadas estas limitaciones, se debe considerar con precaución toda expectativa de aplicar el programa en otras regiones del país.

Sin embargo, de cumplirse con determinados requisitos previos, el programa podría reproducirse ampliamente en otros países. Entre esos requisitos se encuentran políticas oficiales acertadas, un adecuado sistema reglamentario en materia de financiamiento, recursos naturales y comercio y suficientes servicios de apoyo, incluidos investigación y desarrollo, educación, atención de la salud y planificación familiar. Una vez que un gobierno decida aplicar programas de desarrollo rural a nivel local, el de Aga Khan puede tomarse como sistema probado, integrado por un modelo viable y un método de aplicación.

## Recomendaciones

*Dotación de personal.* Una de las reiteradas recomendaciones de esta evaluación que atañe a casi todos los aspectos de las actividades del Programa Aga Khan es la necesidad de examinar y revisar sus estructuras de personal y las proyecciones correspondientes. Ya se ha identificado la necesidad de ampliar en gran medida su potencial de capacitación para poder intensificar la transferencia de tecnología, y es en esta esfera donde se deben examinar las actividades y necesidades relacionadas con el personal.

En general, al parecer es preciso que las necesidades de personal del programa reflejen adecuadamente los cambios en el volumen de trabajo y las nuevas prioridades. Sobre todo, dada la necesidad de identificar, experimentar y desarrollar nuevas técnicas, el personal técnico de la sección agropecuaria no parece ser suficiente. De la misma ma-

nera, el personal del programa para la mujer se beneficiaría si tuviera mejores servicios técnicos para identificar proyectos pertinentes, especialmente de producción y de ahorro de trabajo, con un adecuado seguimiento. También hace falta examinar y fortalecer en algunas esferas los recursos de personal asignado al seguimiento, la evaluación y la presentación de informes.

La insuficiencia de personal en algunas esferas, especialmente la necesidad insatisfecha de peritos agrónomos, pone de relieve la importancia de hallar nuevas maneras de contratar y retener personal técnico de buen nivel. Lógicamente, se debe examinar la dotación de personal en el marco de un estudio global de las cambiantes prioridades del programa, especialmente en relación con las distintas etapas de desarrollo que se alcanzaron en los tres distritos. Es probable que la atención que se presta a las etapas del programa y a los beneficios que trae aparejado el intercambio de personal entre los programas, al llegar cada distrito a una nueva etapa de su desarrollo, contribuya a hacer más eficiente la utilización del escaso personal del programa.

*Otras recomendaciones.* En cierta medida, la estructura de personal en el futuro dependerá de la forma en que se resuelvan y manejen varias cuestiones incluidas en el resumen de otras recomendaciones importantes que se da a continuación.

- Los problemas relacionados con el ahorro y el crédito, especialmente la propuesta de bancos para las organizaciones comunitarias debe analizarse dentro del marco más amplio del total de servicios financieros rurales de que disponen los poblados de la zona norte, no sólo los que se introdujeron con el programa.
- Con respecto a los servicios de comercialización, la prioridad inmediata es crear vínculos productivos con las vías de comercialización existentes en el Pakistán, en lugar de tratar de abordar la tarea más riesgosa y difícil de introducir un sistema independiente y paralelo que compita con ellas. Es posible que en el futuro también sea necesario crear un organismo de comercialización separado y tal vez semiautónomo.
- En materia de cultivos hay que hacer más hincapié en la identificación, comprobación y demostración de nuevas técnicas, aumentando incluso los recursos a tal fin. Entre las esferas que requieren especial atención se encuentran los métodos de riego (especialmente de terrenos en pendiente) y la investigación relacionada con el maíz, la alfalfa, el uso de fertilizantes, varios aspectos de la horticultura y las perspectivas del desarrollo de una industria de semillas de hortalizas en la zona norte.
- En cuanto a la producción ganadera, en esta etapa es necesario mejorar la nutrición animal y la cobertura y eficacia de los programas de vacunación en lugar de aumentar el rebaño o de introducir nuevas razas. El pro-

- grama debe buscar nuevas especies de plantas adecuadas para las pasturas de las zonas altas y para la producción de plantas forrajeras alrededor de los poblados.
- Se justifica continuar las actividades encaminadas a introducir nuevas variedades de árboles que sirvan a distintos fines en la agrosilvicultura, y hace falta investigar sistemas de ordenación de la silvicultura, incluido el cuidado posterior a la plantación y las recomendaciones sobre fertilizantes.
  - Dada la urgente necesidad de intensificar las tareas de investigación y desarrollo apropiadas para la zona norte, y en vista de la falta de medidas adecuadas de apoyo oficial en la materia, el Programa Aga Khan debe seguir cumpliendo esa función. En consecuencia, hasta que inicie su labor la estación gubernamental de investigación de Jaglote, tal vez se deba crear un centro de investigación y capacitación en apoyo de las propias actividades del programa. Es preciso integrar más las actividades de investigación y desarrollo, para lo cual hará falta elevar el nivel de aptitudes del personal y también el número de personal más calificado.
  - El programa podría procurar un mayor apoyo de los donantes internacionales para sus actividades de investigación y desarrollo, incluidos proyectos de investigación realizados en equipo.
  - Las actividades de extensión deben centrarse más en la calidad que en la cantidad de los mensajes y de la transferencia de tecnología, y deben mejorar tanto el seguimiento como la evaluación.
  - Una de las principales funciones del Programa Aga Khan es la capacitación, y hay que ampliarla. Sobre todo, la capacitación requiere instructores con conocimientos especializados y el programa debe invertir en el mejoramiento de su capacidad para formarlos.
  - En el programa para la mujer es necesario identificar medidas adecuadas que permitan ahorrar trabajo, mejorar el modelo técnico y de producción (incluida la introducción de infraestructura física productiva específica para la mujer) y ampliar los temas cubiertos por el programa de capacitación. También hace falta un seguimiento más firme de las actividades productivas. Al parecer se justifica un considerable aumento de la inversión en este programa, teniendo en cuenta la gran participación de la mujer en la actividad económica, los bajos indicadores sociales que le corresponden y la mayor carga de trabajo que tiene.
  - Las variables necesidades de información que deben cubrirse para apoyar el desarrollo de las operaciones del Programa Aga Khan indican que, concomitantemente, es necesario centrarse en las funciones de la Sección de Seguimiento, Evaluación e Investigación. Si bien debe seguir cumpliendo una función clara de seguimiento, ésta debe ser más amplia que la de simple registro y documentación. Hace falta clarificar la idea del proceso de desarrollo, incluida la transformación del modelo del Programa Aga Khan en un "modelo regional". Se justifican otros estudios de la índole de los llevados a cabo recientemente en el Distrito de Gilgit, los que servirán de base para el futuro trabajo de evaluación.
  - Para finalizar la futura orientación del programa, los resultados de la evaluación indican que algunos de sus aspectos revisten especial importancia: si bien la división de las organizaciones comunitarias en grupos más pequeños no debe preocupar demasiado, es sumamente necesario codificar un procedimiento de arbitraje a nivel de poblado en el que no participe el Programa Aga Khan; éste debe evitar la gestión colectiva de las actividades de producción; debe establecerse y mantenerse la independencia legal de las organizaciones comunitarias; también debe conservarse la independencia financiera del propio programa, especialmente al pasar el programa a la etapa de transición a una menor participación directa, y es probable que la capacitación sea una de las principales características de la etapa de transición, tal como ya se ha observado en el programa.
  - El Programa Aga Khan debe seguir haciendo hincapié en la cooperación con otros organismos y actuando en consecuencia; una de sus prioridades debe ser el fortalecimiento de los organismos locales de ejecución.
  - La creciente participación del Programa Aga Khan en relaciones exteriores incluidas las numerosas visitas previstas y no previstas a los emplazamientos indican la necesidad de crear un pequeño centro de recepción de visitantes.
  - Se podría considerar el establecimiento de una academia de desarrollo rural dentro del programa como instrumento para que el mismo pudiera seguir prestando algunos servicios a la zona norte.
  - El programa ya se está repitiendo en otras regiones del Pakistán y tendrá éxito siempre que se cumplan los requisitos previos. De la misma manera, el método del programa sirve de modelo idóneo de desarrollo rural para otros países donde se cumplan las condiciones previas que se han identificado.

# Résumé et Recommandations

Le succès remarquable du programme de soutien rural de la Fondation Aga Khan (PSRFAK) dans les territoires du Nord du Pakistan continue.<sup>1</sup> Cela n'est pas surprenant étant donné qu'il rassemble toutes les conditions indispensables à la réussite d'un programme de développement rural. Son succès intervient dans une région qui présente bon nombre des caractéristiques responsables de la pauvreté rurale—éloignement physique, infrastructure en mauvais état, base de ressource limitée ou en baisse—et que les programmes de développement rural sont conçus pour éliminer ou améliorer. Au milieu de 1989, environ 53.000 ménages, c'est-à-dire environ 54 % de la totalité des ménages ruraux des territoires du Nord, bénéficiaient de leur participation à des organisations villageoises et de la réalisation par le PSRFAK d'infrastructures matérielles productives. A un moment où le "développement rural" n'est plus en vogue comme stratégie de développement, l'expérience du PSRFAK montre qu'il peut, si les circonstances ne lui sont pas défavorables, donner de bons résultats.

## Introduction

*Développement rural : cadre conceptuel et exécution.* Les programmes de développement rural peuvent s'expliquer en fonction d'un modèle à trois volets interdépendants : un volet économique ou incitatif, un volet technique ou productif, et un volet social ou institutionnel. Le PSRFAK a utilisé ce modèle pour élaborer et mettre en place une approche destinée à résoudre les problèmes des territoires du Nord. L'élaboration et la mise en oeuvre de pro-

grammes de développement rural est un travail complexe : la planification doit être rigoureuse, les ajustements continus et leurs activités doivent être coordonnées avec celles des autres organismes ayant des responsabilités ou des activités semblables. Il est évident, dans l'application du modèle, que le PSRFAK a fait ce travail.

Le volet économique ou incitatif sous-tend les deux autres. D'une manière générale, les villageois pauvres ont des ressources limitées et des revenus précaires. Par conséquent, ils répugnent à prendre des risques. De toute innovation, ils exigent une forte rentabilité qui les compense des risques liés à son adoption et de l'effort supplémentaire qu'elle impose à la main-d'oeuvre familiale. Les programmes de développement rural ont donc plus de chances de réussir lorsqu'un changement est intervenu qui augmente considérablement les ressources des ménages (en général la main-d'oeuvre), ou lorsqu'un fait extérieur positif s'est produit qui peut être internalisé par les ménages participant au programme. La construction de la route de Karakoram et de son réseau annexe a considérablement accru les perspectives d'une amélioration des conditions de vie des villageois de cette région arriérée, déshéritée et autrefois isolée du Nord du Pakistan. Le PSRFAK aide à accroître les avantages potentiels de la présence de ces routes en construisant des infrastructures supplémentaires.

Le volet social couvre les ajustements dans l'organisation villageoise et la constitution des liens qui doivent accompagner les changements économiques. Il exige une attention particulière étant donné que les nouvelles organisations locales commencent tôt à lancer leurs propres initiatives et à exprimer leurs propres demandes, et que les directions qu'elles prennent peuvent menacer d'autres groupes. L'organisation des rapports qui s'établissent entre les organisations locales et les autres exige une vigilance de tous instants et beaucoup de doigté. Les organisations locales se trouvent rapidement confrontées à

1. Le PSRFAK travaille dans les trois districts situés les plus au Nord du Pakistan : ceux de Gilgit et de Baltistan dans les territoires du Nord et celui de Chitral dans la province de la frontière du Nord-ouest. Bien que le terme ne soit pas techniquement exact, on a coutume de désigner la région où travaille le PSRFAK comme les territoires du Nord.

de nouveaux défis dans leurs rapports avec les autorités centrales et les organismes commerciaux. Le PSRFAK a fait preuve d'une extrême compétence dans ce domaine puisqu'il a réussi à créer des organisations villageoises dotées de structures relativement démocratiques.

La mise en oeuvre du volet technique présente également des problèmes spécifiques. Il faut des moyens importants, divers et spécifiques pour trouver de nouvelles technologies appropriées, les adapter aux conditions locales et les transférer à un grand nombre de petits exploitants. Des ressources considérables, et surtout des techniciens spécialisés, sont nécessaires pour cela.

*Méthodologie de l'évaluation rétrospective.* La méthodologie d'évaluation rétrospective des projets utilisée dans cette étude a consisté à identifier les buts et objectifs du projet et de les comparer aux résultats. Cette comparaison est en partie quantitative et en partie qualitative étant donné qu'il n'est pas possible d'exprimer tous les objectifs en termes quantitatifs. Les indicateurs utilisés dans l'évaluation sont essentiellement les mêmes, après ajustement dans certains

cas, que ceux utilisés par le PSRFAK dans ses rapports annuels.

## Etat du programme et résultats

Le programme a continué son expansion sur pratiquement tous les fronts, compte tenu de certaines fluctuations annuelles. On trouvera au Tableau 1 un récapitulatif de ces principaux indicateurs. Pour ce qui est de la création d'organisations villageoises, de l'identification et de la réalisation de projets productifs d'infrastructure matérielle, des dépôts d'épargne, de la participation aux campagnes de commercialisation et du nombre des membres des organisations villageoises formés aux techniques de production, la croissance est régulière et soutenue. Certaines questions méritent d'être étudiées de plus près : fluctuations annuelles du nombre des nouvelles organisations, importance du programme de construction d'infrastructures restant à réaliser, croissance rapide des dépôts d'épargne par rapport au crédit, et baisse régulière du nombre des adhérents aux divers groupes qui implique

**Tableau S.1 : Récapitulatif des données sur les résultats du PSRFAK, 1983-juin 1989**

(données cumulatives, sauf indication contraire)

	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>
Nombre d'organisations villageoises constituées	131	379	477	571	762	993	1.087 <sup>b</sup>
Nombre d'organisations de femmes constituées <sup>c</sup>	10	72	100	133	174	248	271
Infrastructures matérielles productives							
Identifiées	363	706	826	1.045	1.249	1.346	1.426
Terminées	23	114	195	256	375	514	560
Epargne et crédit (en millions de roupies)							
Dépôts par les organisations villageoises et organisations de femmes	0,8	6,4	11,9	18,0	34,3	51,3	66,1
Crédit décaissé/an <sup>d</sup>	1,0	3,2	8,3	12,5	25,7	34,6	30,8
Commercialisation							
Nombre d'organisations villageoises participant/an <sup>e</sup>	11	8	45	164	191	215	73
Formation							
Nombre de stages/an <sup>f</sup>	4	8	14	16	24	37	19
Bénéficiaires (milliers de ménages)							
Membres d'organisations villageoises/projet d'infrastructure	12,1	31,0	35,8	40,0	45,2	51,3	53,0
Pourcentage de ménages ruraux <sup>g</sup>	12	32	36	40	46	52	54
Nombre moyen d'adhérents par groupe	92	82	75	70	59	52	49
Adhésion aux organisations de femmes	0,6	4,2	5,4	6,8	8,3	9,7	10,3
Nombre moyen d'adhérents par groupe	60	58	54	51	48	39	38
Crédit agricole/an <sup>h</sup>	4,7	13,1	12,2	39,4	40,3	61,0	36,1
Commercialisation/an	0,5	0,3	1,1	4,4	6,6	8,5	2,8
Personnes suivant une formation pour la première fois/an	91	179	275	347	401	770	370

<sup>a</sup> Au 30 juin.

<sup>b</sup> Y compris 50 organisations villageoises formées à Gilgit depuis 1987 par des personnes ayant quitté des organisations villageoises existantes.

<sup>c</sup> Y compris les sections féminines des organisations villageoises.

<sup>d</sup> A moyen et court termes.

<sup>e</sup> Y compris les organisations villageoises participant à nouveau aux campagnes.

<sup>f</sup> Plus 57 stages de recyclage, soit au total 179 stages, ayant rassemblé 2.433 stagiaires..

<sup>g</sup> Le nombre total des ménages ruraux est de 98.200.

<sup>h</sup> Y compris un double comptage des prêts à moyen et court termes aux OV.

une augmentation des coûts unitaires. Il semble en particulier que dans le district de Gilgit la couverture par les organisations villageoises est plus complète que dans ceux de Chitral et de Baltistan, ce qui signifie, dans le premier cas, que l'on peut envisager d'autres activités, alors que dans les deux autres, il reste un grand travail organisationnel à réaliser.

*Bénéficiaires.* Au milieu de 1989, environ 53.000 ménages, soit 54 % du nombre total des ménages ruraux des territoires du Nord, bénéficiaient du programme. Le nombre moyen d'adhérents par organisation villageoise est cependant tombé de 80-90 pendant les premières années à environ 50 ce qui indique que les nouvelles organisations villageoises sont plus petites. Les activités de crédit ont augmenté : 61.000 prêts ont été accordés en 1988, soit un peu plus d'un par ménage membre d'une organisation villageoise. Quelque 8.500 familles ont bénéficié des activités de commercialisation en 1988.

*Organisations villageoises et infrastructure matérielle productive.* Selon le PSRFAK, 1.087 organisations villageoises et 271 organisations de femmes avaient été créées au milieu de 1989. Cela constitue un investissement considérable en développement institutionnel et en organisationnel sur une longue période de temps. Plus de la moitié de tous les ménages ruraux des trois districts du projet appartenaient à des organisations villageoises au milieu de 1989.

Au total, 1.426 projets d'infrastructure matérielle productifs ont été identifiés et 560 (39 %) sont terminés. Quelque 57 % des projets identifiés sont en route, ce qui signifie qu'un important programme de construction doit être financé par l'intermédiaire de dons et appuyé par le personnel du PSRFAK. Le rythme de construction des projets d'infrastructure s'est accéléré. Plus de 60 % des projets consistent en canaux d'alimentation pour l'irrigation et 22 % en ponts ou en tronçons routiers.

*Épargne et crédit.* Entre 1986, date de la première évaluation intérimaire du PSRFAK par le Département de l'évaluation rétrospective des opérations (OED), et la mi-1989, l'épargne des organisations villageoises est passée de 14,5 millions de roupies à 60,22 millions de roupies (soit de 0,72 million de dollars à 3 millions de dollars), et celle des organisations de femmes de 1,6 million de roupies à 5,9 millions de roupies (de 80.000 dollars à 290.000 dollars). Le rythme de l'épargne de ces deux groupes a donc fortement progressé depuis 1986. La popularité de l'épargne dans la majorité des organisations villageoises confirme à la fois la validité de l'élément épargne qui sous-tend le concept fondamental du PSRFAK et la sérieux que les organisations villageoises attachent à leurs obligations dans le cadre de leurs accords avec le PSRFAK. Elle témoigne également de

la validité et du bon fonctionnement des organisations villageoises en tant qu'institutions communautaires. Dans un contexte plus large, une enquête par sondages dans dix villages du district de Gilgit (Khan 1989) a montré que l'épargne des organisations villageoises ne représentait qu'une petite partie de l'épargne totale des villages. Fait important pour la future stratégie d'épargne et de crédit du PSRFAK, une partie de cette épargne vient sans doute de transferts d'autres types d'épargnes plutôt que d'une épargne supplémentaire.

L'encours du crédit a progressé à un rythme moins rapide que l'épargne : il atteignait 43,9 millions de roupies (2,2 millions de dollars) à la fin de 1988. Les opérations de crédit du PSRFAK se fondent sur la rétrocession aux organisations villageoises des fonds que le PSRFAK a empruntés ou a reçus de bailleurs de fonds. Ces opérations de crédit constituent une réussite : les taux de remboursement sont très élevés et ceux de défaut négligeables. Quatre vingt-sept pour cent des crédits à court terme fournis par le PSRFAK sont utilisés pour l'achat d'engrais ou pour des opérations de commercialisation. Les crédits à moyen terme sont plutôt utilisés pour la mise en valeur des terres et l'achat de machines agricoles. L'analyse des données de l'enquête réalisée dans le district de Gilgit montre que, comme pour l'épargne, les activités de crédit des organisations villageoises ne constituent qu'une petite partie de l'ensemble des opérations de crédit des villages. Il faudra tenir compte de ce fait dans la planification du futur rôle du crédit dans le programme.

Le PSRFAK, avec l'aide de consultants, s'est longuement entretenu avec les représentants des organisations villageoises des futures dispositions applicables au crédit agricole. À l'issue de ce processus, il a formulé une proposition de "banques d'organisations villageoises" où il aiderait des groupes d'organisations villageoises à obtenir des prêts qu'elles rétrocéderaient à leurs membres. Plusieurs aspects de cette proposition doivent être étudiés plus avant.

*Commercialisation.* Le nombre des organisations villageoises participant aux opérations annuelles de commercialisation, qui était inférieur à la douzaine au début des années 80, est passé à 215 en 1988, pour un total cumulatif, en juin 1989, de 707. Le volume de produits commercialisés a également été en augmentation constante, mais il est encore faible si on le rapporte à la croissance de la production dans les territoires du Nord ou à celui beaucoup plus important commercialisé en dehors du programme. Néanmoins, ces opérations ont pris un bon départ et ont permis de tirer des enseignements intéressants pour l'avenir.

Les premières opérations de commercialisation consistaient surtout à regrouper et à vendre directement les produits dans le reste du pays pour éviter d'avoir à passer par des négociants privés; elles ont eu des résultats mixtes, et

cette stratégie a été abandonnée : aujourd'hui, elle se concentre sur quelques produits ayant un potentiel perçu important et sur l'exploitation de quelques créneaux spécifiques du marché.

La stratégie de commercialisation actuelle est dictée par la stratégie de production en ce que l'on ne vend ou l'on envisage de vendre que les denrées dont la production est régulièrement excédentaire. Plus tard, on prévoit que les besoins du marché pourront influencer plus directement la production. La clé de la réussite réside en l'établissement de liens entre la stratégie de commercialisation et celle de production, au moins au stade de la planification. L'expansion de la production doit tenir compte des contraintes et des opportunités du marché, et les plans de commercialisation doivent reposer sur des projections réalistes des excédents commercialisables. Dans ce contexte, il importe de modifier la planification de la production, qui à l'heure actuelle se fonde sur une stratégie de remplacement des importations, après avoir déterminé quelles seraient les meilleures options de production et de commercialisation dans les divers contextes géographiques des territoires du Nord compte tenu de leurs contraintes en ressource spécifique telles que la pénurie des terres, les variations saisonnières des précipitations et la main-d'oeuvre familiale (y compris les femmes).

*Formation.* Le PSRFAK a parrainé 179 stages de formation et 57 stages de recyclage, qui ont été suivis par 2.433 stagiaires; ces stages couvraient avant tout l'agriculture, l'élevage et la commercialisation.

*Personnel du programme.* Vu l'expansion du programme de travail dans tous les districts, les effectifs ont remarquablement peu augmenté au cours des trois dernières années, et encore n'ont-ils augmenté que dans la catégorie de personnel de soutien. En dépit des difficultés de recrutement, le noyau de cadres de haut niveau est resté intact. Cela constitue sans doute une des raisons de la force du programme et est à porter au crédit de sa direction. Le PSRFAK envisage d'augmenter sensiblement son personnel dans le futur, surtout compte tenu de l'accent plus important qui sera mis sur la formation comme moyen de transfert de technologie.

Le PSRFAK a eu des difficultés à recruter du personnel qualifié possédant les compétences techniques voulues : la pénurie de certain personnel technique critique est inquiétante, et il faut trouver des moyens d'attirer et de retenir des spécialistes dans ces domaines.

*Ressources et dépenses du programme.* Le programme a réussi à attirer un nombre important de bailleurs de fonds. Par conséquent, le PSRFAK a consacré beaucoup de temps à répondre à leurs demandes, y compris de visites dans les

zones du programme. La Fondation Aga Khan (Genève) fournit un soutien complémentaire au programme. Chaque bailleur de fonds s'intéresse à des aspects spécifiques du programme et lui consacre donc son financement, ce qui crée certaines difficultés administratives.

Le coût annuel du programme et le nombre des organisations villageoises ont doublé de 1985 à 1988, alors que le nombre des ménages-membres n'a augmenté que de 44 %. Il en est résulté une augmentation, en termes nominaux, du coût annuel par ménage bénéficiaire (il est passé de 1.005 roupies à 1.399 roupies). Les coûts ont augmenté dans toutes les catégories à l'exception de la recherche, des enquêtes et des démonstrations, où ils ont baissé de 58 %. La plus forte augmentation s'explique par le fait que les coûts de personnel ont quadruplé au cours des trois dernières années; ils sont passés de 11 à 25 % du coût du programme.

### **Programme de production agricole**

Pour ce qui est de l'introduction de nouvelles technologies de production agricole dans les territoires du Nord, le PSRFAK a réalisé un travail très honorable avec des ressources limitées. Il devra continuer son rôle de "fournisseur" de technologie jusqu'à ce que les organes d'exécution du Gouvernement puissent faire le travail qui leur a été confié. Le PSRFAK a reconnu que les organisations villageoises constituaient un excellent véhicule de transferts de technologie et les autres organismes devraient tirer parti de cet enseignement. Dans ce domaine, la collaboration avec les autres organismes est fortement recommandée, et le PSRFAK travaille déjà de manière très efficace avec, entre autres, le Ministère de l'agriculture pakistanaise et l'équipe technique de la FAO à la production de semences.

*Technologie de production et changement technique.* L'ouverture des territoires du Nord a entraîné des changements rapides dans la région. Parmi ceux-ci, on peut citer : la diversification accrue de l'économie des ménages (grâce surtout aux transferts de salaires), la meilleure disponibilité des engrais, de nouvelles possibilités de commercialisation des produits agricoles, l'augmentation de la mécanisation agricole (surtout dans la production céréalière), et un plus grand empressement de la part des exploitants de modifier leurs pratiques culturales. Plus précisément, c'est grâce au programme, qui a fourni les crédits et les approvisionnements nécessaires, que les semences et le matériel de plantation amélioré disponibles ont fortement augmenté et que l'utilisation des engrais a beaucoup progressé pendant les années 80 dans les territoires du Nord.

Pratiquement toute la production de céréales et de l'agro-foresterie est tributaire de l'irrigation dans cette ré-

gion. Près de 60 % des infrastructures matérielles productives réalisées sous les auspices du PSRFAK avaient pour but d'accroître l'approvisionnement en eau (construction de nouveaux canaux d'alimentation ou rénovation et élargissement des canaux existants). Un grand nombre de ces projets étant terminés, il faut maintenant passer à la mise en valeur des terres sur une grande échelle. Des méthodes d'irrigation appropriées doivent être conçues pour tirer tous les avantages possibles des investissements réalisés.

*Cultures.* Les cultures céréalières constituent la principale activité agricole des territoires du Nord et vont continuer à l'être pendant encore un certain temps. Le blé est cultivé sur près de la moitié des terres arables. La production de blé a beaucoup bénéficié des travaux du PSRFAK qui a encouragé l'adoption d'une nouvelle variété, le PAK-81. La culture du maïs, soit comme aliment pour les animaux, soit comme céréale, a moins progressé. Dans les zones de monoculture en haute altitude, on cultive l'orge et le triticale. Il pourrait être intéressant de porter une plus grande attention à ces cultures.

La production d'aliments pour animaux est un élément important des systèmes d'exploitation des territoires du Nord. Il existe de nombreuses manières d'améliorer cette production et d'assurer la disponibilité de fourrage de bonne qualité pendant toute l'année. Cela permettrait d'accroître considérablement la production de l'élevage et de réduire la charge sur les pâturages de haute montagne et autour des villages. On pourrait tirer de nombreux avantages de l'amélioration de la nutrition des animaux.

Le potentiel de culture des fruits, des noix et des autres produits horticoles est élevé dans les territoires du Nord. Le PSRFAK a joué un rôle important dans la distribution de nouveaux matériels de plantation, dans la création de pépinières et dans la formation du personnel aux nouvelles technologies. Une importante production fruitière va bientôt être disponible, et il faudra la commercialiser.

La culture de la pomme de terre (surtout à des fins de production de pomme de terre de semence) va très probablement se développer fortement dans les territoires du Nord. Prenant le relais des équipes du Ministère de l'agriculture et de la FAO, le PSRFAK a joué un rôle important dans l'expansion de la production de pomme de terre de semence. Il a également testé et introduit de nouvelles variétés de légumes, surtout par l'intermédiaire des organisations de femmes. Les territoires du Nord pourraient probablement produire des semences de légumes pour le reste du Pakistan et pour l'exportation.

*Production et santé animale.* L'élevage joue un rôle vital dans l'économie et dans les systèmes d'exploitation des territoires du Nord et surtout des zones de haute altitude. Cependant, dans la plupart des régions, les troupeaux de

ruminants augmentent en même temps que la population, ce qui amène une dégradation continue des pâturages de haute altitude et de ceux situés autour des villages. En outre, comme les animaux paissent en liberté autour des villages, ils constituent un obstacle à la production céréalière, surtout à la fin de l'été lorsqu'ils reviennent des hauts pâturages.

Dans sa stratégie de réduction des pertes de l'élevage, le PSRFAK a, dans un premier temps, et à juste titre, concentré son attention sur la santé animale. De nombreux spécialistes villageois ont été formés aux techniques des soins de santé animale, et les villages acceptent maintenant de payer les traitements prophylactiques. Cependant, jusqu'à présent, la couverture des villages par les programmes de vaccination s'est révélée décevante, et l'acceptation de ces programmes varie d'un village à l'autre. L'efficacité des vaccins utilisés pose également un problème dans la mesure où leur manutention et leur stockage ne sont pas appropriés. Le PSRFAK s'est également efforcé, mais sans guère de succès, d'améliorer le cheptel, à la fois par des inséminations artificielles et par l'introduction de nouvelles races : le taux de réussite du programme d'insémination artificielle du bétail est très faible. Pour que les efforts lancés dans le domaine de la production animale aboutissent, il faut d'abord que les exploitants acceptent le fait qu'ils peuvent accroître leur production et leur revenu et réduire les pressions sur l'environnement local avec un nombre moins important d'animaux mieux nourris. Avec l'amélioration de l'alimentation et des changements dans les systèmes de gestion, il pourra être possible, dans certains cas, de relancer les tentatives d'amélioration des races utilisées pour l'élevage.

*Agro-foresterie et production de bois.* Il existe une tradition bien établie d'arboriculture dans les régions du programme et un engagement, au niveau des organisations villageoises, de planter des arbres pourrait servir de modèle à d'autres programmes de développement et de reboisement. D'une manière générale, les ressources forestières sont bien gérées dans la région mais, dans certaines zones, la pression de la population a amené la disparition des massifs forestiers naturels autour des villages. Le PSRFAK a fourni un appui à de nombreuses plantations et également aidé à accroître les variétés d'arbres. Quelles que soient les normes utilisées, le nombre d'arbres plantés est impressionnant.

*Technologie, recherche et développement.* Le programme a, à juste titre, accordé une priorité importante à la technologie; le PSRFAK a réussi à assembler et à tester de nouvelles technologies, et de nombreux travaux se poursuivent pour en trouver de nouvelles, appropriées à la région. Cependant, pour ce qui est des résultats, il semble que le suivi

de leur adoption, ou de leur rejet, n'ait pas été suffisant.

Il faut renforcer la recherche et le développement dans les territoires du Nord. Du fait des changements intervenus dans les communications et du fait d'autres facteurs, la technologie a progressé rapidement ces dernières années. Mais, avec la croissance des incitations et des pressions exercées pour la diversification des cultures, il est nécessaire de lancer des actions de recherche et développement spécifiquement axées sur les pratiques culturelles des territoires du Nord. Le PSRFAK a essayé de le faire mais, à ce jour, il travaille plutôt au coup par coup. Il a encouragé des organismes extérieurs à entreprendre des projets coopératifs de recherche, et cette collaboration devrait se poursuivre et s'intensifier.

La station du conseil de recherche agricole du Pakistan, à Jaglote, ne fonctionne pas de manière efficace. Le PSRFAK devra continuer à demander que cette station soit améliorée, grâce à des efforts accrus de collaboration. Entre-temps, il devra accroître son propre programme de recherche.

*Formation et vulgarisation.* La formation est une des fonctions clés du PSRFAK, et il conviendrait de la renforcer. Pour former, il faut avant tout que les formateurs soient des spécialistes, et le PSRFAK devra se doter de moyens accrus pour former des formateurs. Les visites régulières du personnel de gestion de l'agriculture et des ressources (GAR) aux organismes villageois et aux organisations de femmes, aux fins d'examiner les problèmes et d'appuyer les décisions prises par les spécialistes, constituent un élément nécessaire du processus de formation, mais il est quelquefois laissé de côté, les effectifs du GAR étant trop peu nombreux. Pour fournir des conseils de vulgarisation, les organisateurs sociaux (spécialistes des organisations villageoises) et les spécialistes de la technologie agricole doivent constamment actualiser leurs compétences et leurs connaissances.

*Environnement et durabilité des systèmes de production.* Tout système de production agricole durable est probablement un système qui protège l'environnement. A l'heure actuelle, les problèmes les plus graves viennent de la pression croissante exercée par la croissance de la population et de l'élevage. Certains systèmes de production, qui étaient valides dans le passé, ne le sont plus aujourd'hui. La demande accrue de bois de feu pour les villes et les pressions sur les pâturages situés autour des villages ou en haute altitude posent de graves problèmes et, il est peu probable que les engrais chimiques ou les pesticides soient une importante source de pollution dans les territoires du Nord, il faut cependant mettre en place un programme d'éducation continue pour sensibiliser les villageois aux dangers de leur utilisation excessive et inconsidérée.

*Faune et tourisme.* Le PSRFAK reconnaît également que la faune est menacée dans les territoires du Nord, et il a lancé un programme visant à sensibiliser les populations aux avantages à long terme pouvant découler de la préservation des espèces animales de la région.

## **Le programme en faveur des femmes**

Les femmes jouent un rôle majeur dans la vie économique des territoires du Nord. Elles sont très actives dans l'agriculture, dans l'élevage, et dans de nombreux aspects de la gestion des ressources naturelles. On ne dispose guère de renseignements sur les indicateurs sociaux et le statut des femmes dans les territoires du Nord, mais on peut penser, du fait de l'isolement de la région, qu'ils sont probablement inférieurs à ceux, déjà faibles, de l'ensemble du pays. La faiblesse des indicateurs sociaux pour les femmes s'explique, en partie, par leur charge de travail très lourde, par le manque d'intérêt que les pouvoirs publics accordent aux problèmes des femmes, et par la faiblesse des budgets consacrés aux programmes d'éducation et de santé.

*Exécution du programme.* Le PSRFAK a intensifié les actions en faveur des femmes pour accroître leur productivité, réduire leur charge de travail et constituer des capacités institutionnelles. Dans les trois districts, les progrès ont été remarquables, compte tenu de la très grande faiblesse des indicateurs sociaux et des conditions de travail très difficiles du personnel féminin. Le programme accorde une grande importance à l'introduction de techniques permettant d'économiser la main-d'oeuvre et à la promotion, grâce à des actions de formation et à la fourniture d'intrants, de meilleures techniques d'élevage et de lutte contre les maladies de la volaille, et de production de légumes tant pour la consommation des ménages que pour la vente. Une des grandes réussites du programme est qu'il a donné aux femmes, pour la première fois, accès aux crédits de production agricole.

La plus grande faiblesse du programme est que les enveloppes qui devaient permettre des économies de main-d'oeuvre n'ont eu qu'un impact très faible. Vu la charge de travail très lourde des femmes, c'est là un point qui doit être examiné d'urgence. D'une manière générale, elles n'étaient pas appropriées ou n'avaient pas été adaptées à la conjoncture locale : leur distribution a été arrêtée après 1987 et depuis, aucune nouvelle enveloppe n'a été introduite.

## **Programme d'information**

*Information et données.* Les renseignements dont a besoin le PSRFAK lui sont fournis par le service de suivi, évalua-

tion et recherche (SER). Celui-ci collecte des données détaillées depuis le début du programme et, à mesure que celui-ci s'est diversifié, les quantités de données recueillies ont également augmenté. L'ampleur, le détail et la précision de cette base de données sont impressionnants, et le PSRFAK peut probablement prétendre être un des programmes de développement rural les mieux documentés du monde.

Le cadre de collecte des données a été modifié en 1988 pour donner une vue plus claire du programme à la direction, aux bailleurs de fonds et aux lecteurs des rapports du PSRFAK. Cependant, l'approche adoptée pour la collecte et l'analyse des données, comme le programme de développement lui-même, n'est pas encore sortie de sa première phase et, à la fin de 1989, le cadre était donc à nouveau en cours de révision.

Après la première évaluation intérimaire PSRFAK par l'OED, les services de SER ont élaboré un système d'information de gestion informatisé. La plupart des données des opérations de Gilgit ont été entrées et celles des deux autres districts suivront sous peu.

Le PSRFAK a publié un nombre impressionnant de documents, dont des rapports d'avancement, des rapports d'évaluation rétrospective, des notes statistiques, des études de cas, des études préparées pour des congrès, des rapports de recherche et diverses autres études préparées par des chercheurs, des consultants et des internes.

