

USAID PAKISTAN

Agricultural Research Project Redesign

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Pakistan - Agricultural Research Project Redesign

Table of Contents

Page

PART I	- Summary and Recommendations	
	A. Recommendations	1
	B. Summary Project Description	1
	C. Summary Findings and Status of Negotiations	2
PART II	- Statement of the Problem and Proposed Response	
	A. Background	3
	B. Conclusions of 1976 Review Team	5
	C. Results of 1977 Review	5
	D. Proposed Redesign Strategy	7
PART III.	- Detailed Description	
	A. General	10
	B. Goals	10
	C. Project Purpose	12
	D. Goal Related Linkages	13
	E. Interim Project Purpose	14
	F. Purpose Related Linkages	15
	G. Primary Means of EOPS Verification	16
	H. Outputs	16
PART IV.	- Project Analysis	
	A. Technical Analysis	24
	B. Economic Analysis	26
	C. Social Soundness	28
	D. Environmental Analysis	30

PART V.	- Financial Analysis and Plan	
	A. General	31
	B. Technical Assistance	32
	C. Training	32
	D. Commodities	32
	E. Rupee Costs	33
	F. Financing Arrangements	33
	G. FAA Section 110(a)	34
PART VI.	- Implementation Arrangements	
	A. Review and Evaluation	38
	B. Implementation Plan	40

ANNEXES

- A. - Logical Framework
- B. - 1976 Review Team's Recommendations
- C. - Vehicle Source Waiver Request
- D. - Implementation Schedule
- E. - Detailed Financial Tables
- F. - Technical Details
- G. - Initial Environmental Examination

PART - I

SUMMARY AND RECOMMENDATIONS

A. Recommendations

Approval of the following:

1. Continuation of AID support for the Agricultural Research Project as redesigned until Dec. 31, 1979, provided that specified interim performance targets are met. The Terminal Disbursement Date (TDD) for the Loan and Final Contribution Date for relevant grants will be adjusted to allow disbursements until June 30, 1980.
2. Conditional approval of AID support for the Agricultural Research Project as redesigned until June 30, 1982. The AID Mission will make the final decision on this extension after a Project evaluation scheduled for July 1979.
3. Amendment of the Agricultural Research Loan Agreement to decrease Loan No. 391-T-156 by \$1.4 million, from \$7.6 million to \$6.2 million.
4. Amendment of the Agricultural Research Project Agreement No. 74-4 to (1) eliminate the requirement for the Government of Pakistan to contribute \$520,000 in foreign exchange to the Project and (2) decrease the AID Rupee contribution by Rs. 20 million from Rs. 73.5 million to Rs. 53.5 million. Assuming the Project is extended to June 30, 1982, an additional Mondale Grant of approximately Rs. 60 million will be requested in FY 1980.
5. Waiver of U.S. Source requirements for vehicle procurement to permit in-country acquisition of U.S. vehicles assembled in Pakistan (See Annex C for justification).
6. Provision for funding of IRRI-PAK contract for small agricultural machinery development under the Agricultural Research Project beginning in June, 1978: Total estimate foreign exchange cost for three years is \$268,200.

B. Summary Description

The redesign of the Agricultural Research Project was developed over a period of two years. The redesign addresses on a priority basis

the major problem which has adversely affected project implementation to date: an overemphasis on developing research programs without adequate attention to developing the institutional base for managing and supporting the research. Emphasis is being placed during the first two years of the redesigned project (Phase I) on development of an effective research organization for the Agricultural Research Council (ARC), establishing an appropriate research management system, and providing priority technical assistance to key institution development areas. Technical assistance for specific research programs will be provided only at the appropriate stage of program development with most of the assistance for research delayed until the institutional base has been sufficiently developed. Following an evaluation of Phase I, a three year extension of the Project will be considered for Phase II in order to implement an accelerated program of improved agricultural research.

C. Summary Findings and Status of Negotiations

The technical and social soundness of the Agricultural Research Project was established in the original Project Paper. Revisions proposed for the redesigned Project will further enhance technical and social feasibilities. Cost estimates have been updated and are considered reasonable and firm.

The principle recommendations in the redesign have been thoroughly discussed with the appropriate officials in the Government and complete accord on the philosophy and direction has been reached. Upon Washington approval of the redesign paper, the Project Agreement and Loan Agreement will be amended as required to incorporate the changes.

FART II

STATEMENT OF THE PROBLEM AND PROPOSED RESPONSE

A. Back ground

The slow rate of adoption of improved agricultural technology is one of the major constraints to increasing agriculture productivity and increasing rural incomes. This is particularly a problem among small and low-income farmers. Several reasons have been suggested for this slow rate of adoption including lack of water, fertilizer, credit, improved seed and other inputs, lack of price incentives and inadequate capacity for generation and transfer of technical know-how to farmers. Considerable progress has been made in improving the availability of inputs and improving price incentives; and efforts are being made to improve water delivery and its on-farm water management. 1/

Both 1968 and 1973 joint Pakistan-American teams which reviewed Agricultural Research in Pakistan, singled out applied research and its transfer to the extension services and to farmers as a major constraint to increasing productivity and income of all farmers. Yields per unit of land and water in Pakistan are very low compared with developed countries and many developing countries with similar growing conditions.

In response to these identified problems a proposal for support of Agricultural Research in Pakistan was approved and an agreement signed April 30, 1974. The project proposed to support the development of a series of coordinated national research programs each dealing with a specialized research area involving the cooperative efforts of all relevant provincial and national research institutions. The project also provided support for development of a national research center. This center was to provide support for agricultural research institutions by carrying out research in areas not being adequately covered elsewhere, and in cases where additional efforts could best be concentrated in a centralized facility under federal auspices. 2/

1/ See 1976 Water Management Project Paper, 1977 Agricultural Inputs Project Paper and 1977 Data Book for Pakistan prepared by USAID Mission to Pakistan.

2/ See 1974 Agricultural Research Project Paper for Pakistan.

Support from the U.S. included both loan and grant dollars for technical assistance and loan dollars for imported commodities and training outside Pakistan. It also included a grant of US-owned rupees to help finance local costs of new facilities, implementation of research programs and operational costs. The total estimated cost of the five year project as originally envisaged was approximately \$19.6 million, with \$9.6 million for foreign exchange requirements and about \$10 million equivalent required for local currency costs. Table 1 below shows the Rupee and foreign exchange break down for the project as originally estimated.

Table 1. Estimated Costs and Sources of Funds for Agricultural Research Project (1974 Estimate)

<u>Foreign Exchange Costs</u>	<u>Loan Funds</u>	<u>US Grants</u>	<u>GOP Grants</u>
Commodities	\$2.4 million	-	\$0.520 million
Technical Assistance	\$2.47 million	\$1.50million	-
<u>Training</u>	<u>\$2.73 million</u>	<u>-</u>	<u>-</u>
FX Totals:	<u>\$7.60 million</u>	<u>\$1.50million</u>	<u>\$0.520 million</u>
<u>Local Currency Costs</u>	<u>US Mondale Rupee Grant</u>	<u>GOP Grant</u>	<u>Total</u>
ARC revolving Fund	Rs. 61.8 million	Rs. 27 million	Rs. 88.8 million
Technical Assistance Support	Rs. 11.7 million	-	Rs. 11.7 million
Rs. Totals:	<u>Rs. 73.5 million</u>	<u>Rs. 27 million</u>	<u>Rs. 100.5 million</u>

Prior to initiation of the project, ARC had a relatively narrow prescribed function and very limited financial resources. The project provided for a substantial increase in resources to support coordinated programs and also to develop the Pakistan Agricultural Research Center to be located in Islamabad. Significant institutional demands were also placed on the fledgling Agricultural Research Council at an early date before adequate staffing could be made or internal administration procedures could be fully established. An acceptable senior research advisor could not be recruited for almost 3-1/2 years, and this inhibited ARC's early organizational efforts. Finally, several unanticipated problems continually interfered with timely project implementation. These included complications in removing squatters from land given to the Agricultural Research Council for the Pakistan Agricultural Research Center (PARC), changes in senior ARC leadership, budgeting constraints,

difficulties in making staff appointments, and the difficulties met by ARC in trying to provide logistical support for both households and offices of foreign advisors. These and other problems were described in detail by a joint Pakistan-American team which reviewed the project early in 1976.

B. Conclusions of 1976 Review Team

The 1974 Loan Agreement provided for a joint AID-Pakistan review of the Project 18 months after execution of the Agreement. The review team composed of AID/Washington, U.S. Consultant, Agricultural Research Council, and AID Mission members completed the review in April, 1976. The findings of the team are summarized below:

1. The basic concept of the project was sound.
2. The project should be continued for one additional year without substantial modifications to permit ARC to implement more fully provisions of the Agreement and to allow a more thorough evaluation of problems.
3. The program of work called for under the original Agreement was too ambitious. Several components were far behind schedule and needed special attention.
4. Lack of Key Staffing was a major constraint to progress.
5. ARC was unlikely to be able to utilize all remaining funds in the project over the remaining 3 years of the project, and a reassessment of priorities was needed over the next year to determine appropriate funding requirements.

Several specific recommendations were also made regarding organization and institutional development and the major activities under the project. A copy of these recommendations is contained in Annex B.

C. Results of 1977 Review

Vigorous efforts were made by ARC over the ensuing year to correct the deficiencies noted in the 1976 Joint Review Team Report, and significant results were achieved on many of the

Team's specific recommendations. Annex B details these results. Progress, however, has continued to be disappointing for many of the planned project outputs for the first three years of the Project. Only seven of 317 scheduled participants actually were selected and departed for training during the first three years; less than 10 person years of the originally estimated 47 person years of technical assistance has been provided; no commodities yet have been procured off shore, although orders for about \$257,000 have now been placed; only one-third of the expected number of coordinated programs have been developed (five of 15) and less than one-fourth of the expected construction has been implemented. Satisfactory progress was made during the last year in construction, and the target for that particular year was met. Table 2 at the end of this section summarizes the annual progress under the Project and shows planned outputs under the old and new designs.