*Evaluation de la performance du programme.* Le travail du SER semble avoir été déséquilibré. Il a réalisé un suivi continu, mais ses évaluations laissent quelque peu à désirer. Jusqu'à une époque récente, il semble avoir donné la priorité à la collecte de données permettant de répondre aux questions tombant dans la catégorie des "quoi?" et accordé moins d'importance au "pourquoi?" et au "comment?" des opérations.

Les évaluations actuelles des performances du programme souffrent de deux faiblesses. Premièrement, on ne dispose pas de données de base; si l'on peut comprendre pourquoi on ne les a pas recueillies pendant les premières années du programme, il est plus difficile de justifier la décision prise de ne pas le faire au cours des six dernières années. La récente étude d'impact réalisée dans le district de Gilgit (Khan 1989) est la première enquête à grande échelle susceptible de constituer une base de données pour le futur. Deuxièmement, les services du SER se sont attachés à documenter les intrants du programme plutôt que ses résultats économiques. Même si un certain nombre d'évaluations partielles ont été réalisées, peu d'entre elles fournissent des renseignements utiles pour la prise de décision, parce qu'elles étaient trop focalisées. On ne peut mentionner qu'un ou deux cas où l'on a clairement identifié le concept approprié de "situation sans projet"

pour évaluer les résultats du programme.

La stratégie du programme PSRFAK évolue : au lieu de se concentrer sur le développement des villages individuels, elle commence à porter sur le développement économique de tous les territoires du Nord. Pour mesurer et évaluer l'impact d'un programme de développement, il importe d'avoir une idée claire des changements qui seront lancés. Avant les récentes études réalisées dans le district de Gilgit, le PSRFAK n'avait fait aucun effort pour recueillir des renseignements sur la structure globale des ressources et de leur utilisation (notamment de la main-d'oeuvre), ou sur les autres intrants et résultats au niveau des villages et des familles. De toute évidence, des travaux supplémentaires s'imposent dans ce domaine.

## Directions futures

*Evolution des organisations villageoises.* Les récents développements montrent que les organisations villageoises assument les fonctions d'institution centrale dans les gouvernements locaux des vallées. Dans ce contexte, le programme devra tenir compte, à l'avenir, de l'évolution des organisations villageoises, de leur fragmentation (une cinquantaine de nouvelles organisations villageoises du district de Gilgit ont été constituées par l'éclatement de groupes plus importants), des besoins de codification et d'arbitrage, de la baisse des adhésions, de l'échec des entreprises de production collective, du regroupement des organisations villageoises, de l'indépendance de ces organisations et de la formation de cadres de gestion au niveau des villages.

*Evolution du programme.* Le PSRFAK continue à tirer tout le parti possible d'une démarche fondée sur l'innovation, les essais et les évaluations pragmatiques. Elle lui permet d'être très souple dans l'exécution du programme. L'indépendance de chacun des programmes de district par rapport aux autres et par rapport à la direction centrale du PSRFAK constitue une innovation opportune qui, en outre, est compatible avec l'objectif à long terme de dévolution des responsabilités. Dans ce contexte, le programme de formation a connu une forte expansion qui devra se continuer.

On ne comprend pas toujours très bien, à l'extérieur du PSRFAK, que les organisations villageoises sont, au moins en pratique, des entités locales indépendantes. Il est important que le programme continue à faire savoir que les organisations villageoises peuvent être contactées directement et peuvent passer des marchés et des contrats les unes avec les autres. L'utilisation efficace du réseau des organisations villageoises par d'autres organismes et programmes ne peut que renforcer leur rôle et leur efficacité.

A mesure que le PSRFAK lance de nouveaux programmes, ses besoins de personnel augmentent et changent. Il faudra sans doute étudier la coordination des calendriers d'exécution des activités des divers districts et l'efficacité de l'élargissement des responsabilités du personnel. Le processus est compliqué par le fait qu'il est difficile d'attirer des cadres qualifiés dans les territoires du Nord.

Certaines activités dérivées du programme du PSRFAK pourraient peut-être être mieux gérées et attirer un appui supplémentaire des bailleurs de fonds si elles étaient présentées sous forme de sous-programmes spécifiques. Il s'agit des systèmes de production en altitude, de la mise en place de systèmes d'irrigation et d'exploitation des terres, et de l'alimentation et de la gestion du bétail.

*Relations extérieures.* Le PSRFAK a un bon programme de relations publiques, ce qui est dans la logique, d'une part, de la nécessité où elle se trouve d'attirer régulièrement des fonds et, d'autre part, de son deuxième grand objectif qui est de promouvoir, tant dans les autres régions du Pakistan que dans les autres parties du monde, son programme comme modèle de programme de développement rural soutenu par l'Etat. La documentation et les rapports préparés par le PSRFAK témoignent de l'importance qu'il attache à ce programme de relations publiques. Malheureusement, il attire un flux continu et croissant de visiteurs qui accaparent beaucoup du temps des cadres de direction et interrompent le travail du programme. Pour pallier à cet inconvénient, on pourrait créer un centre de visiteurs qui, dans une certaine mesure, protégerait les cadres de direction de ces interruptions. D'une manière générale, les centres de ce genre s'occupent également des autres aspects des relations extérieures, y compris de la préparation et de l'expédition des rapports, brochures et autres documents écrits, et des réponses aux diverses demandes.

*Phase suivante du programme.* L'objectif à long terme du PSRFAK est de ne plus intervenir directement dans le développement rural des territoires du Nord. Le moment est peut-être arrivé pour le PSRFAK de se désengager au niveau du terrain, en commençant par le district de Gilgit où le programme est établi depuis plus longue date. A terme, les organisations villageoises devront avoir leurs propres organisations pyramidales, et peut-être même des organisations de niveau intermédiaire telles que par exemple des groupes au niveau des vallées. Ces organisations devront être autogérées et autofinancées. D'autres questions institutionnelles doivent également être examinées, et il faut en particulier étudier s'il est souhaitable de créer un institut de développement rural et une société de commercialisation et déterminer les mécanismes de financement rural futurs.

*Reproductibilité du programme.* L'évaluation s'est particulièrement intéressée à la reproductibilité du programme parce que l'un des objectifs du PSRFAK est de formuler et de présenter un modèle général de programmes de développement rural. Aujourd'hui, le modèle a été affiné, la méthode de travail établie et documentée et le programme étendu, avec réussite, à trois districts, avec des directions différentes. S'il est vrai que le modèle fournit une bonne base pour la poursuite du développement rural, la question reste de savoir si cette approche peut être utilisée ailleurs et par d'autres gouvernements. Au Pakistan, le programme a été transposé dans deux autres régions adjacentes, et il semble possible de le reproduire aussi ailleurs dans le pays. Cependant, vu la faiblesse des services officiels, le PSRFAK a dû s'engager dans des domaines qui dépendent normalement des pouvoirs publics, notamment dans la recherche et le développement. Cette faiblesse des services de l'Etat peut limiter les possibilités de transfert dans d'autres régions. Peu d'organismes seront en mesure de mobiliser les fonds, l'expertise et le temps voulus pour monter des programmes aussi importants. L'expérience acquise par la Banque mondiale semble montrer que le manque de technologie adéquate au niveau des exploitations est un des problèmes les plus courants auxquels se heurtent les projets de développement rural.

La politique des pouvoirs publics en matière de subventions des intrants agricoles peut également freiner les initiatives de développement rural. Au Pakistan et ailleurs, les circuits de commercialisation normaux souffrent de la concurrence des approvisionnements subventionnés, ce qui a pour résultat de rationner les fournitures et les services au profit des plus fortunés. Un autre problème concernant la reproductibilité est de savoir si les organismes officiels jouissent d'assez d'indépendance et de souplesse pour mettre en place le modèle élaboré par le PSRFAK. Celui-ci peut réussir du fait qu'il est indépendant et qu'il dispose d'une base de financement très large. L'expérience montre que les programmes de développement rural appuyés par le Gouvernement qui ont eu le plus de succès ont été ceux qui étaient dirigés par des organismes semi-étatiques autonomes et responsables; or, au Pakistan, il est rare que l'on fasse appel à de tels organismes indépendants. Vu ces contraintes, il faut sans doute se garder de trop espérer de la reproductibilité du programme.

L'approche utilisée par le programme pourrait être reprise dans d'autres pays, à condition cependant que certaines conditions préalables soient remplies; il faut qu'il existe des politiques officielles appropriées, un système de réglementation adéquat pour les finances, les ressources naturelles et le commerce; et des services de soutien suffisants, y compris des services de recherche et développement, d'éducation, de soins de santé et de planning familial. A tout gouvernement décidant de lancer des pro-

grammes de développement rural au niveau local, le PSRFAK peut offrir une approche ayant fait ses preuves, un modèle fonctionnant bien et une méthode d'exécution.

## Recommandations

*Personnel.* Une recommandation revient dans l'évaluation de presque toutes les activités du PSRFAK : il faut revoir et réviser les projections des besoins en personnel et les modalités des affectations. Le PSRFAK a déjà reconnu qu'il devait fortement accroître ses capacités de formation pour renforcer ses capacités de transfert de technologie, et c'est dans ce contexte qu'il devra revoir toutes ses activités et ses besoins de dotation en personnel.

D'une manière générale, il semble que les besoins de personnel doivent être ajustés en fonction de l'évolution des charges de travail et des nouvelles priorités. Plus particulièrement, vu la nécessité d'identifier, d'analyser et de créer de nouvelles technologies, le personnel technique de la section agricole semble particulièrement faible. De même, le personnel du programme à l'intention des femmes pourrait profiter de l'amélioration des services techniques chargés d'identifier les enveloppes de travail (surtout les enveloppes de production et les nouvelles enveloppes d'économie de main-d'œuvre) et d'assurer un suivi approprié. Les ressources en personnel pour le suivi, l'évaluation et la préparation des rapports devront également être revues et renforcées dans certains domaines.

Les sous-effectifs existant dans certains domaines et, plus spécialement, la demande non satisfaite de techniciens agricoles, montrent bien qu'il importe de trouver de nouvelles manières de recruter et de garder des personnels techniques de qualité. Une étude des dotations en personnel devrait, en toute logique, être lancée dans le contexte d'une étude globale des nouvelles priorités du programme et, plus particulièrement, en fonction des différents stades de développement atteints dans les trois districts. L'ajustement des calendriers d'exécution des divers programmes et le transfert du personnel entre les divers programmes, à mesure que chaque district passe à un nouveau stade de son développement, permettraient probablement d'utiliser le plus efficacement possible les rares ressources en personnel du programme.

*Autres recommandations.* Dans une certaine mesure, la répartition du personnel dépendra de la manière dont seront résolues les questions présentées dans la liste récapitulative, donnée ci-après, des principales grandes recommandations.

- La question de l'épargne et du crédit, et surtout la proposition d'établir des banques d'organisations villageoises, ne doit pas être examinée uniquement dans la perspective des services introduits par le programme,

mais dans celle, plus large, de l'ensemble des services financiers ruraux mis à la disposition des villages des territoires du Nord.

- Pour ce qui est des services de commercialisation, la priorité des priorités est d'établir des liens productifs avec les circuits de commercialisation existant déjà au Pakistan plutôt que d'essayer d'introduire un système de commercialisation parallèle et séparé, en concurrence avec les circuits existants, ce qui serait plus difficile et plus risqué. A l'avenir, il sera peut-être nécessaire de constituer un organisme de commercialisation séparé, semi-autonome.
- Pour ce qui est de la production végétale, il faut donner encore plus d'importance, et donc consacrer des ressources supplémentaires, à l'identification, aux essais et aux démonstrations de nouvelles technologies. Des efforts particuliers devront être faits dans les domaines des méthodes d'irrigation (en particulier sur les pentes escarpées), de la recherche (sur le maïs, l'alfa, l'utilisation des engrais, et divers aspects de l'horticulture) et des possibilités de créer une industrie de semences de légumes dans les territoires du Nord.
- Pour ce qui est de la production animale, il est plus important à l'heure actuelle d'améliorer la nutrition et la couverture et l'efficacité des programmes de vaccination que d'accroître la taille du cheptel ou d'introduire de nouvelles races. Le programme devrait essayer d'identifier de nouvelles espèces végétales adaptées aux pâturages de haute altitude et/ou pouvant être cultivées pour la production de fourrage autour des villages.
- La poursuite des efforts visant à introduire de nouvelles variétés d'arbres polyvalents pour l'agro-foresterie se justifie et des recherches complémentaires doivent être lancées sur les systèmes de gestion de la sylviculture, y compris sur les soins à donner après la plantation et sur les niveaux recommandés d'utilisation des engrais.
- Vu l'impérieuse nécessité d'accroître les efforts de recherche et de développement axés sur les territoires du Nord, et vu l'inaction des pouvoirs publics, le PSRFAK doit continuer son travail dans ce domaine. Par conséquent, dans la mesure où la station de recherche de l'Etat à Jaglote est inefficace, le PSRFAK doit peut-être établir un centre de recherche et de formation pour soutenir ses activités. Les actions de recherche et de développement doivent être plus étroitement intégrées; à cette fin, les compétences du personnel doivent être améliorées, et du personnel plus qualifié sera également nécessaire.
- Le PSRFAK pourrait essayer d'obtenir un appui supplémentaire des bailleurs de fonds internationaux pour ses actions de recherche et développement, y compris par l'intermédiaire de projets de recherche lancés en collaboration avec ces bailleurs de fonds.
- Les efforts de vulgarisation du PSRFAK doivent être plus

centrés sur la qualité des messages et sur les transferts de technologie que sur la quantité, grâce à un suivi et un contrôle améliorés.

- La formation est une des fonctions clés du PSRFAK et elle devrait être renforcée. La formation exige que les formateurs soient des spécialistes, et le PSRFAK devrait consacrer une partie de ses ressources à améliorer sa capacité de former des formateurs.
- S'agissant du programme à l'intention des femmes, il faut identifier des enveloppes appropriées permettant des économies de main-d'oeuvre, améliorer le modèle de production et de technique (y compris l'introduction d'infrastructures matérielles productives spécifiquement destinées aux femmes), et accroître le nombre de domaines couverts par le programme de formation. Le suivi des enveloppes de production doit également être renforcé. Une augmentation sensible des investissements consacrés à ce programme semble justifiée, compte tenu de l'importance des femmes dans la vie économique, la faiblesse de leurs indicateurs sociaux, et l'augmentation de leur charge de travail.
- Les renseignements dont le PSRFAK a besoin pour ses opérations changent; il faut donc refocaliser les fonctions de la section Suivi, évaluation et recherche. La fonction de suivi doit certes continuer à exister, mais elle ne doit pas se contenter d'enregistrer et de documenter. Il importe d'avoir une conception plus claire du processus de développement et, à terme, d'élargir le modèle du PSRFAK en un modèle régional. Des enquêtes supplémentaires, semblables à celle récemment exécutée dans le district de Gilgit, se justifient : elles permettront d'établir les bases de données nécessaires au travail d'évaluation futur.

- Pour ce qui est des directions futures du programme, les conclusions de l'évaluation mettent en lumière un certain nombre de points : la scission des organisations villageoises en groupes plus petits n'est pas inquiétante en soi, mais il faut codifier, au niveau du village, un processus d'arbitrage n'impliquant pas le PSRFAK; le PSRFAK devra éviter la gestion collective des activités de production; il faut établir et maintenir l'indépendance juridique des organisations villageoises; il faut également maintenir l'indépendance financière du programme, surtout que le PSRFAK entre dans une phase de transition pendant laquelle il interviendra moins directement; comme le PSRFAK l'a déjà reconnu, la formation sera probablement l'une des grandes composantes de la phase de transition.
- Le PSRFAK devra continuer à coopérer avec les autres organismes; une de ses priorités devra être de renforcer les organismes d'exécution locaux.
- L'intérêt marqué du PSRFAK à son programme de relations publiques, et les nombreuses visites prévues et imprévues des consultants sur les sites du programme, indiquent qu'il est nécessaire de créer un petit centre de visiteurs.
- Le PSRFAK devrait envisager de créer un institut de développement rural lui permettant de continuer à fournir des services résiduels dans les territoires du Nord.
- Le programme a déjà commencé à être reproduit dans d'autres parties du Pakistan, et ces tentatives devraient être couronnées de succès là où les conditions préalables sont remplies. L'approche du PSRFAK fournit également un modèle approprié pour le développement rural en dehors du Pakistan, là où les conditions préalables sont remplies.



# 1. Introduction

The Aga Khan Rural Support Program (AKRSP) continues to be remarkably successful. Visiting the villages of the program area in the three northernmost districts of Pakistan, one gains a repetitive impression of vitality and positive change. Not only are many of the physical works in place and in use, but observable signs of improved incomes are evident among the villagers in the presence of better quality clothing and of consumer durables such as radios and in housing improvements such as galvanized iron roofs. Other indications of improved economic conditions are the growth of savings and the increasing rate of growth in the number of children attending schools. Of course, not all of these changes are directly attributable to AKRSP, since some are the consequence of the government's road, power, and other programs.

Nevertheless, the overall success of the program to date is in certain respects not surprising since the program meets most if not all criteria generally considered essential for a successful rural development program. Although the program area's starkly beautiful and dramatic setting may mask some of its harsher realities, the area had, and largely still has, all the characteristics that rural development approaches were designed to meet. Rural development is a specific strategy focused directly on assisting people who have to find their livelihood in rural areas, on ameliorating their poverty, and on maximizing the efficiencies of their small-scale operations.

A common cause of rural poverty is physical remoteness, compounded by poor infrastructure. Poor or non-existent roads are a particular deficiency, with resultant high costs of transport. This situation characterized the Northern Areas of Pakistan prior to the building of the Karakoram Highway, and even now some villages lie 12-15 hours from the major commercial centers of Gilgit, Chitral, or Skardu, on roads that are passable only a few months a year. The great distances from the main towns

to the nearest cities of Rawalpindi, Islamabad, and Peshawar mean that transport costs, although much reduced by improved infrastructure, are still high.

Another cause of rural poverty is a restricted or declining resource base. People may not have access to land, or the land may be of such poor quality that existing low-capital technologies cannot provide an adequate income. This situation also characterizes the Northern Areas (see Annex 1). The land base is limited to fan-shaped areas of flat or terraced land along rivers and some high, mountain-top pastures. The water supply is restricted to irrigation from snow or glacial melt because of very low rainfall. The soils are thin, and the whole natural environment is fragile. Livestock quality is poor, food for livestock is scarce, and crop varieties are generally low yielding.

## Conceptual Framework for Rural Development

These are the kinds of circumstances that rural development projects and programs are designed to overcome or ameliorate. Conceptually, rural development projects can be explained in terms of a model comprising three submodels: an economic or incentives model, a technical or production model, and a social or institutional model. These are closely interrelated and mutually supportive.

### *The Economic Model*

The economic or incentives model underlies the others. Poor villagers typically have a household system in which resources are stretched and incomes quite precarious. In consequence, they are highly risk averse. They require high returns from any innovation to offset the risk associated with its adoption and the extra effort often required of family labor. Field trials have revealed that smallholders may often require a yield increase that will pay a return as

high as 200 percent to ensure adoption of a new seed and fertilizer package. To get villagers to make larger investments or join a broader program, the incentives have to be substantial. Thus rural development programs work best where some changed circumstance has arisen which greatly increases their opportunities to produce and sell a salable surplus or their other resources (usually their labor). In other words, rural development programs work best where some positive externality has been created which can be internalized to participant households.

This change can take many forms. It may result from the building of new infrastructure, such as an irrigation canal. The increase in water supply can ensure a crop in the regular growing season, while often also permitting a second crop. The building of a new road may give access to markets previously out of reach. With these kinds of incentives, smallholders can be persuaded to make significant changes or incur high costs, including, for example, the relinquishment of some of their land for field irrigation channels. In the case of the Northern Areas of Pakistan, the building of the Karakoram Highway and its related road network enhanced the prospects for transforming the conditions of the villagers in this backward, desolate, and once isolated area. AKRSP helps to extend the potential benefits of these roads by building supplementary infrastructure.

The first phase of the program, once a village organization has been formed, is to construct a piece of productive physical infrastructure to augment the government-provided road system. Typically, this is a link road, bridge, or irrigation channel. The next phase is to improve production and productivity with better technology. Together, these improvements permit village organization members to benefit from the new highway access by selling their expanded surplus to a wider market.

#### *The Technical Model*

The technical or production model provides the mechanism through which villages and individual farm families capture the potential benefits of change. This model relates to changes that take place within the village or smallholding. It involves processes for enhancing or increasing the productivity of the existing stock of resources, land, labor, and capital. It might be described as a process of factor augmentation.

AKRSP seeks to increase the productivity of smallholders by improving the quality of their land, through the use of purchased inputs such as fertilizer or improved seed, or their labor, through the use of better equipment or additional services. For this purpose, AKRSP has developed and introduced production programs and technical packages. These programs include agronomic research, distri-

bution of inputs such as seeds and fertilizer, and training of "technical specialists" from the village organizations to provide the necessary services, such as inoculation of livestock and spraying of crops. The program has also provided for access to credit for tractors and other machines. And increasing attention has been given to marketing, particularly to organization at the village level for marketing purposes.

#### *The Social Model*

The social or institutional model describes the adjustments in village organization, the growth of linkages, and the institutional developments that must accompany the economic and technical changes already described. In most situations, these social adjustments can be divided into two categories: changes internal to the village and changes in the external system, including especially government instruments.

Typically, rural areas in developing countries suffer from an inadequate institutional framework. The feudal fiefdoms have been abolished, the colonial administrations have gone away, but strong local government has not arisen in their stead. This has been very much the case in the Northern Areas. AKRSP has addressed this issue through its concerted efforts to establish village organizations and make them function. This has included, first, an emphasis on group organization and, second, continuing efforts to identify and develop local leaders and managers through training.

#### **Implementation of Rural Development**

The implementation of rural development programs is clearly a complex process. Ensuring the effective development and interaction of each of the sub-models outlined above is no easy task. It requires careful planning and continued adjustment. The difficulty is compounded by the fact that not all of the key components in the process are within the control of management. There is extensive need for coordination with other entities that have responsibilities or activities in the area.

In particular, the social model requires special attention. A key characteristic of rural development is that it involves large numbers of people. Encouraging the participation of largely unorganized villagers of both sexes requires untiring effort and attention. Once formed, local organizations develop their own initiatives and demands. These affect both the supporting agency and various other entities in both the public and private sectors. The emerging power of village organizations is threatening to some and is not always viewed with equanimity. Managing these emergent relationships between local organizations and others re-

quires constant vigilance and good judgment.

The creation of village-level organizations may require the intervention of a change agent or *animateur* who can persuade villagers to participate. In the case of AKRSP, this role is performed by the social organizers, although successful ventures at the individual village level quickly lead to imitation (even, in some cases, by nonparticipant villages in the Northern Areas). Achieving full participation, however, often requires concerted effort and incentives in the form of quick results. Since the generation of substantial benefits from the development process generally takes several years, it is often advantageous for governments (or development agencies) to provide grants to fledgling local organizations to undertake some significant shared enterprise or to remove some constraint affecting most of the community. This provides participants with some clearly visible immediate benefits, thereby maintaining their interest while the longer-term benefits mature.

The newly formed local organizations begin by taking on the traditional functions of an organization, but they quickly face new tests in the form of dealing with government (or project) staff and with commercial operations. There are many "tricks of the trade" both in forming the village organizations and in getting them to function reasonably democratically. This is an area in which AKRSP demonstrates superb competence. Village organizations are involved in a variety of activities that range from serving as vehicles for local government or selected communal activities to being instruments for collective action, especially in regard to services such as credit and the marketing of produce. In the Northern Areas, there are village organizations which fulfill each of these functions although few individual village organizations cover the full gamut.

The technical model also presents special problems, particularly since the elements needed to introduce a new way of doing things are numerous, specialized, and complex. The model requires identifying the new technology, adapting it to the working environment, and conveying it to large numbers of smallholder families. Each of these steps involves processes that are complex in themselves. If the program has to take care of all three steps, as in the case of AKRSP, the challenge is daunting. Coordinating such a program, while also providing adequate incentives to ensure continued participation of the villagers, is no easy matter. Further, the resources needed—especially in terms of skilled technicians—are not negligible.

Although outlined here as a logical and orderly process, rural development typically exhibits uneven progress. Not infrequently, the proponents of rural development are disappointed by the often-shifting direction of what they perceive should be an orderly and equitable process. But such shifts are the inevitable consequence of events, both foreseen and unforeseen, and of individuals and communities

exploiting the opportunities that emerge. Social history tells us that periods of rapid economic change can be rather messy, as was the experience of Georgian England, for instance. The most difficult to achieve of the various goals often pursued in rural development is that of equity, in the sense of continued relative economic equality.

Dissatisfaction is often also expressed with the "short-term view" and "low level of advancement" that seem to be the goal of rural development. This dissatisfaction derives largely from a misconception of the role of rural development. Rural development should not be perceived as providing a long-term or permanent solution to development. Economic history tells us that farms must grow in size as land holdings amalgamate and the farming population declines. One purpose of rural development might reasonably be to provide a stable period of relatively improved economic circumstances during which younger generations can get an education and find employment beyond the farm or even the village. A failure to recognize this important larger goal may severely restrict the initiative of participants in rural development programs. In the case of the Northern Areas, the dynamics of the development taking place go far beyond those elements in which AKRSP has a direct involvement.

### **Approach of the Evaluation**

The methodology of ex post project evaluation is to identify the goals and objectives of the project and to assess achievements against these goals and objectives. The goals and objectives are in this case set out in the basic project document of 1982 and in the subsequent strategy papers. The assessment is partly quantitative, insofar as the information available will allow, and partly qualitative, since not all objectives can be expressed in quantitative terms. In addition, achievements may be assessed against more general expectations for interventions of a particular kind—in this case a rural development program. In this context, the foregoing sections of this chapter attempt to establish general precepts and practice which may be used as a standard in evaluating AKRSP performance to date.

The focus of this second interim evaluation was also directed toward particular aspects of the program, in response to the overall findings and concerns of the previous interim evaluation. This was done without intended prejudice to the breadth of the program or the overall evaluation. But the subprograms for agricultural production, for women's programs, and for monitoring and evaluation each seemed to present special problems and therefore to warrant special attention. The evaluation team included members with expert knowledge in each of these areas, and their findings are presented in Chapters 3, 4, and 5, respectively.

The performance indicators used in the evaluation are, of necessity, essentially the same as those presented by AKRSP in its regular reports. No new data have been collected and no attempt has been made to validate the data provided—an impossible task in the time available. Rather, this report relies on the accuracy and fairness of the pro-

gram's reporting procedures. The volume of data available can be overwhelming, and some attempt has been made to simplify, organize, and present the data in a form which will help provide new insight into the program, raise issues deserving of further attention, and point in new directions.

## 2. Program Status and Performance

This chapter reviews the program's status and performance as they are revealed through the numerous data collected and reported by AKRSP. Seven indicators were chosen to illustrate program performance: (1) the establishment of village organizations and (2) women's organizations; (3) identification and completion of productive physical infrastructure; (4) savings and credit participation; (5) marketing participation; (6) training activities; and (7) participation in village organizations and women's organizations, and in credit, marketing and training activities. A summary of the main program indicators and data from the start of the program in 1983 through June 1989 is presented in Table 2.1 (supporting details are provided in Annex 3).

The program has continued to expand and grow on most fronts, although there have been some variations from year to year. Growth has been consistently strong with respect to the establishment of village organizations, the identification and completion of productive physical infrastructure, savings levels, marketing participation, and the number of village organization members trained in production techniques.

While all three districts are progressing well, Gilgit District, where the program has been in place the longest, is well ahead of the others in terms of the extent of village coverage by village organizations (See Figure 2.1 and Annex 3, Tables 3-1 and 3-2). This difference in program phasing has important implications for AKRSP staffing and work plan projections. The work of establishing village organizations should now be winding down in Gilgit in favor of other types of activities, while in Chitral and Baltistan districts, a substantial amount of organization-establishment work still remains. Thus, for example, at current trend rates (see Figure 2.1), Baltistan may not reach 90 percent coverage for another four years, Chitral for another six years.

### Village Organizations and Productive Physical Infrastructure

AKRSP reports that 1,087 village organizations (see Figure 2.2 and Annex 3, Tables 3-1 and 3-2) and 271 women's organizations had been established by mid-1989. This development represents a substantial investment in organization and institutional development over a long period. By mid-1989, 54 percent of estimated total rural households of the three districts were members of village organizations. Coverage by district varies considerably, however, ranging from 90 percent for Gilgit to 30 percent for Baltistan, with Chitral between them at 48 percent. Village organizations started later in Baltistan and Chitral than in Gilgit and have also been slower in gaining momentum. The rate of establishment of women's organizations has also been uneven, peaking in 1984 at 62 groups, falling to half that level in 1985 and 1986, increasing again in 1987, and peaking once more at 74 groups in 1988 (see Table 4.2 in Chapter 4). Baltistan has no women's organizations but women's sections of village organizations participate in the Women's Program.

### Productive Physical Infrastructure Projects

A total of 1,426 productive physical infrastructure projects have been identified and 560 (39 percent) have been completed. In the early years, identification of infrastructure projects outpaced establishment of village organizations at a rate of two to one; the differential has now fallen to only about 30 percent. Of the 1,426 infrastructure projects identified, 824 (57 percent) are under construction. In clarification, AKRSP management has noted that not all PPIs identified will be implemented, depending on the priorities decided by village organizations. Hence the difference between the identified number of productive phys-

**Table 2.1: Summary Data on AKRSP Program Performance, 1983–June 1989***(cumulative, unless stated)*

	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>
<i>Village Organizations Established</i>	131	379	477	571	762	993	1,087 <sup>b</sup>
Village organizations established/year	131	248	98	94	191	231	94
<i>Women's Organizations Established<sup>c</sup></i>	10	72	100	133	174	248	271
Women's organizations established/year	10	62	28	33	41	74	23
<i>Productive Physical Infrastructure Projects</i>							
Identified	363	706	826	1,045	1,249	1,346	1,426
Per year	363	343	120	219	204	97	80
Completed	23	114	195	256	375	514	560
Percent of Identified Projects	6	16	24	25	30	38	39
Per year	23	91	81	61	119	139	42
<i>Savings and Credit (Rs. millions)</i>							
Village and Women's Organizations Deposits	0.8	6.4	11.9	18.0	34.3	51.3	66.1
Credit Disbursed/year <sup>d</sup>	1.0	3.2	8.3	12.5	25.7	34.6	30.8
<i>Marketing</i>							
Village Organizations Participating/year <sup>e</sup>	11	8	45	164	191	215	73
<i>Training</i>							
Number of Courses/year <sup>f</sup>	4	8	14	16	24	37	19
<i>Beneficiaries (thousand households)</i>							
Village Organization Members/infrastructure project	12.1	31.0	35.8	40.0	45.2	51.3	53.0
Percent of Rural households (no. of households = 98,200)	12	32	36	40	46	52	54
Average Members per Group	92	82	75	70	59	52	49
Women's Organization Membership (thousands)	.6	4.2	5.4	6.8	8.3	9.7	10.3
Average Members per Group	60	58	54	51	48	39	38
Agricultural Credit/year <sup>g</sup> (thousand households)	4.7	13.1	12.2	39.4	40.3	61.0	36.1
Marketing/year (thousand households)	0.5	0.3	1.1	4.4	6.6	8.5	2.8
First-time Trainees/year	91	179	275	347	401	770	370

a. As of June 30.

b. Includes 50 village organizations formed since 1987 by members splitting off from existing village organizations.

c. Includes women's sections of village organizations.

d. Short and medium term.

e. Includes repeat participation of village organizations.

f. A total of 57 refresher courses have also been held, for a total of 179 courses and 2,433 trainees attending.

g. Includes double counting of short- and medium-term lending to village organizations.

ical infrastructure projects and those under construction overstates the future work load and funding requirements, whether from AKRSP grants or long-term credit. The rate of completion of infrastructure projects has accelerated very satisfactorily; however, because of the high rate of project identification, the outstanding "stockpile" of infrastructure projects has been reduced only gradually.

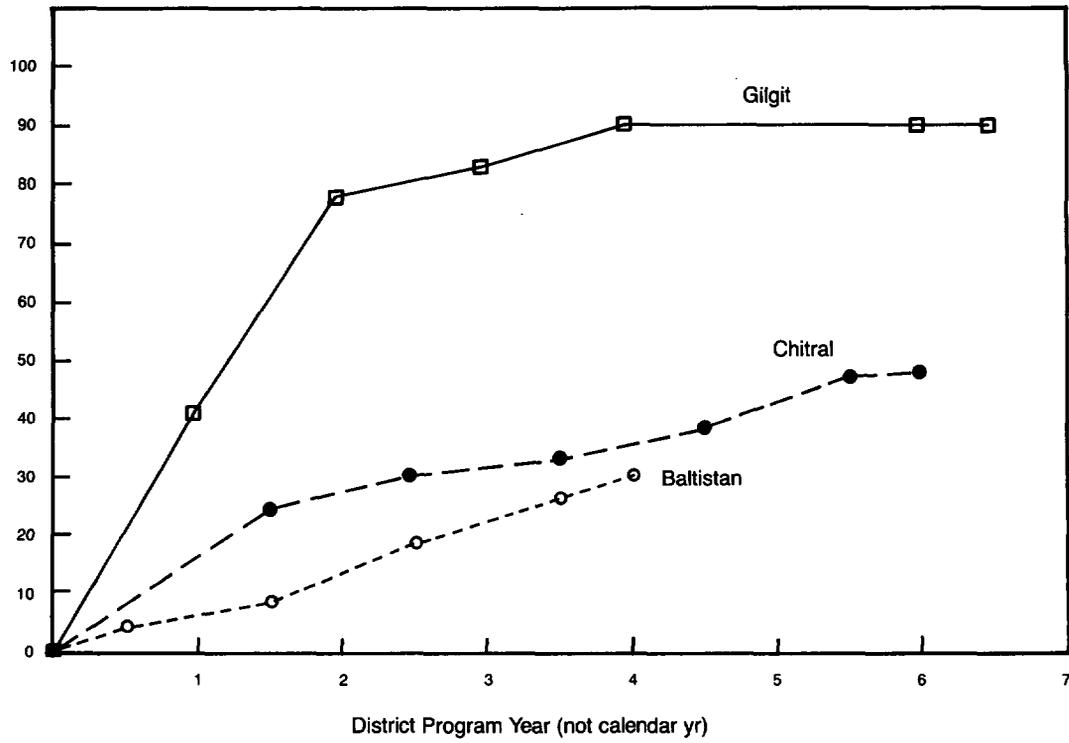
By type of project, 61 percent are irrigation, mainly feeder irrigation channels, 22 percent are for transport infrastructure, mainly link roads, and the rest are mostly protective works and boundary walls. The three districts

have roughly the same distribution of infrastructure types. Similarly, projects in the pipeline (identified but not yet started) have much the same distribution as the ongoing projects.

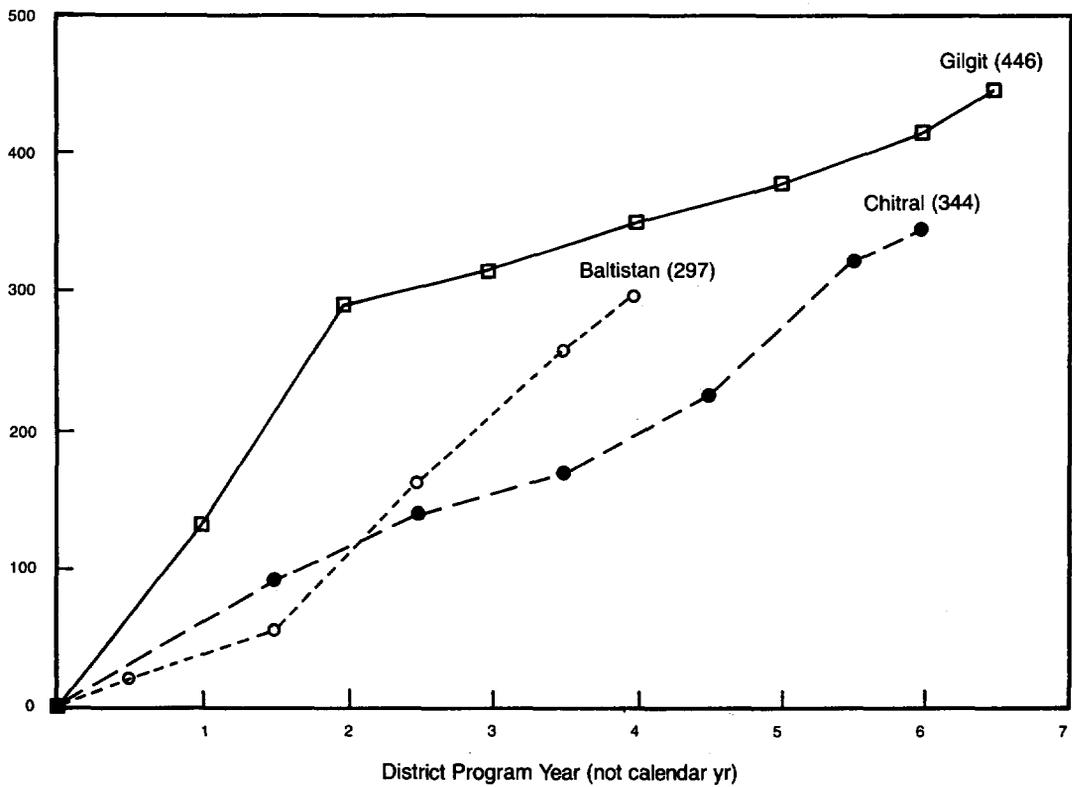
### Savings and Credit

The regular accumulation of savings by village organizations is a requirement of the agreement AKRSP makes with each participating village organization. Through savings, a village organization develops collateral for later

**Figure 2.1: Percentage of Total Households in Village Organizations, by District and Program Year**



**Figure 2.2: Number of Village Organizations Established, by District and Program Year**



credit activities and members engage in a joint effort for a shared purpose, namely qualifying for productive physical infrastructure projects assistance. Next to progress in village organization formation and infrastructure construction, continued growth in savings deposits is the most visible and readily monitored measure of performance reported by AKRSP.