Despite some encouraging signs that Project implementation was improving, the GOP and Mission agreed in late 1976 that chronic institutional problems were a major hindrance to a viable agricultural research program in Pakistan. It was consequently decided to undertake a comprehensive review of the problem which would culminate in an appropriate redesign of the Agricultural Research Project.

A major part of the comprehensive review and redesign effort was undertaken by a USDA research management consultant in May-June 1977. He concluded that major changes were needed in the overall administration and management of the agricultural research system in Pakistan in order to emphasize the development of an institutional base for research as opposed to the earlier emphasis on developing specific research programs. His recommendations included:

1. Install a research management system that permits ARC administrators to effectively manage research. This would include the development of a project system, an accounting system, an accomplishment reporting system, and an information gathering system.
2. Reorganize the organizational structure of ARC so that the internal relationships, job descriptions, committee structure all reflect a commitment to serve research.

3. Shift the emphasis in the training component to train greater numbers of students in Pakistan institutions at the MSc and PhD levels whenever practical and institute an overseas post-doctoral program. Also shift the emphasis in technical assistance from large numbers of resident advisors to long-term commitments of expatriate advisors that periodically visit Pakistan on a short-term basis when the program requires their presence.
4. Develop in-house research capability at PARC.
5. Relating construction priorities to program development and staff needs.

The proposed project redesign described in this paper is based on the above recommendations. Certain other changes are also recommended for more adequately directing the impact of the project to small farmers(See Part III E). The redesigned project is described in detail in Parts III, V, and VI. A proposed strategy for accomplishing the recommended changes follows immediately below.

D. Proposed Redesign Strategy

Conclusions and recommendations of both the 1976 and 1977 reviews indicated that the current conditions and needs in the agriculture sector are sufficiently similar to those defined at the initiation of the Project to justify continued support for the Project. However, due to problems discussed above there was also general agreement that the original targets for the Project were too ambitious within the originally projected five year implementation period. The design for subsequent project implementation has consequently been revised. The revision proposes separating the Project into two discrete phases: Phase I would concentrate on establishing a viable institutional base for agricultural research in Pakistan and is estimated to take two years ending June 1979; Phase II would build on the institutional base by developing an adequate program of coordinated agricultural research and would encompass three more years (1979-1982).

The establishment of an adequate institutional base, which is the interim purpose of Phase I in the redesigned Project, is expected to be accomplished by June 30, 1979. During July, 1979, an in-depth evaluation of Phase I will be conducted in order to determine whether to proceed to Phase II of the Project. A transition period (August 1979 - December 1979) is being designed into the Project during which contracting, procurement, and training activities may be terminated in the event it is decided not to proceed to Phase II. In order to accommodate the transition period the Terminal Disbursement Dates for the Loan and Grants will be extended to June 30, 1980 which will allow payments against obligations incurred up to December 31, 1979. Specific performance indicators have been collaboratively developed to measure progress during Phase I toward the interim purpose. These indicators are discussed in detail in Part VI.

Under the strategy proposed for the redesign, achievement of specific performance indicators described in Part VI will be closely monitored during Phase I. Satisfactory achievement of the indicators and evidence of the GOP's financial commitment and support for the organizational and operational changes called for in the redesign would justify continuing AID financial support for the Project during Phase I.

In summary, it is proposed to continue the Agricultural Research Project under the redesigned plan until December 31, 1979, and consider support until June 30, 1982. The Terminal Disbursement Date for the Loan will be extended to June 30, 1980, to allow an orderly transition/termination period and would be extended to December 31, 1982, if it is decided to proceed with Phase II. The final decision on the latter extension will be made by the Mission in the summer of 1979 and will be based on performance during the next 18 months. Funds not required for the redesigned Project will be reduced from the Project per the Recommendations Section in Part I of this paper.

TABLE 2 - Program Outputs; Originally Estimated, Actual for 1st Three Years and Proposed in Redesign.

Calendar Year - Program Year - Designation -	6/74-6/75 1	6/75-6/76 2	6/76-6/77 3	3 Year Total (1974-77)	6/77-6/78 4	6/78-6/79 5	5 Year Total (1974-79)	6/79-6/80 6	6/80-6/81 7	6/81-6/82 8	8 Year Total (1974-1982)
	Completed to Date				Phase I of Redesign			Phase II of Redesign			
Project Outputs -											
Training A1/ (No. of participants)	87	115	115	317	95	58	470	NA	NA	NA	NA
B2/	0	1	6	7	NA	NA	NA	NA	NA	NA	NA
C3/	NA 4/	NA	NA	7	25	70	102	80	60	15	257
Technical Assistance (Man Years)											
A	7.5	19.5	20	47	18	13	78	NA	NA	NA	NA
B	2	3.5	4.2	9.7	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	9.7	6	10.2	26	11	11	7.5	55.5
Commodities (\$ 000)											
A	680	760	690	2130	430	430	2990	NA	NA	NA	NA
B	0	0	0	0	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	0	400	700	1100	700	550	50	2400
Coordinated Programs (No. approved)											
A	Not scheduled			15	Not scheduled		15	NA	NA	NA	NA
B	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	5	1	2	8	3	2	2	15
PARC & ARCA Construction (Rs. 000)											
A	3740	2430	1935	8105	495	0	8600	NA	NA	NA	NA
B	0	1984	1548	3532	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	3532	2400	5760	10145	5720	4400	1350	23162

- 1/ A. Original PP schedule.
- 2/ B. Actual Expenditure/Output.
- 3/ C. Redesign Proposal.
- 4/ (NA = Not Applicable).

PART III

DETAILED DESCRIPTION

A. General

USAID and the GOP are proposing a three year conditional extension (from June 1979 to June 1982) of the Agricultural Research Project in order to successfully accomplish the Project's intended purpose: establishing a centrally coordinated nationwide research program for major agricultural commodities.

The principal reason for the proposed extension is underscored by the fact that the original implementation schedule (June 1974 to June 1979) was too short a period of time to successfully accomplished the Project's purpose. The ambitious schedule was especially difficult to follow because of the initial need to develop within ARC a strong institutional base for supporting research activities.

Accordingly, and as a result of the recommendations made from two earlier evaluations, the Project has been redesigned and restructured into two discrete complementary phases which take into account the need for institution building and an extension of the Project's life to compensate for time already lost as a result of earlier institutional constraints. The primary purpose of Phase I (from June/July 1977 to June 1979) will be to develop within ARC an effective institution capable of managing and administering its research program. Semi-annual reviews of specific performance indicators and a scheduled GOP/AID in-depth evaluation in July 1979 will determine whether this phase has been successful and justify proceeding to Phase II. Assuming Phase I succeeds in achieving the project's interim purpose, Phase II (July, 1979 to June, 1982) will proceed with an enhanced capability to fully develop a nationally coordinated program for agricultural research.

The logical framework outlining the redesign is contained in Annex A. A discussion of the goals, interim and final purposes, inputs, outputs, and linkages follows:

B. Program and Project Sector Goal/Sub-Goal

1. Program Goal

AID's over-all program goal in Pakistan is to improve

the social and economic welfare among the rural poor. AID is currently financing a cluster of projects (including this one) which are targeted to this broad goal.

2. Project Sector Goal

The broad program goal is linked to Pakistan's agricultural sector goal of increasing food production and incomes among small, low-income farmers, who are defined as having an average holding of 12 or less acres and a maximum average annual income of approximately \$ 100. This project aims to contribute to attainment of this sector goal (hereafter referred to as goal) by focusing on research as one of the necessary preconditions to increasing agricultural productivity. Attention to research appropriate to small farmers and extension of the results to them will lead to increased earnings for this target group.

Two critical assumptions governing the attainment of the project's goal are: (1) the GOP maintains policies favorable to agriculture and especially to small farmers and (2) small farmers will deem the use of improved technology (the results of research efforts) to be in their economic interests.

There is support for the former assumption since the GOP has consistently promulgated policies favorable to small farmers. Generous price supports have been given to key agricultural products and fertilizer prices have been consistently subsidized leading to a generally favorable relationship between agricultural inputs and crop market prices. Other indications of the GOP policy efforts aimed at the agricultural sector are evident in the number of rural projects being planned and underway, AID is supporting several of these including the On-Farm Water Management Project and the Rural Roads program which emphasizes the accelerated and improved construction of farm to market roads.

Before they will adopt new technology small farmers must perceive the new technology to be economically advantageous. The redesigned Project consequently places much emphasis on making the research relevant to small farmer's needs and on two-way communication between farmers and researchers (See "D" below).

An indication of goal achievement will in-part be measured by modest reductions in food imports of principle food grains, particularly wheat. Another indicator will be increases in real income among small farmers. Base-line data from the Barani project will be available for making comparisons.

3. Project Sub-Goal

As an interim step to goal achievement, farmer adoption of production increasing technologies is a necessary pre-condition. A critical assumption that will have an effect on the process of adoption is that research results will be disseminated to farmers. Support for this assumption is currently reflected by greater coordination between research and extension efforts than was previously the case. This has been made possible by increased efforts on the part of the Barani project staff to link extension efforts to those of research. It is expected that such coordination will continue into the future and with greater emphasis.

Sub-goal achievement will be reflected by increased numbers of farmers using new crop varieties and practicing new cropping patterns, for example, planting two crops per year instead of one. However, the magnitude at which adoption will take place is difficult to quantify. Through ARC surveys of farmers in surrounding and distant areas, it will be possible at a future date to estimate the numbers of farmers who are likely to adopt improved technologies.

C. Primary Project Purpose (for the next five years)

The purpose of the extended redesigned Project is the establishment of a functioning, centrally coordinated program of agricultural research for major agricultural commodities which effectively translates policy guidelines into specific research projects with actionable results.

End of Project Status (EOPS) will be achieved when the following conditions have been satisfied: (1) Approved manual of ARC function and organization being followed accurately; (2) ongoing programs established for 15 commodities in priority areas; (3) 45 research projects completed with results being extended to the field; (4) 15 multi-disciplinary research problem area committees meeting

at least annually from 1980; (5) A function PARC carrying out 24 research projects not being duplicated in provinces and training 30 people yearly; and (6) 45 per cent increase in number of trained scientists and administrators actively involved in national and regional program; (7) Money spent for Agricultural research increases by 100 per cent at the national level and 20 per cent at provincial levels.

ARC records, copies of their planning documents, and a final evaluation will determine whether the above conditions are being established. Monitoring on the part of the Project Implementation Committee (PIC) will further provide feedback on progress towards the purpose and will provide guidance on corrective action for Project implementation.

D. Goal Related Linkage and Assumptions

The linkage between the Project purpose, sub-goal, and goal is that if a centrally coordinated, nationwide research program that is able to translate policy guidelines into actionable results is effectively implemented, those research efforts will lead to results which, when adopted by enough farmers, will result in improved agricultural production, particularly among the target group.

Three principal activities have been structured into ARC/FARC activities which will support the linkages between the purpose and goal levels:

1. Regular farmer field days to be conducted by PARC. (These have been held in the past but on an infrequent basis).
2. Coordination of PARC/ARC activities with those of the Barani project as a link in the process of disseminating information to farmers as well as for obtaining feedback that will form the basis for further refinement and/or modification of research design.

3. The inclusion in each research project prior to its approval of an acceptable plan for transferring research results/technology to the farmers.

One critical assumption that will affect successful achievement of the Project's purpose is that provincial research institutions will be receptive to national co-ordination. There is support for this assumption in that ARC is providing small sums of money to provincial research institutions, and this has led to their increased cooperation with national efforts. These subsidies will be continued.

A second assumption is that adequate incentives for continuing agricultural research are provided by GOP. Lack of incentives to make research scientists more productive has been a problem recognized by ARC officials. Elements such as easier access to training, merit promotion systems, and intellectual rewards derived from scientists personally presenting their research results, all represent potential avenues that ARC will explore as possible incentives.

A third assumption is that the ARC concept will continue to receive GOP support. The Government's support for agricultural research in its recent planning documents indicates that its support is likely to continue into the foreseeable future.

E. Interim Project Purpose (during the next two years)

In order to insure that the Project purpose can be met, it is essential to establish an effective institutional base within ARC during the next two years. As other sections of this paper indicate, the present organizational and administrative systems need significant modifications. By the end of June 1979, the following conditions reflecting End of Interim Project Status (EIPS) is expected to have been established:

1. An effective national research management system characterized by discrete projects that can be approved, implemented, and evaluated.
2. All major ARC administrative and research responsibilities defined and assigned to qualified personnel.
3. National and cooperating provincial research facilities operational with essential equipment in place.
4. Research project committees formed under the supervision of qualified coordinators.

F. Purpose Related Linkages and Assumptions

The linkage between the interim and primary purpose is that the establishment of an effectively functioning organization and managerial system in ARC will measurably increase its capacity to conduct research.

ARC is aware of the need to improve the present system of management and administration. However, it is assumed that the proposed revisions will be acceptable to the ARC administrators and scientists. There is support for this assumption, as ARC has requested the present USDA research advisor to prepare and submit a "Manual of Function and Organization" for ARC, and ARC has accorded high priority to its completion and adoption. The substance of this manual has been discussed with relevant GOP authorities and scientists, and there is agreement in principle on the proposed changes to be detailed in the manual.

A second assumption critical to successful achievement of the interim purpose is that there will be sufficient numbers of qualified scientists available and willing to work for ARC. As in other developing countries, personnel management and promotions in Pakistan are centrally governed through an established civil service department which makes personnel decisions based on well defined procedures. These procedures often conflict with the need for qualified staff particularly as placement and promotions are based on seniority of service rather than on merit. This project will explore alternative ways for assuring the assignment of qualified staff to ARC. Further problems which may arise

from the departure of such staff for training purposes will be averted by close AID/GOP monitoring of training plans.

G. Primary Means of Verifying Progress Towards EOFS

1. Primary Purpose (Phase II) EOFS

If after the summer 1979 evaluation it is decided to proceed to Phase II, a final evaluation will be scheduled for early summer of 1982 to verify progress towards EOFS. However, prior to a final evaluation, there will be periodic monitoring on the part of the GOP and AID to provide guidance and take corrective action if needed. A Project Implementation Committee has been established for monitoring purposes and will meet on a semi-annual basis. It will serve the same monitoring role for Phase I as well (See Part VI).

2. Interim Purpose (Phase II) EIPS

The two primary means of verification are (1) the semi-annual joint AID/ARC review of specific performance indicators (detailed in Part VI B and Annex D) and (2) the joint GOP/AID evaluation scheduled for the summer of 1979. It is expected that AID/W will participate in this evaluation which, as earlier mentioned, will determine definitively whether or not to proceed with Phase II. In addition to these two methods, the USDA resident advisor's reports will also provide another source of verification.

H. Outputs Phase I

For comparative purposes, refer to Table 2 which contains: (1) originally planned and achieved outputs, (2) proposed revisions for Phase I, and (3) proposed targets for Phase II. The following represents only those outputs for Phase I:

1. Facilities Constructed and Equipped

The schedule and estimated cost of PARC construction found in Annex E, Table I reflects the magnitude of output expected to take place during the life of the Project. The priority buildings to be built with project funds are scheduled for completion in 1981 at a cost of 19.6 million rupees and \$270,000.

Targets established in the original estimate have not been met because of unforeseen events such as problems in securing the land, difficulties in securing an acceptable architect and problems in developing designs acceptable to ARC, GCF and AID. These problems have now been satisfactorily resolved.

Details of the PARC campus plan are found in the PARC Development Guide setting forth the priority building plan envisaged by AID and ARC. Included are office and support buildings scheduled for construction during the next five years which offer a maximization of flexibility. When the first phase is completed in 1981, facilities will be completed for farm operation, laboratories, communication, administration, training, essential staff housing, and support services.

The estimated total rupee cost of PARC has more than doubled (from Rs. 8.6 million to Rs. 23.1 million) as a result of the overly conservative estimates that were originally made, and ensuing high rate of inflation.

2. Agricultural Research Scientists and Administrators Trained

The training program has been under-utilized for many reasons. The three most important are: (a) the delay in appointment of appropriate coordinators and the concomitant delay in developing coordinated programs; (b) the difficulty of recruiting participants from other institutions (PARC is building its staff) causing in the process a reduction of staff at cooperating institutions; and (c) the difficulties of satisfying all the bureaucratic requirements for sending participants abroad.

In order to accelerate the training program and to assure that it will be relevant to the coordinated programs, emphasis will be given to training (M.Sc. and Ph.D.) in host country colleges and universities. Secondary emphasis will be given to overseas Ph.D. and practical programs which may not be undertaken effectively in Pakistan.

The appointment of both M.Sc. and Ph.D. candidates will be included in and contingent on the approval of a technical assistance plan. When appointed, they will be expected to perform half time research for ARC in an approved project

and also pursue studies leading to either a M.Sc. or Ph. D. Generally, M.Sc. degrees will be earned in Pakistani schools, and even the majority of Ph.D's if the course of study provides a broad base of excellence. In certain cases it may be necessary to train Ph.Ds in the USA. Preference for Pakistan schools is based on the desire to upgrade the agriculture research capabilities of the colleges and universities in Pakistan and the existence of adequate and functioning M.Sc. and Ph.D. programs in Pakistani institutions. It is expected that the Post Doctoral fellow will spend his time in the United States working with an appropriate research scientist. The intention of this arrangement is to provide the Ph.D. with new skills, broader perspective and international contacts in the agricultural research community.

The immediate need to upgrade ARC's staff while simultaneously improving the capability of the universities to do agricultural research are both addressed in this approach. Estimated enrollment, and costs of the training program are found in Annex E.

The redesign calls for a total of 32 participants trained by July 1978 and 257 trained by 1982 in contrast to a total of 470 trained in the original design. The reduction does not imply less need but rather a more realistic goal based on the capability to recruit and process the trainees.

However, if the project is terminated after Phase I, there will be approximately 60 candidates in training both in Pakistan and abroad. To avoid the possibility of prematurely terminating their training, alternative sources of rupee and dollar funds will be explored to finance these candidates' training programs to completion.

3. Procurement of Commodities

Procurement of off-shore commodities has been particularly difficult for ARC to accomplish. Initially there was no qualified ARC officer with sufficient experience to successfully prepare an IFB and negotiate a contract. In the past year, however, ARC has hired a procurement officer and with AID assistance he has prepared an IFB, received bids, chosen

a successful bidder and is continuing to complete arrangements for shipping from the successful bidder. During this process certain weaknesses became evident. They are:

- i. The need for a rational, systematic procurement procedure that is based on justifiable needs to minimize present tendencies towards excessive purchases of equipment and other commodity items. Such a system will further assure a more effective utilization of funds.
- ii. The need for the procurement officer in ARC to be sufficiently trained to be familiar with all aspects of off-shore procurement.
- iii. The need for a satisfactory method of identifying and inventorying equipment so that it is used for its intended purpose.

None of these components are well enough established in ARC to insure efficiency in the procurement procedure. It is therefore planned that the services of a professional procurement agent from USDA/ARS be obtained on TDY to insure that the procurement system meets the requirements of a proper system and the statutory requirements of AID. Services of an outside accounting firm and an ARS short-term consultant will also be arranged so that an adequate accounting system to provide research accounting and inventory control can be installed.

The original list of equipment needs is still considered valid; the reduction in commodities reflects both inflation and the fact that many items have already been procured with rupees (See Financial Analysis and Plan for additional comments).