### *Savings*

From the first Operations Evaluation Department (OED) interim evaluation of AKRSP in 1986 to mid-1989, village organization savings have grown from 14.5 million rupees (Rs.) to Rs. 60.2 million, while women's organization savings have grown from Rs. 1.6 million to Rs. 5.9 million (Annex 5, Table 5-1). Total savings by both groups have grown fourfold over that period, from Rs. 16.1 million (\$0.8 million) to Rs. 66.1 million (\$3.3 million). The savings rate for both types of organization has accelerated rapidly since 1986. Average savings per village organization member household are now Rs. 1,180 (\$59), with some variation among districts consistent with their period of program activity: the average is Rs. 1,460 in Gilgit, Rs. 1,000 in Chitral and Rs. 520 in Baltistan (Annex 5, Table 5-2).

Early in a village organization's savings program, savings volume receives a boost from villagers who are receiving wages for working on productive physical infrastructure projects. Even after that initial boost, savings continue to be generated on a broad and regular basis from the incomes of members. This broad-based pattern of saving throughout most village organizations attests both to the soundness of the savings concept underpinning the basic AKRSP approach and to the seriousness village organizations attach to their obligations under their agreement with AKRSP. It also verifies the continuing viability and functioning of the village organizations as village-level institutions.

As village savings continue to mount, however—and AKRSP expects savings to increase by 30 percent a year—this highly successful arm of the program will present both a problem and an opportunity. The problem arises because the rate of increase in savings is beginning to outstrip readily identifiable credit needs; the opportunity lies in employing these savings in the long term to support further development and improved living standards. As discussed below, this aspect of future strategy was viewed by the evaluation team as one of the most important issues requiring early resolution.

Data collected in a survey of ten sample village organizations in Gilgit District (Khan 1989) offer a broader perspective on village savings behavior (see Annex 5, Table 5-16). In this sample, about 70 percent of total household savings is in cash or bank/post office accounts. Only about

5-12 percent of savings are held by village or women's organizations. Although the "active" groups have an average of 40 percent more savings than "inactive" groups, the difference is accounted for mainly by the bank/post office accounts rather than village organization savings accounts. If bank/post office accounts are excluded from calculations, then inactive village groups save slightly more than active groups. The larger percentage of savings held in village/women's organization accounts by active compared to inactive village organizations is more than offset by the much larger amount inactive groups hold in the "loans to others" account. What these comparisons suggest, then, is that village organizations savings may to some extent be simply a transfer from the "loans to others" category (the informal system of credit among closely associated families) rather than additional savings. Thus although the sample data are based on limited observations, they suggest that village organization savings may not be as important to the village overall as has been believed. Moreover, there is the possibility that village organization/women's organization savings come at the expense of other kinds of savings practices, at least in part, or that some shifting of funds has occurred to meet AKRSP's requirements. Time-series information would be helpful in exploring this issue further and in clarifying whether overall growth in savings has occurred that may be partly attributable to AKRSP's promotional efforts.

These data for Gilgit show that the savings behavior of villages is more complex than project-specific reporting has suggested. In consequence, it would be useful to determine whether the findings for Gilgit District reflect a more sophisticated pattern of savings by the sample villages than by others in the more distant parts of the Northern Areas or whether it is broadly representative. The implications of actual savings practices for the program's future savings (and credit) strategy need to be considered since the main objective of a savings strategy should be to optimize the benefits to the village organization members of the total savings and credit system available to them, not just that (small) part directly within AKRSP's management mandate. Exploration of savings and credit behavior in the other districts is indicated.

### *Credit*

AKRSP's credit operations began in 1983 using funds from a loan of Rs. 200,000 taken by AKRSP from Habib Bank Limited. This loan was interest free under the Islamic banking code followed at the time. Initially AKRSP lent funds to the village organizations without interest, although a penalty interest of one percent a month was applied in case of default. Since 1988, a service charge ranging from 0 to 10 percent a year has been levied on short-

term loans; the charge levied on different categories of medium-term loans falls between 5 and 12 percent. One-fifth of these charges is paid to the village organization manager as payment for handling loans. No collateral was taken by AKRSP for short-term loans, but the village organizations have to deposit their savings in an account at a scheduled bank or the post office, and withdrawals can be made only with the approval of the AKRSP general manager. AKRSP's rationale for entering the rural credit market was that, despite the presence of commercial banks doing credit business in Northern Areas villages, small farmers received little if any funds (since they were considered uncreditworthy), with the bulk of such credit going to a very few of the wealthier farmers.

For medium-term loans, AKRSP has taken 100-percent cash collateral for marketing loans and 30-percent cash collateral for other types of medium-term loans. With the abolition of the government's policy on interest-free production loans, AKRSP gradually introduced a 10-percent service charge on all loans; the rate now ranges between 10 and 15 percent. Medium-term loans were first financed by a soft loan (one percent) from a commercial bank and later by donor funds.

Gilgit District has consistently taken around 70 percent of the short-term credit disbursed by the program. Between 1985 and 1988 disbursements grew at high rates, varying between 55 and 74 percent a year (Annex 5, Table 5-3). The data display an uneven but notable declining trend in the number of borrowers per village organization loan, which is commensurate with the fall-off in membership in village organizations. The average number of borrowers per village organization loan made by AKRSP has fallen from about 60 in the early years of the program to 45 most recently (Annex 5, Table 5-7). Given that village organization loan size has grown by about 50 percent over the last six years, while membership per village organization has declined, the average loan size per beneficiary has grown by 75 percent (Annex 5, Table 5-8); for example in round figures, from Rs. 240 (\$12) in 1986 to Rs. 320 (\$16) in 1989 for fertilizer and from Rs. 400 (\$20) to Rs. 600 (\$30) for marketing credit in Gilgit District.

By far the largest amount of AKRSP-provided short-term credit has been for fertilizer and marketing operations (87 percent of the total). Fertilizer, at 64 percent, is the largest single component (Annex 5, Table 5-3). This short-term fertilizer credit has played a role in the rapid growth of fertilizer use in Gilgit District. In connection with the credit program AKRSP has been responsible for arranging fertilizer supplies ranging from 14 to 47 percent of total annual deliveries from all sources over recent years (Annex 3, Table 3-8).

AKRSP's medium-term lending is dominated by land development (63 percent) and agricultural machinery loans

(25 percent). Growth in medium-term loan disbursements has been erratic, largely because of large variations in disbursements for land development loans. Thus year-on-year growth rates for medium-term credit have varied from minus 5 percent most recently to 20 percent for 1986 and 197 percent for 1987 (see Annex 5, Table 5-9). (That land development loans are responsible for most of this variation suggests an uneven work load with respect to the assistance required by village organizations for land development planning and implementation.) In Gilgit District, medium-term credit disbursements rapidly climbed to a peak of Rs. 10.5 million for Gilgit District in 1987. Since then, annual disbursements have fallen off. In Chitral District, growth has been steady throughout the four years (Annex 5, Table 5-11). Baltistan started well but growth there has since fallen off, especially as loans for agricultural machinery were not being made in 1989 (Annex 5, Table 5-12). Total medium-term credit disbursements were Rs. 46.6 million in mid-1989 for 376 village organization loans involving 21,400 borrowers (Annex 5, Table 5-13). The average medium-term loan per village organization has been Rs. 124,000 (\$6,200) and the average loan per beneficiary member has been Rs. 2,174 (\$109). Average beneficiary loan size has been highest in Chitral, where it is about 50 percent higher than in Gilgit and Baltistan, probably because of the relatively larger number of loans for large agricultural machinery in Chitral.

The Gilgit impact survey data for ten village organizations (Khan 1989) shows that AKRSP's credit activities have been numerically very significant with respect to credit for agricultural purposes but much less significant in the total credit behavior of the surveyed households (Annex 5, Table 5-16). AKRSP-provided credit constituted 83-97 percent of borrowing for agricultural activities, but commercial banks, village lenders, and friends were the source of 90 percent of total borrowing for household needs and "household industry", among active village organizations. (Strangely, the five village organizations in this survey classed as "inactive" with respect to the program depended much more heavily on AKRSP loans—40 percent of their total borrowing—than the ten "active" village organizations.) At least for Gilgit District, these data raise the recurring question concerning "additionality" or "substitution" effects of directed credit programs. Detailed inquiry on savings and credit behavior at the family level would be needed to explore whether the impact of the AKRSP program has been as great as the bare data reported by AKRSP tend to suggest. However, such enquiries would be handicapped by being ex post rather than current, unless data on earlier savings and credit behavior are available from sources such as banks and the post office. (Village lenders and friends are unlikely to have such data).

## *Repayments*

Credit repayment to AKRSP has been exemplary since 1983. AKRSP reports that only 1.7 percent of short-term credit and 1.0 percent of medium-term credit is in default. Overdues, measured as a percentage of the total amount recoverable in 1988 (data were obtained for fertilizer loans and medium-term credit only), are reported at an insignificant 0.3 percent. Data on this conventional measure of credit performance have not been routinely reported by AKRSP. About Rs. 1.9 million was written off in 1988 (Annex 5, Table 5-15), amounting to less than 5 percent of outstanding balances, but part of this amount was written off as a humanitarian gesture in connection with property destroyed during civil disturbances in Gilgit District. AKRSP has not restructured any loans to date. This healthy status of AKRSP loans indicates the soundness of its agricultural credit system, particularly the virtue of lending to a viable village-level institution that has to ensure repayment by village members.

## *Summary Findings on Savings and Credit*

Over the last few years, AKRSP has introduced and promoted a major savings and credit operation for program activities based on group loans to village organizations. In repayment terms, lending to village organizations has been outstandingly successful. Less is known about the AKRSP program in terms of its influence on the wider context of overall savings and credit activities in the Northern Area. The savings program has been successful also in terms of continuing high savings rates in village organization accounts, indicating the continued relevance of the village organization as a village-level institution.

Data on savings and credit from the Gilgit impact survey, however, indicate that village organization operations are less important than they might at first seem (Annex 5, Table 5-16). AKRSP operations have probably had a substantial effect on overall savings behavior, the access of the poorer villages to credit, and expansion of fertilizer availability and use, but without resort to comparative time-series data this aspect cannot be examined further. Furthermore, the focus of savings and credit activities in Northern Area villages needs to be broadened if village organization members are to be assisted to benefit fully from all the financial resources available to them.

AKRSP has correctly identified the placing of the savings and credit operation on a more secure institutional foundation as one of its high priorities. To this end, AKRSP hired consultants to advise on the options and held numerous discussions with village clusters, within AKRSP, and between AKRSP and interested observers. The main option under consideration during the team's visit is

known as "village organization banking." An AKRSP paper on the subject addresses the concept solely in the context of village organization saving and credit activities, rather than in the broader context of the total savings and credit system in the Northern Areas. Under this proposal, AKRSP would assist village organization clusters to take loans for onlending to members. The loans would be secured by the assignment of their deposits to AKRSP. Various rules and procedures have been drawn up for this purpose. Generally, this is a very conservative proposal, reflecting the priority attached to ensuring that village organization savings are at minimal risk. The evaluation believes, however, that aspects of the village organization banking proposal require rethinking, especially those that would result in village organization capital being exported from the Northern Areas.

The issue of savings and credit was discussed in more detail with AKRSP staff, and the following main objectives appear important:

- to release AKRSP from its close involvement in the credit program, especially by recognizing the diversity and scale of savings and credit activity at the village level;
- to design a system for the future for locally recycling village organization savings; the system would be integrated more directly with the entire range of savings and credit practices of Northern Area villages (as detailed in the impact survey data for Gilgit District);
- to design a system that is more closely modeled on proven credit patterns, practices, and procedures, rather than to invent a new system with potential unnecessary risks;
- to design a system that can readily accommodate growth in demand for credit, especially for medium- and long-term credit for such things as land development and other self-financed productive physical infrastructure, and thereby provide continued incentives for savings growth as long as such savings serve a useful purpose;
- overall, while creating additional liquidity at the village level, to ensure that the financial security of village organizations' savings is not jeopardized by any new arrangements.

## **Marketing**

The number of village organizations involved in annual program marketing operations has increased from less than a dozen in the early 1980s to 215 in 1988, for a cumulative total of 707 by June 1989 (see Annex 3, Table 3-9). This represents a substantial expansion of AKRSP's work load on this activity. Marketed volumes have risen steadily as well, as AKRSP's draft strategy paper notes. The amount is small in relation to the growth in production in the Northern Areas or to the much larger and increasing

volumes being marketed outside the program. Nonetheless, a good start has been made and valuable lessons for the future have been learned.

Data for Gilgit District for the last quarter of 1988 provide an indication of the character of marketing activities (see Annex 3, Table 3-10, which is based on data from AKRSP's Sixth Annual Review). Sales are broken into three categories: crop produce (maize, vegetables, seed potatoes, dried fruit, and fodder); livestock and products (animals, poultry, fresh milk, and desi ghee); and firewood. Sales of animals, seed potatoes, and dried fruit strongly dominated all others, accounting for 87 percent of gross sales and 84 percent of farmgate revenue. Fourteen village organizations participated in marketing seed potatoes, fifteen in dried fruit, and five in livestock. In total, fifty-eight village organizations received marketing assistance from AKRSP during the quarter. A surprisingly high percentage of village organization members were involved in marketing activities; for example 100 percent in maize, poultry, fresh milk, and desi ghee; over 70 percent in five other products; and 67 percent in fodder. Low reported marketing costs permit farmers to capture a high proportion of the gross sales price: over 94 percent for all products except fodder (50 percent) and seed potatoes (43 percent).

Early marketing efforts concentrated on eliminating traders or "middlemen" (who were reputed to receive excessive profits at the expense of producers), and switching to the bulk marketing of village surplus produce through village organizations. A complete account of this phase of the program's marketing operations has not been obtained, but various reports and interviews suggest that the trial marketing phase of the early strategy had at best "mixed" results. In some cases, bulk consignments had to be disposed of at substantial losses, and in other cases shipments were returned for local sale in preference to taking losses down-country (see Khan 1989). This earlier strategy has now been abandoned.

AKRSP reports that these cooperative marketing initiatives suffered from a lack of marketing experience, poor marketing infrastructure in the Northern Areas, and underestimation of the importance of traditional ties between producers, traders, and markets. The mixed results have also been partly attributed to AKRSP's lack of success in identifying and stimulating the right activities in village organizations. Consequently, a need is seen to create more village organization marketing specialists and to improve the skills of existing specialists in the village organizations. Early marketing operations have been supported throughout by short-term credit, largely to enable village organizations to pay members for produce promptly on delivery rather than to cover marketing costs.

The aim now is to concentrate on a few products that are perceived to have real market potential (mainly dried

apricots and seed potatoes at this stage), to identify markets, and to provide market information. Building on early work undertaken by a UN Development Program/Food and Agriculture Organization-assisted project, AKRSP has had considerable success with both dried apricots and seed potato marketing, especially in the latter case by assisting village organizations in negotiations with a seed potato wholesaler. Another initiative has been to assist a Gilgit entrepreneur to establish a small fruit processing unit.

For the few highly promising products identified so far, "vertically integrated commodity packages" are proposed for the future. The AKRSP draft strategy paper suggests that in addition to continued work on the marketing potential of fruits, work would be initiated on the marketing of vegetables and on the processing and marketing of dairy, wool, hides, and forestry products. Other needs identified include local storage facilities and the development of local entrepreneurship in processing and marketing. In brief, this strategy is intended to ready producers in the Northern Areas to compete efficiently in suitable markets. In support of this approach, AKRSP will encourage and assist government to create a more enticing business environment to stimulate processing and marketing investments in the Northern Areas. This will include the establishment of improved communications, a broader range of wholesale markets, and more electric power.

The current marketing strategy is dictated by production strategy, in the sense that only products that are generating regular surpluses as a result of production increases are being actively marketed or considered for marketing. At a later stage, market requirements can be expected to influence production more directly. The strategy for fruit and vegetable marketing will be based on exploiting the natural advantages of the Northern Areas compared with the rest of Pakistan, in terms of altitude, latitude, and time of harvest. Since unprocessed products from the Northern Areas will generally enter down-country markets after other sources of supply are exhausted, commercial traders should readily be able to transfer their marketing operations to the Northern Areas during this lull in their regular activities. Thus no special marketing structure or organizations should be established without first taking into account the marketing practices and procedures of wholesale merchants and producers in similar producing areas in Pakistan (for example Swat and Baluchistan). Such a study should provide satisfactory marketing models for the Northern Areas, which can be introduced quickly and then developed and refined to suit any special requirements of the program area.

The simplistic view that rapacious middlemen were cheating poor producers has been replaced by an awareness that, in efficient markets, the specialized entrepreneur (trader or merchant) has a role to play which benefits

both producers and consumers. AKRSP should encourage and assist merchant/village organization relations to the mutual benefit of both parties, as it has done for both seed potatoes and dried apricots, rather than trying to establish new risky parallel marketing systems. AKRSP should seek ways to encourage competition between marketing outlets through product improvement and information services and by generally facilitating and promoting profitable marketing operations for all concerned. If this strategy fails, alternative marketing channels could then be considered.

Logistic considerations in the Northern Areas dictate that any production and marketing strategy take into account such factors as keeping and transport qualities and value-to-weight and -volume ratios. This has already been done to good effect in the program through the introduction of higher-value fruit trees and improvements in the processing of dried apricots.

Given the "lumpy" nature of many investments in marketing infrastructure (stores, processing and packing plants, and so on) and the dispersed pattern of production in the Northern Areas, it is preferable to rely, initially at least, on marketing strategies which involve little infrastructure investment risk. As volume and knowledge increase and marketing channels become well established, the advantages of more value-added processing and bulk processing and handling may be worth pursuing in cases where the risks are acceptable. But it is important to recall the cautionary examples of failed marketing and processing infrastructure that litter the developing world even in areas in which conditions are much less severe. These relics offer mute testimony against reliance on an overoptimistic or unrealistic marketing strategy.

The key to success is to link marketing strategy and production strategy, at least at the planning stage. Production expansion must take into account market constraints and opportunities, and marketing plans must relate to realistic projections of marketable surpluses. In this context, there is a need for a change in the production planning approach away from a simple import-substitution strategy toward an assessment of what constitutes the best production and marketing options within various environments of the Northern Areas—given their particular resource constraints such as shortages of land and family labor (including that of women), and seasonal variations in water supply.

### **Training**

The number of training courses sponsored by AKRSP has risen steadily to 37 in 1988 and then to a total of 122 by mid-1989. With the addition of 57 refresher courses held to date, the total number of courses held reached 179 with 2,433 trainees. By type, courses have been 37 percent in

agriculture, 48 percent in livestock, 12 percent in marketing, and 2 percent each in accounting and appropriate technology.

### **Beneficiaries**

The number of households benefiting from village organization membership (and almost equally from productive physical infrastructure implementation) had risen to about 53,000 by mid-1989, or 54 percent of the estimated total rural households in the Northern Areas. Data in Table 2.1 show that average membership in village organizations has declined from 80-90 in the early years to around 50 now. This decline in part reflects the fact that smaller organizations are easier to establish (fewer factional problems), as well as some splitting of organizations in Gilgit District, as the cohesive effect of the early large infrastructure projects dissipates after their completion. The growth of membership in women's organizations and women's sections of village organizations has fluctuated between 6 percent (see Chapter 4) and more than 32 percent a year, with an average growth rate since 1986 of 18 percent. As with village organization membership, the average number of members in women's organizations has steadily declined by a third since 1984 (when it was 58), falling to 39 in 1988. The number of households benefiting from agricultural credit has grown steadily, so that by 1988 the average was more than one loan per village organization member household, for a total of 61,000 loans. Some 8,500 families benefited from marketing activities in 1988 (see Table 2.1).

### **Program Staffing, Resources, and Expenditures**

#### *Staffing*

Despite the expanding work load in all districts, staffing levels in the program have increased remarkably little over the last three years, and then only in support categories (see Annex 4, Table 4-5). Total staff strength increased from 248 in 1987 to 291 by the third quarter of 1989, while senior staff declined from 30 to 28 and the number of "professional" staff remained nearly unchanged. In part, this may reflect AKRSP's acknowledged difficulty recruiting and holding suitable senior technical staff. Despite the difficulty, however, a core of high-quality and long-serving professional staff has been retained intact. This has been a source of considerable strength in the program and is a credit to program management.

AKRSP has proposed a significant staffing expansion over the next few years, especially to implement the proposed additional emphasis on training (particularly of trainers) as the prime means of technology transfer in com-

ing years. This proposal amounts to an increase of 21 percent over current staff levels (291) to a total of 353. Of the increased numbers, 18 staff would be senior professionals, 18 would be junior professionals, and 26 would be support staff. This seems a reasonable plan for expansion, given the work load implications outlined in this chapter. AKRSP could also take the opportunity during this expansion of staffing to review existing and potential work loads, at headquarters and throughout the districts, with a view to reallocating staff accordingly.

A related point of some importance is the ability of AKRSP to recruit appropriately qualified staff for these new positions, and to fill some existing or imminent critical vacancies. The difficulty stems partly from AKRSP's special requirements (particularly, local language ability for most posts) and partly from the relative hardship (for senior staff recruited externally) of postings in the Northern Areas. Furthermore, AKRSP cannot offer career prospects to staff recruited from within the Northern Areas. Recent meetings within AKRSP have reviewed this issue in some detail; it will need to be reviewed again over the coming months and years as the staffing expansion is implemented. AKRSP's shortage of certain critical technical staff is of particular concern, and ways must be found to attract and hold such staff.

The program has been successful in attracting an unusually large number of donors (Annex 4, Table 4-1). In addition to the support of the four national members of the AKF network (Canada, Pakistan, UK, and USA), and the substantial unrecorded support from AKF (Geneva) for management back up and donor coordination, there are four bilateral donors (CIDA, Netherlands-MDC, UK/ODA, and USAID), the European Community (EEC) and five NGO donors. The helicopter services are not shown in the program budget, but are a personal contribution of the Aga Khan. With the addition of the Government of Pakistan, therefore, support for the program comes from 17 sources. The downside of this multitude of funding sources is, of course, that AKRSP's core team, and also other program staff, have to devote considerable time to meeting the needs of different donors, including their visits to the program areas.

This unusual spread of support indicates the widespread impact that the program's achievements are having on the donor community and is also a tribute to the program's effective relationship with the donor community. Recruiting and managing such a large and disparate group of donors is not, of course, a small task and this function is among others a major justification for the unusually close and detailed involvement in the program of AKF (Geneva), the founding sponsor of the program. This back up support includes handling all external (i.e., to Pakistan) relationships (including the important task of managing/

screening most proposed visits to the program) as well as quite extensive direct involvement in major strategy and management decisions. The latter includes recruitment of senior staff. The AKF (Geneva) program manager is a member of the AKRSP board. This is very different from the mode of operation of bilateral or multilateral agencies, who use supervision or progress reviews to provide control. In this case the project is implemented by AKF, a mode not unknown among non-government organizations. This evaluation has not explicitly evaluated this dimension of AKRSP management.

Table 4-7 of Annex 4 shows that individual donor interests and participation have been directed at different parts of the program's activities and to the different regions. Thus the AKF network has funded the "core" management functions, i.e., outside the three DPOs, plus aspects of the high altitude work. CIDA is funding the Gilgit program and agricultural credit. ODA funds the Chitral program and credit. The Netherlands funds the Baltistan program, the women's program and credit. USAID has funded the credit program. GOP has funded the women's program. Oxfam and the EEC are funding only the more difficult, less advanced high altitude areas, and the Konrad Adenauer Foundation is funding training. This pattern of "earmarked" funding has, of course, increased the work load for both AKF (Geneva) and AKRSP, compared with a more simple system of pooled funding.

#### *Program Expenditures*

Program expenditures are summarized in Table 2.2. Program annual costs and the number of village organizations both doubled from 1985 to 1988, while the number of member households rose by only 44 percent. This disproportion has resulted in an increase in nominal terms in annual costs per beneficiary household of 39 percent (from Rs. 1,005 to Rs. 1,399). Significant movements in costs occurred over the period 1985-88 in the credit program (171 percent increase), training (32 percent increase), and research, survey and demonstration (58 percent decline). Productive physical infrastructure costs paid out rose 50 percent. Staff salaries and benefits more than quadrupled over the three years, rising from 11 percent to 25 percent of total program costs. Operations costs moved from 46 percent to 50 percent of total costs; accordingly, infrastructure grants and credit funding together went down from 54 percent to 50 percent as a proportion of total costs.

Total project cost from 1983 through 1988 was Rs. 258.1 million (\$13 million). This represents a cumulative total cost of Rs. 5,031 (\$252) per participating household. Presuming that external funding continues for a further five years (though cost recovery from beneficiaries should begin well before the five years is over), total costs can be

**Table 2.2: Expenditure Summary for AKRSP, 1983-88**

	Expenditures						Average Cost/Beneficiary (Rs.) <sup>a</sup>						
	1983-88 (cumulative)			1985			1988			Village Organization		Household	
											1983-88 (cumulative)		
	(Rs. mill.)	(percent)	(Rs. mill.)	(percent)	(Rs. mill.)	(percent)	1985	1988	1985	1988	1985	1988	
Capital Expenditure	18.0	7	2.7	8	4.3	6	5	4	350	75	83		
Salaries and Benefits	42.1	16	3.9	11	17.7	25	8	18	820	109	345		
Operation of Vehicles	12.3	5	1.4	4	5.8	8	3	6	239	39	113		
Office Costs	9.0	3	1.2	3	2.5	3	2	3	175	33	48		
Training	19.0	7	2.8	8	3.7	5	6	4	370	78	72		
Research, Survey, and Demonstration	24.6	10	4.5	13	1.9	3	9	2	479	126	37		
Total Operating Costs	125	48	16.5	46	35.9	50	33	36	2,436	463	699		
Infrastructure	89.4	35	13.6	38	20.4	28	28	21	1,742	382	397		
Credit Program (net)	43.7	17	5.7	16	15.5	22	12	16	851	160	302		
<b>Total</b>	<b>258.1</b>	<b>100</b>	<b>35.8</b>	<b>100</b>	<b>71.8</b>	<b>100</b>	<b>73</b>	<b>72</b>	<b>5,031</b>	<b>1,005</b>	<b>1,399</b>		

a. Cost data divided by beneficiaries:

	1985	1988
Number of village organizations	493	993
Number of households	35,594	51,294

Sources: AKRSP Progress Reports, *Third Annual Review (1985)* and *Sixth Annual Review (1988)*.

expected to more than double and the cost per participating household to just about double (in constant 1988 dollars). This would give a total project cost per beneficiary of about Rs. 10,000 (\$500) over twelve years. This is rela-

tively modest compared with equivalent costs per beneficiary for World Bank-funded rural development projects initiated in the 1970s of about \$1,000 per participating household, usually covering a six to eight year program.

# 3. *Agricultural Production Program*

AKRSP has done a creditable job with limited resources in the introduction of new agricultural production technologies to the Northern Areas. It has in general correctly analyzed and taken into account the main technical issues and has selected an appropriate range of new technologies. It is learning the lesson that adaptive trials are usually essential before technologies are ready for extension to farmers, but it has been too ready to introduce livestock innovations without adequate prior trials and reference to experience elsewhere. With some false starts, especially in livestock production, new technologies show promise of making a real impact on farm production and income in the move away from subsistence toward more cash-oriented production. The need for an integrated farming system approach is recognized, but the downstream effects of changes in production have yet to be comprehensively addressed by AKRSP and its advisers.

For the future, AKRSP will need to continue in its role as the main technology broker or facilitator until government line agencies can fulfill their appointed roles more adequately. AKRSP has recognized that the village organizations are an excellent vehicle for technology transfer, and other agencies should also build on this opportunity. There is need for an even greater collaborative effort with concerned local agencies, and there is also now much potential for collaborative research and development with specialist international agencies, which themselves could build on the support network and knowledge of the area developed by AKRSP.

AKRSP remains seriously understaffed in some technical areas, especially in agriculture. AKRSP has begun to address this problem by commissioning an impressive number of high-calibre consultants, in particular to look at agricultural production issues. This method of expanding AKRSP's expertise should continue, where needed, for all activities.

AKRSP has also been cooperating with and supporting new developments in areas in which other agencies have taken a lead role. This collaboration should continue to serve the Northern Areas well. For example, the close cooperation between the Department of Agriculture, the FAO team, commercial companies, the Federal Plant Protection Department, the Federal Seed Protection Department, and AKRSP in developing seed potato production at the village organization level is an excellent indication of the facilitating role that AKRSP can play in technology adoption and expansion. In general, the relationship between AKRSP and the Department of Agriculture is harmonious and fruitful, but AKRSP should give higher priority and visibility to helping to strengthen the line agencies' capabilities as an important part of the development process for the region. It is these agencies that will provide continuing support for technology identification and transfer after externally funded development projects are completed.

## **Production Technology and Technical Change**

Until the recent development of the Karakoram Highway, connecting bridges, and access roads, the remoteness of most of the villages in the region meant that subsistence agriculture prevailed, supplemented by some remittance income. When introducing new technologies into this system, AKRSP must consider carefully how they might affect related activities and especially the exposure to risk of poor households.

Change has come very rapidly in recent years, with improved communications. The household economy is slowly becoming less dependent on farm production, particularly in the more advanced areas. Farmers' thinking, however, is still dominated by subsistence production and the need for food security, especially in the higher-altitude and more

remote areas. The new promise of increased income from alternative cash crops, therefore, is balanced against the risks and difficulties of marketing locally, where demand is limited, or outside the Northern Areas, where risks increase.

Road access has also made it possible to bring in fertilizer and to market farm produce more widely. Hence the opportunity to diversify from subsistence to cash cropping has greatly increased. Mechanization has also spread widely since the Northern Areas were opened up. The timeliness of operations in cereal production has benefited especially.

Improved road access has also increased out-migration of labor. This has reduced labor availability, while increasing remittance cash within the villages. A result has been the adoption of mechanized alternatives and a greater overall willingness to change the farming system. However, the import of subsidized wheat, flour, and beef from the plains has reduced the incentive for their local production and enabled farmers to consider alternative cash crops. (Conversely, AKRSP has considered "import" substitution a logical production strategy.)

The inherent fertility of land in the Northern Areas is low, and increasing its production potential has depended on introducing organic matter to the soil. Traditional methods have worked very well on the flatter lands, but new technologies can hasten the process. Chemical fertilizer is one such different approach that is perhaps more appropriate for the sloping lands. The amount of farmyard manure available is already limited, and other methods of building up soil organic matter must be sought. Growing legumes and returning more plant residues to the soil are two options. Chemical fertilizers are increasingly used by farmers (Annex 6, Table 6-1) as availability has increased and credit has become available through AKRSP initiatives, and application rates generally seem adequate for reasonable production levels.

Most recently, the program has been responsible for a great increase in the availability of improved seeds (especially of wheat), planting material (fruit and multipurpose trees), sprays, and veterinary supplies. The main features of the Northern Areas agricultural system are reviewed in more detail in Annexes 1 and 6. The following sections present the principal evaluation findings on production and related aspects.

Virtually all crop and agroforestry production in the region is dependent on irrigation. Irrigation systems have been developed over the centuries to minimize erosion and to encourage silt deposition and soil build-up on fields.

About 60 percent of the AKRSP-sponsored village organization productive physical infrastructure projects have been concerned with increasing the water supply through new irrigation feeder channels or renovation and enlarge-

ment of existing ones. This increased water supply has permitted considerable extension of the production area and increased cropping intensity. On some schemes, irrigation layout and methods are rudimentary. Indigenous practices and technology are in this respect a tribute to the inventiveness and resourcefulness of local cultivators, but significant improvements could be made to irrigation efficiency with the careful application of selected innovations. Appropriate irrigation methods for sloping lands under permanent crops are quite different from the well-understood practices used quite efficiently for the flat lands (IIMI, 1986). Research and extension input is required to establish an appropriate technology. Little detailed work has been done to date on irrigation technology in the Northern Areas, although the agroforestry group has made a start in this direction.

## Crops

### Cereals

Cereal cropping is likely to remain the major farm activity in the Northern Areas for some time to come. Cereal crops provide both grain for humans and fodder for animals. It is this latter use that is so important in maintaining soil fertility for all crops by building up soil organic matter through farmyard manure additions to the fields.

*Wheat* is the major crop grown on about half of the farm area, with most farms being less than 2 hectares in size. In the 1985/86 season in Gilgit District, old semi-dwarf varieties were sown on 64 percent of the area. The uptake of new, high-yielding wheat varieties has been slow (as has the development of other cereal varieties specifically adapted to the Northern Areas.) The adoption rate of Pak-81, the most actively promoted new variety, increased from about 2 percent of the total wheat area in 1983/84 to 24 percent in 1988/89 (Ahmad et al. 1989). In contrast, chemical fertilizers are used by a surprisingly high 93 percent of the farmers recently surveyed in Gilgit District. Farmers in Gilgit District now recognize that the Pak-81 wheat variety is both higher yielding and fertilizer responsive and that any changeover to a new variety needs to be as complete as possible on individual farms. AKRSP has played the major role in this recent adoption of new technology (Khan, 1989) and has been the main supplier of the new seed. AKRSP expects to continue this effort under the proposed Mountainland Seed Industry and Crop Improvement Program (Stevens et al. 1989).

*Maize* has dual usage as both grain and fodder crop, occupying about 23 percent of the total crop area in Gilgit District and 27 percent in Chitral District (AKRSP Sixth

Annual Review 1988 and Tetlay et al. 1988). It is grown mainly in double-cropped regions after wheat, but it is also grown in the shorter-season single-cropped areas where fodder becomes the main use as cold autumns restrict grain fill. Grain yields are usually poor, and there is much potential to select better adapted cultivars with the introduction and testing of new varieties. Little is known of the relationship between plant stand, time of thinning, and final fodder dry-matter yield. Good yields require large fertilizer applications. AKRSP should encourage and facilitate research on the development of maize populations adapted to the Northern Areas, including cold tolerance; on thinning strategies, on topping of tassels and removal of leaves; and on fertilizer application rates and timing for maize. AKRSP should also encourage the development of a local seeds industry for maize (as outlined in the Mountainland Seed Industry and Crop Improvement Program proposal).

*Barley* is grown in the high altitude single-cropping areas. Little has yet been done to introduce new varieties. Local varieties are susceptible to lodging and to yellow stripe rust, but yield up to 4 tons per hectare. Although improving barley production has lower priority than upgrading wheat and maize production, the inclusion of barley in the Mountainland Seed Industry and Crop Improvement Program is worthwhile.

*Triticale* also grows well in the Northern Areas and can outyield wheat, but villagers do not like the color or taste of the flour. Traditional breads can be satisfactorily made with mixtures of wheat and triticale flour. Triticale also gives good grazing in early spring. AKRSP should explore further (and encourage others to explore) the potential for triticale, as resources and priorities permit.

#### ***Forage and Fodder Production***

Livestock feed production is a critical component of the farming system of the Northern Areas, with fodder crops occupying 25 percent of the total cultivable area in Gilgit District. *Alfalfa* occupies a key place, particularly in single-crop areas where animals play a relatively more important role in the production system. AKRSP has encouraged the traditional practice of planting alfalfa on newly developed lands by providing seed (Annex 6, Table 6-2). Research on optimizing the rotation system and on fertilizer requirements is needed. Use of other fodder legumes is small in comparison to alfalfa but could increase with the identification of suitable new species and development of appropriate management systems.

*Fodder brassicas* such as mangels and fodder beets, tur-

nips, rapes, and kales are exceptionally productive and can provide forage into the winter and early spring (Whiteman 1985). There are many options for improving fodder production so that year-round good quality feed can be available. This would greatly increase animal production by slowing the weight loss of animals in winter and would reduce pressure on high pastures by keeping more animals in the village during summer.

There is much to be gained by improving animal nutrition and eliminating free grazing. This requires new and improved *fodder sources*. AKRSP has responded to this challenge by encouraging fodder production from herb and tree plantations, by developing alternative fodder crops such as the brassica root crops and the new agroforestry tree species, and by improving the feeding quality and digestibility of cereal straw through urea supplements and chopping.