4. Technical Assistance

The need for foreign technical assistance for the project is still valid, but the nature of this assistance has been re-structured in the redesign. With the introduction of the Project system, foreign advisors will be called upon to help carefully

define 'project' objectives in relation to program objectives. After new national coordinated programs are proposed and a coordinator is assigned, short-term foreign advisors will then be brought in to assist the coordinator(s) in developing research projects.

The technical assistance program to date has been under-utilized and of limited effectiveness for two principal reasons: (1) the delays in appointment of appropriate coordinators to work with foreign advisors; and (2) ARC's difficulties in providing logistical support to these advisors.

Progress has been made recently in the appointment of coordinators, and effective use of expatriate advisors can be expected to improve in the future. A new rationale for the use of technical assistance however is suggested with the basic notion being a continuing long-term (5-years) commitment on the part of each ARS or other short-term advisor to the development and nurturing of a particular research program in Pakistan. This long-term commitment may include several short (4-6 weeks) trips to Pakistan to aid in Project development and execution, and may include instructing and training an appropriate Pakistani scientists when he visits to U.S. It will involve continual contact, joint program development and the joint establishment of long-term program goals early in the relationship. The timetable, length of visits, time of visits, and content of visits must be worked out for each research area.

The scheduling of advisors for the July 77 to June 79 period and the expertise proposed has been modified from the original schedule to reflect current needs based on three years of experience. The plan calls for advisors in established programs which have high GOF priority. In addition a commodity procurement advisor and a fiscal management advisor are scheduled for institutional support in accord with the next two year effort. Refer to Annexes E and F for the redesigned TA schedule and cost breakdown. Included in the cost and unscheduled in the original plan is the proposed transfer on June 30, 1978 of the AID-TAB funded IRRI-PAK machinery project. The details

of this activity will not be available until the contract between IRRI and ARC is approved. The estimated cost by year are:

	<u>1978-79</u>	<u>1979-80</u>	<u>1980-81</u>
Dollars:	84,300	83,900	100,000
Rupees:	730,000	790,000	850,000

The dollar figures include salary and benefits of advisors, IRRI overhead (15%) and 10% inflation.

The rupee estimates include support funds plus operational funds which include 10 local staff.

5. Organization and Administration

The establishment of an effective research management system is a critical output of this project and its achievement will be an important criterion for the three year extension of the project.

Reorganization of ARC and distribution of authority and accountability is a prerequisite to the success of the program supported by the U.S. Loan and Grant. Of prime importance is decentralization of administrative authority for research to be efficiently planned, supported, executed, and evaluated; it will be necessary to go beyond "program" as presently conceived to a system of research projects each with clearly stated objectives and a clearly defined schedule of inputs and outputs. At present objectives for national programs are not clearly defined. Responsibility is not clearly related to specific personnel under the program concept. The currently conceived procedure of relying on technical committees (commodity committees of the prior PP) has not worked as desired. The members appear to lack commitment, interest and consequently contribute little to developing good research.

It is essential that the research program of ARC be translated into research projects in order to institute a Research Management System.

a. The Proposed Research Management System

The research management system in ARC has as its principal tool the approved research project. The research project is prepared by appropriate coordinators and principal investigators and contains a title, justification, previous work, objective, procedure, technology transfer plan, probable duration, financial support including commodities, personnel, and cooperating institutions.^{1/}

b. Increasing Institutional Effectiveness

Although the 1974 Project Paper identifies the necessity of adopting a personnel evaluation and promotion procedure that rewards excellence of performance, there is little evidence that such a procedure is on its way to becoming operational. The FP asserts:

"A pool of unassigned, vacant positions at each of the higher classifications will be maintained, thus a scientist deserving promotion will not have to await a vacancy at a higher level".

This pool has not been maintained. There is considerable difficulty in retaining good and promising scientists. An alert and aggressive person will move to a higher grade position, even though the move takes him out of his discipline or area of research expertise. This mobility contributes to program instability since the national manpower pool generally is not able to produce experienced replacements quickly.

^{1/} A comprehensive description of the proposed research management system is contained in John Naegele's "Project Redesign Report" which was developed under contract 12-17-07-5-1984 and which was completed in June, 1977. Copies of the report are available in AID/Washington.

In order to address this basic problem the following system will be examined for implementation under the redesigned project:

- a) Merit promotion
- b) Merit increment
- c) Merit evaluation
- d) Evaluation panels
- e) Concise job description

The detailed description of the operational and organizational procedures to be established are also found in Dr. Naegele's redesign report.

PART IV

PROJECT ANALYSES

A. Technical Analysis

1. Technical Considerations

A complete technical analysis was included in the original Project Paper. The redesigned project remains technically feasible in all respects. It now reflects realistic targets which can be achieved within the remaining period of time for the Project and for a possible Phase II extension of three years. The result is a project that can be implemented within the capabilities of the Agricultural Research Council at a reasonable cost.

2. Organization, Management and Administration

The recommendations that a research management system be instituted stems from the absence of such a functional system at ARC. The administration does not have the tools nor the systems to manage the magnitude of research underway. Even simple forms to achieve straightforward approvals of routine matters are lacking.

Organizational changes in ARC are recommended because the current structure does not easily accommodate the service of the research program. The proposed changes emphasise the importance of administrative service to the research program and more clearly defines the internal relationships between the professional administrators and scientists.

The organizational changes contemplated for PARC are a response to the lack of definition in the proposed program and method of operation in the research scheduled to be conducted at PARC.

3. Technical Assistance Changes

The redirection of the technical assistance program to utilize more short-term scientists is a reflection of the expense of maintaining resident advisors. Short intermittent visits geared

to program needs over a long period of time is less costly, better supports the Pakistan scientist by placing greater reliance on his judgement and independent action, and does not conflict with the domestic program needs of the USDA's Agriculture Research Service (ARS). In addition, greater interest from US scientists is likely to result since short-term visits do not interfere with their career ambitions.

4. Training

The shift in emphasis from overseas training to in-country training is designed to develop Pakistan's ability to do research relevant to its needs. Greater support of in-country research in the institutions of higher education in Pakistan will strengthen existing research capabilities. This shift in emphasis does not imply the termination of the overseas post doctorate training which is still needed to counter-balance the potential for in-breeding among host country institutions. Training is now designed for the above specific needs.

5. Commodity Procurement

The commodity program is expected to continue in its present form. The only revision required is a procurement system that is based on orderly, rationale, procedures. The present system is based on ad hoc requests without any links to program or project justifications. The design of such a system will be the primary responsibility of the proposed commodity procurement advisor.

6. Construction of PARC Facilities

The physical facilities contemplated are supportive of the basic research effort and now scheduled to coincide with future growth and expansion. Ample space for laboratories, offices, livestock and commodities will be provided.

The buildings are of simple construction and utilize local materials to the greatest extent possible. Pakistan has an indigenous engineering and construction capability to carry out this phase of the project without undue difficulty. Design and construction supervision will be carried out by the architectural/engineering

staffs of relevant government agencies or by consultants from the private sector. Construction contracts will be awarded to qualified contractors from the private sector based on public bidding.

7. Summary Conclusion

Assuming the Project is implemented according to the proposed recommendations set forth herein, this Project is considered to be technically sound and fully meets the requirements of FAA Section 611 (a).

B. Economic Analysis

An analysis of the economic costs and benefits of this project along traditional lines poses problems because the Project activities are not designed to produce a quantifiable stream of direct benefits over the life of the Project. Instead the outputs create new opportunities for increasing productivity and real income, which in turn depend upon additional investment to create direct quantifiable stream to consumers and society. Future economic returns depend on two critical assumptions: First, the research undertaken must result in identification of solutions to the major problems inhibiting increased agricultural productivity that are technically, socially and economically feasible. Second, these solutions must be implemented on a broad scale at the farm level before increased production attributable to research can materialize. The redesigned Project is intended to maximize the likelihood of these assumptions being met, particularly the latter one.

If the above assumptions or links between research and increased agricultural productivity are well established, the economic soundness of investing in agricultural research in Pakistan is evident. Improvements in technology, and therefore research, are necessary pre-conditions to long-term gains in agricultural productivity. There is a great deal of potential for increased crop yields in Pakistan. Yet there is a limit to how much of this potential can be realized simply by applying more fertilizer, water, and other inputs. In economic terms, the agricultural production frontier cannot be expanded without technical innovations which come from research. In addition, productivity gains that have been made in the past require continuous adaptive research to be maintained. To be sure, a country like Pakistan can benefit a great deal from basic research done abroad. But informed observers agree that a developing country needs its own research capability to adapt other research to its own particular needs. Such adaptive research,

which identifies minor modifications that make major innovations discovered elsewhere feasible for local adoption, has very high potential payoffs.

That the required assumptions can be met so that the return to investment in agricultural research will be very high has been definitively proven. A recent study of the benefits from wheat and rice research in two dozen countries showed annual returns to such investments in developing countries between 40 and 60 percent.* A major favorable attribute of agricultural research is that the distribution of the resulting additions to income can favor the members of the rural poor majority target group. The redesign of the project considered here points the activities to be undertaken more towards that target group.

Having accepted the need for agricultural research in Pakistan and the magnitude of potential economic benefits from a research body such as the Agricultural Research Council, it remains to assure that the Project is cost effective -- i. e., that it will help to minimize the cost of ARC research efforts and maximize the resulting returns.

In the past, a major shortcoming of ARC research was that it did not emphasize that practical implementation aspects of research solutions, and therefore many solutions developed turned out to be infeasible. In the redesign of the Project, all ARC research projects are required to include an implementation plan detailing how the results of the research can be implemented at the farm level, taking into account such things as farmer attitudes, agricultural inputs requirements, and credit requirements.

Another problem has been the lack of a common set of priorities for research. The result was that research funds were often wasted on extraneous projects that did not contribute directly to recognized national goals for the agricultural sector such as self-sufficiency in wheat and increased edible oil production. The redesigned Project emphasizes the need to carefully limit research activities to the goals defined in the Government's development plans. This has the advantage of providing a natural focus for research, and of assuring Government interest in and support for the Project.

A third way in which the Project will increase the efficiency of the ARC is to upgrade researchers' skills in defining problems. Many types of bottlenecks -- technical, cultural, economic -- may inhibit productivity increases for various crops. Researchers need to be

*R. E. Evenson, Y. Kisler, Agricultural Research and Productivity
New Haven: Yale University Press, 1975.

more adept at identifying the bottleneck which affords the best chance of a feasible solution.

The efficiency of the ARC has also suffered a great deal from overall mismanagement. Steps to be taken in the Project to streamline budgeting, project monitoring, the personnel system, the technical assistance and training programs, and commodity procurement should result in savings of time and money, as well as improved morale.

The above changes in Project design, taken together, should improve the efficiency of the entire research process, and maximize the possibility of high future economic returns to agricultural research in Pakistan.

C. Social Soundness

1. Profile of Target Beneficiaries

ARC is the national Agricultural Research coordinating agency for Pakistan and as such sets priority policy for all agriculture production except certain cash crops such as cotton. ARC, therefore, has a mandate to assist all farmers in Pakistan.

Even more so than the original Project, the redesigned Project will attempt to make available to the small farmers improved appropriate technology through research. For the most part, intended beneficiaries are those small farm units located in areas with poorer quality unirrigated lands, where family incomes range between \$400 and less than \$100 per year. Land holdings may vary among this target group, but in general terms the areas being cultivated by each farmer do not exceed 25 barani acres.

This target group which depends on cereal and pulses crops and feed and forage for live stock production, is gradually transforming small tracts of land from migratory uncontrolled grazing to crop production. It is estimated that 65 percent of the farms are under 12 acres in the Punjab and 84 percent in the NWFP. These provinces contain large barani tracts. Other intended beneficiaries are the farmers operating irrigated areas, the majority of which

operate with the same size constraints. In fact the procedures operative in the inheritance of land will produce more and more small farms.

2. Acceptability of Project

Acceptability of improved technology (resulting from research) by the small farmer is a real concern. The average target farmer views life in more basic terms and is conservative by nature. His acceptance of new technologies is slow for fear of disturbing a traditional system of cultivation that has guaranteed him predictable results over time.

In order to address the small farmers' natural reluctance to adopt new technology farmer field days are being organized under the auspices of ARC which will to introduce research results, identify problems and present possible solutions. Problem areas thus identified will be singled out for future research projects.

This careful targeting of research is a new feature of the Project. In each individual research activity to be undertaken, ARC will require a comprehensive plan for the application of the results of the research to the farmers. The plan will identify the target beneficiaries in more precise terms, it will describe how the new research will benefit them, and it will identify the delivery mechanism and communication strategies for the dissemination of the information. Traditional obstacles to effective acceptance of research results by the small farmer through the extension service will be addressed in each individual case.

3. Benefit Incidence

It is anticipated that the major portions of project benefits will accrue to the target group, i. e., small farmer/rural poor. The careful design of research projects and the targeting strategy outlined above will go a long way toward ensuring the appropriate benefit incidence.

As was the case with the original project, many of the very low income farm operator families, particularly in the barani areas, will benefit directly from technology directed at the crops they raise and from the introduction of new crops and rotations which will substantially increase yields and farm income.

Other benefits will accrue to others such as suppliers of production inputs and owners of trucking and transportation facilities. Additionally, employment will be generated off the farm as agricultural output increases, and on the farm as labor intensive agricultural projects such as livestock production increase.

The translation of improved institutional capability to do and manage research into national social benefits requires the coincidence of a multitude of enterlocking and interdependent events, many of which have little to do with ARC institutional capability. The anticipated direct outcome of the loan is to create the capability of developing appropriate and realistic technology targeted at the solution of real social problems. It is our assumption that realistic solutions to real problems will accrue positive social benefits.

D. Environmental Analysis

This project involves two basic components, the institutional development of ARC and the enhancement of agricultural research through controlled experimentation. The proposed research effort will be confined to small areas and will be carefully monitored.

AID environmental rules and regulations explicitly single out this type of project as the type that normally will not have a significant effect on the human environment. This project is no exception. Consequently, further environmental analysis (i. e., environmental assessment or impact statement) will not be required.

The Initial Environmental Examination (IEE) is shown in Annex G.

FART V

FINANCIAL ANALYSIS AND PLAN

A. General

Tables VI, V2, and V3, summarize the cost estimates and source of funds proposed for the redesigned Agricultural Research Project. Tables V2 and V3 also show the original expenditure plan and accrued expenditures to date for comparison purposes.

As can be seen from Table V2, accrued dollar expenditures during the first three years of the Project have been far below original expectations: only \$321,000 of expenditures have been accrued upto June, 1977 from loan/grant funds compared with planned expenditures of \$5,712,000. Most of the reasons for the shortfall in expenditures have been discussed in detail elsewhere in this paper. Briefly, the original expenditure plan was over-optimistic and assumed a much greater institutional absorptive capacity than actually existed during the first three years. Technical assistance advisors could not be recruited until counterparts were in place and research programs were developed, participants were not being sent abroad because a systematic procedure for selection and processing was not yet in place, commodities were not ordered until the last year because of difficulties in recruiting a full time procurement officer and establishing the procedures for procuring goods off-shore.

As a result of the reassessment of priorities and actual foreign exchange requirements of the Agricultural Research Project, it is estimated that only \$3.05 million will be needed for the first five years of the Project, and a total of \$7.62 million will be required for the Project if it is extended for three more years. Since \$9.1 million has already been approved for the Project (\$7.6 million loan; \$1.5 million grant) it is proposed to reduce through a loan amendment \$1.4 million in loan funds. It is also proposed to eliminate the original requirement for the Government to contribute \$520,000 to the Project. This money was originally proposed for procuring other than Code 941 source commodities, but expenditures for such commodities have not been necessary.

B. Technical Assistance

Under the redesigned Project, technical assistance has been reduced from \$3.9 million over a five year period to \$3.1 over an eight year period. At the end of Phase I (6/79) the cumulative accrued expenditures will be \$1.3 million. The bulk of the expenditures for technical assistance (\$1.9 million) will be incurred during Phase II when the program emphasis will be on implementing research projects.

During year five the TAB funded PAK-IRRI contract costs will be assumed under the Agricultural Research Project. The dollar costs for this contract are \$84,300 for year five, \$83,900 for year six and \$100,000 for year seven. Total dollar and rupee costs are reflected in Tables and also discussed in Part III.

Costs for technical assistance are based on \$5,000 foreign exchange costs plus Rs. 32,000 per man month for short-term assistance, and \$60,000 foreign exchange costs plus Rs. 250,000 per man year for long-term assistance.

C. Training

Foreign exchange costs for training have been reduced substantially because of the increased emphasis being placed on in-country training. Table V2 shows that total dollar costs for participants are estimated at \$1.4 million vs \$2.7 million under the original project. For the in country training, tuition costs of Rs. 200/month plus a modest stipend of Rs. 13,000/year will be partially financed by ARC with the U.S. Mondale Rupee Grant. Salaries of the participants will be paid by their institutions and are not shown in the Tables. Annex E contains a detailed costs breakdown for the training costs.

D. Commodities

Under the redesigned Project the estimate for commodity foreign exchange expenditures have been somewhat scaled-down (from \$2.99 million to \$2.4 million), because many of the items required to equip ARC, PARC, and the provincial research institutes have been readily available on the local market at commensurate or less cost than if procured abroad. Consequently, no commodities yet have been procured with foreign exchange although orders for \$257,000 worth of priority items have been placed. It is estimated

that items costing approximately \$600,000 have already been procured with rupees on the local market, and these costs are reflected in Tables V1 and V3 under research and operational costs.

There is still a need for approximately 40 vehicles by ARC, PARC, and the research institutes. A waiver has been requested so that these might be locally procured (See Annex C).

Other commodity requirements remain essentially as detailed in the 1974 Project Paper.

E. Rupee Costs

Costs to be financed under the Project include construction costs, technical assistance support costs, research and operational support costs, and in-country training costs. Under the redesigned plan, these costs are estimated to total Rs. 78.3 million at the end of Phase I (July 1979) and Rs. 180.8 million by the end of Phase II, assuming a three year extension of the Project. It thus appears that more than enough rupees will be available from the original Mondale Grant of Rs. 73.5 million and GOP contribution of Rs. 27 million to finance costs until June 30, 1979. In order to ensure that the GOP finances at least 25 per cent of the costs associated with Phase I the rupees not required for Phase I, or approximately Rs. 20 million, will be reduced from the Mondale Grant. This will result in a GOP contribution of Rs. 27 million and a U.S. contribution of approximately Rs. 51 million plus a U.S. FX contribution of \$3.0 million for Phase I. An additional U.S. grant of approximately Rs. 60 million and an additional GOP contribution of Rs. 42 million will be needed for Phase II.

F. Financing Arrangements

1. Foreign Exchange Costs

Foreign exchange costs will be financed through the direct letter of commitment procedure for technical assistance costs and bank letter of commitment/letter of credit procedures for commodity procurement costs. These arrangements have already been established for the USDA, CIMMYT and IRRRI as well as for the first commodity orders.

Per the 1974 Project Agreement, 40 per cent of the foreign exchange costs for technical assistance will be financed under development grants and 60 per cent under the loan. Thus, approximately \$1.3 million of grant funds and \$1.9 million of loan funds will be allocated for the foreign exchange technical assistance requirements.

2. Rupee Costs

Financial arrangements for rupee costs will remain substantially unchanged for the redesigned project: a revolving fund under ARC's control will be periodically replenished upon the submission of expenditure reports evidencing the proper use of the funds.