#### ***Horticulture***

*Fruit and nut trees* are not yet generally grown in consolidated orchards. In an AKRSP survey of Gilgit District, the average household had about 40 trees producing 770 kilograms (kg) of fresh fruit per year and 130 kg of dried fruits, about half of which is eaten and the rest sold. The local fresh fruit market is small. About 63 percent of the fruit trees in the region are apricot, but this fruit is difficult to transport. Many other temperate fruits grow well in the region, including apples, cherries, and pears. These fruits are of high value and readily transportable.

The production potential for fruits and nuts in the Northern Areas is high. AKRSP has played a key role in distributing superior disease-resistant dwarf rootstocks and good quality scion material (Annex 6, Table 3). This has been a cooperative activity with the Department of Agriculture and the FAO/UNDP-assisted project. AKRSP has been encouraging new methods of production, such as companion cropping with crops such as alfalfa and vegetables, which is an excellent approach to increasing soil fertility and generating income in the interim until young fruit trees mature. AKRSP should continue to promote the planting of good quality fruit trees that are disease-resistant and have maturity dates appropriate for their market niche. Ways to minimize fruit fly and aphid damage need to be found. The Agricultural Development Bank of Pakistan (ADBP) has been active elsewhere in funding nursery development and the introduction of improved varieties, and AKRSP should seek ways of collaborating with ADBP to promote the horticulture industry of the Northern Areas. The plains market offers a good price for almonds and walnuts produced in the Northern Areas, and AKRSP should encourage selection of good trees to provide planting stock for expansion of the production area.

*Potato* (especially for seed) is a crop poised to expand its area of production. Because the Northern Areas are relatively free of virus and insect pests and do not contain the potato cyst nematode, there is much potential for producing seed potatoes for winter sowing on the plains. AKRSP has played an important role in fostering this development by building on the early development and promotion work of the Department of Agriculture and FAO technical team.

*Other vegetables* are also expanding production through AKRSP intervention: testing and selecting suitable varieties, procuring and distributing improved seed and teaching villagers (particularly through the women's organizations) improved methods of vegetable production. Some of the women's organization gardens are very productive, with a broad range of vegetables of excellent quality. The production package of suitable cultivars, fertilizer, irrigation schedule, and insect and weed control has usually been taken up in toto.

Because of the favorable climate and low incidence of pests and diseases, the Northern Areas could be used to produce vegetable seed for the rest of Pakistan and even for export. During winter, fruits and vegetables are imported into Gilgit, Chitral, and Skardu. The marketing period for local produce in the Northern Areas could be extended into the winter months by providing for storage of fruits, potatoes and other vegetables in a cold store with controlled ventilation in the cooler upland areas where refrigeration would not be needed (Deomampo 1988).

### **Animal Production and Health**

Animals play a vital role in the economy and farming system of the Northern Areas, with even greater importance at higher altitudes where cropping options are more restricted. Livestock are critical to human nutrition, soil fertility, and incomes. Because of the dominant subsistence nature of the Northern Areas production systems, milk and its products and meat are consumed mainly by the household, while small surpluses of hides, wool products, and eggs are sold.

Grazing animal populations are increasing in most areas along with human populations. This has contributed to the degradation of natural grasslands around villages and put pressure on the fragile alpine pastures, resulting in a gradual loss of plant species diversity and a reduction in ground cover. Traditionally, animals graze virtually freely throughout the village, when they are not in the summer high pastures. This restricts autumn and winter crop production at lower altitudes, where it would be feasible. AKRSP advocacy has had a significant influence on the number of village organizations that are now stopping free grazing; a number of village organizations have selected

boundary walls for their productive physical infrastructure project. With respect to degraded high pastures, AKRSP should assemble species suitable for high areas and should push ahead with assessments of the potential for improving pastures and developing a suitable management system. The proposed IUCN project would be a good vehicle for this research and should clarify the options for sustainable management of high pastures.

Animal health was quite correctly the early focal point for AKRSP's livestock efforts as part of its original loss-reduction strategy. (The Department of Agriculture has limited capability to deliver its free animal medicines, due to lack of transport and funds.) AKRSP has helped many villages acquire the capability to administer medicines to animals by training village specialists. A procurement and distribution network for supplies has been developed, and some farmers now accept that prophylactic measures are worth paying for. Vaccinations are provided by the village livestock specialist for a fee.

However, animal coverage so far has been disappointing, and the uptake of vaccinations has varied a great deal between villages (Ishaq 1988 and Khan 1989). Very few poultry are vaccinated except for poultry that have been distributed to women's organizations. AKRSP will need to concentrate more effort on village education about the benefits of preventative medicine so that coverage increases. Three-quarters of the village organizations in Gilgit District are using vaccines, but only one third of the ruminants are vaccinated on the recommended schedule. Also, there have been some unfortunate experiences with poor quality vaccines (Annex 6, Box 6-3). Training village organization members is a good way to spread the word, but demonstrations and village visits by the AKRSP specialists will also be needed to convince farmers of the benefits of investing in vaccinations. Carefully conducted regular surveys and monitoring of the impact of the vaccination program are also needed. One AKRSP study in Gilgit District showed that vaccination reduced mortality 2.6 times, financial loss fivefold, and disease incidence sevenfold (Ishaq 1988).

AKRSP has invested much effort in animal breeding programs to little or no avail, both through artificial insemination and introduction of new breeds. Such programs require a long-term commitment, careful analysis of breeding strategy, and measurement of genetic gains. Breeds adapted to local environments have been selected over centuries. Smallholder animal populations are too small for the culling levels needed for genetic improvement, and in any case farmers are reluctant to reduce their herd and flock size. AKRSP should avoid animal distribution schemes, as their impact on long-term animal production in the village is likely to be small at this stage of development, and they require a disproportionate technical input

from AKRSP staff if they are to succeed (see Annex 6).

The success rate of the artificial insemination program for cattle supported by AKRSP is small. It is not cost effective and should not be continued. At this early stage of development of the animal production systems, artificial insemination can have little effect on livestock production growth in the Northern Areas as a whole in the absence of adequate nutritional levels. Emphasis would be better transferred to improving nutrition and thereby improving output per animal, including increased fertility and successful pregnancies.

Farmers need to be encouraged to adopt the view that a smaller number of better fed animals can increase production and income while reducing pressures on the local environment. If farmers are to be convinced to follow this approach death from diseases must be reduced so that farmers will no longer need the security of larger numbers of animals. AKRSP needs to devote more effort to developing fodder production systems, which will involve attention to species evaluation, agronomy, seed production, cutting and harvesting, storing and feeding schedules, and the farming system into which the new crops will fit. As nutrition levels improve and management systems change, it may become worthwhile to focus on breed improvement in selected situations. But this change is several years away.

AKRSP has tried two approaches to poultry development—introduction of a broiler production scheme for village organizations and distribution of a scavenging poultry breed with improved egg production to women's organizations. For the broiler production scheme, some 600 to 1,000 chicks were distributed to a village organization collective management group. Mortalities through bad management (overcrowding, lack of proper feed) made the exercise unprofitable. Two larger commercial poultry farms run by women's organizations were also unsuccessful (AKRSP, Annual Review 1988). The distribution scheme has been more successful, with an estimated 50,000 chicks to be distributed in 1989. It is too early to judge the long-term impact of the introduction of scavenging birds, but the increase in egg production has improved family nutrition and income. The development by FAO/UNDP of two poultry hatcheries at Gilgit and one at Skardu (each with 2,000 to 3,000 hens) is likely to saturate the market requirements of these towns for eggs and broilers, thereby closing off the main outlet for surplus village production.

### **Agroforestry and Timber Production**

Several species of poplar are particularly well adapted to agroforestry, with the freshly cut leaves being good quality fodder for ruminants and the trunks producing good poles and useful timber. Similarly, several willow species are also adapted to the region and are usually pollarded or cop-

iced for firewood, fodder, wall thatching, and basket making, while the bark provides tannin. Several other multipurpose trees are widely planted in the Northern Areas (see Annex 6, Box 6-2).

A tree planting tradition is well developed in the region, and a commitment to this on a village organization level could serve as a model to other development and reforestation programs. (Much of the fruit tree plantings can also be viewed as agroforestry, with loppings and prunings used for fodder and fuel.) However, merely planting trees does not ensure their good growth, especially as they are usually planted on the marginal, steeply sloping land or in river beds unsuitable for cropping. Ensuring a supply of nutrients and water is as essential for tree growth as it is for crops.<sup>1</sup> The village organization must also assume this responsibility. It is only through such village involvement in planting and maintenance that the labor required for extensive plantings can be mobilized.

Although there is a history of good management of tree resources in the region, in some areas population pressures have resulted in loss of natural stands around the villages. Scarcity of timber around the village, especially at higher altitudes, has forced a recognition of the need to replant large areas. The number of trees planted is very impressive by any standards. The collective action of the village organizations, by ensuring water and land for tree planting, has enabled this to happen invariably close to the villages. Controlling free grazing is also necessary, otherwise young trees are soon destroyed. AKRSP has supported tree planting by setting up seedling nurseries and by publicizing the problem and its solution. AKRSP has also helped to increase the variety of trees being planted.

AKRSP should support and encourage the collection of suitable germplasm for agroforestry and timber species from worldwide sources and oversee its testing in the region, working in collaboration with the Conservator of Forests for Northern Areas and the Forestry Department of the North West Frontier Province (NWFP). AKRSP should also facilitate the supply of inputs for agroforestry. Credit should be made available where necessary, although this is not a simple matter for products with such a long lead time before harvesting and where communal ownership and management is practiced. Research is needed to develop silvicultural management systems in the nursery and after outplanting, for fertilizer recommendations, population densities, irrigation systems for agroforestry on sloping lands, and on cutting regimes for fodder, fuelwood and timber end-products.

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1. In the hierarchy of water rights, wheat and then alfalfa usually have priority, followed by fruit orchards and only then by multipurpose tree plantations (Dani 1989).

## Technology, Research, and Development

*Technology* has rightly received high priority. AKRSP has done a very creditable job in assembling and testing new technologies. It has both promulgated technologies already researched and introduced by other agencies and introduced new materials and tested their efficiency. Largely through AKRSP's interventions, farmers are now aware of and willing to try new technologies.

AKRSP has demonstrated the potential benefits from new varieties of wheat, maize, apple and cherry, forage vetch and clover, fodder beet and turnip, and various vegetable varieties and has been instrumental in their adoption by some village organizations. Technology promotion for livestock in which AKRSP has been involved includes the increased use of animal vaccines and medicines, silage production, changes in straw fodder to increase nutritional value, use of fodder root crops, and stall feeding of chopped fodder to penned animals rather than free grazing. However, more work is needed before such new ideas become commonplace activities.

The traditional method of sun drying apricots produces a poor and variable quality product. AKRSP has helped to popularize a simple low-cost system for sulphuring apricots before drying, thereby producing a better product of good color and superior quality. This fruit is of export quality and such exports are being explored.

Many other types of new technology are sponsored by the program as reported in specialist studies and progress reports. Much work is going on to find new suitable technology, but there is a danger that target setting will distort AKRSP's effectiveness in technology transfer. While it is necessary to document the adoption rate of new technology, planning targets should not become ends in themselves. It is much better to go for quality and not quantity, until the package is nearly foolproof. It is also preferable to focus efforts on a few, key receptive villages than to try to expose as many villages as possible to AKRSP's activity, as seems to be happening at present. Similarly, it is important to ensure that demonstrations and trained village specialists are effectively introducing technology to villages, and building this capability takes time.

With respect to new crops and varieties, much work remains to be done to investigate and test known technologies from elsewhere. AKRSP should expand its program of testing new crops, particularly for forage and fodder production, storage, and use in balanced animal nutrition. Pilot farms and village organizations should be chosen to validate the usefulness of new technologies before any large-scale extension and demonstration program is undertaken (this applies to all types of technology). For higher altitudes, special management techniques and new varieties are needed to increase production, given the con-

straint of a short growing season. In particular, shorter-duration cultivars are needed to allow the single-crop cereal to be followed by another short-duration forage crop.

Turning to results, there is evidence from surveys of AKRSP's impact that there has been insufficient monitoring of village organization technology-adoption activities (Khan 1989), especially of technology problems or failures. Careful analysis of why an apparently relevant technology is either not working or not being adopted is as important as reporting on success, and should include coverage of socioeconomic aspects as well as technical.

*Research and development* in the Northern Areas require greater attention. Agricultural production technology has advanced rapidly in recent years, mainly from adaptation of existing technology. With the incentives and pressures for crop diversification growing, however, there is an urgent need to undertake research and development specifically for Northern Areas' farming systems.

AKRSP has attempted to start this process in the absence of any significant government line agency input, apart from two FAO/UNDP-assisted projects. The effort to date has been rather ad hoc, however, partly in response to the insufficient numbers of experienced agricultural staff in AKRSP. There has also been some confusion over the different requirements of a trial or experiment to validate or adapt technology, and those for a demonstration of a tested technology. Both require constant attention from qualified Agriculture Resource Management (ARM) staff. Through necessity and design, AKRSP has had the good sense to operate at the on-farm level. However, if farmers are not carefully informed of the nature of the activity, they may have very different expectations from the ARM staff of the outcome. Many of the technologies ostensibly being demonstrated to village organizations are still at the adaptive research stage, and the outcome of the experiments is far from certain, for example, in silage making and utilization, new feed mixtures for cattle over winter, and management of vetch as a cash crop.

Given the need for more research on production technology, the skills of the present field staff in field experimentation need upgrading. The number of staff in ARM with skills to handle specialist areas also needs to be increased. There is also a need to integrate the research and demonstration activity, by considering it in the context of the farming system as a whole, and undertaking cooperative experiments across disciplines together with demonstrations. For example, the move to stall feeding of animals requires integration with pasture and fodder production and storage, assessment of the nutritional status of feed mixtures and impact on animal productivity, and assessment of labor requirements.

AKRSP has encouraged outside agencies to develop co-

operative research projects.<sup>2</sup> The most significant recent development is the Mountainland Seed Industry and Crop Improvement Program, with start-up funds mainly from the Aga Khan Foundation (AKF), linking AKRSP with the Cereal Crop Research Institute in Nowshera, NWFP, and with commercial producers. It is unfortunate that a delayed start to this project may reduce activity in the next wheat season. The project will conduct research to develop new cereal varieties specifically adapted for the Northern Areas and will link with other international and national activities in other countries in similar ecosystems. The networking approach to be adopted will bring many outside resources to the service of the Northern Areas. The linkage of the AKRSP program with other countries will require other donors, but such an international network should pay dividends. Another possible linkage could be with agencies such as the Australian Centre for International Agricultural Research, which has a program on testing the suitability of Australian hardwood tree species for timber and fuel for developing countries.

AKRSP should also seek increased international donor activity in collaborative research projects. Agencies such as ACIAR, ODA, USAID, CIDA, IDRC, and the Netherlands MDC might be able to fund research related to the needs of the Northern Areas, and AKRSP could play a key role in establishing and cooperating with such projects. For example, as farming in the Northern Areas inevitably becomes more dependent on chemical fertilizers, research on soil fertility and the form, rates, and methods of application of fertilizer will become of greater importance. Without this information, fertilizer may be used inefficiently and nutrient imbalances may develop that may limit crop production. AKRSP should foster collaborative research activity to address these issues. A three-way link with the government line agencies in such projects should be established. The importance of AKRSP's role in such efforts in briefing collaborators, providing logistical support, and organizing related on-farm trials and subsequent demonstrations cannot be overstated.

Much of the activity described above in which AKRSP is involved, or could become involved, would not be necessary if the government's existing agricultural research arrangements functioned properly. The Pakistan Agricultural Research Council (PARC) is responsible for research

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2. Examples are the IUCN sustainable forestry development program; the IUCN pasture development program; the Commonwealth Biological Control Center program, funded by ODA, for the biological control of insect pests; the National Agricultural Research Council on feed analysis and nutrition; the International Irrigation Management Institute for a study of irrigation system performance; the International Center for Integrated Mountain Development for a study of mediating structures in the development process; and CIMMYT for economic analyses of wheat and maize production systems.

in the Northern Areas and for operating the Agricultural Research Institute for Northern Areas (ARINA) station at Jaglote. National horticulture, forage, and cereal production trials are conducted there, but presently there is little research specifically related to the Northern Areas. An adequate staff complement has been proposed for the station (director, deputy director, horticulturist, agronomist, forestry and range manager with 30 support staff), but recruitment difficulties have left the station with only the forestry specialist in place. The present director, who will operate from Islamabad, has not yet visited the station. This is not a satisfactory arrangement. The station has very limited lab facilities, but the 35 acres of land are excellent and fields are well laid out and maintained. There is one tractor, but currently no transport for off-station work.

ARINA could serve as an excellent focal point for regional research, and AKRSP should maintain close links to develop cooperative programs when the station staff are in place. An outstation for high altitude trials would also be needed. The proposed World Bank-assisted Agricultural Research Project should provide support for ARINA operations. AKRSP should continue to lobby the authorities and PARC to bring ARINA to full staff strength, to develop its laboratory facilities, and to implement a research program appropriate to the Northern Areas' needs. Closer cooperation between AKRSP and ARINA could be developed through on-farm trials and joint research coordination meetings. ARINA staff should be encouraged to become involved in AKRSP's technical training programs.

So long as ARINA does not function effectively, AKRSP has no option but to expand its own program research activity, particularly through collaborative research with interested international agencies. In this event, AKRSP should consider establishing a small research and training center at Gilgit as a focal point for collaborative research for the Northern Areas, to provide limited facilities for such projects, and to establish a repository for the collective memory needed to capitalize on this research.

### **Training and Extension**

Training is a key function for AKRSP and should be expanded. Above all, training requires trainers with specialist skills, and AKRSP should invest in enhancing its capability to train the trainers. AKRSP uses both its own and line agency staff for training villagers. AKRSP does much of its training by bringing village organization managers, leaders, plant and animal production specialists, and others from the village to the district headquarters. Follow-up training is also given.

Through the training course for plant production specialists for village and women's organizations, AKRSP has begun the extension of technologies and skills necessary

for expanding fruit, vegetable, and poultry production. Training could also extend to private entrepreneurs involved in the provision of inputs for agricultural production and marketing, so that their skills will develop in parallel with production technology.

There is a tendency for AKRSP to overestimate the skill level that can be attained in such short courses. It is a daunting task for a village or women's organization specialist to recognize specific pest and disease attacks on plants or animals and to remember the appropriate response. Regular visits by ARM staff to village and women's organizations to discuss problems and reinforce judgments made by the specialists are a very necessary part of the training process. This has been somewhat neglected, however, partly because there are too few ARM staff. The extension of information at village level requires a continual updating of social organizers and engineering staff in agricultural technology.

Extension does not require sophisticated equipment, but AKRSP's skills in the production of visual aids such as videos and flip charts assist training and complement direct contacts between staff and farmers. Production of training manuals and extension materials should continue in support of the trained specialists' work. Two very good examples are the comprehensive manuals on village forestry and on forest nurseries that have been produced for extension workers.

### **Environmental and Sustainability Issues**

A sustainable agricultural production system is most likely to be protective of the environment. Currently, the most serious environmental problems arise from the increasing pressure of growing human and livestock populations. Some of the production systems which were valid in the past are no longer sustainable once the appropriate ratios of people and animals to land and critical natural resources are exceeded. The population's increasing need for wood for fuel in the cold climate, as well as for cooking, is the most obvious example of the impact of too many people. For animals, degradation caused by overgrazing is a clear indication of unsustainable numbers with present practices.

Fuelwood for towns such as Gilgit and Chitral is increasingly being brought in from the higher mountain slopes, putting further pressure on the ecology of those regions. Use of timber by the army for fuelwood has exacerbated the situation, particularly in border regions. The normal cycle of regeneration of mature trees is about 100 years, and many of the trees recently cut were hundreds of years old. Increased availability of natural gas and kerosene for cooking and heating would reduce pressure on this scarce natural resource. AKRSP may be able to facilitate this pro-

cess by conducting an analysis of the requirements for the Northern Areas and by documenting the inevitable run-down of forest resources that will otherwise occur. Similarly, further development of electrical power from local sites, in which AKRSP may have a role, would help the energy situation.

Increased grazing by growing animal populations has degraded grazing lands around villages and is changing the species composition of the high, alpine pastures. This process will be reversed only if grazing pressure is reduced by keeping animals away and allowing regeneration. Such a change would require collective and systematic action by all villages using a particular region, a challenge that will test the strength of the village organizations. Reduced labor availability to shepherd animals is likely to result in fewer animals being taken to the pastures, but to maintain animal production increased fodder production will be required in the village. This will require substitution of some wheat lands, increased cropping intensity, and use of new lands made available by the construction of productive physical infrastructure or other collective village organization action. Stall feeding of animals and the abolition of free grazing in the village will be necessary to enable increased cropping intensities. This change may put an intolerable extra burden on the women, who traditionally tend to animal feeding, so shifts in male/female household responsibilities may be necessary for this process to succeed.

The large increase in village agroforestry plantings, mostly on new lands unsuitable for cropping, is one very positive indication of the will to change the production system and to consider future requirements rationally. Building up soil fertility on new lands and maintaining it on old lands will require a balance of leguminous pulse, forage, and green manure crops and trees (such as *Robinia* and *Gleditsia*) either in rotation or in mixtures with other crops, along with continued use of farmyard manure and chemical fertilizers. As land productivity increases, soil organic matter levels should also increase, raising the overall fertility of the system. Scheduling fertilizer additions with irrigation will require fine tuning to increase the efficiency of utilization of both these inputs. Given the favorable climate, there is no reason why the region's quite high productivity should not increase toward its maximum potential.

Pollution from chemical fertilizers is unlikely to be a problem in the Northern Areas. Similarly, the level of crop pests is relatively low, which should reduce the need for pesticides. However, a continuing education program is required to develop villagers' awareness of the dangers from indiscriminate and over-use of pesticides. The main danger is usually to the person applying the chemicals, but lack of understanding of problems arising from persistent

insecticides can also lead to problems. The AKRSP program of continued training of crop protection (plant production) specialists in each village is an excellent way of introducing the required skills for pesticide use.

### **Wildlife and Tourism**

AKRSP has recognized that wildlife is also under threat in the Northern Areas and has encouraged an awareness of the long-term benefits from maintaining these populations. The IUCN has recently assessed the status of natural resources and land-use practices within the Khunjerab National Park and environs and has recommended a management scheme which recognizes village and tourists' needs

and indicates achievable ways to preserve the unique fauna and flora. The Marco Polo sheep are the most threatened species, and immediate action is needed to prevent their extinction. The wild Tibetan ass or Kulan is likewise rare and endangered. Snow leopard, bhoral (blue sheep), Asiatic ibex, and wolf are under less threat. The unique beauty of the region will inevitably lead to increased tourism now that access is easier, and there is a need to manage activity so that natural ecosystems and village social structures are not eroded. Properly managed tourism will bring prosperity to the region, and the AKRSP program can play a role in seeing that villagers receive a fair share of the benefits arising from tourism, particularly through marketing their high quality produce.

## 4. *Women's Program*

Women play a major role in the economic activity of the Northern Areas. They are substantially involved in crop and livestock production, providing over 50 percent of the total labor used in farm activities. They are key actors in various aspects of natural resource management. They are frequently responsible for collecting firewood for cooking and heating and are usually responsible for collecting fodder and water for livestock and for domestic use. They are also responsible for continual child raising, processing domestic food supplies, and spinning wool. Women's only income-generating asset is their labor. Under Koranic law, women are entitled to half a share of land inheritance (men to a full share), but women usually relinquish this in favor of male relatives. Women have no access to official credit. In Gilgit and Chitral, women have small sums of money, but in Baltistan, women rarely handle money.

Information on social indicators for the Northern Areas is weak. (See Box 4.1 for a discussion of the quality of life for women in Pakistan generally.) The isolation of the region and conservative cultural practices in many areas would suggest that women's status and living standards are below the national average. Literacy rates range widely. An impact study covering ten sample villages in Gilgit (Khan 1989) estimated female literacy at 25 percent compared with 52 percent for males. Data for Gilgit District as a whole indicate an average literacy rate of 4 percent for rural women and 17 percent for urban women. AKRSP data for Baltistan in 1981 show a 3-percent literacy rate for rural women.

Several factors help to explain the low social indicators for women in Pakistan. One is their heavy work burden. Another is the lack of government interest in social services. Central government expenditures (the three districts are administered by the federal government) clearly illustrate government priorities. In 1986, 33.9 percent of the national budget was allocated to defense expenditures while only 3.2 percent went to education and 1 percent to

health. Although augmented somewhat by provincial government spending on health and education, overall national expenditures on the social sector are low by comparison with the average for all low-income countries of 10.3 percent for education and 4.5 percent for health. In the area of education, nongovernmental organizations have also supplemented government spending. Thus, for example, 33 percent of primary schools for girls in Chitral and 57 percent in the Northern Areas were constructed and supported by the Aga Khan Education Services. Overall, however, the percentage of female schools in Chitral and the Northern Areas is low (Table 4.1).

A third reason for the low social indicators for girls and women is the economic, cultural, and religious factors operating at the village and family level that further limit women's access to the few services that are available to them. Girls' access to education is restricted by the high opportunity cost of attending school and by the fact that education is perceived to offer few benefits to the family since girls usually marry at 14-15 years of age and move to their husband's household. In addition, women's lack of freedom to move outside the village and the fact that there are only male interlocutors mean that women have little or no access to health facilities (except on an emergency basis) or to family planning, agricultural extension, technical training, or markets for their products.

### **Program Implementation**

OED's interim evaluation report concluded that AKRSP did not give not enough attention to women's roles in agricultural production or to the impact of the program on women. At the same time, the report noted, women were increasingly looking to AKRSP for technical support, having taken the initiative in Gilgit to establish women's organizations as separate entities from the village organizations. Since then, AKRSP's objectives have been to increase

### Box 4.1: Women in Pakistan

The overall quality of life for women in Pakistan is poor. On many social indicators, Pakistani women fare worse than both their South Asian neighbors and the average for all low-income countries—on sex ratios, life expectancy, primary

school enrollment, use of contraceptives, and fertility rate (see table). Some of these indicators have worsened over the past 20 years.

Cross-country Comparisons, 1986

	<i>Pakistan</i>	<i>Bangladesh</i>	<i>India</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Low-income countries</i>
Sex Ratio <sup>a</sup> (females per 100 males)	91	95	94	101	99	95
Life Expectancy at Birth (years)						
Female	51	50	56	58	71	61
Male	52	51	57	55	67	60
Primary School Enrollment Ratio						
Female	32	50	76	116	99	88
Male	61	70	107	121	100	110
Fertility Rates (no. of children)	6.8	5.6	4.4	3.6	3.5	3.9
Percentage of Women of Child-bearing Age Using Contraception (1985)	11	25	35	40	51	na
Population Growth Rate (percentage, annual 1980-86)	3.1	2.6	2.2	2.2	2.7	1.9
Average Annual Growth of GNP per capita (percentage, 1965-86)	2.4	0.4	1.8	4.6	4.3	3.1
GNP per capita (1986 US\$)	350	160	290	490	1,830	270

na Not available.

a. Since the male-female ratio is unity in the younger age groups, a lower female-to-male ratio indicates that females have a shorter life expectancy at birth resulting largely from lower survival rates than males during their early years.

Source: World Bank data.

On a worldwide basis, the women of Pakistan also rank poorly. Pakistan has the lowest female-to-male ratio in the world, with 91 females to 100 males in 1986; the situation has deteriorated since 1965, when there were 93 females to 100 males. In only two other countries in the world (Bangladesh and Nepal) do men live longer than women. Primary school enrollment for women in Pakistan is among the ten lowest in the world (only Bhutan and Yemen in Asia, the remainder in Africa). Only five other countries have a lower female-to-male primary school enrollment ratio; four countries (Bhutan, Nepal, Togo, and Yemen) have worse ratios for female-to-male

secondary school enrollment. All of the ten countries which have higher fertility rates than Pakistan are in Africa.

Women play an important role in agriculture. Official data vary widely and generally understate the situation. The 1986/87 Labor Force Survey recorded a female labor force participation rate, urban and rural, of 11.9 percent. A recent World Bank report estimated that this survey had omitted about 12 million women agricultural workers. Women have almost no access to agricultural credit: at the five banks that keep records of loans by gender, women accounted for less than 0.1 percent of lending.

**Table 4.1: Girls' and Boys' Schools in Northern Areas and Chitral, 1988, 1989**

School Level	Gilgit, Diamer, Baltistan (1989)							Chitral (1988)						
	Government		AKES <sup>a</sup>		Total		Percent of Girls' Schools	Government		AKES		Total		Percent of Girls' Schools
	M	F	M	F	M	F		M	F	M	F	M	F	
Primary	542 <sup>b</sup>	58	—	77	542	135	20	252	63	—	31	252	94	27
Middle	74	6	—	43	74	49	40	28	3	—	9	28	12	30
Secondary	33	5	—	2	33	7	18	24	3	—	—	24	3	11

— Not applicable.

a. Aga Khan Education Services; Gilgit only.

b. Girls have access to about 100 of these schools.

Source: World Bank data.

women's productivity, to reduce their workload, and to develop institutional capacity. The strategy is based on the formation of separate women's organizations in Gilgit and Chitral—but not in Baltistan (the social model)—and the provision of women's packages and training (the technical/production model). To implement this strategy, there has been a slight increase in staffing (women) and strengthened management input.

AKRSP has seen the establishment of separate women's organizations as analogous to the development of village organizations. AKRSP enters into a contract with women's organizations in which it agrees to provide technical assistance and training for specific women's production packages (home-based poultry, nurseries, vegetable production) and labor-saving technologies and training in organization and management. For their part, women members undertake to meet and save regularly—savings which, together with income from the production packages, are deposited in separate accounts. Women's organizations are not eligible for grant-assisted productive physical infrastructure projects.

### District Programs

Progress in all three districts has been remarkable (Table 4.2), given the general government indifference to the needs of women, the difficulty recruiting not merely qualified female staff but female staff at all; and the problems which female staff encounter—often from the villagers themselves—when traveling alone or in male company, in finding suitable accommodation and coping with the physical difficulties of the harsh terrain and the frequent unavailability of electricity, water, and food supplies.

The AKRSP women's program has given almost equal emphasis to institution building and enhanced productivity. Institution building concentrated on creating new women's organizations (up 53 percent from 1986 to mid-1989) and increased savings (up 148 percent) rather than

expanding membership (up 20 percent). While the average size of women's organizations declined from 51 members in 1986 to 40 in mid-1989, average savings per group increased from Rs. 15,940 to Rs. 25,790. Savings, which are required weekly, are viewed by AKRSP more as a yardstick for measuring the health and strength of the organization than as a means of providing a link to productive investment (as collateral for credit). The wide variations in savings—from Rs. 5,000 per group in Nagar to Rs. 51,650 per group in Gilgit—do not seem to stem from any differences in AKRSP-sponsored production activities. Differences in training may be a factor, but disaggregated data on training by subdivision are not available for examining this relationship.

The technical model initially concentrated on alleviating women's labor burden by extending labor-saving packages to women's organizations on a grant basis. Almost half the groups received nut-cracking machines and about one-quarter obtained butter churners and spinning wheels. The high demand by women for production packages, combined with the inappropriateness of the labor-saving packages, resulted in a shift in strategy during 1988-89 to the provision of short-term credit, technical assistance, and training to increase productivity. The number of women's organizations receiving credit rose from ten in 1986 to a cumulative total of 246 in mid-1989. Of the short-term loans, almost half were for fertilizer and about 25 percent for poultry; vegetable seed and marketing also featured prominently. About 10 percent of the women's organizations received long-term loans, principally for sulphur tents, sheep breeding, and nursery and land development. Almost 70 percent of women's organizations received training in vegetable production, with about half the groups receiving supplies and technical assistance for a vegetable demonstration plot, a collective enterprise. Many of the groups also received poultry training, while 13 percent received the individual, home-based poultry package. Other training included plant protection, silage making, and goat management.

**Table 4.2: Summary Indicators of Progress in Institution Building and Technology Transfer for Women's Programs, by District, 1986-89**

Indicator	Gilgit					Chitral				Baltistan <sup>a</sup>			
	Up To 1986	1987	1988	June 1989	Total	1987	1988	June 1989	Total	1987	1988	June 1989	Total
<b>Organization</b>													
No. of Women's Organizations	133	15	39	17	204	26	35	6	67	162	92	43	297
<b>Savings (cumulative)</b>													
Total (Rs. millions)	2.12	3.18	4.40	5.26	5.26	0.17	0.42	0.68	0.68	na	na	na	na
Per Group (Rs.)	15,940	21,486	23,529	25,793	25,793	6,583	6,885	10,149	10,149	na	na	na	na
<b>Credit</b>													
Short-term (Rs. millions)	0.01	0.49	1.6	1.0	3.1	0	0	0	0	0	0	0.001	0.001
No. of Organizations	10	62	113	61	246	0	0	0	0	8	14	19	41
Medium-term (Rs. millions)	0	0.2	0.4	0.2	0.8	0	0	0	0	0	0	0	0
No. of Organizations	0	5	7	10	22	0	0	0	0	0	0	0	0
Disbursement/Savings Ratio (cumulative)	0	0.23	0.61	0.75	0.75	—	—	—	—	—	—	—	—
<b>Production Packages &amp; Training (no. of groups participating)</b>													
<b>Vegetable Demonstration</b>													
Plots	0	23	32	41	96	4	8	38	50	4	12	20	36
Training	0	23	52	64	139	0	6	9	15	4	12	20	36
Nurseries	6	0	1	9	16	4	9	3	16	0	0	0	0
Training	6	0	0	0	6	0	0	0	0	0	0	0	0
Home-based poultry	0	0	3	24	27	2	0	4	6	12	13	48	73
Training	113	34	53	43	243	11	18	16	45	0	2	0	2
Total Production Packages	6	23	36	74	139	10	17	45	72	16	25	68	109
<b>Labor-saving Packages (no. of groups participating)</b>													
Nut-cracking Machines	37	52	2	0	91	10	0	0	10	21	16	4	41
Butter Churners	0	0	47	11	57	0	10	0	10	0	10	1	11
Improved Stoves	0	30	0	0	30	214	0	0	214	0	0	0	0
Spinning Wheels	0	0	12	17	29	10	11	0	21	1	2	0	3
Total Labor-saving Packages	37	82	61	27	207	234	21	0	255	22	28	5	55
<b>Women's Program Staff</b>													
<b>District Program Coordinator</b>													
Budgeted	0	1	1	1	—	1	1	1	—	1	1	1	—
Filled	0	1	1	1	—	1	1	1	—	0	0	1	—
<b>Field Coordinators</b>													
Budgeted	4	4	4	4	—	2	3	3	—	2	2	2	—
Filled	4	4	4	4	—	2	2	2	—	2	2	2	—
Trainees	0	0	0	2	—	0	0	4 <sup>b</sup>	—	0	0	4	—

na = Not available.

— Not applicable.

a. No separate WOs have been established in Baltistan, but women's sections of village organizations participate in the women's program.

b. Valley-level supervisors.

In Chitral, the program emphasized the social model more than the technical model. Institution building received high priority. The emphasis was on increasing the number of women's organizations and their savings rate rather than on increasing the number of members. Over the 2.5-year period up to mid-1989, an average of 27 new women's organizations were created annually in Chitral (compared with 28 in Gilgit). Average savings per women's

organization over the program periods has increased at almost the same rate in Chitral as in Gilgit (see Table 4.2), while the average group size declined from 39 to 32 members. While data are unavailable for an analysis of savings by subdivision, it is likely that the wide ranges observed in Gilgit can be found in Chitral as well.

The link between savings and investment is more tenuous in Chitral than in Gilgit. Although savings have in-

creased rapidly, no credit has yet been extended to women's organizations in Chitral. The production model in general received less attention than in Gilgit, and technical training was not a precondition for vegetable production packages which was the principal technical package extended (see Figure 4.1). Few labor-saving packages were introduced, except for improved stoves provided by the Aga Khan Housing Board.

The program in Baltistan is the converse of that in Chitral, with the social model taking second place to technology transfer. Because of male villager opposition in Baltistan, no separate women's organizations were encouraged or created. Instead, village organizations have women's sections. There are no separate women's savings accounts.

The main focus in Baltistan has been on technical training and supplies for collective vegetable production (12 percent of village organizations) and home-based poultry packages (25 percent), although very small amounts of short term credit have been extended. As in Chitral, the introduction of labor-saving technologies slowed after the first year, with the exception of the sulphur drying tents since Baltistan is a major producer of dried apricots.

#### *Program Management*

AKRSP organization and management to support these activities are centralized and technical in orientation. AKRSP has deliberately sought to recruit local female staff, in part because of language requirements but also to enhance the prospects for sustainability. Overall program responsibility rests with the program coordinator, who is part of the core office management group based in Gilgit. A district program coordinator, who is one of seven section heads, directs the program at the district level, although with no staff of her own. In Gilgit, field coordinators are attached to each of four sections: agriculture, livestock, marketing and engineering/appropriate technology; Chitral had only two field coordinators until 1988, when a new position was added, although it has not yet been filled (see Table 4.2). Until recently, there were no women's program staff at the field level. Social organization units are responsible for providing the link between all AKRSP services and the women's organizations.