One of the major problems at ARC in the past has been the weak accounting system used by ARC to monitor its expenditures. Another problem has been the very complicated fund release procedure. Mission controller personnel have made recommendations to improve the system but to date existing financial records and procedures at ARC are still inadequate. In order to remedy the situation a financial consultant will be obtained as soon as possible to assist in establishing an adequate financial system for ARC.

G. FAA Section 110(a)

Under the redesigned Project, AID will have financed \$5.3 million in foreign exchange costs and Rs. 51 million for local costs by the end of year five (Phase I). The GOP contribution during the first five years will be approximately Rs. 27 million, or about 25 per cent of the estimated Project costs. Costs not figured in the Government's contribution, such as costs for land at PARC and for staff housing and offices, would easily increase the contribution to Rs. 40 million or about 35 per cent.

For the extended project, the total U.S. contribution will be increased to \$7.6 million plus Rs. 111.9 million, and the Government's contribution will be increased to Rs. 68.8 million, or more than 25 percent of total costs without considering costs for land.

FAA Section 110(a) is accordingly met for both Phases of the redesigned Project.

Table V-1 Summary Cost Estimates and Sources of Funds (000)

	AID		AID	Borrower/Grantee
	<u>Dollar Assistance</u>	<u>Grant</u>	<u>Rupee Assistance</u>	<u>Local Currency</u>
	<u>Loan</u>	<u>Grant</u>	<u>(Grant)</u>	<u>Contribution</u>
	\$	\$	Rs.	Rs.
1. Technical Assistance	1,873	1,248	13,699	5,067
2. Training	1,428	-	4,920	1,820
3. Commodities	2,400	-	-	-
4. Priority Research	-	-	57,080	34,811
5. Operation PARC	-	-	8,961	10,164
6. Construction of PARC	-	-	11,908	11,254
7. Off Campus Housing	-	-	5,487	2,029
8. Contingency	420	252	9,935	3,675
	<hr/>	<hr/>	<hr/>	<hr/>
Total:	6,121	1,500	111,990	68,820
	=====	=====	=====	=====

TABLE V2

Dollar Expenditures: Original Estimates, Actual to Date, Proposed Redesign
(000's)

Calendar Year -	7/74-6/75	7/75-6/76	7/76-6/77	3 Years	7/77-6/78	7/78-6/79	5 Years	7/79-6/80	7/80-6/81	7/81-6/82	8 Years
Program Year -	1	2	3	Total	4	5	Total	6	7	8	Total
Designation -	Completed to Date			1975-77	Phase I Redesign			Phase II Redesign			7/74-6/82
1. Technical Assistance											
A	375	975	1,000	2,350	900	650	3,900	NA	NA	NA	NA
B	50	89	143	282	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	282	350	650	1,282	689	705	445	3,121
2. Participants											
A	259	434	539	1,232	504	994	2,730	NA	NA	NA	NA
B	-	-	39	39	39	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	39	104	278	421	428	376	203	1,428
3. Commodities											
A	680	760	690	2,130	430	430	2,990	NA	NA	NA	NA
B	-	-	-	-	NA	NA	NA	NA	NA	NA	NA*
C	NA	NA	NA	-	400	700	1,100	700	550	50	2,400
4. Contingency 10%	-	-	-	-	85	165	250	186	166	70	672
TOTAL:											
A	1,314	2,169	2,229	5,712	1,834	2,074	9,620	NA	NA	NA	NA
B	50	89	182	321	NA	NA	NA	NA	NA	NA	NA
C <u>2/</u>	NA	NA	NA	321	939	1,793	3,053	2,003	1,797	768	7,621
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====

- 1. A = Original FP Schedule
- 2. B = Actual Expenditures
- 3. C = Redesign Proposal
- NA = Not applicable
- 1/ Applicable to Redesign proposal
- 2/ Includes Contingency

TABLE V3 Rupee Expenditures: Original Estimates, Actual to Date, Proposed Redesign
(Rs. 000's)

Calendar Year -	7/74-6/75	7/75-6/76	7/76-6/77	3 Years	7/77-6/78	7/78-6/79	5 Years	7/79-6/80	7/80-6/81	7/81-6/82	8 Years
Program Year -	1	2	3	Total	4	5	Total	6	7	8	Total
Designation	Completed Date			1975-77	Phase I Redesign		7/74-6/79	Phase II Redesign			7/74-6/82
1. Priority Research											
A	3,300	5,000	7,000	15,300	9,600	12,500	37,400	NA	NA	NA	NA
B	5,745	2,134	4,512	12,391	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	12,391	10,000	15,000	37,391	16,500	18,000	20,000	91,891
2. Operation PARC											
A	500	2,000	3,000	5,500	3,500	4,000	13,000	NA	NA	NA	NA
B	320	1,456	1,249	3,025	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	3,025	1,700	3,000	7,725	3,400	3,800	4,200	19,125
3. Training											
A	931	1,657	1,857	4,445	1,717	2,118	8,280	NA	NA	NA	NA
B	-	-	10	10	NA	NA	NA	NA	NA	NA	NA
C	-	-	NA	10	420	1,335	1,765	2,095	1,890	990	6,740
4. Technical Assistance Support											
A	1,130	2,920	3,000	7,050	2,700	1,950	11,700	NA	NA	NA	NA
B	574	520	1,422	2,516	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	2,516	1,704	3,590	7,810	4,123	4,186	2,647	18,766
5. Construction of PARC											
A	3,400	2,500	2,400	8,300	300	-	8,600	NA	NA	NA	NA
B	-	1,984	1,548	3,532	NA	NA	NA	NA	NA	NA	NA
C	-	NA	NA	3,532	2,400	5,760	11,692	5,720	4,400	1,350	23,162
6. Off. Campus Housing											
A	7,000	7,000	7,500	21,500	-	-	21,500	NA	NA	NA	NA
B	-	7,063	453	7,516	NA	NA	NA	NA	NA	NA	NA
C	-	NA	NA	7,516	-	-	7,516	-	-	-	7,516
7. Contingency											
A	-	-	-	-	1,622	2,821	4,443	3,105	3,143	2,919	13,610
Total===											
A	16,261	21,077	24,757	62,095	17,817	20,568	100,480	NA	NA	NA	NA
B	6,639	13,157	9,194	28,990	NA	NA	NA	NA	NA	NA	NA
C ^{1/}	NA	NA	NA	28,990	17,846	31,506	78,342	34,943	35,419	32,106	180,810
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====

1. A = Original PP Schedule NA = Not applicable
 2. B = Actual Expenditures 1/ = Includes Contingency
 3. C = Redesign Proposal

PART VI

IMPLEMENTATION ARRANGEMENTS

A. Review and Evaluation

1. Original Plan

The original Project Paper described two review procedures: an annual workshop and an annual evaluation by a panel.

The work-shop was designed to be commodity specific and was to be performed by the participating scientists of the individual coordinated programs. The progress of the technical programs and the technical and procedural problems were to be reported and sent to the ARC and to AID.

The evaluation panel, composed of the Director General and Directors of ARC, AID/W, International Research Community, and the AID Mission was to convene annually beginning 18 months after the loan agreement. Each evaluation report was to contain "go-no go" directives.

The first evaluation took place in the Spring of 1976. The report team concluded that the Project concept was sound, the objectives and implementation schedule too ambitious, noted some progress, and identified specific recommendations which are addressed in this redesign.

In addition to the above formal reviews ARC has submitted Quarterly Progress Reports to AID. These reports have been useful for monitoring purposes. A Project Implementation Committee (PIC) was also organized to monitor the early progress of the Project, but no pre-determined dates were established for review meetings.

2. Recommended Project Monitoring and Evaluation Plan

a. Implementation Monitoring

In order to more closely monitor progress under the redesigned Project, a systematic review process has been developed. Data collection will be incorporated in the implementation plan for the routine collection of data on

research results, inputs, outputs targets and other critical indicators (see Part VI and Annex "D" for a description of the indicators). Data will be summarized in the ARC quarterly reports, and with an analysis by the project manager, will be reviewed by the AID Agricultural Research Committee. At least twice annually the project status will be reviewed by the joint GOP-AID Project Implementation Committee (PIC).

These committees will consider recommendations for needed changes in project implementation and for modifications of performance indicators. The Agricultural Research Committee meetings will be scheduled two weeks after receipt of the ARC quarterly reports which are due one month after each quarter.

b. Project Evaluation

The scheduled annual evaluation will not be held in May 1978 as it would allow only six months from project redesign, which is not sufficient time to assess the results of the Project's re-direction. Planned implementation monitoring can provide adequate data for making any needed interim changes, and PIC meetings can be convened at any time if they are required.

A joint in-depth evaluation is scheduled for summer 1979 to determine whether to extend the program for an additional three years beyond the original June 1979 completion date in order to carry out Phase II activities. In the event the project is terminated, it is expected that an additional six month extension will be needed to permit an orderly close out of USDA contract services. Accordingly an extension of the TDD from December 31, 1979 to June 30, 1980 will be processed.

The evaluation will examine the progress toward the interim End of Project Status, the impact of the program on ARC capabilities to conduct research projects, and the functioning of the institutional structure and procedures including the commodity coordinated programs. The team will also analyse unplanned results and the continued relevance of the Project.

It is expected that the joint evaluation team will be composed of members from GOP, USAID, AID/W, USDA, and the international research community.

B. Implementation Plan

The implementation schedule found in Annex D graphically shows scheduled beginning dates and completion dates for discrete activities under broad project outputs. Select activities considered indicative of project progress have been extracted from this table and will be used as a basis for the semi-annual reviews described above.

June 1978

- 1) The concept of projectizing programs complete.
- 2) Project statements for Maize and Wheat programs near completion.
- 3) Development of Pakistan CRIS system underway.
- 4) Proformas and instrumental material for accomplishment reporting complete.
- 5) Accounting system of ARC audited.
- 6) T. A. fiscal management advisor on board establishing new accounting system.
- 7) A new ARC function manual prepared.
- 8) Commodity procurement advisor in country.
- 9) System of commodity procurement, established.
- 10) Define current duties at ARC with job descriptions.
- 11) ARC committees reorganized.
- 12) TA plans for future year prepared.
- 13) Participants training selection plan developed for in-country and abroad.
- 14) 25 participants in training.
- 15) Campus plan for PARC approved.

December 1978

- 1) Project statements for rice, oilseeds, and forage coordinated programs completed.
- 2) Training sessions with coordinators for CRIS system underway.
- 3) Initiate new accounting system for ARC and determine staff needs.
- 4) Allocate budgets to coordinators per new system.
- 5) Commodity disbursement authority delegated to coordinators.
- 6) Redefined staff duties in ARC approved and being implemented.
- 7) Five year TA program prepared for annual review.
- 8) Improved training plan approved and being implemented.
- 9) Construction at PARC underway according to schedule.

June 1979

- 1) Coordinated program approved for pest management and cropping systems.
- 2) Initiate project descriptions for CRIS system.
- 3) Annual accomplishment reports for all approved projects submitted.
- 4) New accounting system operational.
- 5) Commodity procurement, maintenance, and distribution underway according to schedule.
- 6) TA and Training schedules according to plan.
- 7) Satisfactory construction progress at PARC.

Specific Recommendations of 1976 Joint Review Team
for the Agricultural Research Project

A. Organization and Institutional Development

1. Top priority should be given to the appointment of a Director General with the qualifications necessary to provide strong leadership both as a manager and scientist to make ARC fully effective as an operating organization.
2. Arrangements should be completed for the appointment of a Research Advisor with necessary qualifications as a scientist and also experienced in both management and administration of a research entity.
3. The appointment of coordinators required for research projects already approved under the loan agreement program should proceed forthwith. These are also required as counterparts to the respective technical advisors concerned with the specific research programs.
4. Emphasis should be placed on developing effective organizational arrangements, including clear statements of responsibility of all organizational units and administrative officers and delegation of the necessary authority to fulfil these responsibilities.
5. The make-up of the ARC Executive Sub-committee is unwieldy in numbers and ineffective in action. The number of members should be reduced and Steering Committee formed to make it more efficient and effective. Also, the ARC secretariat should provide supporting services, including documentation and recommendations on all major items of business. The responsibilities and working relationships between ARC and the Executive Sub-committee needs critical analysis.

6. Measures should be initiated by ARC to improve communication and coordination of all agricultural research programs in Pakistan, including those in the Atomic Energy Commission, the Ministry of Commerce, Ministry of Fuel, Power and Natural Resources, and in various divisions of the Ministry of Food and Agriculture.

B. Activities Under the Loan Agreement

1. Training

The following steps are recommended to move the training program forward:

- a) Appointment of a full-time training officer in ARC.
- b) Carefully planned utilization of the full scope of training under the Loan Agreement with a view toward institution building, as well as direct support of the coordinated research programs.
- c) Establishment of systematic procedures for processing nominations for all categories of trainees. This includes assistance by OIT and USAID/Islamabad regarding training outside Pakistan.
- d) Conduct of a study on provincial attitudes and problems related to training for advanced degrees at AUL so as to improve the use of AUL as a training facility for agriculture research.
- e) Establishment of fellowship support for approved training programs within Pakistan as well as for trainees going abroad.

2. Commodity Procurement

The following measures are recommended to institutionalize and increase the efficiency of foreign exchange commodity procurement:

- a) Establishment within ARC of a procurement cell headed by a procurement officer responsible to the Director of Administrative Services, or the equivalent in the ARC organization.
- b) Arrangement for the services, on a temporary basis, of an experienced U.S. procurement officer to work with the ARC procurement officer in developing norms for writing specifications and establishing procurement procedures.
- c) Pending implementation of "a" and "b" above, greater participation by USAID/Islamabad in working with ARC to develop and process commodity procurement needs.

3. Technical Assistance

- a) That as soon as possible ARC, in consultation with AID and others, as appropriate, re-assess the need for expatriate technicians during the remaining period under the Project.
- b) That the assessment of need reflect the intent and ability of ARC to provide the counterpart staff and official logistic support to fully capitalize on the services of the technician.
- c) That ARC, AID and the other interested parties fully support LAPSA with the understanding that more direct involvement by them may be required while LAPSA becomes operational and can provide the anticipated support.

4. Agricultural Research Council Building and Housing

- a) Urgent attention should be given to construction of staff houses. A prompt, unequivocal decision is needed as to who will be responsible for the construction; the present uncertainty is further delaying the already seriously delayed implementation.
- b) All possible avenues should be explored to facilitate availability of temporary housing in Islamabad for key ARC personnel.
- c) Arrangements should be completed at the earliest possible date to consolidate ARC offices on a temporary basis, pending construction of the ARC administration building.
- d) While plans should move ahead expeditiously with the construction of the ARC administration building, care should be taken to avoid the temptation to include in it provisions for facilities that might more appropriately be located at PARC.

5. Pakistan Agricultural Research Center (PARC)

- a) Since so many actions hinge on it, GOF/ARC and AID should reach agreement on fulfilment of conditions for land acquisition under the Loan Agreement precedent to disbursement of funds for PARC. These conditions seem imminent and both parties should press for a prompt accord.
- b) It is imperative that key PARC staff be appointed promptly. Particular emphasis placed on the need for a capable Director who would have major responsibility for campus and farm development and operation.
- c) Master campus and farm plans are urgently needed as a prerequisite to construction of buildings, establishment of field boundaries, roads, irrigation and drainage

channels, etc. Renewed services are needed of the expatriate campus planning experts, and an expatriate technician is needed in research farm development.

d) Concomitant with PARC construction and farm planning, ad hoc arrangements should be made to enable ARC/PARC staff to meaningfully utilize existing PARC facilities to support national research programs.

e) Implementation of master campus and farm plans should be strictly phased on the basis of priority needs. Quite likely all of the facilities and activities of PARC envisaged to be constructed/operative by the end of the Loan Agreement period would not be realized. After one year from now, at the latest, a revised estimate should be available of funds for the remaining two years of the Project.

f) Constant surveillance is needed to avoid having PARC develop facilities and initiate activities that might more appropriately be carried out in one or more of the existing provincial institutions.

C. Research Program

1. National Administration and Implementation of Research

a) The responsibility of each research administrator should be clearly stated in writing. Authority to act and carry out programs should be fully delegated and responsibilities fixed. These positions should also be advanced to adequate grades to attract and retain highly capable research administrators and to bring their salaries to a par with comparable positions in the colleges and universities.

b) ARC should develop policies, strategies and procedures to effectively transfer funds to provincial

institutions in such a way as to effectively stimulate quality research in line with national priorities.

c) There should be annual reviews of performance of principal research administrators and periodic reviews of all scientific personnel with an accompanying procedure for informing each of the results and of suggestions for performance improvement.

d) A project system with annual reports and work plans and critical peer reviews should be implemented for all research funded by ARC.

2. Research in Agricultural Departments in the Provinces

a) An effective system of research projects should be initiated together with effective administrative procedures for review and implementation.

b) Policies and problems should be established for evaluating staff performance and basing advances in salary and rank primarily on merit.

c) Library holdings and library management should be improved so the world's best scientific literature is available for study.

d) Communications should be promoted among scientists through seminars, strengthened national scientific journals with stringent editorial policies, and more national and regional scientific meetings with moderately liberal attendance privileges.

3. Research in Agricultural Colleges and Universities

Research training in graduate studies programs needs strengthening through greater personal involvement of faculty as partners with students in research activities, through more applied field research and through strengthened standards for student research accomplishment.

D. Financial Management

1. That the loan/project be continued in its present form for one additional year, but that next year's evaluation seriously consider termination or modification of the project if adequate progress has not been made in the areas highlighted by this report. In the next review special attention be given to progress in training, commodity procurement, technical assistance, housing and building construction and the development of PARK.
2. That revised budgets be formulated by ARC in each of the major budget categories to reflect the work to be accomplished in each of the next three years.
3. That USAID devise a scheme to release some funds to the Revolving Fund based on ARC working with USAID to formulate an acceptable expenditure report which would then allow full replenishment of the Revolving Fund.
4. That ARC staff its administrative and financial positions and complete the transition from Karachi as soon as possible.
5. That ARC review and revise its financial management and accounting system so as to allow proper management of its funds and sufficient record-keeping of this use. Particular attention should be given to budgetary control so funds will be expended and financial records kept according to categories specified in the Loan Agreement.

Progress to date on the Specific Recommendations of the 1976 Review Team for the Agriculture Research Project

A. Organization and Institutional Development

1. A Director General is fully operative in ARC and is providing leadership.
2. A Research Advisor has been appointed and is on his resident assignment in Pakistan.
3. Coordinators for the maize, rice, forage, and wheat programs are functional. The oilseed program has a temporary coordinator pending appointment of a permanent incumbent. Difficulties have been experienced in recruitment because of the rules on hiring of the government of Pakistan.
4. The redesign effort emphasises the development of organizational effectiveness. Job descriptions have been prepared in a draft manuscript of a "Manual of Organization and Function". This Manual will serve as a reference operational manual. It has not been official adopted by ARC. Insufficient delegation of of responsibility and authority to fulfill the designated duties currently remains as a operational handicap.
5. The organizational structure is addressed in the redesign and appear in revised form in the Manual of Organization and function, but no substantive change has yet been authorized or implemented.
6. The proposed project system will address the communication and coordination issue.