In Gilgit, there was no increase in staff for the women's program during the period of substantial expansion in both the number of women's organizations and the provision of technical packages and training. In 1989, Chitral took the initiative to decentralize its organization somewhat and appointed four valley-level supervisors, selected by the cluster village organizations. In Baltistan, although no separate women's organizations were established, the technical packages and the training can be provided only by women's program staff since the social organizations

units, which would normally take on this responsibility, are staffed by men. This places a heavy burden on the two women field coordinators. The district program coordinator position was vacant throughout 1987-88.

The women's program has been well supported in budgetary terms; budget figures, which are available up to 1988, show an increase in program funding from Rs. 2.5 million in 1986 to Rs. 8.4 million in 1988, including donor grants and Pakistan government contributions (see Annex 4, Table 4-4).

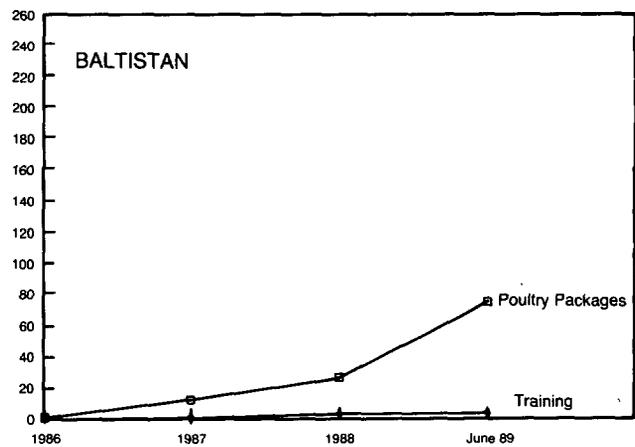
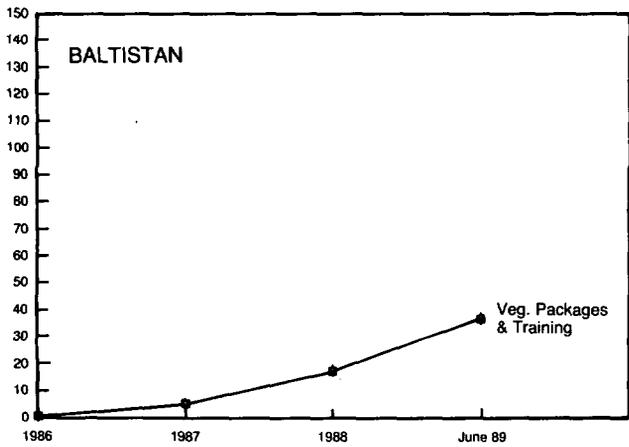
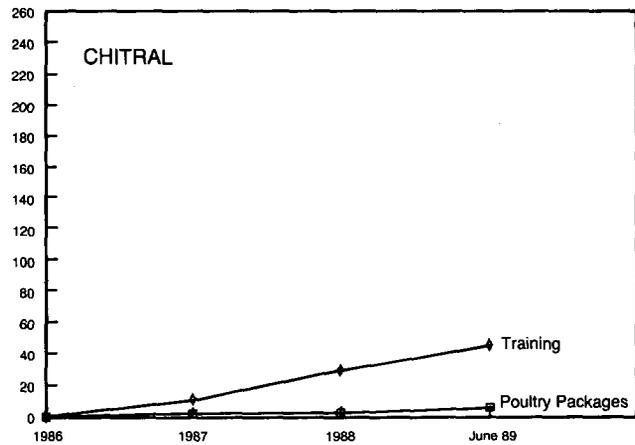
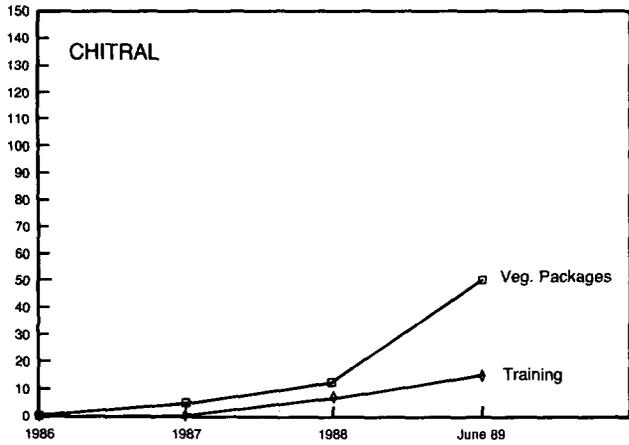
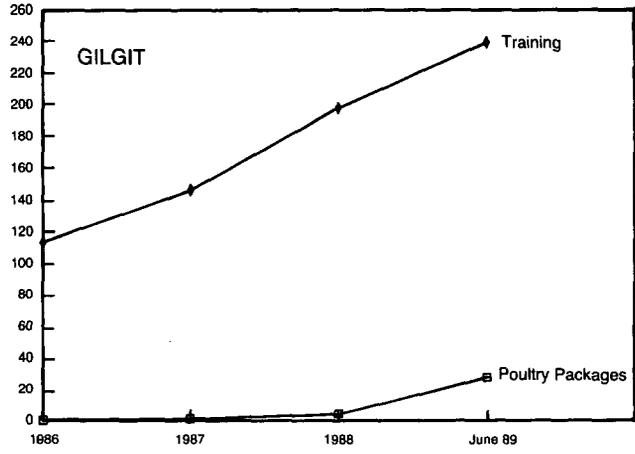
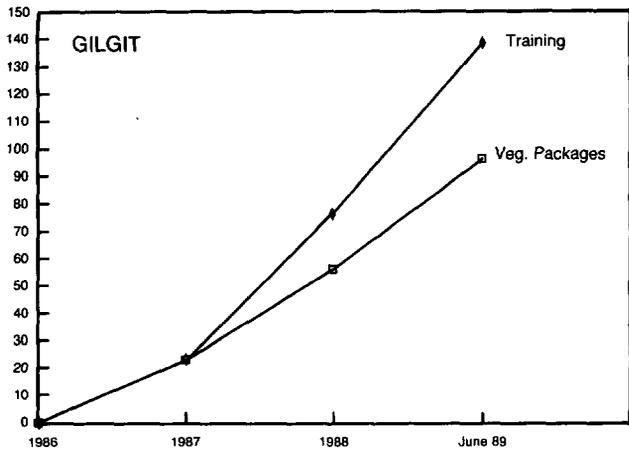
#### *Achievements*

Assessment of the impact of these activities is necessarily preliminary because of the short period of the program and the limited agricultural production data available. The impact of institution building needs to be measured over the long term since the activity itself is a long-term process. Nevertheless, certain trends are evident and are supported by two recent studies commissioned by AKRSP (Khan 1989 and Hooper 1989).

The single most important contribution of the women's program to date has been the creation of a large number of separate women's organizations. These have benefited women by facilitating their access to much-needed social services and providing a conduit through which technology can be quickly transferred to them. These organizations have also contributed to a substantial change in women's outlook. They have helped to reduce women's isolation and to build self-confidence while developing technical and management skills. The contrast in women's outlook in villages which have women's organizations and in those which do not is immediately apparent.

A critical aspect of institution building is to develop an organization's capability to function independently and to interact with external agencies. Women pay user fees for village-based services such as poultry vaccination and plant protection. Women now recognize that outside agencies are interested in supplying services directly to them and tailored to their particular requirements. The existence of separate women's organizations has enabled women health visitors to make contact with women more easily than through the village organization. Women have more confidence in being able to identify and articulate their needs, such as access to family planning services, clean water, education, and health facilities. This in turn has enabled agencies to review existing policies in the light of these needs. For example, government health services have established a five-year plan to provide an increasing number of family planning centers—from 90 in 1989 to 150 by 1992. Since there is a shortage of female staff, however, these services will be directed to men only. Also, in the light of women's newly articulated demands and the ex-

**Figure 4.1: Number of Women's Organizations Receiving Production Packages and Related Training**



pansion in government family planning services for men only, Aga Khan Health Services is reviewing its current policy of not supplying family planning services.

The principal accomplishment of the production model is that women in Gilgit now have access for the first time to agricultural production credit. This is a major step forward that puts the women in Gilgit ahead of the great majority of women in the rest of Pakistan. Women's organizations in Gilgit have an excellent credit repayment record; separate data for repayment of credit are not available, but the overall repayment rate for short-term credit is 98 percent. There is no apparent relation, however, between level of savings and the provision of production packages (see Table 4.3). Women's organizations in Gilgit and Gupis/Yasin have each received a total of almost 50 packages, yet average savings in Gilgit are more than three times those of Gupis/Yasin. Similarly, average savings in Hunza are almost the same as in Punyial/Iskoman, yet in Hunza 37 quick-yielding packages were distributed compared with

is used for home consumption; in others, all the vegetables are sold. In the case of poultry, family consumption is often limited to men;<sup>1</sup> the remainder of production is sold.

## Strategy Assessment

### Labor-Saving Packages

The most significant weakness in AKRSP's women's program has been the labor-saving packages. This is an urgent issue. Data now available on labor use at the household level indicate that women's work load is much heavier than was previously thought. Table 4-4 shows that women in a household work almost three times longer during the year than do males. Men are increasingly engaged in off-farm activities; the impact study (Khan 1989) shows that 36 percent of average annual farm income is derived from off-farm work undertaken by men. As a result, female involvement in farming and related household

**Table 4.3: Level of Savings and Number of Production Packages for Women's Organizations in Gilgit**

(cumulative to June 1989)

Item	Hunza	Gilgit	Gupis/Yasin	Punyial/Iskoman	Nagar
Savings (Rs. millions)	2.0	1.3	1.1	0.9	0.02
Rs/Women's Organization	28,500	51,600	14,100	28,000	5,000
Production Packages					
Quick-yielding					
Vegetable	25	17	36	10	10
Poultry	12	5	1	2	-
Subtotal	37	22	37	12	10
Longer-term					
Nurseries	6	4	1	2	3
Orchards	15	12	11	7	6
Total	58	48	49	21	19

Source: World Bank mission data.

only 12 in Punyial/Iskoman. Nevertheless, the savings program has enabled more women to be brought into the cash economy, particularly in Gilgit and Chitral. Many women regard the savings itself as the most important benefit, because of the safeguard it represents for their children's future.

The impact of specific technical production packages is more difficult to gauge because of the lack of information on quantity of inputs applied and on yields, production, and cropping intensities. Women's demand for these packages is strong because they are considered of high value and to provide quick returns. The secondary benefits from these packages, such as improved nutrition for women and children, vary. In some villages, part of the vegetable crop

activities is increasing. Khan also points out that for women, especially, the category "household activities" often includes a large agricultural component because cultural mores prefer that women be described as working on household rather than agricultural activities. These findings point to the urgency of finding suitable technologies to alleviate women's burden; they also indicate the high opportunity cost of sending children to school, particularly girls.

1. In one village in Nagar, a conservative area, women reported that only the men may eat eggs and that women are directed to sell the remainder, although many women would like to have eggs for themselves on a regular basis.

**Table 4.4: Household Labor Distribution by Gender for Household Activities and Crop Production in Gilgit District, 1988**

(working hours per year)

Labor activity	Women	Men	Children
<i>Household</i>			
Household Activities <sup>a</sup>	2,034	342	419
Livestock	885	349	431
Crop Production	538	523	83
Collection of Water	283	50	132
Collection of Firewood	100	176	47
Orchards	38	37	20
<b>Total</b>	<b>3,878</b>	<b>1,477</b>	<b>1,132</b>
<i>Individual<sup>b</sup></i>			
	1,939	739	1,919
<i>Crop Production</i>			
Land Preparation	51	163	21
Irrigation	67	202	36
Weeding	241	64	45
Fertilizing	31	17	12
Harvesting	137	131	41
Threshing	34	34	15
<b>Total</b>	<b>538</b>	<b>523</b>	<b>83</b>

a. Khan (1989) points out that for women, the category "household activities" often includes a large agricultural component.

b. Based on an assumed household size of two men, two women, and 0.59 children; for other assumptions, see Khan (1989, p.49).

Source: Khan 1989.

The impact of labor-saving packages is small. The impact study in Gilgit found that only 7 percent of villages used the butter churners and 11 percent the nutcrackers. In general, the technology was not appropriate: the nutcrackers were too heavy to operate, the butter churners too large to take up to the summer pastures, and the carders for the spinning wheels caused problems. Value-added technology, such as sulphur tents, have been much more successful, to the extent that many families have constructed or self-financed additional tents on their own. Recognizing their shortcomings, AKRSP has not actively promoted the labor-saving packages since 1988.

#### Other Weaknesses

Other program weaknesses are evident. Program experience suggests the need to improve the quality of the technical/production model, strengthen the women's organizations, and review the structure of women's services generally.

Up to now, extension of the production model has been target-oriented, in response to women's increasing expectations. In the process, however, the qualitative aspect has

been somewhat neglected. The system for transferring the technologies has not always been sufficiently integrated both upstream and downstream. Experience with World Bank-supported rural development projects that have been successful in technology transfer, points to the importance of such an integrated development strategy.<sup>2</sup> This type of strategy has several requirements:

- *Sufficient inputs must be available on time.* (By contrast, seed shortages occur in Baltistan and Gilgit; the availability of poultry vaccine in Chitral depends on the village livestock specialist obtaining supplies; and fertilizer shortages are evident in Gilgit.)
- *Production packages should be introduced in conjunction with the necessary training.* (This has not always been the case; see Figure 4.1.)
- *Sufficient links must be established between research stations and farmers, and ways must be established to ensure feedback to deal with the inevitable technical problems that arise.* (The flow of technical information from agricultural staff does not always go to the women, even for packages specifically identified as women's packages.)
- *Provision must be made for fine-tuning the packages.* (There is no monitoring of the largely uniform vegetable package despite the large range of cropping patterns and the wide variation in rainfall and evaporation rates.)
- *Markets and market information must be available.* (Women frequently make decisions on which vegetables to plant based on the previous year's prices. Better information is needed on down-country markets on quality and other standards necessary to meet market demands.)

While the effective transfer of technology usually requires that all of these components be in place, this does not imply that services must be supplied by a single agency. Rather, it is the strategy that must be integrated; often this occurs within a framework of institutional pluralism.

The program has given substantial attention to training, largely of a technical nature, but its impact is not altogether clear. In Gilgit, 243 women's organizations received training in poultry raising, including the use of vaccines (see Table 4.2). In the ten villages in Gilgit covered in the impact study, however, only 1 percent of households reported practicing poultry vaccination. (The fact that the liquid vaccine for Newcastle disease is unstable and must be used within 24 hours of exposure to room temperature may explain the low recorded use of vaccinations.) Similarly, 139 women's organizations received training for the vegetable demonstration plot, yet the same study reported that

2. See, for example, *The Jengka Triangle Projects in Malaysia: Impact Evaluation Report*, OED, World Bank, 1987; and *Cotton Development Programs in Burkina Faso, Côte d'Ivoire and Togo*, OED, World Bank, 1988.

77-87 percent of villages continue to use the traditional vegetable seeds. There is also a need to expand training to include additional disciplines, for example, bookkeeping and accounting and farm management. Women need a better understanding of all aspects of farm management: the amount and cost of inputs, yields and prices, market information, and management of collective savings.

The structure of services in the women's development program, as currently organized, has sometimes led to an imbalance in resources in supporting the social and production models. Operational staff for the women's program are situated in the technical sections of the respective district program offices. With the high demand by women for the technical packages, priority is often accorded to supplying production packages rather than to institution building. In Gilgit District, the allocation of one field coordinator to each of four technical sections in the women's program has created an uneven work load in view of the demand-oriented nature of the program. Although women's program staff are physically located in the technical divisions, there is in fact no systematic coordination between women's program work schedules/visits and those of the agricultural technical staff. Follow-up is weak, with little monitoring of production packages either to guide any necessary fine-tuning of the packages or to enable an assessment of overall impact. Data on yields and production are not available.

## Future Directions

Two main conclusions emerge. First, the finding that women work more hours than men on every farm production and household activity (except firewood collection, land preparation and irrigation) makes a compelling case for all interventions in village or women's organizations to have a specific gender focus. Improvements in agricultural production and natural resource conservation will be achieved only if both the quality of female labor and women's access to productive resources are improved. Second, the equity implications of the low social indicators for women, combined with the recognized social benefits to be derived from female education, argue the case for substantial additional investment in education and other social services for women.

The implications for AKRSP are several. First, the strategy needs to be broadened so that women's organizations are offered specific productive physical infrastructure tailored to their needs—for example, hydroelectricity to provide alternative sources of energy, or improved rural water supplies. This change may also have a positive impact on girls' attendance at school. The benefits demonstrated in Gilgit as a result of women having access to both the social

and the production models suggests that women in Chitral would similarly benefit from more technical support, including access to credit. Experience in Gilgit also indicates that women in Baltistan would be likely to benefit substantially from separate women's organizations. There also need to be stronger links between the respective models, especially between institution building and production.

Second, the program needs to strengthen both technical services delivery and the women's organizations. The focus of the technical services has been on providing separate packages for women, as was recommended in OED's 1987 interim evaluation. Now that detailed information is available on labor use at the household level, it is clear that *all* technical activities promoted by AKRSP should have a gender focus. Efforts to assist women should not be left solely to the women's program section. Greater attention needs to be given to the qualitative aspects of technology delivery and to the identification of appropriate labor-saving technologies. The social model requires strengthening through increased technical and management training. Since a shortage of qualified women restricts training availability, other options should be explored for relieving this constraint—perhaps school teachers could be hired to provide such training during their non-school hours.

This strengthening of the strategy for the women's program will require continued and sustained management commitment at all levels of AKRSP to ensure the success of the program. While strong AKRSP support is critical, the success of the program will also depend on whether the broader environment for program activities is supportive. In this respect, the role of government is critical. OED evaluations of World Bank-supported rural development programs have highlighted the importance of government commitment to the success of any rural development strategy. While this does not imply that direct government implementation of these projects is necessary, it does mean that active support is needed in two areas: in creating an environment that enables the rural poor to take advantage of new opportunities and in providing targeted public services for the rural poor, both men and women. Government has evidenced a lack of interest in, or support for, women and the particular problems they face. The importance of investing in women on economic and equity grounds has already been stated. Some specific steps are required now:

- *Equal treatment of women.* Government has the responsibility for leading this effort; it should not be left to a nongovernmental organization.
- *Immediate efforts to recruit female extension officers for areas where cultural sensitivities prevent male extension officers from working with women.*
- *Strengthening the network of existing women's organizations so that they can serve as conduits for public services.* Seldom

do governments have such effective local organizations operating in remote rural areas; they should take advantage of this fact.

- *A reordering of investment priorities toward productive enterprise.* Investments in education, primary health care, family planning services, and potable water all serve to improve human resources.

Since these actions will require a substantial effort on the part of government, external agencies can provide necessary support in several ways:

- Through the process of policy dialogue, to encourage government to invest more in the social sectors.
- Through increased provision of resources. World Bank studies have concluded, for example, that the problems

in the education sector stem less from implementation difficulties than from a shortage of resources; in particular, more schools for girls are needed.

- By channelling their services through women's organizations, thereby strengthening women's links with outside commercial, legal, and political structures.
- Through a continued commitment to improving the status of women. Such commitment has already provided an important catalyst at the field level. Many villages reported that they had established separate women's organizations at least partly because of external prompting. Once having established these organizations, however, they now recognize the benefits.

# 5. Information Program

## Information and Data Resources

The information needs of AKRSP are provided through its Monitoring, Evaluation, and Research (MER) Section. At the Gilgit headquarters, MER has a core staff of five professionals, whose leader is one of the two deputy general managers. Each district program office has a monitoring officer whose role is to assemble information on the operation of the program from the subdivisions, social organizers, and village organizations.

From the outset, MER has collected much detailed data. A common basic framework is used to record basic characteristics of each village (for example, number of households, agricultural area), each village organization (membership, savings, details of productive physical infrastructure, specialists trained, loans granted), and each women's organization. These accumulated characterization data (collected since 1982) chart the program's spreading involvement in the region. As its activities have become more diverse, the fund of data collected has inevitably grown. It now includes data to such level of detail as the numbers of different types of trees planted, livestock vaccinated, quantities of vaccines, new seeds supplied, product volumes marketed, and a host of other detail on matters that either pass through the hands of the AKRSP organization or are noticed during its everyday operations.

### *Database*

The AKRSP database is, by any standards, impressive in its detail, content, breadth and precision. The AKRSP operation can claim to be one of the best-documented rural development programs anywhere. The Gilgit situation is recorded most finely, but the Chitral and Baltistan pictures are being painted in similar detail. The program managers are to be complimented for their far-sightedness in recog-

nizing the desirability of such careful recording of activities and for instituting a detailed structure for this purpose. Also deserving of commendation is AKRSP's policy of data accessibility, which is in line with its transparent mode of action in pursuing its development strategy. The documentary evidence of the program's activities and effects is made widely available to anyone with a valid interest, including researchers and students.

The data collection framework was revised in 1988 to present a clearer picture of the program to management, donors, and readers of AKRSP's regular reports and is under review again. Notwithstanding attempts to simplify the structure of summary reporting, the increasing diversity and wider spread of the program create a tendency for the quantity of data recorded to expand. Growing publicity and interest in the program exacerbates this tendency toward expansion. MER needs to define a practical model for serving the information needs of the program that will also meet the responsibilities associated with the program's somewhat experimental approach. The program must also be protected from expectations that it should be capable of providing data on virtually any aspect of the operation which may be raised for enquiry.

### *Reporting*

The 1987 OED interim evaluation recommended that AKRSP consider computerizing its information base. To some extent, this has been accomplished. MER has developed a computer-based management information system to hold the data summarizing the characteristics and performance of each village organization. Most of the data on Gilgit operation have been entered; data on the other two districts will follow. The major direct use of the information collected is in documenting program activity for regular reporting to donors and other interested parties. By June

30, 1989, AKRSP had issued 26 quarterly reports and 6 annual reviews. These reports now carry substantial statistical appendixes which represent a major data source for evaluation and research into the program's activities and effects. MER has undertaken a number of such studies itself or in collaboration with other institutions, while other reports have been commissioned from outside consultants.

As a result, MER can point to a number of papers and studies, in addition to its regular "statutory" reporting. An internal memorandum issued in September 1989 lists the studies as follows:

<i>Item</i>	<i>Number issued/undertaken</i>
Program evaluation reports	7
Regional statistical notes	8
Discussion and evaluation notes	19
Village case studies	15
Conference papers on AKRSP	15
Rural science research reports	6
Consultancy and internship reports	14
Livestock papers	4
Credit and savings papers	2
Primary data collection surveys	10
(Support for student theses)	(8)

There are also a number of studies in progress and reports in draft form. Even so, this is far from a complete catalogue of MER's published output. Many items reviewed by the evaluation team (13 of the 18 reviewed) do not appear on this list, yet they are reports of studies undertaken or sponsored by the MER. Such incomplete documentation of the papers and reports produced within MER gives credence to the view that information provision is being submerged by passive data recording.

### **Evaluating Program Performance**

A relevant question concerns the manner and extent to which AKRSP's information base, studies, and analyses serve their proper purposes. In most development projects, the resources made available are viewed as a specific investment, and the changes induced are expressed as a computed rate of return on that investment. Notwithstanding its weaknesses, this parameter does provide a comparative indicator of achievement relative to other experiences. It is unfortunate that such a measure cannot be estimated for the AKRSP as a whole or even individually for the bulk of its most significant development activities. This may seem surprising, given the detailed attention to data gathering. The weakness, however, is twofold.

### **Quality of Output**

First, there are no baseline data recording the starting position of villages with respect to the characteristics to be changed by the program, and against which achievements could be assessed. There seem plausible reasons why AKRSP did not undertake a major baseline survey at the outset, since the initial emphasis was on fostering institutional innovation and villager participation. A program of (perhaps intrusive) questioning at that time could have undermined confidence in AKRSP and created an erroneous impression of bureaucracy and management imposed from above. Recently, however, a change was introduced in data collection: data will now be gathered from all households in 42 villages covering the major agroclimatic zones throughout the program area as an adjunct of the major impact study undertaken in 1988/89 (Khan 1989). It remains to be seen whether this will offer a suitable base for more complete ex post evaluations.

A second difficulty in attempting to pursue a conventional rate of return computation is the nature of the data in MER's records. Because its primary purpose has been to document the activities of AKRSP, recording has concentrated on the *inputs* into the development effort, not the economic outputs. Statistics on the number of trees planted, vaccines purchased, appropriate technology items introduced, individuals trained, and loans advanced offer a splendidly detailed picture of how the program has entered the lives and economic activity of the villages. However, the numbers of trees which died, trained specialists not functioning, technology items not in full use, or canals in need of repair are not known. Each quarterly report documents the increment in these various parameters, but none of the data provides the measures of value added that would be needed to estimate a return on the financial resources expended in the program.

Although no overall rate of return calculations can be contrived, many partial evaluations have been undertaken. A number of simple cost-benefit studies on technical packages—including poultry, vegetables, apricot drying, new wheat varieties, and fertilizer—have measured benefit/cost ratios ranging from 3/1 to 12/1. Other program components have been studied to document how they progressed and to record technical characteristics of their operations. These include case studies of land development loans, the use of farm records, livestock vaccination, the heifer project, and the functioning of village organizations.

Few of these studies yield useful information for decision making, because each has a narrow focus and ignores the rest of the (enterprise, farm, or village) system in which change is embedded. In many cases, the purpose of the study is not clear. The reports often are relatively brief

accounts of what took place, accompanied by anecdotal comments and data from small samples covering some of the variables which changed. Sometimes, despite frequent use of the word "impact" in the titles, the studies are decidedly sketchy. There is little attempt to undertake what might be recognized as structured or formal evaluation, and the methodology employed is usually little more than simple accounting along the lines of a partial budget. (For example, the return on marketing loans is calculated to assess the performance of the village organization as a marketing institution, not to measure the full effect on farmer members who receive the added benefit of selling to the village organization at a higher price than they would otherwise receive.) Only in one or two instances has an appropriate concept of the "without project" situation been clearly identified.

These comments do not apply universally to all of MER's published output. Within its portfolio, MER has a number of well-conceived analytical studies conducted with suitable rigor and directed at particularly defined questions of management importance. The evaluation of irrigation projects in Gilgit district, for example (Hussein et al.), is a solid and professional piece of work. The impact study, due to appear by the end of 1989, is built upon a clear structuring of the issues within its purview, pursues a consistent line of enquiry, and assembles a data package that promises to serve well the future information needs of program evaluation.

The impression remains, however, that much of the evaluation activity so far may be falling short of the mark. Elementary partial cost-benefit studies, presumably intended as broad general assessments of program performance, have now been completed on virtually all of the program's packages. With their narrow focus, they offer little guidance for any potentially useful operating adjustments because no prior standards exist against which to assess actual achievement. They offer weak evaluation information and little to assist monitoring. On the other hand, the formal impact and evaluation studies, because of methodological weaknesses, may not be achieving their more precise aims of yielding structured assessments of performance in the major themes that the program is attempting to pursue. In the light of these shortcomings, MER may wish to consider more carefully the disposition of its resources and the structure of the studies it undertakes.

### ***Balance of Activities***

The way MER has fulfilled its three-part mission thus far has been a little unbalanced. Its *monitoring* has been assiduous and detailed, although centered more on record-

ing inputs than on monitoring subsequent changes. Its *evaluation* activities have been much less ambitious and have been hampered by the lack of initial baseline data. Most primary indicators suggest that the program continues to be highly successful in initiating beneficial change in the villages it enters for the first time; it is less clear what effects can be attributed in the second-round, once village organizations are established and development is more internally generated. The *research* function is less easy to draw out. Much of its nonroutine work is directed toward exercising a planning and advisory role for program management and decision making. MER has undertaken or commissioned various research studies, but it seems to be pursuing no clearly articulated program. The program's concerns range widely across technical matters relating to productive physical infrastructure planning and construction, land reclamation, development of new production techniques and appropriate technology, resource management, and environmental impacts. All are a potential focus for research, but few have direct connections with the essentially socioeconomic orientation of MER.

Until recently, MER appears to have placed primary emphasis on answering questions that fall into the "what?" category rather than those dealing with the "why?" and "how?" of AKRSP's operations. MER's documentation of activities, as already stated, is detailed and impressive. However, the explanation of the change process initiated by AKRSP, the characterization of the relationships (economic, technical, and other) it is influencing, and the identification of particular determinants of its success have not been given the attention they deserve. This results in a weaker base for undertaking formal evaluations than might otherwise be the case. More important, perhaps, is the resultant lack of a framework for predicting future issues and generating information needed to answer questions relating to the evolution, transition, and replication of the program.

AKRSP's draft Strategy Document for 1990-92 declares a shift away from simple output-increasing targets toward quality-of-life aims reflected in higher incomes, improved living conditions, and a more stress-free environment. Further, in the longer term, AKRSP seeks progressively to withdraw as the direct support organization for village development. These targets imply that there will be far fewer straightforward interventions through the program and many more diverse initiatives and more complex decision processes. The information base needed for identifying planning, targeting, and implementing relevant actions will be rather different from that which has served in previous stages. Assessing the program's success in encouraging more equitable development will be far more demanding in terms of data and methodology. Equally de-

manding will be assessment of success in implementing strategies for sustainable change which link resource management and environmental considerations (objectives declared in the Strategy Document). Together, these developments imply the need for some important extensions to MER's activities.

### *Information Framework*

To measure and evaluate the impact of a development program, a clear concept of the change process being initiated is needed. Otherwise, the variables through which change is manifested, and on which data will be required, are not defined. In short, there will be no expectations about what to look for. The first phase of AKRSP's activity emphasized two primary areas—institutional development and agricultural development. In the first of these, a clear model of institutional change was established, involving the formation of village organizations, collective and participatory decision making, self-help, and savings mobilization. In the area of agricultural development, where the targets were to raise output through infrastructure investments, new technical packages, and enhanced management skills, it is less clear that the pathway of change was sufficiently identified in advance. This lack was highlighted in the 1987 interim evaluation report, which called for a more precise articulation of AKRSP's production model, and suggested that a farming systems research framework be considered. In effect, this comment voiced the concern that, while expanded agricultural output would almost undeniably generate benefits for villagers, it was important to understand the *structure* of farming activity within which the changes took place. Otherwise, there was no basis to judge the sustainability or replicability of the change.

The weakness relates not only to the lack of a model of the agricultural activities within a village but also—perhaps more importantly—to the lack of a model of the village as an economic system. No attempt has been made to gather information on the overall structure of resources and resource use (especially labor), the level and sources of household incomes, asset values and holdings, patterns of consumption and expenditure, or their distribution across households. Little evidence is available on how these characteristics are determined or how they are changing as a result of the program's initiatives. An extension of this kind of economic information relates also to the resource and product markets within the village—the prices and supplies of inputs, outputs, and consumption goods and services that enter into what is an increasingly commercialized village trading system. Data, and information on these key economic relationships, are needed

to link in with the data on actual and potential growth in agricultural activity at the village level, so that a more integrated view can be derived. Otherwise, an excessive focus on the village as a unit of observation and on the micro detail of change in its various components can obscure the important aggregate effects on markets, prices, and resource systems within the region.

### *Response to Earlier Recommendations*

These comments concerning gaps in AKRSP's information program repeat, albeit in a more developed way, comments made in the 1987 evaluation. The earlier evaluation suggested that infrastructure development, production expansion, and marketing be treated as an integrated whole. This was a call to place information on farm-level changes into a village context and link it with market development; the suggestion has not been followed up. Very little has been done to "identify and test markets" despite the continued program emphasis on expanding agricultural output; one study has been undertaken, although not directly by AKRSP (see Deomampo 1988). To provide a better framework for understanding the decision processes of village households, the evaluation report recommended collection of data on resources and agricultural production in a farming systems context; this has yet to be explored. There is no evidence that the strong recommendation to place more emphasis on households as the unit of observation has been adopted. Studies on labor profiles; income levels, sources, distribution across households; and consumption and expenditure patterns, are still unavailable. The suggestion that the program's focus might be sharpened by grouping data according to farmer characteristics, location, or agro-ecological zone—which represents a rudimentary attempt to discern explanatory factors—has not been attempted. Nor, judging by the recent studies by the Baltistan district program office (Rahim 1989), has much attention been paid to refining the approach to the financial benefit-cost calculations, despite the urgings to do so. The data problems which limited the rigor of the earlier attempts to assess irrigation and livestock projects remain fundamentally unchanged.

All this suggests that AKRSP's approach to information collection and analysis, like the development program itself, has not yet broken out of its first phase. There is a distinct impression of a "keep on taking the tablets" approach, in which the familiar and apparently workable procedures of the initial years are continued automatically. This can divert attention from the need to shift toward activities now more appropriate to the increasingly diverse and complex development process that is gathering momentum within the region.

### *Need for a Regional Model*

AKRSP's program is moving beyond the stage of being merely a strategy for the development of individual villages. As the program embraces more and more of the region, it becomes, unavoidably, a strategy for economic development in the Northern Areas as a whole. This shift is emphasized as the program extends its range of technical packages to affect more subsectors of economic activity, and is strengthened by the institutional initiatives foreshadowed in its Strategy Document for 1990-1992. These include encouragement of village organization banking and cluster village organizations, the fostering of linkages with private and public sector institutions, and an emphasis on greater self-reliance and independence of villages from donor funding. It becomes increasingly important, therefore, that AKRSP set its activities with a clear image of the economic development process that is occurring within the Northern Areas. To extend the recommendation of the 1987 evaluation report, AKRSP needs to articulate its regional model in greater detail as a guide to the evolution—and assessment—of its program.

Placing the AKRSP effort within a regional context has major implications for MER's data collection and program evaluation functions. Initially, AKRSP could pursue its basic strategy virtually as an enclave project. The physical separation of villages from each other and the relative economic separation of the Northern Areas from the rest of Pakistan allowed the program to target its efforts on individual villages. That insularity of approach will be increasingly difficult to sustain. As village needs for subsistence consumption are met, the incremental agricultural output induced by the program will need to be linked with regional markets and with markets in down-country Pakistan. The potential economic benefits from growth in cash crops and specialist products (such as milk and milk products, seed potatoes, vegetables, and vegetable and flower seeds) can be gained only from markets outside the villages that produce them. This puts a priority on identifying, understanding, and developing the (physical, institutional, and economic) linkages from the village, through the Northern Areas region, and beyond to down-country—and even international—markets. Furthermore, it emphasizes the growing reliance that village producers have on input supplies, technology, information, and services from sources that are not only external to their immediate locality but ultimately external to AKRSP.

Added to this, the economic development of the Northern Areas will be increasingly determined by forces other than internal demands. The comparative economic advantage of the region's resource base, the demands from external markets, and products with higher income elasticities of demand than for basic commodities will

progressively provide the economic incentives and opportunities for growth. Many of these may be unrelated to the traditional agricultural base of the villages in the region. The moves towards specialist seed production are one clear illustration of this; the potential for tourism is another obvious change in the way the Northern Areas may exploit its resource base for local economic advantage. Both examples also demonstrate how linkages with external institutions become crucial to the development process. As the villages of the Northern Areas lift themselves from the basic activities of subsistence production and survival and respond to widening economic opportunities, they will become increasingly integrated with each other, with the major towns of their region, and with the rest of the country. It becomes increasingly important to trace those linkages in order to be able to explain (or foresee) the Northern Areas development path as it intersects with, relies on, and responds to the economic influences and opportunities in this wider scene.

In thinking through the path of change with which it is associated, AKRSP needs to explore both the likely *sequence* of changes through time and the *broadening* of economic activity that may take place. Part of the reason for this exercise will be to identify the changes that may now be expected to occur autonomously, and due to the activities of other agencies, including those of the Government of Pakistan, so that program actions are predictably consistent with them. The other reason is to establish relevant objectives for the program, whether to foster particular opportunities or to relieve constraints which may arise. Thus, for example, while the Northern Areas may have a comparative advantage in a number of specific agricultural commodities (fruits, seeds, vegetables), its economy is unlikely to remain dominantly based in primary agriculture. The diversification of economic activity within villages, and the growth of value added industries for local production, will become important elements of future development.

The potential for creating new year-round employment opportunities, the program's impact on local wage rates and labor earnings, and implications for labor supply to farming (including women) need to be analyzed. Increased household incomes imply new demands for consumer goods and services (and for public services such as health and education); all these may need deliberate supply planning, especially if income growth is rapid and unevenly distributed. AKRSP will be able to appropriately assist village organization development and generally maintain the momentum of the economic change it has initiated only if it has sufficiently foreseen the nature and pattern of these further manifestations of economic development. Its regional model needs to be constructed around these, and other, facets of economic change.

## Realignment of Information-Related Activities

The changing information needs required to support AKRSP's evolving operation suggest a refocusing of functions for MER. A clear *monitoring* role must inevitably remain, but this must go beyond simple recording and documentation functions. MER's monitoring role should move closer to an actual monitoring of the pace and pattern of the program's actions in relation to particular points of reference. For program management, those reference points are presumably the planned or expected achievements within the relevant period—for example, loan disbursements and repayments; uptake of seeds, fertilizers, vaccines; areas of new land developed; and numbers of specialists trained. For reporting purposes, useful reference points are past and perhaps expected future patterns of change. Quarterly reports and annual reviews would give a more informative picture of AKRSP's progress if information charted the path of development through time. Comparisons across regions and representations of changes in relative terms rather than absolute numbers would better convey the pace and pattern of progress. Charts and graphics could replace some tabular presentations to provide more accessible accounts of what had taken place. Reporting on a more restricted set of items, while leaving others in the databanks for reference if needed, would also improve accessibility. The important point is that MER should pose questions about what data it needs to collect, for what purposes, and for which users.

In pursuing *evaluation*, MER needs a clearer definition of what aspects it should center on (key components? important commodities? technical aspects? economic aspects? experimental or traditional activities? aggregate or village-level changes? social adjustments? financial performance? institutional developments? output growth or income growth? broad resource patterns or detailed input use?). Just as data cannot be collected covering all facets of the program, not all facets can be evaluated. The decision about what is considered essential—whether it be to serve management, political, or simply academic interests—a basic, replicable methodology needs to be established so that findings from different studies will be comparable.

Not enough is known about which elements in the program package and the rural environment are critical determinants of its success. What distinguishes successful and less successful village organizations, and to what extent does economic advance at the village level differ in the two cases? Does every village in the region need to engage in collective activity, or is it sufficient for some villages to generate economic change that others then interact with? How have different technical packages affected other elements of the farming system, and why have they had different impacts in different villages? What determines the

effectiveness of the human resources development program, and the choice and ultimate productivity of the infrastructure developments? Such questions are not adequately answered in the monitoring statistics and require a range of explanatory (as opposed to evaluation) studies.<sup>1</sup>

Routine monitoring of program performance and explanatory studies are *ex post* in orientation. They look back to record or explain observed events and influences. In addition, AKRSP needs *ex ante* studies to guide its program actions—not forecasts of future developments so much as indications of possible change scenarios. For example, what are the market prospects, inside and outside the region, for products whose supply is expanding through the AKRSP initiatives? When the timber from recent tree plantings comes onstream how might it be utilized? What mechanisms will be needed to link progressive farmers with information or supplies of new productive inputs? What new employment effects and demands for investment capital are implied by the technical changes in prospect? How might labor availability in villages, and labor mobility throughout the region, be affected by changing wage rates, incomes, and developing employment opportunities? Can a village organization banking system service the credit needs of the more diverse economic activities that villages might undertake? Can the existing system of research and training cope with the likely future demands for innovation? Where are the emerging priorities for new research? How might rising household incomes be distributed between savings, asset acquisition and consumption?

The longer-term development of AKRSP as an initiator of rural development, and its aim to withdraw from its central position of support, should be informed by considered responses to a host of such questions. MER cannot tackle all these issues on its own; it will need to pursue research studies with the close collaboration and assistance of other institutions concerned with rural development.

### *Analysis of Implications*

One type of *ex ante* study that ideally AKRSP should have been undertaking is what might be termed "implications analysis" or exploration of the prospective effects of a change introduced into the village system. For each technical package, there should be a detailed examination

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1. AKRSP staff, given a draft of this report, commented that "an important dimension of program evaluation is the performance of village organizations. Program Audit has been introduced as a regular function in the three district program offices. The first round of village organization audits is already underway (early 1990). The audit format is also being refined continuously. Each district program office now has a program auditor. Data generated provide feedback for management."

of its direct implications to the adopting farmer. This would cover estimates of its immediate resource requirements, expected output effects, net financial benefits, and influence on land or labor use or other aspects of the farm production structure. This could be achieved through a partial budget for deriving an average incremental margin (per unit of land or livestock) or simply through a careful specification of the performance standards expected. Either way, it is crucial to establish specific expectations upon which the acceptability of the package can be judged and against which its subsequent outcomes can be monitored. Identification of which elements of the package are most sensitive to variation is also important. In the past, technical packages for new seed varieties, livestock disease management, tree planting, land development, and other innovations appear to have been offered largely on the basis of their technical merits, as though this were a sufficient criterion. The lack of any formal financial appraisal at the farm level means that no standards of achievement are available to guide subsequent monitoring. In some cases, the lack of prior clarification has proved critical (see Meghji et al., 1987).

The process of thinking through the likely effects of a technical package also needs to be applied more broadly at the village level and on through to the potential effects on the market. For example, the local implications of numerous villagers adopting a new productive poultry technology, or the effects on the milk market if higher yielding cows were to be rapidly taken up by many village organizations, deserve to be set out before the packages are widely spread. A similar approach should be taken for each productive physical infrastructure project which adds a new water channel or link road, for example. Only then will there be a reasonable basis for formalizing expectations against which eventual progress can be monitored and assessed. Not only will this encourage confidence in the acceptability and sustainability of the change, it should ensure that there is a foreseen pathway of adjustment and a greater awareness of any likely new pressures or second-generation issues which might arise.

### ***Appraisal Data***

To construct such implications analyses, AKRSP needs basic farm planning data. This means, for each commodity, typical figures on yields, prices, and requirements for and costs of major inputs, along with accessory information on time patterns and potential demands on available fixed resources (storage, machinery capacity). Such data allow elementary calculations to be made that highlight the key aspects of the proposed action. Calculations of average increments in cash revenues, cash expenditures, and gross margin derived through simple partial budgets are highly

illuminating about the potential net financial benefits to the farmer. Peak labor requirements, likely needs for credit or special resources, and side effects on other products in the farming system (or on people) can all be clarified. Extensions of this approach allow estimates of possible impacts on household incomes or on available markets and prices.

MER should consider assembling a stock of basic farm-level technical and financial input-output coefficients for all major agricultural commodities and for any other products considered relevant to the program's activities. A structured approach, aimed first at collecting primary coefficients (average yields, inputs of key resources, typical prices and cost levels) could be quite effective while limiting the resource and time costs. To be broadly representative of the variability in conditions and achievement encountered requires a survey approach. The case study methodology, while good for precision and detail, falls short in terms of generality. AKRSP, with its structure of social organizers, village organizations and village technical specialists, who are all numerate and literate, has a network of individuals who could supply sample observations of selected parameters in a standard framework. A quite comprehensive district-level planning database could be assembled in this way. Based on the practicality and success of initial attempts to generate such representative cross-section data, decisions can be made about continuing in full or limited form on an annual basis. In general, overall sample sizes of say 400-500 units may be sufficient if random selection methods are employed. Pilot studies can be undertaken first to assess the variance in the data population before finally specifying the appropriate structure and size of samples. Having random sample information confers the facility to derive raised estimates of aggregate values. Using such methods, AKRSP could reasonably build a capability for assessing its contribution to agricultural production and added economic value in each of its districts and for the Northern Areas as a whole. It is the lack of these kinds of data which currently inhibits much formal evaluation of the program.

A survey program to establish other important baselines is also desirable. Enumeration of livestock numbers and land use in a sample of villages would allow the regional farm to be characterized and would provide a basis for estimating program impacts. Program planning and evaluation would benefit from ongoing surveys covering resource use and income generation on a whole-farm basis (as opposed to individual crop or livestock enterprises), and sources and patterns of household income and expenditure. A farm incomes survey represents the only wholly reliable way of constructing a baseline and later of assessing the economic effects of the development program as experienced at the level of the primary decision-

makers. The results would give leading indicators on such aspects as the potential for savings and reinvestment, credit requirements and use, and possible directions for further development. A household incomes survey would allow the assessment of program benefits from a consumer standpoint, again indicating savings potential and areas where new demands for consumption expenditure are growing. It can also clarify how uniformly the benefits of development are being distributed between households, and possibly even within households.

These more complex surveys focusing on the basic economic actions of whole farms or households would not be easy to implement, however. They would require a tremendous effort in collecting details that are at present rarely if ever recorded; furthermore, much of this effort would require a recording discipline on the part of farmers or householders who make up the sample. These requirements may be enough to indicate that the aim is infeasible. However, because of the potential benefits to program planning and evaluation that could flow from the availability of such information, even in a rudimentary form, it is worth exploring the practical possibilities of establishing such a program.

#### *MER Resources*

Some of these recommendations for MER have significant implications for the budgeting of resources within AKRSP. As the program matures, the pressures on MER will inevitably increase. Information needs for planning and management will expand in quantity, type, and com-

plexity as the program's influence on economic development in the region intensifies. MER will need to be much more selective in the tasks it takes on if it is not to be swamped by data flow and demands for information. It must work toward a coherent program of well-specified studies, having clear objectives and robust methodologies, to address the central questions about the success and replicability of the AKRSP formula. It must not allow these important issues to become submerged by the more superficial and narrow accounting functions.

To achieve this end, MER deserves a more substantial commitment of resources and it needs a different disposition of those resources. In particular, it should separate more clearly its routine monitoring and other functions. Routine monitoring could be streamlined, simplified, and confined largely to technical staff supported by available computer facilities. The other functions of formal evaluation, explanatory studies, and provision of guidance for program development deserve to be given greatly increased emphasis and the support of at least two more professional staff. One should be an economic statistician and survey analyst; the other should be a qualified agricultural (or perhaps regional) economist with experience in research and formal evaluation methodology. In addition, more use should be made of consultants to identify appropriate study schemes, to structure and pilot the various regional and village surveys to test their feasibility, and to undertake particular studies focused closely on assessing the main themes in the AKRSP approach to development.

# 6. *Future Directions*

## **Evolution of the Village Organizations**

In many respects, the strength and vigor of the village organizations is the critical indicator of the achievements of AKRSP. Much of the ultimate success of AKRSP's efforts depends on each village organization being sustained and renewed and eventually maturing as an effective resilient and long-standing institution.

The strategy of AKRSP is first to organize a village organization around the task of building and maintaining a piece of collective infrastructure, such as an irrigation channel, road, or bridge, and subsequently to institutionalize this organization by expanding and formalizing its activities. This process amounts to the collective management of a collective or public good, which is one of the primary roles of government—local, regional, or central. The families of a village are dependent on many collective goods, however, including roads, bridges, barrages, irrigation channels, meeting halls, schools, and natural resources such as high pastures, trees, and forests. So for the village organization to be an effective institution it must move quickly beyond its initial focus on the AKRSP-sponsored infrastructure project and become the logical vehicle for management of the other collective goods owned by the village. Many changes that have occurred in the village organizations indicate that this is progressively happening.

In addition, the village organizations have taken on other functions. They are active in the aggregation and distribution stages of marketing both produce and inputs. They provide a vehicle through which villagers can deal as a group with government or other agencies (including AKRSP itself). And they provide a forum for discussion and decisionmaking relating to all issues affecting the joint welfare of the members. These developments indicate that the village organizations are evolving toward being, or

have already become, central institutions in local government of the valleys.

The progressive institutionalization of the village organization as the instrument of management has facilitated the reinstatement of old codes, such as those relating to access to and use of common land. Many such codes emphasize the fragility of the production environment and the care with which it is usually managed. As circumstances change, the old codes require progressive modification, and new codes are needed. Furthermore, as a consequence of the increasing activities and usefulness of the village organizations, a need has emerged for an arbitration mechanism to assist in the resolution of disputes. While this does not seem to be an appropriate role for AKRSP to take on, except perhaps as an interim measure, AKRSP might consider fostering the development of some other regional institution that can fulfill such a role.

## *Fragmentation of Village Organizations*

Some 50 of the 97 new village organizations formed in Gilgit District since 1987 were formed by the splitting of original village organizations into smaller ones. These "new" organizations, having completed a productive physical infrastructure project in their old organization, are not eligible for a second infrastructure grant from AKRSP, so that is not their motivation. Rather, the divisions are a reflection that participatory management of collective goods is difficult when the size of the group exceeds a certain number, say 30. Some of the original village organizations had included over 80 families. The divisions also reflect the fact that not all villagers have the same resources or equal access to resources. For example, the existence of traditional rights of access to the high pastures and forests, which are based on institutions that predate the feudal period, means that not all villagers have access to the same

pastures and forests. Thus divisions exist along centuries old tribal or clan lines, and some of the splits in village organizations reflect these divisions. Further, some villages are located on different though adjacent pieces of land, some separated vertically, others separated horizontally, and this separation clearly affects the working relationship between various groups. Thus the division of some village organizations seems a reasonable if not an inevitable outcome, consistent with the broadening of the function of these groups as an effective institution for collective management of common property.

### *Failure of Collective Production*

An area of concern in the AKRSP program is the consistent failure of subprojects involving the collective management of production. Various village organization-managed production projects sponsored by AKRSP have met with little or no success, including the poultry units, the heifer program, and in many cases, the collective ownership of tractors and equipment. Yet now even the collective management of small hotels is being considered. The overwhelming weight of evidence from around the world is that, notwithstanding their social, idealistic, or ideological appeal, such schemes are destined for expensive failure. The costs are not only the loss of capital or cash flow, but also the aggravation and disillusionment that are generally associated with the eventual failure. AKRSP should discourage all such undertakings. The walled gardens of the women's program seem to be a singular exception to the rule of failure of collective management of production. However, the reason for their success is that they are multipurpose programs rather than purely production programs. They provide a demonstration plot, training, seed, and a place where women can gather for social interactions, as well as a consumable surplus. The difference between such an activity and a purely production-oriented one should not be difficult to discern.

### *Clustering of Village Organizations*

A positive aspect of village organization development has been the evolution of the "cluster village organization," or groups of village organizations that have united to achieve a specific purpose. For these efforts, management authority is delegated to a committee. The main purpose for such united action has generally been to purchase and distribute inputs such as fertilizer or to service and maintain infrastructure shared by several villages. This development is a natural outgrowth of the splitting of some village organizations and of the general trend toward smaller village organizations among the new groups.

The formation of these cluster entities is an important development in the village organization movement. Several of them have already become very successful. There are some potential perils ahead, however, especially if the cluster group is able to borrow funds for which individual village organization members would be liable. While the evolution of these cluster groups will need to be closely monitored, their development provides convincing evidence of the value and vitality of the AKRSP program.

### *Independence of the Village Organizations*

The village organizations, although sponsored by AKRSP, are instruments of the villagers, so the extent to which they take initiatives on their own is of interest. Apart from their growing role in internal village management, many village organizations have begun broader initiatives of their own. Examples include borrowing for and building additional infrastructure, undertaking produce marketing, arranging for the establishment of schools and health centers, and contracting with officials and commercial entities for potato seed production. These examples indicate that village organizations are capable of exercising considerable initiative in many areas of community concern and are not simply conduits for AKRSP-initiated activities.

While the village organizations may truly be instruments of the villagers, they are still commonly perceived by outsiders as AKRSP-owned and -controlled entities. One reason for the strength of this perception may be related to roadside markers that prominently identify AKRSP with the completed productive physical infrastructure projects. These markers may be counterproductive in their impact on villagers as well as outsiders. It is, after all, the villagers who deserve credit for the hard and often dangerous work associated with the building of productive physical infrastructure. Further, it is essential for the success of donor-supported projects that participants feel that they own the projects and have a stake in their success. Since AKRSP management not only appreciates this perspective, but practices it, it might want to reconsider its practice with respect to the inscriptions on these markers.

### *Management Cadre*

One of the most effective contributions of AKRSP has been to foster the emergence of a management group in the villages. By regularly bringing village organization chairmen and officers to program headquarters for meetings and thereby providing them with training and an op-

portunity to share experiences, AKRSP is creating a group of increasingly astute local leaders who will be invaluable to the villages. The emergence of such a cadre, however, will be perceived as a threat to some and an irritation to others, particularly in official and commercial circles.

The growing competence of this management group has repercussions for the role of the social organizers. Already there are signs that village organization officers resent the involvement of the social organizers in such activities as identifying candidates for training as technical specialists. Clearly such activities ought to be the prerogative of organization members, who should also have to bear the cost of the training and related expenses. Another area in which the role of the social organizer needs re-examination concerns credit administration and recovery, where their increasing involvement appears inconsistent with their other functions.

The strength of the village organizations and the success of their managers in relaying the growing expectations of the organization membership help to keep AKRSP staff flexible in their approach and attuned to the changing needs of villagers. The more experienced and cohesive the management cadre in the village organizations, the brighter the prospects for the future. In many ways this development of human capital is perhaps AKRSP's most valuable contribution to the villagers of the Northern Areas.

### **Evolution of the Program**

AKRSP continues to use to great advantage its strategy of innovation, testing, and assessment on a trial and error basis. Once new organizational approaches or new technology packages are found to work, they are implemented more widely by being offered to the village organizations. Where the risk is high, the participating organizations usually receive a grant or partial grant, but they also receive support in the form of the transfer of the "working method" that has been found to be functional. The village organizations may then introduce further innovations or modifications. Through this approach, AKRSP remains a highly flexible project implementation agency, and village organizations assume an important decisionmaking role with respect to the directions they take. Nevertheless, the overall strategy and direction are manifestly determined by AKRSP.

OED's first interim evaluation of AKRSP identified three areas that warranted further attention: the agricultural production program, the women's program, and the information program. These three programs, which were reviewed in detail in Chapters 3, 4, and 5, are discussed here in the context of their importance to the future direction of AKRSP in the Northern Areas.

### ***Agricultural Production***

Agricultural production was considered of primary concern because increasing output is essential for realization of the benefits of the physical infrastructure built by the village organizations and the government. For this reason, AKRSP has been very active in this and has made good progress. The difficulty, however, is that AKRSP has had to play a much bigger role than it should have had to because of the lack of agricultural research and testing in the Northern Areas. Where partners from other agencies or institutions have been available, AKRSP has collaborated with them to good effect and mutual advantage. Examples are the FAO/UNDP-assisted seed potato program and the Department of Agriculture's livestock program. AKRSP's search for working partners or institutions has been avowedly "exhaustive and exhausting."

Despite this progress, further expansion and diffusion of agricultural technology in the Northern Areas is imperative. Agricultural technology is the key to future output growth, and it is an area in which government agencies should be expected to make a much greater contribution. Revitalization of the Juglote Agricultural Research Station ought to be a high priority. Until now, AKRSP has asked the Government of Pakistan only for freedom of action; it might now ask for a more concerted government effort in the area of agricultural research and technology development. Given existing resource constraints, the government could seek assistance from external development agencies or it could transfer funds from input subsidy programs such as those for crop chemicals and veterinary supplies to agricultural research. This latter option would have the additional benefit of encouraging the competitive provision of inputs by the private sector.

Some of AKRSP's activities and concerns might be better addressed and managed, and might attract additional donor support, if they were packaged into explicit subprograms. Three examples which come immediately to mind are high-altitude production systems, land and irrigation system development (to increase benefits to the new irrigation channel infrastructure) and livestock nutrition and management (in alpine pastures and within the village). Staff with specific responsibility for these subprograms would be assigned to them full time.

A special subprogram and resources for the single-cropping high-altitude villages would help to reduce the perceived equity imbalance of the program between these villages and the relatively better-off lower-altitude villages. The lower-altitude villages, especially those villages around the main towns and in Gilgit District that entered the program in the early years, are perceived to be receiving a disproportionately large share of program resources.

Reallocation of resources toward a demonstrably greater effort in single-crop villages is now needed. The high-altitude subprogram should be managed separately, to give it a clear identity and its own resources; it should be monitored and evaluated as a separate activity as well.

A separate land development subprogram is necessary to ensure that the benefits from the many feeder channel and irrigation pipes, constructed as productive physical infrastructure projects, are realized in the future. The main objective of the subprogram would be to increase production, as measured against "without sub-program" production levels. AKRSP documents refer to such a separate program in connection with village organization's credit-financed second productive infrastructure projects, but progress is not evaluated and reported in any detail. Since such a subprogram could be funded under whatever new credit system is introduced, the subprogram would also serve as a means for monitoring the medium-term credit program. This subprogram could be packaged in a form to interest donors as well, both from the physical irrigation and agricultural systems perspective and the credit side.

Livestock nutrition and management improvements are so critical to the future growth and stability of the village production system that a separately defined subprogram is desirable. Such a subprogram would include aspects of a wide set of the program's current activities, including engineering (walls to enclose fields and buildings for livestock), agronomy (fodder improvement), and social organization to persuade the villagers to adopt new management practices (for example, ending free grazing and introducing stall feeding).

### ***Women's Program***

The changes instituted in the women's program by AKRSP over the past three years have been significant. To begin with, the emphasis on the women's program overall has been greatly increased. Women staff members concerned with women-in-development issues have been placed in each of the programs, including the productive infrastructure and engineering service and agriculture and resource management. While a great deal remains to be done, the change in direction and emphasis augurs well for the future.

### ***Information Program***

Improvements in the database and the commissioning of a field survey of impact in Gilgit were two of the steps taken to address problems identified in the information program. Much more still needs to be done to enable analysis of the kind necessary to support assessments of per-

formance; decisions about future directions at the household, village, or program level and the evaluation of the prospects for replicability are useful steps toward addressing this problem but more progress is badly needed in this area. There is also a need for a thorough approach to analysis of the questions asked by donors, managers, and would-be imitators.

### ***Devolution of AKRSP's Responsibilities***

The substantial *independence of the three district programs* from one another and from AKRSP's core management is a desirable development and is consistent with the long-run devolution of AKRSP responsibility. To some extent, the greater independence of the Chitral and Baltistan District programs was fostered by the fact that helicopter service was unavailable for three years. The return of the helicopter service, however, will now help to ensure that the outlying programs are not cut off from the program leaders and senior management of AKRSP. The helicopters also permit greater staff attention to the more isolated valleys and villages located a day's drive or more from program headquarters. It is in these isolated, poorer villages that AKRSP's contribution is most in evidence and most easily evaluated, since AKRSP support services are virtually the only ones that reach them.

The strengthening of the *training* program has also been significant. The variety of subjects covered in training has been increased along with numbers of courses and persons trained. As the functions of the village organizations expand and the management and technical skills required to support them grow, training will assume more importance in its role of supporting self-sustaining growth and the independence of village organization. Training, therefore, will be a key area to be accommodated in the transition to a post-AKRSP mode.

As implementation of the AKRSP programs progresses, staffing requirements expand and change. Once the village organizations have been formed and consolidated, the role of the social organizers should diminish. Similarly, as the infrastructure projects are completed, there should be less demand for engineers and more for agriculturalists. Furthermore, if the programs in the three districts are phased relative to each other, staff could be shifted from one program to another as district staff needs change. In practice, however, events have not unfolded in just this way. Thus, for example, as the requirements of the village organizations and the programs have changed, the roles and functions of social organizers and engineers have expanded rather than diminished. It is not at all clear that this is a desirable development. And in terms of program phasing, the number of village organizations established and infra-

structure projects identified and completed per year evidences an uneven pattern, while program staffing needs do not seem to influence the way in which activities are phased in the three districts.

The expansion of the role of social organizers into general agents of the program gives them a pervasive influence in the villages. Whether this is a welcome development varies by village. Some village organization officers appear to resent such intervention by social organizers. In other aspects of the program, responsibilities have changed as well, often without sufficient consideration of the likely outcome of such changes. Thus, for example, the extension of the village organization functions into credit administration and recovery creates a mixture of responsibilities that has proved to be incompatible in many countries. Similarly, the extension of the engineers' functions into agricultural extension activities seems to be an inefficient and ineffective extension of responsibilities. Some attention to the issues of program phasing and the effectiveness of changes in roles seems warranted.

### **Development of External Relations**

AKRSP has a strong program of fostering public and external relations. This is consistent with the need to attract funding on a regular basis and with the second major objective of the program: to promote the program as a workable model for government-sponsored rural development elsewhere.

The strength of this program is reflected in AKRSP documentation and reporting (see Chapter 5), by the number of presentations and papers prepared, by the quality and extensive use made of the professionally crafted videos about the program, and by the recognition bestowed on AKRSP as evidenced by the public honors presented to the general manager. Such honors are personal and deservedly so, but they owe something as well to the general renown of AKRSP. The AKRSP is already one of the best known of programs of its type, and this is clearly desirable. However, this publicity brings with it its own problems, which require some attention.

#### **Visitors**

One of the simple consequences of this renown is the continual and growing stream of visitors to AKRSP. Some are short-term, some long-term, some arrive by arrangement, others on a "drop in" basis. All these visitors make demands on the limited time of the AKRSP management group, and by interrupting normal work, they fragment the time of managers. Many public institutions have responded to a similar situation by establishing visitor centers, which provide a buffer for senior staff. Typically such

centers also look after other aspects of external relations, including producing and mailing reports, pamphlets, and other materials and answering various enquiries. AKRSP seems to have reached the stage where it needs to institute a similar arrangement, or designate a specific officer to handle this function. The cost of the current situation in terms of senior management time loss and interruption would seem sufficient to justify such action.

#### **Balanced Reporting**

AKRSP needs to conduct its assessments and reporting of achievements in a "with project" versus "without project" framework. That is to say, it needs to introduce the counterfactual to its analyses—what would have happened without the AKRSP program. While this may not be easy to do, it is essential because AKRSP, for the credibility of its program, must be able to distinguish what changes would have occurred anyway from those that would not have occurred without the program. With completion of the Karakoram Highway and the associated road network, significant changes were inevitable in the Northern Areas. While it may be wholly believable that because of AKRSP, the changes have been faster, more equitable, better balanced and more enduring than they might otherwise have been, more rigorous demonstration of this is needed. AKRSP's monitoring and evaluation system does not provide enough evidence of the kind necessary to support these perceptions convincingly. Especially in such a context, great care must be taken to avoid claiming more credit than is deserved—or to be perceived to be doing so. Even legitimate achievements may be perceived as overclaiming if they cannot be confirmed. Such overclaiming, real or perceived, can also offend other players with whom AKRSP has to work closely. AKRSP needs to review and adjust the perspective of its reporting and data presentations accordingly.

#### **Independence of Village Organizations**

The village organizations, once established, are independent local entities (at least in practice). This fact is not well understood outside of AKRSP, however, especially in government circles. Until their independence is widely understood and accepted, AKRSP needs to continue to point out that the village organizations can be contacted directly and can enter into contracts with others. This is indeed a primary part of the strategy of the program: making it easier for villagers to work with others and vice versa. The effective use of the village organization network by other agencies and programs can only strengthen the role and effectiveness of the village organizations. Given the importance of independent action to the village organiza-

tions, the fact that they are not legally independent is likely to become a more serious impediment as they evolve. The matter will need to be addressed before long.

### **Transition of the Program**

A long-term goal of AKRSP, which is wholly appropriate to its role as a nongovernmental organization-sponsored intervention, is to phase itself out of rural development in the Northern Areas. To do this the institutions being created must become self-financing based on cost recovery. Since the program is now squarely "mid-term," it is timely to consider when these things might happen. Further, given the evolution of the village organizations and the program, the initiatives they have undertaken, and the independence they now seek, the time may be opportune for AKRSP to begin to draw back from involvement at the field level. The earlier start and greater progress in Gilgit District suggests that the transition could begin there soon.

Ultimately, the system of village organizations has to have its own apex organization, and perhaps its own intermediate-level organizations as well, such as valley clusters. Such organizations need to be self-governing and self-financing. Certain functions such as training, monitoring, evaluation, and arbitration may need to be institutionalized separately. Rural financial services could be provided through a credit union or similar arrangement, if an additional credit institution is considered necessary. And a vehicle will need to be provided through which the experience of AKRSP can be made available to other nascent programs in Pakistan and overseas.

### **Apex Organization**

As their functions evolve, the district program offices become progressively responsive to the expectations and requirements of the village organizations as articulated by them and less an externally inspired agent for change. This progression makes it logical that they should eventually evolve into an apex organization for each district. A first step toward the reinstitutionalizing of the district program office as an apex organization might be to establish a local board which could be advisory at the outset but would gradually become an executive or governing body. The rate of transformation would be determined by the financing arrangements that are introduced and the extent to which the village organization structure can be self-financing. Sources of finance also need to be further explored; village organization user fees and profits from the marketing company may be possible sources. Also, as the apex organization takes form, it might be logical to drop the name-association of the Aga Khan Foundation and become demonstrably a local institution.

### **Rural Development Academy**

Institutionalization of the important training function and the evaluation and research activities might be achieved through the creation of an Aga Khan Rural Development Academy. This would provide the base for training professionals to staff other programs in Pakistan and beyond. It may continue to be externally financed beyond the horizon of the current project, but should be planned to function eventually on a cost recovery (fee charging) basis. It would also provide an institutional base for Shoaib Sultan Khan as the preeminent adviser on AKRSP experience. As the AKRSP model is applied in other areas in Pakistan, there may be a need to broaden his role beyond day to day concern with AKRSP management. Thus the academy might usefully be established well before the eventual transition of the AKRSP programs. The academy might appropriately be centered in Gilgit District, while having branches elsewhere. It could also take over the functions of the AKRSP visitor center.

### **Marketing Company**

The emergence of the cluster village organizations and their role in marketing, as well as the problems village organizations have encountered in marketing activities, suggests that an institution providing marketing services may eventually be desirable. If it is—and this is by no means proven—it may be appropriate to incorporate this function into a public company in which the village organizations and individuals in the area would hold shares. It is well established that collective marketing arrangements have been most successful when they have been run by managers with considerable autonomy. This is best achieved by incorporation and the appointment of professionals as executives.

### **Rural Finance**

The provision of rural financial services is in an interim phase in AKRSP. The management team has put substantial effort into exploring alternative ways of instituting a village organization credit program. The creation of a commercial bank or a cooperative bank has been ruled out for various reasons. Thus, if a separate institutional source of financial services for the village organizations is desired, it might take the form of a credit union or similar body. Such an initiative might gain technical support from the Credit Union National Association in North America, which fosters such institutions. Such credit schemes, unless kept very small, would be too specialized to be handled by the apex organization or any other nonspecialized institution.

## **Replication of the Program**

Since one of the objectives of AKRSP is to formulate and demonstrate a general model for rural development, its replicability is a major concern of this evaluation. When OED conducted the first interim evaluation of AKRSP, it was too early to assess fully the robustness of the model or its replicability. After six years of operation, it is easier to see the potential of the model for replication. A number of reservations must be noted, however.

### *Potential of the Model*

The model has now been refined and documented, and the program has effectively spread over three districts under different management with good success. The model has now been tested sufficiently for a claim to be made that it provides a good basis for pursuing rural development. Unfortunately, because of the narrow perspective of the information system, more is known about the achievements of the program than of the achievements of the participants. Nonetheless, the studies that have been undertaken together with the more casual observations of experienced observers leave little doubt about the suitability and effectiveness of the model and method as implemented. The question is, can it be used elsewhere and can it be used by governments?

### *Replication within Pakistan*

In many respects, the potential for replication within Pakistan is high. The program has already been replicated in two districts adjacent to the one in which it started. In addition, it has been able to recruit qualified staff in Pakistan, and to convince villagers in some of the most resource-constrained locations in the country to participate in the program. However, the problems AKRSP has had in areas with program interventions that are dependent on government services suggest a potentially serious constraint on program replication. One of the most troublesome areas in this respect has been agricultural research and development. For want of a reasonable government program, in agricultural research and development, AKRSP has had, in effect, to establish its own agricultural development program. This is costly, difficult, and slow, and few programs are likely to find the money, expertise, or time needed to mount such a substitute program.

The experience of some 250 rural development projects financed by the World Bank reveals that one of the most commonly encountered problems was inadequate technology for introduction at the farm level and insufficient effort to provide one. Some of these projects relied almost exclu-

sively on technology change, to the neglect of ensuring sufficient incentives for participation. The broader-based AKRSP model has avoided this excessive reliance on technology. Nevertheless improved technology is essential to AKRSP (and to any rural development program); it enables the average village organization member to increase output and so to take advantage of the infrastructure and land development investments.

Input subsidies are another area in which government policies and procedures are a hindrance to rural development. When inputs such as fertilizer, pesticides, and veterinary medicines are highly subsidized and the prices all kept low, demand exceeds supply and normal market channels are squeezed out. This is the case in Pakistan. Thus a basis for rationing other than price has to be found. All too often such a situation allows politicians and government officers to discriminate in the provision of materials and services. But rural development programs cannot discriminate in materials or level of service. In this sense, such government policies are inimical to rural development. AKRSP, with its superior resources and excellent management, has done well to compensate for supply shortages so far, but a government-run rural support program is unlikely to overcome such problems.

A third area of potential difficulty for replication by government concerns the relative rigidity of government institutions. To be successful, the implementing unit needs substantial independence and flexibility. AKRSP achieves this through its independent status and its broad-based financing. Experience over the past 50 years suggests that the most successful government-sponsored rural development programs have been run by autonomous yet accountable parastatal bodies with carefully crafted institutional development strategies. This is true of programs in Brazil; Kenya; Korea; Malawi; Malaysia; Taiwan, China and elsewhere. Pakistan, however, has no tradition of using such independent bodies, nor any experience with government-run programs that are independent and flexible and beyond day-to-day control of government.

As long as these problems persist, efforts to replicate the AKRSP program within Pakistan should proceed with some caution. Nonetheless, where the will to do so is strong, all of these constraints can be overcome.

### *Replication beyond Pakistan*

The AKRSP model could be fairly widely replicated in other countries provided certain prerequisites are in place. The model is broadly based, carefully crafted, and flexible. It corresponds very well with the generalized rural development model outlined in Chapter 1. The circumstances of smallholders in many countries of the world are similar

to those of the Northern Area farmers—poor, isolated, resource-constrained, and with weak institutions. The question is whether the prerequisites can be met.

Rural development is highly dependent on government policies for its success (and on government nonintervention for its effective implementation). In this respect, two sets of policies are required: policies for rural development and policies of rural development. The first relates to the creation of an appropriate macro and sector policy environment for agriculture in general and smallholders in particular; the second to the provision of rural development institutions and programs. The former implies economic policies that do not discriminate against agriculture. Many governments maintain policies that discriminate against agriculture, including overvalued exchange rates, high export taxes, statutory pricing arrangements that keep food prices low, inefficient parastatal marketing arrangements, and mechanisms for protecting other sectors which operate at the expense of agriculture. Such policy situations are often accompanied by poor support services for the sector, including inadequate programs of education, health

and agricultural research and development. Where such circumstances exist rural development is unlikely to succeed, no matter how effective the model itself.

Where a reasonable macro- and micro-policy environment exists—including an adequate regulatory system affecting finance, natural resources, and commerce; and sufficient support services in research and development, education, health, and family planning—rural development programs can be very successful. Once a government decides to pursue a local-level program of rural development, the AKRSP can provide a proven approach, complete with a workable model and an effective method for its implementation.

Above all, at a time when “rural development” as a development strategy is out of favor because of the large number of unsuccessful projects—although the proportion of successful projects worldwide exceeds 60 percent—the AKRSP experience provides at least a hopeful prospect for arguing that rural development can work, given half-way favorable circumstances.

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# *Annexes*

# *Annex 1: Description of the AKRSP Program<sup>1</sup>*

## **Characteristics of the Program**

### *Rationale and Objectives*

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. 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 (see map).

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.

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.

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

- that government capacity for development was limited;
- that local opportunities and initiative exist but are hindered by lack of effective local organizations, skills, capital and appropriate infrastructure;
- that special attention needs to be paid to the long-term environmental impact of development both in the region and downstream;
- that public and private funds are available to support development; and
- that a small, private, and flexible organization can make a significant contribution to the promotion of local initiatives and the mobilization of outside resources.

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.

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

- the organization of people at the village level to meet common needs and to provide or obtain services through collective action;
- the training of local people in a range of organizational and technical skills; and
- 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.

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1. Reproduced from *The Aga Khan Rural Support Program in Pakistan: An Interim Evaluation*, OED, World Bank: Washington, DC, 1987.

As AKRSP progressed, two additional functions became important:

- the introduction of new activities and technologies to enhance net incomes; and
- 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 socioeconomic 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*

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 are:

- small farmers in isolated communities require a village organization to overcome the disadvantages of small scale;
- 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;
- village organizations can be employed to promote genuine participation in planning and implementing development by villagers;
- villagers can be most effectively organized initially around economic, rather than social, sector activities;
- a PPI project is an effective entry point and catalyst for the organization of villagers;
- in order to implement a PPI efficiently and without exploitation, village labor employed should be paid;
- regular savings, however small, are an essential part of the discipline of collective management and finance of development;
- members of a village organization can acquire the necessary organizational and technical skills to serve themselves and their community, and for which other vil-

lagers are prepared to pay; and

- 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*

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.

The AKRSP model is one of "organization and cooperative management" at the village level. This is based on mass participation of villagers with relatively homogenous 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.

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

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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.

All villages are eligible to participate and receive the same support providing they agree to enter into 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.

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.

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).

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 \$9,100 in 1986 dollars),<sup>2</sup>

2. References to US\$ are all in 1986 dollars, unless otherwise stated.

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.

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.

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.

AKRSP's Social Organizers (SOs) provide the program regular contact with villagers, 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*

Over four years, 526 VOs have been established with a total membership of 38,180 households. 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 Organizations separate from VOs (although more recently the strategy is to integrate women's activities within the VO).

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 million (\$8.0 million). Of these, 393 PPIs have been started and 226 completed. The costs of the PPIs initiated are Rs. 60.13 million (\$3.58 million), or Rs. 153,000 (\$9,100) per PPI. Al-

most 60 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.

### *Funding*

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 (\$8.3 million in current dollars). 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 \$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 (\$3.4 million in current dollars), almost two-fifths of the total (37.3 percent). The Netherlands Government has provided Rs. 12.4 million (\$749,000 in current dollars) to initiate activities in Baltistan in 1985-86, equivalent to 9.8 percent 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).

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

### **Box 1-1: 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. 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. 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.

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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*

AKRSP's staff resources total 191. There are 99 headquarters staff in the three program districts and 92 field staff. 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.

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.)

### **Features of the Northern Areas**

#### *Landscape and Environment*

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 1-1: History of the Northern Areas). This region is one of the most rugged in the world, formed where four mountain ranges meet: the Himalaya, Karakoram, 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.

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, trans-

porting enormous volumes of water and silt. Valleys are narrow and steep-sided, and places separated by 5,000 m 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.

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 man-made environment. Temperatures are accentuated by the mass

#### **Box 1-2: 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 degrees Celsius, and summertime highs above 40 degrees Celsius. 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.

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.

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 1-2: The Fragile Environment).

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

### Box 1-3: Farming and the Seasons

A typical family's livelihood is based mainly on the farm 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. 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 temperatures climb; a hot summer in areas below 2,400 m with peak temperatures above 40 degrees Celsius, 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 pre-season maintenance on the irrigation channels, or kuhl. 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 apricot, 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 winter-time 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.

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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.

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.)

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 1-3: Farming and the Seasons, and 1-4: 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 acceler-

### Box 1-4: 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 percent 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 soybean, sugar beet, fenugreek, 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

ates, 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.

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 2-2½ tons of grain per hectare, annual applications of 20 tons of farmyard manure or equivalent are required per hectare to replenish nutrients.

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

ber 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.

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 maintenance 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 that 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, analyzing 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.

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plant breeders and agronomists.

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.

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.

The effects of natural forces and man-made 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*

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 degrees Celsius in January to 40 degrees Celsius 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 Karakoram highway (KKH).

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.

The population is a complex mixture of indigenous peoples (Box 1-1), 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 occupations.

Forty-five percent of the population is under 15 years of age. A typical household contains four children and has more males than females despite the out-migration of males. 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.

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.

Adult literacy is believed to be 10 percent, but only 2 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*

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.

Most villagers of the Northern Areas still practice mixed mountain agriculture comparable to that found in the highland valleys of the Himalayas, 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.

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. 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.

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.

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*

By virtue of its isolation, and because of its strategic importance, the Northern Areas enjoys numerous subsi-

dies 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 \$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.

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.* 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 1-3). 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.

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).

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*Cash Crop Production.* 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.

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.* 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.)

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, hypophia 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.* 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.

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.

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.

## Methods of Implementation

### *Management Structure and Mode*

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-Muslims. 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 specification. 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.

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 organi-

zations are similarly flat, with District Program Specialists reporting directly to the District Program Officers, while looking to program specialists in Gilgit for technical guidance.

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.

The management group at headquarters meets every week under the chairmanship of the GM. All senior staff are expected to attend and to 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 to 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.

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 im-

plementation 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.

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.

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.

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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.* 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 minibuses which operate along jeepable tracks, even to distant villages. On average, one SO services about 31 FN. Currently there are 17 SOs and three trainee SOs. EFN 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 frequent contacts of short duration, to infrequent contacts of longer duration.

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 (PARAD), 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.

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 mechanism 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*

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.

The skills needed for the construction projects to date have been largely available locally (see Box 1-5: 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 methods more productive, or to add technical innovations, such as gabions for bunds, to improve the effectiveness and longevity of the work (see Box 1-3). 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

### Box 1-5: 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 the 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 providing 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 means of increasing the strength and longevity of bunds.

Although there is a shortage of electricity throughout the area, small-scale hydro-electric 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.

to judge and check on 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 mate-

rials, is a more difficult task for SOs and engineering field staff.

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

## ANNEX 1

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.

### *Follow-on Activities*

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: irrigation; land development; crop development; livestock improvement; training of village specialists; marketing; credit provision; and women's activities.

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.

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 crossbreed

heifers (begun 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.

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.

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.

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.

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 fruit such as apricots and apples. Improved drying tech-

niques 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.

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.

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 various 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.

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 possibility 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*

AKRSP has rejected a "blueprint approach" to rural development, in favor of 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.

AKRSP's approach combines well-tested principles with trial and error. 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 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.



# *Annex 2*

## *Annex 2: Program Area Data*

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**Table 2-1: Program Area Social Data: Gilgit, Chitral, and Baltistan Districts, mid-1989** ANNEX 2

	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 <sup>a</sup>	(500)	(600)	(500)	(1,600)
Average Population/VO	510	400	502	466
Average No. Households/VO	54	51	66	57

a. VO is village organization; large villages establish more than one village organization.

Source: Population, household, and village data based on Northern Areas Census 1981; data on village organizations are from AKRSP Regional Statistics Note No. 2 (June 1989).

**Table 2-2: Demographic Characteristics: Gilgit District, Early 1980s** ANNEX 2

**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)
Total	<u>753</u>	<u>8.33</u>

**C. POPULATION BY RURAL-URBAN DISTRIBUTION**

	Urban	Rural	Total	
			No.	Percent
Female	12,405	107,144	119,549	47
Male	20,349	115,145	135,494	53
Total				
Number	32,754	222,289	255,043	100
Percent	13	87	100	

**D. POPULATION BY SECT (Moslems)**

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

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

**Table 2-3: Size and Distribution of Land Holdings: Gilgit District, 1978, 1980 and 1983** ANNEX 2

A. Size of holdings (1980) (hectares)	% Farms	% Area	Average area
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 (hectares)	Percent Farms	
	AKRSP Cropcut Survey (1983)	LB & RD Survey (1978)
Less than 0.5	24	43
0.5-0.99	33	21
1.0-1.99	31	23
2.0 and above	12	13

Source: A: Northern Areas Census of Agriculture (1980); B: AKRSP Cropcut Survey (1983); LB & RD Survey (1978).

**Table 2-4: Land Use Pattern: Gilgit District, 1985 (est.)** ANNEX 2

**A. Aggregates for Individual and Communal Lands**

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

**B. Individually-Operated Holdings**

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

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

**Table 2-5: Land Ownership and Fragmentation: Gilgit District, 1980**

**ANNEX 2**

**A. Land Tenure**

<i>Land Ownership Status</i>	<i>% Farms</i>	<i>% Area</i>	<i>Average Area (ha)</i>
Owner	95	94	1.21
Owner-tenant	4	5	1.46
Tenant	1	1	0.93

**B. Fragmentation**

<i>Size of Holding (ha)</i>	<i>% of Farms Fragmented</i>	<i>Fragments per Farm</i>	<i>Average Fragment Area (ha)</i>
Less than 0.4	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: Northern Areas Census of Agriculture, 1980.



# *Annex 3*

## *Annex 3: Program Status and Performance Data*

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**Table 3-1: Cumulative Growth of Village Organizations, 1983-89**

**ANNEX 3**

	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>
<i>Gilgit</i>							
Number of VOs Established	131	289	316	349	376	414	446
Membership (households)	12,050	23,120	24,590	26,412	26,500	26,500	26,500
Percent of Rural Households (no. of households = 29,600)	41	78	83	90	90	90	90
<i>Chitral</i>							
Number of VOs Established	na	90	139	168	224	323	344
Membership (households)	na	7,920	9,800	10,667	12,383	15,377	15,815
Percent of Rural Households (no. of households = 32,600)	na	24	30	33	38	47	48
<i>Baltistan</i>							
Number of VOs Established	—	—	22	54	162	256	29
Membership (households)	—	—	1,402	2,915	6,309	9,417	10,688
Percent of Rural Households (no. of households = 36,000)	—	—	4	8	18	26	30
<i>Total</i>							
Number of VOs Established	131	379	477	571	762	993	1,087
Membership (households)	12,050	31,040	35,792	39,994	45,192	51,294	53,003
Percent of Rural Households (no. of households = 98,200)	12	32	36	40	46	52	54

na Not available.

— Not applicable.

VO is village organization.

a. As of June 1989.

Source: AKRSP 26th Progress Report (June 1989).

**Table 3-2: Annual Growth of Village Organizations by District, 1983-89**

**ANNEX 3**

District	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>	Total
<i>Gilgit</i>								
Number of VOs Established	131	158	27	33	27	38	32	446
New Membership (households)	12,050	11,070	1,470	1,822	88	—	— <sup>b</sup>	26,500
Percent of Rural Households (no. of households = 29,600)	41	37	5	6	.3	—	—	90
<i>Chitral</i>								
Number of VOs Established	—	90	49	29	56	99	21	344
New Membership (households)	—	7,920	1,880	867	1,716	2,994	438	15,815
Percent of Rural Households (no. of households = 32,600)	—	24	6	3	5	9	1	48
<i>Baltistan</i>								
Number of VOs Established	—	—	22	32	108	94	41	297
New Membership (households)	—	—	1,402	1,513	3,394	3,108	1,271	10,688
Percent of Rural Households (no. of households = 36,000)	—	—	4	4	9	9	4	30
<i>Total</i>								
Number of VOs Established	131	248	98	94	191	231	94	1,087
New Membership (households)	12,050	18,990	4,752	4,202	5,198	6,102	1,709	53,003
Percent of Rural Households (no. of households = 98,200)	12	19	5	4	5	6	2	54

VO is village organization.

a. As of June 1989.

b. New membership was offset by decline in number of members in existing village organizations.

Source: AKRSP 26th Progress Report (June 1989).

**Table 3-3: AKRSP Program Beneficiary Summary, June 1986 and June 1989**

**ANNEX 3**

	As of June 1986	As of June 1989			
	All Districts	Total	Gilgit	Chitral	Baltistan
Village Organizations (households)	38,180	53,003	26,500	15,815	10,688
Infrastructure (households)	32,713	52,473	26,615	14,834	11,024
Women's Program Membership	6,770	10,297	8,137	2,160	—
Short-term Credit					
No. of beneficiary households	45,475	195,279	131,078	48,668	15,533
Medium-term credit					
No. of beneficiary households	4,120	21,428	17,137	3,559	732
Total no. of beneficiary households	49,595	216,707	148,215	52,227	16,265

Source: AKRSP 26th Progress Report (June 1989).

**Table 3-4: Productive Physical Infrastructure Projects Identified, Initiated, and Completed, by District, 1983-89**

**ANNEX 3**

*(cumulative)*

<i>District/Category</i>	<i>1983</i>	<i>1984</i>	<i>1985</i>	<i>1986</i>	<i>1987</i>	<i>1988</i>	<i>1989<sup>a</sup></i>
<i>Gilgit</i>							
No. of projects							
Identified	na <sup>b</sup>	na		432	426	426	426
Initiated	80	177	232	254	293	314	326
Completed	23	93	148	169	222	252	267
Completion as % of:							
Projects identified	—	—	34	39	52	59	63
Projects initiated	29	53	64	67	78	80	82
Initiated projects as % of identified projects	—	—	54	59	69	78	77
<i>Chitral</i>							
No. of projects							
Identified	na	na	274	406	474	474	474
Initiated	40	53	87	117	177	253	264
Completed	5	21	46	53	100	144	154
Completion as % of:							
Projects identified	—	—	17	13	21	30	32
Projects initiated	13	40	53	45	56	57	58
Initiated projects as % of identified projects	—	—	32	29	37	53	56
<i>Baltistan</i>							
No. of projects							
Identified	—	—	22	110	349	446	526
Initiated	—	—	9	22	115	203	234
Completed	—	—	1	4	53	118	139
Completion as % of:							
Projects identified	—	—	5	4	15	26	26
Projects initiated	—	—	11	18	46	58	59
Initiated projects as % of identified projects	—	—	41	20	33	46	44
<i>Total</i>							
No. of projects							
Identified	na	na	728	948	1,249	1,346	1,426
Initiated	120	230	328	393	585	770	824
Completed	28	114	195	226	375	514	560
Completion as % of:							
Projects identified	—	—	27	24	30	38	39
Projects initiated	23	50	59	58	64	67	68
Initiated projects as % of identified projects	—	—	45	41	47	57	57

na Not available.

— Not applicable.

a. As of June 1989.

Source: AKRSP 26th Progress Report (June 1989).

**Table 3-5: Productive Physical Infrastructure Projects, by District and by Type and Status, as of December 1988** ANNEX 3

(cumulative)

<i>District/type of project</i>	<i>Identified</i>	<i>Initiated</i>	<i>Not yet started</i>	<i>Completed</i>
<i>Gilgit</i>				
<i>Irrigation</i>	271	210	61	167
Feeder channels/pipe irrig.	228	179	49	146
Lift irrigation	5	3	2	2
Storage reservoir	34	26	8	17
Sedimentation tank	4	2	2	2
<i>Transport</i>	87	64	23	55
Link roads	78	55	23	46
Bridges	7	7	—	7
Pony tracks	2	2	—	2
<i>Other</i>	68	40	28	30
Protective works	59	31	28	25
Boundary walls	3	3	—	2
Nursery	5	5	—	3
Hydel scheme	1	1	—	—
<i>Total</i>	426	314	112	252
<i>Chitral</i>				
<i>Irrigation</i>	296	152	144	79
Feeder channels	279	144	135	77
Syphon irrigation	3	1	2	1
Storage reservoir	14	7	7	1
<i>Transport</i>	81	63	18	34
Link roads	58	58	—	30
Bridges	23	5	18	4
<i>Other</i>	97	38	59	31
Protective works	95	36	59	29
Hydel scheme	1	1	—	1
Flour mill	1	—	—	1
<i>Total</i>	474	253	221	144
<i>Baltistan</i>				
<i>Irrigation</i>	247	111	136	62
Feeder channels	187	79	108	45
Storage reservoir	32	13	19	11
Pipe irrigation	20	18	2	6
Lift irrigation	8	1	7	—
<i>Transport</i>	92	40	52	23
Link roads	48	21	27	15
Pony tracks	36	16	20	8
Foot bridges	8	3	5	—
<i>Other</i>	107	52	55	33
Protective works	70	32	38	25
Boundary walls	28	20	8	8
Nursery (orchards)	9	—	9	—
<i>Total</i>	446	203	243	118

District/type of project	Identified	Initiated	Not yet started	Completed
<i>Three Districts</i>				
<i>Irrigation</i>	814	473	341	308
Feeder channels/pipe irrig.	717	421	296	275
Lift irrigation	13	4	9	2
Storage reservoir	80	46	34	29
Sedimentation tank	4	2	2	2
<i>Transport</i>	260	167	93	112
Link roads	184	134	50	91
Bridges	38	15	23	11
Pony tracks	38	18	20	10
<i>Other</i>	272	130	142	94
Protective works	224	99	125	79
Boundary walls	31	23	8	10
Nursery	14	5	9	3
Hydel scheme	2	2	—	1
Flour mill	1	1	—	1
<b>Total</b>	<b>1,346</b>	<b>770</b>	<b>576</b>	<b>514</b>

Source: AKRSP 6th Annual Review (1988).

**Table 3-6: Productive Physical Infrastructure Projects Costs and Construction Progress, by Type of Project, as ANNEX 3 of June 1989**

(cumulative)

Type of Project	No. of projects <sup>a</sup>	AKRSP grant Rs.'000	Disbursement		Completion <sup>a</sup>	
			Rs.'000	Percent	No.	Percent
<i>Gilgit</i>						
<i>Irrigation</i>	218	34,374	29,84	87	174	80
Feeder channels	181	27,595	24,257	88	147	81
Pipe/syphon irrig.	5	1,580	1,208	76	5	100
Lift irrigation	3	501	407	81	2	67
Storage reservoirs	26	4,267	3,543	83	17	65
Sedimentation tanks	2	242	242	100	2	100
Tunnel	1	189	189	100	1	100
<i>Transport</i>	68	12,963	12,178	94	60	88
Link roads <sup>b</sup>	59	11,285	10,509	93	51	86
Bridges	7	1,417	1,409	99	7	100
Pony tracks	2	261	260	100	2	100
<i>Other</i>	40	6,632	6,076	92	33	83
Protective works <sup>c</sup>	31	5,713	5,436	95	27	87
Boundary walls	3	276	208	75	2	67
Nursery	5	489	368	75	4	80
Hydel scheme	1	154	64	42	0	0
<b>Total</b>	<b>326</b>	<b>53,969</b>	<b>48,100</b>	<b>89</b>	<b>267</b>	<b>82</b>
<i>Chitral</i>						
<i>Irrigation</i>	158	29,863	21,067	71	88	56
Feeder channels	150	27,731	19,224	69	82	55
Syphon irrigation	1	1,024	1,024	100	1	100
Storage reservoirs	7	1,108	819	74	5	71

ANNEX 3  
Table 3-6 cont'd.

Type of Project	No. of projects <sup>a</sup>	AKRSP grant Rs.:000	Disbursement		Completion <sup>a</sup>	
			Rs.:000	Percent	No.	Percent
<i>Transport</i>	68	12,339	8,983	73	35	51
Link roads	63	11,659	8,441	72	31	49
Bridges	5	680	542	80	4	80
<i>Other</i>	38	6,347	5,722	90	31	82
Protective works	36	6,117	5,497	90	29	81
Hydel scheme	1	89	89	100	1	100
Flour mill	1	141	136	96	1	100
<b>Total</b>	<b>264</b>	<b>48,549</b>	<b>35,772</b>	<b>74</b>	<b>154</b>	<b>58</b>
<i>Baltistan</i>						
<i>Irrigation</i>	130	17,525	12,429	71	74	57
Feeder channels	96	12,872	8,662	67	47	49
Storage reservoirs	13	1,418	1,315	93	12	92
Pipe irrigation	20	2,985	2,209	74	14	70
Lift irrigation	1	250	243	97	1	100
<i>Transport</i>	47	5,955	4,440	75	30	64
Link roads	24	2,924	2,387	82	18	75
Pony tracks	19	2,344	1,738	76	12	63
Foot bridges	4	687	315	46	0	0
<i>Other</i>	57	7,957	6,411	81	35	61
Protective works	35	5,682	4,909	86	26	74
Boundary walls	22	2,275	1,502	66	9	41
<b>Total</b>	<b>234</b>	<b>31,437</b>	<b>23,280</b>	<b>74</b>	<b>139</b>	<b>59</b>
<i>Three Districts</i>						
	824	133,955	107,152	80	560	68
<i>Irrigation</i>	506	81,762	63,342	77	336	66
Feeder channels	427	68,198	52,143	76	276	65
Pipe/syphon irrig.	26	5,589	4,441	79	20	77
Lift irrigation	4	751	650	87	3	75
Storage reservoirs	46	6,793	5,677	84	34	74
Sedimentation tanks	2	242	242	100	2	100
Tunnel	1	189	189	100	1	100
<i>Transport</i>	183	31,257	25,601	82	125	68
Link roads <sup>b</sup>	146	25,868	21,337	82	100	68
Bridges <sup>c</sup>	16	2,784	2,266	79	11	69
Pony tracks	21	2,605	1,998	77	14	67
<i>Other</i>	135	20,936	18,209	87	99	73
Protective works <sup>d</sup>	102	17,512	15,842	92	82	80
Boundary walls	25	2,551	1,710	67	11	44
Nursery	5	489	368	75	4	80
Hydel scheme	2	243	153	63	1	50
Flour mill	1	141	136	96	1	100
<b>Total</b>	<b>824</b>	<b>133,955</b>	<b>107,152</b>	<b>80</b>	<b>560</b>	<b>68<sup>e</sup></b>

a. Refers to projects on which construction has started. See Tables 3-4 and 3-5 above for data on infrastructure projects in the identification/preparation phase. Data by type of project on schemes identified but not yet started are available in AKRSP progress reports.

b. Includes two link roads with bridges.

c. Of which four are foot bridges.

d. Includes one mud-flow control.

e. Compared with 39 percent completion rate for identified projects (see Table 3-4).

Source: AKRSP 26th Progress Report (June 1989).

Table 3-7: Summary Data on PPIs by Districts, June 1989

ANNEX 3

	District			Total
	Gilgit	Chitral	Baltistan	
No. of Projects Identified	426	474	526	1,426
Estimated Cost (Rs. millions)	58.00	74.00	78.97	210.97
No. of Projects Initiated	326	264	234	824
Cost of Projects Initiated (Rs. million)	53.96	48.55	31.44	133.95
No. of Beneficiary Households	26,615	14,834	11,024	52,473
Physical Progress of Projects	91	76	80	83
No. of Projects Completed	267	154	139	560

Source: AKRSP 26th Progress Report (June 1989).

Table 3-8: Fertilizer Supplies, Gilgit District, 1981-88

ANNEX 3

(nutrient tons)

Year	Total (all sources)		AKRSP	
	Amount	Annual percentage increase	Amount	Percent of total
1981	289	—	—	—
1982	287	-1	—	—
1983	433	51	60	14
1984	577	33	273	47
1985	874	51	342	39
1986	972	11	205	21
1987	644	-31	122	19
1988	1,105	72	270	24

Source: Khan (1989, Table IV-56).

Table 3-9: AKRSP Marketing Operations, 1983-June 1989

ANNEX 3

	1983	1984	1985	1986	1987	1988	As of June 1989 (Cum.)
	Number of Village Organizations Marketing	11	8	45	164	191	215
Quantity of Output Marketed (metric tons)	46	23	176	293	431	973	na
Gross Sales (Rs. thousands)	324	159	940	2,735	3,432	6,360	17,145.8
Beneficiaries of Marketing Operations (households)	514	251	1,070	4,372	6,581	8,522	24,073

na Not available.

Source: AKRSP 26th Progress Report (June 1989).

**Table 3-10: Example of Cooperative Marketing Activities, Gilgit District, Fourth Quarter 1988**

**ANNEX 3**

(millions of tons or units of livestock and thousands of rupees)

	Crop produce					Livestock and products					Totals
	Maize	Veg.	Seed potato	Dried fruit	Fodder	Animals	Poultry	Fresh milk	Desi ghee	Firewood	
<i>Operations</i>											
Volume	5.2	6.2	62.9	19.9	0.2	658	693	5.4	0.04	22.0	—
Gross Sales	9.7	22.8	254.3	219.2	0.4	319.3	21.2	33.5	4.4	30.5	915.3
Marketing Expenses	0.1	0.9	145.9	11.1	0.2	2.7	0.7	2.2	0.02	1.8	165.6
Percent of Gross Sales	1	4	57	5	50	1	3	7	—	6	18
Farmgate Income	9.7	21.9	108.4	208.0	0.2	316.6	20.5	31.3	4.4	28.7	749.7
Percent of Gross Sales	99	96	43	95	50	99	97	94	100	94	82
<i>Beneficiaries</i>											
No. of Village Organizations											
Marketing	1	14	14	15	1	5	1	2	1	4	—
Total Membership	30	253	674	580	60	369	48	61	56	147	—
Members Marketing	32	n.a.	585	421	40	337	48	61	56	107	—
As Percent of total Members	100	n.a.	87	73	67	91	100	100	100	73	—

Source: AKRSP Sixth Annual Review (1988).

**Table 3-11: AKRSP Training Courses, 1983–June 1989**

**ANNEX 3**

	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>
<i>No. of regular courses</i>							
Cumulative	4	12	26	42	66	103	122
Annually	4	8	14	16	24	37	19
<i>Refresher courses</i>							
Cumulative	—	5	14	29	43	53	57
Annually	—	5	9	15	14	10	4
<i>Trainees (regular courses)</i>							
Cumulative	91	270	545	892	1,293	2,063	2,433
Annually	91	179	275	347	401	770	370

Note: Data are for a total of 179 courses, by type as follows:

Course title	No. of regular courses	No. of refresher courses	Total %
Agriculture	45	21	37
Livestock Development	31	24	31
Poultry Development	26	5	17
Marketing	14	7	12
Accounting	3	—	2
Appropriate Technology	3	—	2
	122	57	100

a. As of June 1989.

Source: AKRSP 26th Progress Report (June 1989).

**Table 3-12: Selected Impact Survey Data, Gilgit District, 1989**

**ANNEX 3**

*A. Household Income (Rs. thousands)*

	Farm	Nonfarm			Grand total
		Total	Remittances	Nonfarm work	
Five Active VOs	29.5	16.0	5.4	4.8	45.5
Percent	65	35	12	11	100
Five Inactive VOs	26.7	15.1	6.2	4.2	41.8
Percent	64	36	15	10	100

*B. Use of Improved Inputs (percent of households)*

	New seed		
	Potatoes	Wheat	Fertilizer
Five Active Village Organizations	25	27	81
Five Inactive Village Organizations	15	2	77

*C. Sources of Supply of Selected Inputs (percent of households using)*

	New seed		
	Potatoes	Wheat	Fertilizer
Five Active Village Organizations			
Market	24	5	55
Self	38	31	11
Government	—	—	32
AKRSP	38	64	3
Five Inactive Village Organizations			
Market	20	13	45
Self	80	28	12
Government	—	—	35
AKRSP	—	59	9

*D. Sources of Animal Vaccinations*

	No. of households	Percent
Five Active Village Organizations		
Government	8	3
AKRSP	221	97
Five Inactive Village Organizations		
Government	97	38
AKRSP	161	63

*E. Development and Technology Adoption (five active village organizations)*

	No. of households	Percent of total
Increase in Developed Land	166	50
New Seeds (maize and wheat)	92	28
Fodder Improvement	77	23
Plant Protection	89	27
Breed Improvement	97	29
Animal Health	207	63
Poultry Improvement	103	31
Fruit Tree Improvement	61	18
Nurseries and Orchards	125	38
Forest Nurseries	111	34
Seed Potato Cultivation	59	18

Source: Khan (1989).

# *Annex 4*

## *Annex 4: Program Resources and Expenditures*

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**Table 4-1: AKRSP Sources of Income, by Donor**  
(thousands of rupees)

ANNEX 4

	1982-83	1984	1985	1986	1987	1988	1989 <sup>a</sup>	Total	US\$ <sup>b</sup> ('000)	%
AKF Network <sup>c</sup>	14,851	10,048	12,819	17,410	14,213	8,346	15,238	92,925	4,646	21
AKF (Pakistan)	10,960	7,160	5,901	7,662	7,778	5,251	—	—	—	—
AKF Canada	1,420	2,357	2,398	1,199	2,026	1,107	—	—	—	—
AKF USA	1,328	—	3,193	4,119	417	1,988	—	—	—	—
AKF UK	1,143	531	2,327	4,430	3,992	—	—	—	—	—
CIDA	5,439	9,245	11,241	14,778	18,595	27,533	29,211	116,042	5,802	26
ODA	327	913	2,092	3,471	182	33,809	43,549	84,343	4,217	19
Netherlands	—	—	4,109	7,669	20,584	30,899	36,782	100,043	5,002	22
USAID	—	—	1,426	4,096	5,821	5,950	—	17,293	865	4
Alberta Aid	236	2,192	3,486	—	4,062	—	—	9,976	499	2
OXFAM	603	552	544	1,447	1,701	283	—	5,130	256	1
EEC	—	—	—	—	2,391	2,428	2,590	7,409	370	2
Ford Foundation	1,325	495	—	—	—	—	—	1,820	91	0
Heifer International	—	—	—	1,518	—	40	475	2,033	102	0
Govt. of Pakistan	—	89	89	914	3,243	—	724	5,059	253	1
Konrad Adenauer Foundation	—	—	—	—	—	1,299	2,519	3,818	191	1
<b>Total</b>	<b>22,781</b>	<b>23,039</b>	<b>36,301</b>	<b>51,303</b>	<b>70,792</b>	<b>110,587</b>	<b>131,088</b>	<b>445,891</b>	<b>22,294</b>	<b>100</b>

— Not applicable.

a. Funds committed.

b. US\$1.00 = Rs. 20.00.

c. The costs of AKF Geneva's management back-up and donor coordination, as well as the cost of the helicopter services, are not included.

Source: AKRSP.

**Table 4-2: AKRSP Annual Expenditures since Start-up**  
(thousands of rupees)

ANNEX 4

	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>	TOTAL	US\$ <sup>b</sup> ('000)	%
Capital Expenditure	1,931	1,992	2,673	3,715	3,367	4,318	14,783	32,779	1,639	8
Salaries	1,798	2,577	3,893	6,305	9,812	17,685	24,010	66,080	3,304	17
Travel	485	471	742	1,161	1,420	3,686	4,308	12,273	614	3
Administration	36	131	141	239	196	307	1,697	2,747	137	1
Office Maintenance	370	576	1,076	1,502	2,279	2,193	1,359	9,355	468	2
Vehicle Operation	264	341	577	515	527	2,158	2,618	7,010	351	2
Training	296	913	2,752	4,575	6,839	3,685	5,754	24,814	1,241	6
Research, Survey, and Demonstration	<u>1,726</u>	<u>3,289</u>	<u>4,492</u>	<u>3,802</u>	<u>9,414</u>	<u>1,907</u>	<u>3,268</u>	<u>27,898</u>	<u>1,395</u>	<u>7</u>
Total Operating Cost	6,906	10,290	16,346	21,814	33,854	35,939	67,807	182,956	9,148	47
Infrastructure Projects	7,204	12,083	13,665	15,490	20,519	20,441	35,850	125,252	6,263	32
Credit Program (net)	<u>517</u>	<u>153</u>	<u>5,745</u>	<u>6,727</u>	<u>15,065</u>	<u>15,505</u>	<u>35,400</u>	<u>79,112</u>	<u>3,956</u>	<u>20</u>
<b>Total</b>	<b>14,627</b>	<b>22,526</b>	<b>35,756</b>	<b>49,847</b>	<b>69,438</b>	<b>71,885</b>	<b>129,057</b>	<b>387,320</b>	<b>19,366</b>	<b>100</b>

a. Budgeted.

b. US\$1.00 = Rs. 20.00.

c. Grand total as supplied by AKRSP is greater than the breakdown data.

Source: AKRSP, Oct. 1989.

**Table 4-3: Expenditures on Program Grants to Village Organizations, 1983-89**  
(thousands of rupees)

ANNEX 4

Type of Project	1983	1984	1985	1986 <sup>a</sup>	1983-86 Percent	As of June 1989 (Cum.)	Percent
<i>Irrigation</i>	4,555	7,052	9,751	7,144	63	63,342	59
Feeder Channels	4,275	6,378	8,043	6,268	55	52,143	49
Storage Reservoirs	183	586	819	788	5	5,677	5
Sedimentation Tanks	97	88	33	0	.5	242	—
Pipe/Syphon Irrigation	—	—	802	88	2	4,441	4
Mud Removal	—	—	54	—	.1	—	—
Lift Irrigation	—	—	—	—	—	650	1
Tunnel	—	—	—	—	—	189	—
<i>Transport</i>	1,395	2,262	2,276	2,980	20	25,601	24
Link Roads	1,311	1,957	2,085	2,202	17	21,337 <sup>b</sup>	20
Bridges	84	305	191	778	3	2,266 <sup>c</sup>	2
Pony Tracks	—	—	—	—	—	1,998	2
<i>Other</i>	1,229	2,769	1,637	2,141	17	18,209	17
Protective Works	1,179	2,733	1,624	2,121	17	15,842 <sup>d</sup>	15
Hydel Scheme	50	36	—	—	.2	153	—
Boundary Walls	—	—	13	—	—	1,710	2
Land dev. Implements	—	—	—	20	—	—	—
Nursery	—	—	—	—	—	368	—
Flour Mill	—	—	—	—	—	136	—
<b>Total</b>	<b>7,179</b>	<b>12,083</b>	<b>13,664</b>	<b>12,265</b>	<b>100</b>	<b>107,152</b>	<b>100</b>

a. Actuals as of September 30, 1986. However, budgeted expenditure for program grant to village organizations for all of 1986 is Rs. 20,169,000.

b. Includes grant for link roads with bridges.

c. Includes grant for foot bridges.

d. Includes grant for mud-flow control.

Sources: AKRSP 26th Progress Report (June 1989) and AKRSP Sept. 1986.

**Table 4-4: AKRSP Staff Strength, 1987-June 1989**

ANNEX 4

Category	Core Office			Gilgit			Chitral			Baltistan			Total		
	1987	1988	1989 <sup>a</sup>	1987	1988	1989 <sup>a</sup>	1987	1988	1989 <sup>a</sup>	1987	1988	1989 <sup>a</sup>	1987	1988	1989 <sup>a</sup>
Management Group	7	8	9	—	—	—	1	1	1	1	1	—	9	10	9
Senior Professionals	4	2	2	7	5	5	6	6	6	4	3	4	21	16	17
Junior Professionals	7	7	10	27	29	30	23	23	22	4	3	4	21	16	17
Support Staff	17	16	17	13	11	14	13	12	13	10	10	11	53	49	55
Drivers/Auxiliary Staff	25	23	25	29	31	34	16	23	15	19	23	26	89	100	110

Note: Data on 1986 are omitted because they could not be reconciled with staff categories used in following years.

a. As of June.

**Table 4-5: Donor Involvement by Area or Subprogram Area/Activity, 1989<sup>a</sup>**

**ANNEX 4**

	<i>Core</i>	<i>DPO Gilgit</i>	<i>DPO Training</i>	<i>DPO Chitral</i>	<i>DPO Baltistan</i>	<i>AKRSP women's program</i>	<i>High altitude areas</i>	<i>AKRSP credit program</i>
AKF	X						X	
CIDA		X						X
ODA				X				X
Netherlands					X	X		X
USAID								X
Alberta Aid		X						
OXFAM							X	
EEC							X	
Heifer International		X						
Government of Pakistan Women's Division						X		
Konrad Adenauer Foundation			X					

Note: DPO is District Program Office.

a. Information on Ford Foundation not available.

Source: AKRSP October 1989.

# *Annex 5*

## *Annex 5: Savings and Credit*

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**Table 5-1: Growth of Village and Women's Organization Savings Deposits, 1983–June 1989**  
(cumulative, thousands of rupees)

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	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>
<i>Village Organizations</i>	733	5,870	10,530	15,900	30,990	46,510	60,150
Gilgit	663	5,140	8,100	10,590	20,570	28,810	38,730
Chitral	70	730	2,200	4,450	7,900	13,150	15,830
Baltistan	—	—	230	860	2,520	4,550	5,590
<i>Women's Organizations</i>	24	520	1,380	2,120	3,350	4,820	5,940
Grand total	757	6,390	11,910	18,020	34,340	51,330	66,090

a. As of June 1989.

Source: AKRSP 26th Progress Report (June 1989).

**Table 5-2: Status of Social Organizations and Savings Deposits, by District, June 1989**

ANNEX 5

	Gilgit	Chitral	Baltistan <sup>a</sup>	Total
<i>Village Organizations</i>				
Number of Groups	446 <sup>b</sup>	344	297	1,087
Membership	26,500	15,815	10,688	53,003
Savings Deposits (Rs. million)	38.7	15.8	5.6	60.2
Average Savings per Group (Rs. thousands)	85.9	46	18.8	55.1
Average Savings per Household (Rs.)	1,460	1,000	520	1,180
<i>Women's Organizations</i>				
Number of Groups	204	67	—	271
Membership	8,137	2,160	—	10,297
Savings Deposits (Rs. million)	5.3	0.7	—	5.9
Average Savings per Group (Rs. thousand)	25.9	10.1	—	21.9
Average Savings per Group Member (Rs.)	650	320	—	570

— Not applicable.

a. Baltistan has no separate women's organizations.

b. Includes 50 VOs formed since 1987 by members of existing VOs splitting off to form a new VO.

Source: AKRSP 26th Progress Report (June 1989).

**Table 5-3: AKRSP Short-term Credit Disbursement Summary, 1983–June 1989**  
(thousands of rupees)

ANNEX 5

Item	Annual totals (Gilgit/Chitral/Baltistan)							Cumulative totals as of June 1989				
	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>	Gilgit	Chitral	Baltistan	Total	%
Fertilizer	994	2,537	3,623	5,904	7,699	13,155	10,254	27,482	12,193	4,491	44,166	64
Marketing	—	196	813	1,971	4,052	6,222	2,671	13,216	1,354	1,355	15,925	23
Plants/Seeds	—	10	39	109	273	547	2,272	3,158	81	11	3,250	5
Other <sup>b</sup>	—	—	—	—	—	165	—	165	—	—	165	—
Women's Organizations	—	10	58	40	404	1,549	3,879	5,260	680	—	5,940	9
Total	994	2,753	4,533	8,024	12,428	21,638	19,076	49,281	14,308	5,857	69,446	100

a. Up to June 30.

b. Includes heifer loans, poultry, and pesticide.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1983-88).

**Table 5-4: AKRSP Short-term Credit Disbursements, Gilgit District, 1983–June 1989**

ANNEX 5

*(thousands of rupees)*

Item	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>	Total
Fertilizer	856	2,403	2,854	3,239	4,195	7,659	6,276	27,482
Plants/Seeds	—	10	39	76	268	517	2,248	3,158
Other <sup>b</sup>	—	—	—	—	—	165	—	165
Marketing	—	196	813	1,718	2,717	5,553	2,219	13,216
Women's organizations	—	10	58	40	404	1,549	3,199	5,260
Total	856	2,619	3,764	5,073	7,584	15,443	13,942	49,281

a. Up to June 30.

b. Includes heifer loan, poultry, and pesticide.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1983-88).

**Table 5-5: AKRSP Short-term Credit Disbursements, Chitral District, 1983–June 1989**

ANNEX 5

*(thousands of rupees)*

Item	1983	1984	1985	1986	1987	1988	1989 <sup>a</sup>	Total
Fertilizer	138	134	769	2,207	2,347	4,064	2,534	12,193
Plants/Seeds	—	—	—	33	5	20	23	81
Marketing	—	—	—	16	958	320	60	1,354
Women's organizations	—	—	—	—	—	—	680	680
Total	138	134	769	2,256	3,310	4,404	3,297	14,308

a. Up to June 30.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1983-88).

**Table 5-6: AKRSP Short-term Credit Disbursements, Baltistan District, 1986–June 1989**

ANNEX 5

*(thousands of rupees)*

Item	1986	1987	1988	1989 <sup>a</sup>	Total
Fertilizer	458	1,157	1,432	1,444	4,491
Plants/Seeds	—	—	10	1	11
Marketing	237	377	349	392	1,355
Total	695	1,534	1,791	1,837	5,857

a. Up to June 30.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1986-88).

**Table 5-7: AKRSP Short-term Credit by Year and Totals by District, 1983-86, and Totals as of June 1989****ANNEX 5***(number of loans; number of borrowers in parentheses)*

Item	Annual totals <sup>a</sup>					1983-June 1989			
	1983	1984	1985	1986	Total	Gilgit	Chitral	Baltistan	Total
Fertilizer	79 (4,686)	197 (12,297)	244 (12,616)	223 (9,462)	743 (39,061)	1,798 (86,375)	1,044 (44,121)	355 (12,705)	3,197 (143,201)
In-kind	57 (2,848)	126 (8,468)	169 (8,718)	104 (4,334)	456 (24,368)	—	—	—	—
Cash/Check	22 (1,838)	71 (3,829)	75 (3,898)	119 (14,693)	287	—	—	—	—
Marketing	—	8 (579)	47 (3,541)	12 (875)	67 (4,995)	500 (23,547)	66 (3,383)	66 (2,356)	632 (29,286)
Plants	—	—	2 (70)	2 (103)	4 (173)	203 (7,824)	16 (559)	14 (472)	233 (8,855)
Seeds	—	1 (150)	5 (380)	4 (139)	10 (669)	161 (8,209)	14 (605)	—	175 (8,814)
Women's Organization Credit	—	2 (44)	11 (446)	3 (87)	16 (577)	na	na	—	na
Total	79 (4,686)	208 (13,070)	309 (17,053)	244 (10,666)	840 (45,475)	2,662 (125,955)	1,140 (48,668)	435 (15,533)	4,237 (190,156)
Average Borrowers/Loan	5.9	63	55	44	54	47	43	36	45

na Not available.

— Not applicable.

a. Mainly for Gilgit, but includes 177 loans for Chitral and 20 loans for Baltistan for which breakdown data not available.

Source: AKRSP 26th Progress Report (June 1989).

**Table 5-8: AKRSP Short-term Credit: Average Loan Size, 1983-86 and Totals as of June 1989****ANNEX 5***(marketing and fertilizer loans)*

Item	Gilgit				1983-June 1989		
	1983	1984	1985	1986 <sup>a</sup>	Gilgit	Chitral	Baltistan
<i>Fertilizer credit</i>							
Average Loan (Rs.)	10,761	12,195	11,694	10,322	15,285	11,679	12,652
Average Loan/Beneficiary (Rs.)	181	195	226	243	318	276	354
Number of Beneficiaries/Loan	59	62	52	42	48	42	36
<i>Marketing Credit</i>							
Average Loan (Rs.)	—	24,500	17,298	17,542	26,431	20,514	20,527
Average Loan/Beneficiary (Rs.)	—	339	230	241	561	400	575
Number of Beneficiaries/Loan	—	72	75	73	47	51	36

— Not applicable.

a. As of June 1986.

Source: AKRSP 26th Progress Report (June 1989).

**Table 5-9: AKRSP Medium-term Credit Disbursement Summary, 1984–June 1989**

ANNEX 5

(thousands of rupees)

Item	Annual Totals (Gilgit/Chitral/Baltistan)						Cumulative as of June 1989				
	1984	1985	1986	1987	1988	1989 <sup>a</sup>	Gilgit	Chitral	Baltistan	Total	
										Amount	%
Land Development <sup>b</sup>	473	2,499	2,397	9,768	7,901	6,225	26,651	2,215	397	29,263	63
Agricultural Machinery	—	1,235	2,027	2,906	3,152	2,530	5,639	5,466	745	11,850	25
Sulphur Tent	—	—	—	442	772	634	1,666	—	182	1,848	4
Other <sup>c</sup>	—	—	60	205	1,087	2,262	453	3,061	100	3,614	8
<b>Total</b>	<b>473</b>	<b>3,734</b>	<b>4,484</b>	<b>13,321</b>	<b>12,912</b>	<b>11,651</b>	<b>34,409</b>	<b>10,742</b>	<b>1,424</b>	<b>46,575</b>	<b>100</b>

— Not applicable.

a. Up to June 30.

b. Includes land reclamation, nursery, and mixed farming.

c. Includes marketing, sawmills, drill machines, and sheep breeding.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1983-88).

**Table 5-10: AKRSP Medium-term Credit Disbursements, Gilgit District, 1984–June 1989**

ANNEX 5

(thousands of rupees)

Item	1984	1985	1986	1987	1988	1989 <sup>a</sup>	Total
Land Development <sup>b</sup>	473	2,499	2,167	9,153	6,712	5,647	26,651
Agricultural Machinery	—	1,235	1,727	730	1,192	755	5,639
Sulphur Tent	—	—	—	442	772	452	1,666
Other <sup>c</sup>	—	—	—	205	184	64	453
<b>Total</b>	<b>473</b>	<b>3,734</b>	<b>3,894</b>	<b>10,530</b>	<b>8,860</b>	<b>6,918</b>	<b>34,409</b>

— Not applicable.

a. Up to June 30.

b. Includes land reclamation, nursery, and mixed farming.

c. Includes marketing, sawmills, drill machines, and sheep breeding.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1983-88).

**Table 5-11: AKRSP Medium-term Credit Disbursements, Chitral District, 1986–June 1989**

ANNEX 5

(thousands of rupees)

Item	1986	1987	1988	1989 <sup>a</sup>	Total
Land Development	230	603	899	483	2,215
Agricultural Machinery	300	1,531	1,860	1,775	5,466
Sulphur Tent	—	—	—	—	—
Other <sup>b</sup>	60	—	903	2,098	3,061
<b>Total</b>	<b>590</b>	<b>2,134</b>	<b>3,662</b>	<b>4,356</b>	<b>10,742</b>

— Not applicable.

a. Up to June 30.

b. Includes sheep breeding.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1983-88).

**Table 5-12: AKRSP Medium-term Credit Disbursements, Baltistan District, 1987-June 1989****ANNEX 5***(thousands of rupees)*

Item	1987	1988	1989 <sup>a</sup>	Total
Land Development	12	290	95	397
Agricultural Machinery	645	100	—	745
Sulphur Tent	—	—	182	182
Other <sup>b</sup>	—	—	100	100
Total	657	390	377	1,424

— Not applicable.

a. Up to June 30.

b. Includes sawmill.

Sources: AKRSP 26th Progress Report (June 1989) and Annual Review (1986-88).

**Table 5-13: AKRSP Medium-term Credit to Village Organizations, by District, Purpose and Number of Loans, 1986 and 1989****ANNEX 5**

District/ Purpose	Total Loans (Rs. '000)		Number of Loans		Number of Borrowers		Average Loan (Rs.)	
	June 1986	June 1989	June 1986	June 1989	June 1986	June 1989	1986	1989
<i>Gilgit</i>								
Land Dev. <sup>a</sup>	4,403	26,463	37	183	2,570	11,432	1,713	2,315
Agric. Machinery	2,135	5,639	15	33	1,178	2,345	1,812	2,405
Nursery Dev.	145	187	5	5	432	254	1,336	736
Sulphur Tent	—	1,666	—	47	—	2,433	—	685
Other <sup>b</sup>	—	453	—	13	—	673	—	673
Total	6,683	34,408	57	281	4,180	17,137	1,599	2,008
<i>Chitral</i>								
Land								
Development	89	2,169	4	26	na	1,335	na	1,625
Agr. Mach./other	150	5,466	2	25	na	1,237	na	4,419
Nursery Dev.	—	46	—	1	—	56	—	821
Other <sup>c</sup>	—	3,061	—	22	—	931	—	3,288
Total	239	10,742	6	74	—	3,559	—	3,018
<i>Baltistan</i>								
Land								
Development	—	397	—	5	—	203	—	1,956
Agric. Machinery	—	745	—	5	—	260	—	2,865
Sulphur Tent	—	182	—	10	—	245	—	743
Other <sup>d</sup>	—	100	—	1	—	24	—	4,167
Total	—	1,424	—	21	—	732	—	1,945
Grand total	6,922	46,575	63	376	na	21,428	na	2,174

na Not available.

— Not applicable.

a. Includes mixed farming.

b. Includes marketing, sawmill, drill machine, sheep breeding, micro hydel, butter churns, and spinning wheels.

c. Includes sheep/goat breeding and flour mill.

d. Includes sawmill.

Source: AKRSP 26th Progress Report (June 1989).

**Table 5-14: AKRSP Agricultural Credit: Amounts Disbursed and in Default**

ANNEX 5

*(millions of rupees)*

<i>Loan</i>	<i>Gilgit</i>	<i>Chitral</i>	<i>Baltistan</i>	<i>Total</i>
<i>Short Term</i>				
Amount Disbursed	45.0	13.6	5.9	64.5
Amount in Default	0.8	0.1	0.17	1.1
Percentage in Default	1.8	1.0	2.9	1.7
<i>Medium Term</i>				
Amount Disbursed	32.7	10.7	1.4	44.8
Amount in Default	0.4	.03	0.0	0.4
Percentage in Default	1.3	0.2	—	1.0
<i>All Credit</i>				
Amount Disbursed	77.7	24.4	7.2	109.3
Amount in Default	1.2	0.2	0.2	1.6
Percentage in Default	1.5	0.6	2.0	1.0

— Not applicable.

Source: AKRSP 26th Progress Report (June 1989).

**Table 5-15: AKRSP Agricultural Credit Repayment Performance, 1988**

ANNEX 5

*(millions of rupees)*

<i>Category</i>	<i>Short term</i>	<i>Medium term</i>	<i>Total</i>
Outstanding (1/1/88)	7.6	20.6	28.2
Disbursement in 1988	21.6	13.0	34.5
Total Recovered in 1988	16.1	2.7	18.9
Outstanding (31/12/88)	13.1	30.8	43.9
Amount Written off <sup>a</sup>	0.3	1.6	1.9
Net Outstanding (31/12/88)	12.8	29.2	42.0
Of which:			
Overdue	0.3	0.06	0.3
Restructured	0.0	0.0	0.0
Total Recoverable in 1988	12.4	1.2	13.7
Percent Recovered	130	224	138

a. Includes loans written off on humanitarian grounds following civil disturbances in Gilgit District in May 1988.

Source: AKRSP, Oct. 1989.

**Table 5-16: AKRSP Savings and Credit in Gilgit District: Sample of Ten Village Organizations**

**ANNEX 5**

*A. Household Average Savings by Type (thousands of rupees)*

	Total	Cash	Bank/PO	Village/Women's Organizations	Loans To others	Misc.
Five Active Village Organizations	15.8	2.8	9.2	1.8	1.6	0.3
Percent	100	18	58	12	10	2
Five Inactive Village Organizations	11.3	2.6	4.7	0.5	3.3	0.1
Percent	100	23	42	5	29	1

*B. Number of Households Borrowing by Credit Use <sup>a</sup>*

	Household Needs	Agriculture	Household Industry	Misc.	Total Loans
Five Active Village Organizations	72	254	8	21	289
Five Inactive Village Organizations	214	109	7	12	303

*C. Average Amount of Borrowing (thousands of rupees per household)*

	Household Needs	Agriculture	Household Industry	Misc.	Total Loans
Five Active Village Organizations	7.7	2.6	17.3	21.5	6.2
Five Inactive Village Organizations	7.2	1.5	39.8	12.3	7.0

*D. Sources of Borrowing (percent)*

	Government Agencies	Commercial Bank	Friends	Village Lenders	AKRSP
<i>Total Borrowing</i>					
Five Active Village Organizations	3	58	9	23	6
Five Inactive Village Organizations	0	30	2	28	40
<i>For Agricultural Activities</i>					
Five Active Village Organizations	0	2	0	1	97
Five Inactive Village Organizations	0	15	0	2	83

Note: The surveyed village organizations were paired to be similar except for their degree of program involvement (active/inactive).

a. There were 330 households in the active village organizations and 527 households in the inactive village organizations.

Source: Khan (1989).

# Annex 6: Agricultural Production

## The Farming System and Change

The traditional integrated and sustainable mixed farming system of the Northern Areas consisted of a mixture of annual cereal crops of wheat, barley, maize, and minor millets; perennial forages such as alfalfa; dual-purpose trees such as poplar, willow, *Robinia*, fodder and fruit; annual forages such as maize; some vegetable production; and cattle, yak, horse, goats and sheep, and some poultry production. The efficient use of farmyard manure meant that mineral nutrients were recycled for plant, animals and human use, with a major component of nitrogen-fixing plants in the farming system supplying the nitrogen requirement for crop growth. Livestock have always been a fully integrated and critical component of the system. As new productive land was in very limited supply, increases in human population had pushed the production system to very efficient levels, with the small farmed areas per household being very intensively and carefully managed.

Change came rapidly with the improved roads. The perennial food shortages in the Northern Areas, especially during late winter and spring, were relieved, mainly by subsidized wheat brought up from the plains. This has come to account for up to 25 percent of wheat consumption (Husain 1986) and 32 percent of household food is now purchased (Khan 1989). The regular availability of subsidized wheat from outside the Northern Areas and subsidized beef is permitting Northern Areas farmers to diversify their production systems away from purely subsistence objectives, at lower risk than formerly. However, the production potential of wheat in the region is so high that with the right mix of variety, fertilizer, and irrigation local production may still compete with subsidized government supplies. In addition, increased cash from work outside the villages is enabling a move to substitute horticultural production, both vegetables and fruit, and increased fodder production.

Another major impact of the new roads is that they allowed farm machinery such as tractors, plows, and threshers, together with the fuel that they require, to be brought to the villages. Surveys in Gilgit District showed an increase from about 45 percent of households using tractors in 1985 (Husain 1986) to 77 percent in 1988 (Khan 1989). Threshers were used by 95 percent of sample households in Gilgit District in 1988. Some village organizations have been experimenting with communal machinery purchase and operation with varied success (Khan 1989). Such a system is extremely difficult to operate equitably, and if responsibility for operation and maintenance of equipment is diffused through the group, equipment is likely to deteriorate quickly. If farm incomes continue to increase, communal management of equipment is likely to be a transition phase. AKRSP should encourage development of machinery hiring through private entrepreneurs. While it need not be individual families that end up owning/operating farm machinery, the effort is likely to be more successful with some unit smaller than the village organization.

Expansion of the cropped area has been another major change, largely through AKRSP-assisted productive physical infrastructure construction. Much of this new land is too steep to crop directly without some form of labor-intensive levelling or terracing. Other land is too rocky or steep even for this approach and is suitable only for development of permanent covers such as pastures, agroforestry, or fruit trees with suitable ground covers and irrigation systems. Slopes are steep, and in less constrained situations, no attempt to irrigate such steep land would be considered. AKRSP physical infrastructure and engineering services should collaborate closely with the agriculture and resources management section in devising suitable irrigation improvements for such sloping lands. Soil capping from silt deposition is a recognized problem but does not appear to have led to soil degradation. There is a tendency

## ANNEX 6

in some situations to overirrigate simply because the water is available, leading to nutrient leaching at certain times of the year. However, the pressure to develop new land to keep up with the growing population keeps overirrigation from becoming widespread.

Villagers have shown a remarkable pragmatism and willingness to cooperate in their handling of the new irrigation management issues arising from the extra water made available through the expansion of irrigation-related infrastructure (Dani 1989). Villagers recognize the need for all components of the farming system to receive water and for concerted group action and a hierarchy of responsibility. This has involved changes in the traditional system. The pattern of social behavior adapted for the new productive physical infrastructure has been followed in handling other issues down the line and demonstrates the adaptability and strengths of the village organizations set up by AKRSP.

AKRSP is involved in several changes to the production system that affect its sustainability. Population pressure on a limited area of cropping land and improved access to the outside world are the main driving forces for change. Whereas farmyard manure additions to the soil maintained subsistence levels for production in the past, use of chemical fertilizers has continued to expand over the last ten years, with AKRSP assisting in their distribution until 1989 (see Table 6-1).

### Production Activities

#### Wheat

Traditional wheat varieties yield 1.76 tons per hectare of grain and 5.5 tons per hectare of straw, the latter accounting for as much high as 40 percent of the value of the crop. These traditional varieties are more susceptible to yellow rust than the new dwarf varieties. Before AKRSP's time, semi-dwarf wheat cultivars had been adopted by up to 50 percent of the farmers after their introduction in 1966 but suffered from a progressive reduction in yield advantage because farmers were inadvertently mixing the seed of old and new varieties (Husain 1986). (This is a precautionary tale in the saga of technology adoption. Induction of new varieties requires good back-up support for the production of good quality seed for use by farmers. Such a seed production and distribution system takes time and effort to establish.) AKRSP is now counselling village organizations and individual farmers to change over to a new cultivar as completely as possible to avoid mechanical mixing of farmer-stored seed. (Information on AKRSP's seed distribution activities is given in Table 6-2.)

The new variety, Pak-81, yielded 2.96 tons per hectare of grain and 6.8 tons per hectare of straw, using on average 80 kilograms of nitrogen and 39 kilograms of phosphate

**Table 6-1: Use of Fertilizers in Gilgit District, 1987-88**

	Average Amount	Percent Households Using
Chemical Fertilizer Use (kg/ha for all crops)	242	78
Wheat	215	70
Maize	225	51
Potatoes	590	19
Vegetables	340	13
Organic Fertilizer (tons/ha)	10.2	76
Cropped Area Fertilized: 46%		

Source: Khan 1989.

**Table 6-2: Total Distribution of Seed by AKRSP as of June 1989**

	Gilgit	Chitral	Baltistan
High-yielding Wheat (tons)			
(Pak-81, Suneen)	33	23.6	27
Potatoes	15.6	na	25.3
Others (kg)			
Maize	8	516	—
Alfalfa	330	120	69
Vetch	105	—	—
Rapeseed	20	—	—
Vegetables	368	315	114

na Not available.

Sources: AKRSP 26th Progress Report; Briefing Notes, AKRSP Sixth Annual Review.

per hectare (Saleem et al. 1988). After adjusting yields for impurity of seed, a direct grain yield increase of about 25 percent over local varieties would be expected on farmer fields, with yields from pure seed being 40 percent higher. Some of this increase results from the increased fertilizer application to the Pak-81 and not just the new variety. The increased net income from the improved production system is estimated to be Rs. 750 to 1,050 for the average farm size with 0.5 hectare of wheat (Ahmad et al. 1989). Wheat yields can also be increased if the crop is planted before winter. This requires restricting the free grazing of animals, which is commonly practiced from autumn onwards, or enclosure of the land.

#### Maize

An AKRSP survey in Chitral District found that farmers usually plant very high populations by broadcasting about 130 kilograms of seed per hectare to give stands of about 200,000 plants per hectare. More seed is sown when farmers use thinnings for animal feed, reducing stands to about 145,000 plants per hectare. Because thinning is not uniform, grain yields are reduced by plant competition, and

even though solar radiation levels are high, such populations are much larger than optimal populations for grain production. Grain yields in the double-crop zone are about 3.3 tons per hectare (4.3 tons per hectare stover), with 4.3 tons per hectare grain in the single-crop zone and 5.9 tons per hectare stover (Tetley et al. 1988).

Maize is at the extreme of its natural range in the Northern Areas, but production improvements could be achieved with new varieties. Two promising maize populations to select from are already available at the Central Crops Research Institute, Nowshera, NWFP and the cold-tolerant lines from New Zealand have also performed well (Stevens et al. 1986; Stevens et al. 1989).

#### *Fodder and forage crops*

Through their nitrogen fixation, fodder legumes play a vital role in building up soil fertility as well as providing protein for animal nutrition. Alfalfa is particularly well adapted to the region and to the farming system. Farmers delay the last cut before winter so that seed can be produced for regenerating plants in the bare areas in the next season. Farmers leave alfalfa stands for many years before rotating them with another crop. Whether this optimizes yields is not clear. Use of other fodder legumes is limited (Box 6-1).

New crops such as the forages require attention to cutting, drying and storage systems to optimize their benefits. Fodder root crops also need appropriate storage so that they can be used as animal feed throughout the winter into

#### **Box 6-1: Fodder Legumes**

A local, poorly productive white clover occurs on field boundaries. Red clover, usually a biennial crop, also occurs and can be very productive if managed well. Berseem clover has been undersown with wheat to provide grazing, and for green manure after the wheat harvest. Other clover and *Medicago* species might be more suitable, but such intercropping has much potential for increasing soil fertility. Another legume fodder (*Vicia desycarpa*) has been introduced as a crop after wheat in the high single-cropping areas and grows through to November producing much high quality fodder. At lower altitudes, vetch and rye grass can survive the winter and can be sown in September-October after maize providing fodder early in the spring when it is much needed. However, the level of adoption is at present small, and AKRSP has distributed only 105 kilograms of vetch seed so far (Table 6-2).

early spring before new crops produce enough animal feed. Ways of storing the fodder, such as soil pits for root crops and silage for cereals, are under study at the village level. Stalling of animals and development of a cut and carry feeding system with troughs is being encouraged by AKRSP.

#### *Horticulture*

Fruit production requires a large farmer investment. After the initial costs of establishment and income forgone from annual crops until fruit is borne come the costs of pruning, spraying, picking, and marketing. However, gross cash returns from orchards can be at least five times that from wheat on a planted area basis. Credit program support is necessary for such long-term investments.

The returns from seed potatoes are large, so that there is every incentive to keep the region free of potato pests. With the Department of Agriculture, therefore, AKRSP should keep a close watch on the pest and disease situation and encourage development of suitable quarantine regulations for controlling the movement of potatoes into the area. AKRSP should also continue to encourage farmer compliance with recommended production systems. Yields are good enough for potato production to be attractive for marketing to consumers on the plains at a time when locally-produced and cold-stored potato supplies are finished. To keep disease levels low, potatoes will need to be rotated with other crops such as wheat.

The potential for vegetable seed production in the Northern Areas may be considerable. Whether costs and quality could match current European imports (now worth more than \$0.5 million) needs to be carefully assessed before embarking on such a project. A packaging plant would also be required. AKRSP should work closely with the Department of Agriculture/FAO in their testing of the potential of the Northern Areas for vegetable seed production. AKRSP has taken the initiative to set up a local Mountainland Seed Industry and Crop Improvement Program.

#### *Livestock*

The large number of village animals taken to high summer pastures has resulted in overgrazing, with a reduction in the diversity of flora, which are now dominated by *Artemisia*, *Poa*, and *Atriplex* species. As long as goats and sheep graze freely throughout the region, natural regeneration will be limited. AKRSP- and IUCN-supported experiments have shown that controlling grazing can result in a dramatic increase in plant productivity, including regeneration of useful herbs (AKRSP, 1988; Chitral District Briefing Notes; M. Junkow, personal communication). AKRSP trials have shown that selections of North Ameri-

## ANNEX 6

can orchard grass and brome grass and of sweet clover have good production potential. European selections for high altitudes (for example, ryegrass) may also grow well.

Human and animal population increases have led to degradation of the natural environment around the villages with loss of trees, shrubs, and herbs. These are unlikely to regenerate, and in any case such vegetation is always under pressure from landslides. Villagers have responded by devoting considerable energy to the development of agroforestry as an alternative resource. Whether the Chaprote example (Box 6-2) will spark a move to manage the high uplands to prevent their further degradation remains to be seen, but the village organization/cluster organizations provide a sound basis for the community action required. AKRSP can assist their decisionmaking by conducting research and demonstration efforts on alternative management systems.

With respect to AKRSP's vaccination program, it is extremely important to ensure that medicines retain their potency during transport and storage because failures can have a depressing effect on villagers' perceptions and willingness to innovate in general. While comprehensive impact data are unavailable, there is some evidence that the vaccination program has had much less impact on animal health than dosage amounts might suggest (Box 6-3).

AKRSP's current approach to improving animal production by importing new breeds of cattle, sheep, and goats has not only been costly in terms of money and effort, but it has also been detrimental to perceptions of the program and the program's overall goals. Developing new adapted breeds by incorporating exotic genes requires a long-term effort on a much larger scale than AKRSP could or should undertake. The sporadic introduction of new genes to village-level producers on a small scale may be technically

### Box 6-2: Use of Trees in the Higher Regions

Trees such as *Pinus wallichiana*, spruce (*Picea simitiana*), birch (*Betula utilis*), West Himalaya fir (*Abies pindro*), deodar cedar (*Cedrus deodara*) and pencil cedar (*Juniperus macropoda*) grow in higher regions without irrigation, and these have been traditionally used by villagers and recently exploited commercially. However, for sustainable regeneration an 80- to 120-year rotation is required. The Forestry Department supervises the cutting of forests owned as tribal lands, and collected royalties are split equally between the government and the owner. Government-protected forests are not supposed to be exploited except by local sanctioning of one to three trees at a time for domestic use by villagers in the area on concessional rates.

Villagers are becoming more aware that illegal exploitation of these resources impoverishes them and are taking steps to prevent this. The six villages adjacent to the Chaprote Forest in Gilgit District formed a Reform Committee for Conservation of the Forest in 1986 to protect the forest and curb illegal logging, to prevent livestock grazing, to ban commercial logging, and to manage fuelwood and timber use by the villages themselves (Dani 1989). The Committee induced the Forest Department to stop issuing licenses to contractors, but the Department is unhappy at this loss of jurisdiction and AKRSP is accused of inciting this usurping of the forest management role. The Committee still controls a barrier preventing timber export from the region. The Forest Department is delaying the issue of permits for tree felling by villagers, so that even the small local use is now technically illegal. AKRSP has been asked by the District Administrator to encourage meetings between the Forest Department senior staff

and villagers to try to resolve this stand-off. The villagers are unwilling to remove the barrier because they believe this is the only way to prevent illegal and indiscriminate felling by the Forest Department's field staff.

The Chaprote confrontation illustrates an emerging realization in the Northern Areas that decentralized community-based management of natural resources is the best way to preserve or sustain them, but the government administrative machinery has yet to respond to this opportunity. The preferable way to prevent the exploitation of these resources for short-term gain (from the high prices for forest products commanded in urban markets) is to encourage local communities to realize that it is in their best long-term interest to manage "their" local forests on a sustainable basis. The Forest Department's attempts at reforestation have not been very successful to date through lack of commitment and resources. Any reforestation activity must involve the villagers if young trees are to be properly cared for and livestock grazing is to be controlled. AKRSP thus is playing a very important role in furthering the recognition of the issues involved in sustaining forest resources and in high pasture management, and in mediating the changes in responsibilities between central and local administration that arise.

In Chitral District, exploitation of the forests is rapidly increasing, and again AKRSP has an important role in explaining to villagers and government agencies the long-term implications of this change. Sustainable use of these timber resources will require disciplined felling and managed grazing to allow regeneration of trees.

### Box 6-3: Livestock Vaccination and Vaccines

Livestock vaccination coverage in the Northern Areas is much better than before AKRSP's involvement, but it remains well below desired levels. The effectiveness of the vaccination program is in doubt, however, as little hard data on impact are available and other information tends to be anecdotal. One of the priorities is to survey the types of diseases prevalent in the region and their incidence. While any improvement may be worthwhile, compared with the high losses of the past, costs and benefits need to be better monitored, and special concern has arisen over the quality of the vaccine being used in some cases. An expert on these issues, from outside the OED team, with experience in Asia, has confirmed these concerns about the use of vaccines as currently handled in the Northern Areas.

Detailed vaccination coverage data are available, but AKRSP has reported that coverage (that achieved versus desired) is 32 percent for Gilgit District. This estimate is based on the requirements of different classes and ages of stock, and on observed prevalence of diseases (detailed diagnostic surveys have not been carried out). For the 1989 summer season 60,000 units of vaccine were used for about 100,000 animals. This would appear to be a low rate of coverage and information on the impact of the vaccines is not available. Information is also unavailable on the form of the vaccines distributed, and the dose schedule has not been obtained. It is not clear how AKRSP monitors potency, which is difficult to maintain in a cold chain distribution system which relies at the village level on small flasks to hold large volumes of vaccine.

For cattle, black quarter and anthrax vaccines are stable and a once-only dose is required. Hence effective coverage should be possible in the Northern Areas provided trained staff and funding are available. The foot and mouth disease vaccine, however, is not stable and should be given twice in the first year then annually. This vaccine needs a cold chain distribution network to be effective, and must be used within 24 hours of reaching room temperature. There are seven types and numerous subtypes of foot and mouth virus, with three main types occurring in Asia. Although difficult, it is vital to identify these virus types so that use of ineffective vaccines may be prevented. Clearly a program for this disease presents a much greater challenge than for the preceding two diseases. Goat pox vaccine as used by AKRSP is unstable at room temperature and is light-sensitive; therefore, vaccine bottles need to be stored in Alfoil and the syringe covered in Alfoil. For goat pleuropneumonia, caused by mycoplasma, the vaccine is a heat-sensitive liquid which is unstable and needs to be used within 24 hours of reaching room temperature. It is likely that most of the poultry vaccinations done by village technical specialists are ineffective (Ishaq 1988). (Poultry losses are reportedly very high, but detailed follow-up investigations are needed to clarify the situation.) Freeze-dried Newcastle disease vaccine lasts for several days, but a complex and costly system would be required to maintain fresh supplies to villages. AKRSP does not appear to be vaccinating extensively for hemorrhagic septicemia in cattle, which is a major cause of cattle loss elsewhere in Asia. This vaccine is stable.

interesting, but is unlikely to have much impact over the long term. Bringing highly specialized breeds up from the Pakistan plains to the Northern Areas is unlikely to be beneficial and is very costly.<sup>1</sup>

Heifer Project International supported AKRSP in distributing ten Fresian-Sahiwal crossbred milch cows to each of eight village organizations in Gilgit District. The cows were donated along with \$2,000 for construction of a shed to house the animals. These herds were to be managed collectively by the village organizations. Offspring were to be

distributed as a gift to other village organization members. The scheme was "oversold", and production and fertility have been far less than expected and promised. The animals do not seem well adapted to the very different environment of the Northern Areas, and the sophisticated feeding regime needed if the animals are to outperform local animals is beyond the means of most subsistence farmers. (Also maintenance of the Fresian-Sahiwal cross at the desired ratio will be difficult over the long term at the village level.) Stalled animals can be managed properly by individuals, but collective management is unlikely to give the desired results. Even if production targets had been achieved, sale of the milk would have been difficult as there are few marketing opportunities within the village and transport difficulties reduce other marketing possibilities (Meghji et al. 1987). Frustration and disappointment at the village level was very evident at the worst of these enterprises.

1. In contrast, farmers in one village in the Booni cluster in Chitral District recently used credit from AKRSP to purchase 500 large frame sheep from Afghanistan and have started a crossing program with their local sheep. Improved production through hybrid vigor was the outcome. With selection for twinning, careful progeny monitoring for ram selection, and culling of ewes after four births, this village is likely to achieve worthwhile gains over the long term. Such enterprise and understanding of animal production should be encouraged.

## ANNEX 6

### Agroforestry

Among recently introduced exotic trees, *Robinia pseudo-acacia* (black locust), introduced from the United States, has spread rapidly and is well adapted. The flowers are excellent for honey production, the timber is useful for poles and firewood, and the leaves are excellent fodder, fresh or as hay. *Eleagnus angustifolia*, or Russian olive, another nitrogen-fixing tree, also has multipurpose uses.

Other species that might be considered include some snow gums, some *Grevillea* and *Acacia* varieties (from Australian sources) and species such as the honey locust (*Gleditsia triacanthos*), Aleppo pine (*Pinus halepensis*), silver birch (*Betula pendula*) and black birch (*Betula lenta*), which are fast growing and may be adapted to Northern Areas.

Some data on AKRSP's agroforestry (and fruit tree) planting are shown in Table 6-3.

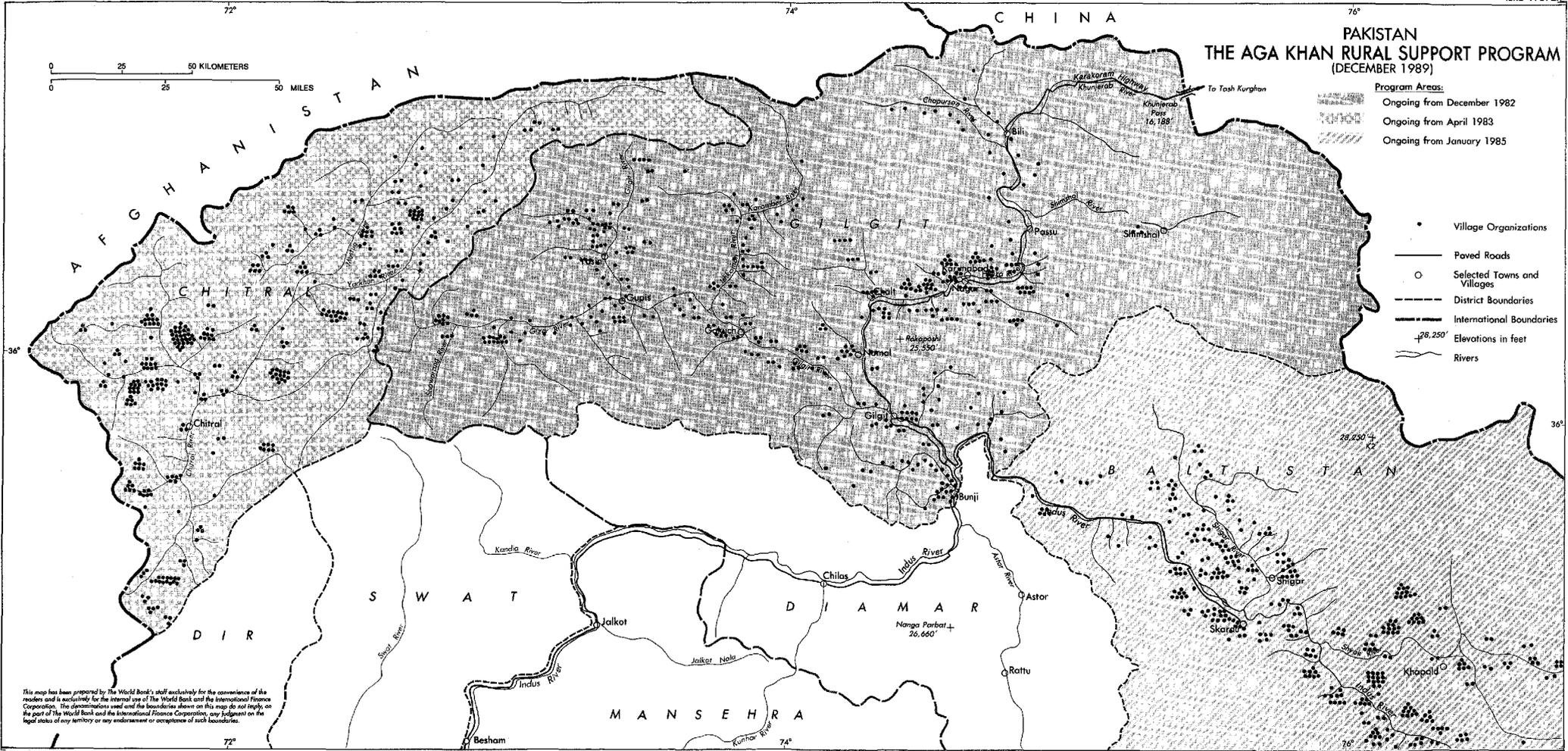
**Table 6-3: AKRSP Agroforestry and Fruit Tree Activities by District to June 1989**

(thousands of trees)

	Gilgit	Chitral	Baltistan	Total
Supply of Improved Fruit Trees	142	16.5	41	199.5
Total Plantings (village organizations)	422	206	na	na
Nurseries Established (including women's organizations)	7	16	2	25
Orchards Established	19	8	6	33
Forest Trees Planted by Village Organizations	1,418	3,230	1,050 <sup>a</sup>	5,698

na Not available.

a. Plantings in 1988 and 1989 (to June) only. Earlier data not available.



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**THE AGA KHAN RURAL SUPPORT PROGRAM**  
 (DECEMBER 1989)

**Program Areas:**  
 [Cross-hatched pattern] Ongoing from December 1982  
 [Diagonal lines pattern] Ongoing from April 1983  
 [Horizontal lines pattern] Ongoing from January 1985

- Village Organizations
- Paved Roads
- Selected Towns and Villages
- - - District Boundaries
- International Boundaries
- 28,250' Elevations in feet
- ~ Rivers

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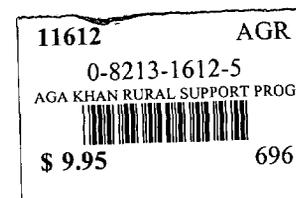
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