B. Activities under the loan agreement

1. Training

The following steps have to be taken to move the training program forward:

- a) ARC currently has a part time training officer.
- b) Training is still underutilized, but the redesign visualizes major emphasis on utilization of Pakistan institutions, supporting them in the improvement of research capability by instituting projects which are a part of the coordinated programs and provide for support of graduate students, equipment, supplies and the opportunity to retain a focus on Pakistan problems.
- c) Systematic procedures are still frustrated by political considerations. This recommendation still remains valid.
- d) Still a valid consideration. It has been determined that AUL is willing to serve in this capacity and has the basic capability.
- e) The redesign visualizes such support and recommends the establishment of a post doctorate program that will supply such support.

2. Commodity Procurement

The following measures have to be taken to institutionalize and increase the efficiency of foreign exchange commodity procurement:

- a) A procurement cell and a procurement officer are operational.
- b) USAID help in procurement has been operational. A RFP has been initiated, bids received, contract let because of this help. The redesign anticipates further US help.

c) Done.

3. Technical Assistance

- a) The redesign reflects the fulfillment of this recommendation
- b) Logistical support for USDA technicians will now be provided by USAID alleviating the problem perceived by the study team. A prerequisite of engaging an expatriate advisor is that the counterpart be in place.
- c) Since USAID will now provide logistical support for USDA advisors the USDA will not provide active support even though it retains active interest. The international center's advisors will continue to receive support from LAPSA.

4. Agricultural Research Council Building and Housing

- a) Staff houses at G-8 are under construction and some completed. USAID has unequivocally decided to reimburse ARC for this construction. Plans for essential housing for staff at PARC are included in the master plan but construction has not started awaiting the choice of an architect. Housing for workers at PARC is underway and because of procedural voids and high cost poor quality construction AID has decided not to reimburse ARC for this construction. The whole issue of proper procedure has been thoroughly reviewed and ARC is now aware of the appropriate procedure required to move with alacrity. The search for, and approval of, an architect is underway.
- b) The housing market in Islamabad is very tight. Houses are large and expensive, and often not available. The government housing allowance is clearly inadequate to solve the problem of staff housing. The DG still has no house and his family remains in Karachi. The problem is beyond the ability of ARC to solve and must be dealt with higher in the government complex.

- c) Significant consolidation has occurred. Virtually all of ARC is now housed in two adjacent buildings.
- d) Temptation has been defeated. Not only has the ARC administration building been located at PARC, but the PARC development guide (in press) has clearly indicated what functions will be in the building. However the building plans are subject to further consideration so the functions of the building are subject to further modification depending on what other buildings will be built.

5. Pakistan Agricultural Research Center (PARC)

- a) Accord was reached - land was acquired and funds were disbursed.
- b) A Director was picked and placed, but he was subsequently removed due to problems at PARC. ~~xxxxx~~ He retains the title Director but does no "directing". This anomaly plus other personnel anomalies constitute a major problem in PARC effectiveness.
- c) A campus planner has been engaged and under his influence a PARC development guide has been prepared and is now in press. A research farm development technician is planned for the future.
- d) During the kharif all the coordinators had experimental plots at PARC. A total of about 30 acres of experimental plots were planted and a very successful farmers field day was held. During the rabbi over 70 acres of experimental plots were planted by the coordinators.
- e) The PARC Development Guide visualizes phased construction and revises the financial needs. The redesign document estimates resource availability.
- f) The administrative methodology that will be used at PARC will avoid this problem.

1. National Administration and Implementation of Research

- a) The responsibilities of all personnel have been written in a Manual of Organization and Function, but delegation of authority is still a problem. Salaries are also a problem since they are fixed by GOP which is currently on an austerity program.
- b) The proposed research management scheme using projects as a functional tool for management will help alleviate this problem which still exists because the funds are in many cases transferred to the provincial governments.
- c) The need still exists and has been written into the proposed redesign. A procedure for evaluation along with proformas have been included in the Manual of Organization and Function.
- d) Plans for a project system are included in the redesign.

2. Research in Agricultural Departments in the Provinces

- a) When a project system is initiated in ARC it is expected that the provincial cooperators will be required to organize their research accordingly.
- b) A merit promotion and salary increase system along with peer evaluation is described in the redesign, but its institution awaits the establishment of the project system.
- c) Arrangements have been made to incorporate the Pakistan project descriptive information in the US CRIS system thus making available current research information to Pak scientists. Arrangements have also been made to enroll Pakistan scientist in the USDA/ARS Current Literature Awareness Program.
- d) A good recommendation which will be enthusiastically pursued.

3. Research in Agricultural Colleges and Universities

It is anticipated that the project system will permit us to achieve the spirit of the above recommendation. The redesigned training program speaks directly to this issue.

D. Financial Management

1. The current redesign effort is in response to this recommendation.
2. Budget revisions are constantly underway. A new complication has recently been introduced however in that the ARC shifted budget control of the coordinated programs to the GOF thus reducing their flexibility. A compromise position between the revolving fund and GOF is under study.
3. Accounting is a particularly difficult problem. There is no adequate research accounting system that allows fiscal control of research projects. It has been recommended to ARC and USAID that an outside accounting firm be hired to do an audit and establish with the help of appropriate advisors a bona fide research accounting system. The notion of an audit is acceptable to USAID. It frightens ARC. It is under study.
4. There are sufficient bodies in the financial section. What they lack is appropriate skills and procedures. The transition from Karachi is largely complete.
5. Financial management remains as a significant deterrent to good research management. If the recommendations contained in the Naegele TDY report and embodied in this redesign are accepted by ARC some progress can be made in this area.

REQUEST FOR VEHICLE SOURCE WAIVER

Problem

A commodity source waiver is needed for the procurement of approximately 40 vehicles from Code 935 by the Agriculture Research Council (ARC) for use in the Ag Research Project. Total value of the procurement is not to exceed \$ 350, 000.

Discussion

1. It has become clear that the extreme reluctance of ARC to use the loan to procure vehicles is the U.S. source restriction. Yet lack of vehicles has been a very burdensome impediment to project implementation. USDA advisors particularly have been troubled by lack of vehicles and IRRI advisors have raised the same problem.

2. ARC justifies the need for locally available vehicles thusly:

(a) Pakistan is a right-hand drive country. Use of left-hand drive is possible, but extremely hazardous. On GOP's wage scale, ARC's drivers need all the help they can get, especially when they are not used to left-hand drive.

(b) There is a present and projected lack of adequate service facilities and supply of spare parts for vehicles procured in U.S. ARC will supply almost all of these vehicles to various research facilities all over Pakistan and they will be used interchangeably with those institutions other vehicles. Practically every facility requesting vehicles has urged ARC to procure locally available vehicles to avoid maintenance and spare parts problems. Even ARC itself, much less the smaller institutes, does not have its own maintenance facilities and uses available garages and service stations so that procuring inventory of spare parts is not feasible.

3. ARC has suggested it plans to purchase AMC vehicles assembled locally which were discussed in Islamabad 7855 (attached). ARC would anticipate placing an order for about 19 Pick Ups, 3 Wagoneers and 18 Jeeps.

Recommendation

It is proposed that a vehicle source waiver be approved for 40 vehicles not to exceed \$ 350,000. Given the combination of right-hand drive and the spare parts/maintenance situation. The AID Mission regards waiver as completely legitimate and valid.

AMEMBASSY ISLAMABAD

N/A

Procurement of Vehicles for AID Projects

SECSTATE WASHDC

UNCLASSIFIED ISLAMABAD 7855

AIDAC

Reference: (A) Islamabad 5180

(B) State 128548

1. Ref (A) requested a procurement source waiver for vehicles for Basic Health Services and ref (B) expressed reluctance to provide a waiver, requesting the Mission to pursue other alternatives.

2. One alternative Mission is considering is to allow GOP to use loan and/or grant dollars to purchase AMC vehicles delivered to Pakistan in knocked-down state and assembled here. A Pakistani Company, Naya Daur Motors imports from the United States AMC Jeeps, station wagons and pick-up, trucks in knocked-down condition. It assembles the vehicles here using some parts manufactured in Pakistan - about 30 percent for the jeeps and about 5 percent for the station wagons and pick-ups.

3. We note that HBI, Supp. B. 4C2 provides that Qte a motor vehicle is manufactured in the United States if.. it is shipped from the United States in knocked-down condition for assembly in.... the cooperating country unqte. It also provides that 50 percent componentry rules applies to motor vehicles.

4. We assume that this allows procurement of the AMC vehicles described above where some parts are manufactured locally.

5. We also assume that if these vehicles do qualify as US manufactured, since this Company is the only source of US vehicles in Pakistan and since it is the only source with locally available spare parts and with an in-country maintenance capability that proprietary, negotiated procurement is acceptable.

6. If our assumptions are correct, we anticipate pursuing this option for most projects needing vehicles. Ag Research Project, particularly, is in dire need of vehicles, yet AR&C has been extremely reluctant to purchase off-shore due to the left-hand drive and spare parts/maintenance problems.

7. Would appreciate favorable decision.

HUMMEL

Implementation Schedule and Project Critical Indicators

	2 Year												3 Additional Year												Critical Indicator Ranking C-1 ^{1/2}
	Year 77			78			79			80			81			82									
	Month	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12					
1. Establish a Research Management System at ARC.																									
A) The Program/Project Concept.																						C			
1. Develop concept, proformas.																									
2. Establish Project Technical Committees.																									
3. Conduct Training Programs.																									
4. Regular Committee Meetings.																									
5. Quarterly Reviews.																									
E) Projectizing Coordinated Programs.																						C			
1. Develop concept, proformas, etc.																									
2. Conduct Training.																									
3. Prepare Project Statements for Maize & Wheat programs.																									
a) For rice, oilseeds, forage.																									
b) For pest mgt. cropping system, soil & irrigation.																									
c) For goat, buffalo, dairy, socio-economic.																									
d) For deciduous fruit & vegetables.																									
4. Review & critique at committee meetings.																									
C) Establish CRIS System.																						I			
1. Develop Pakistan CRIS forms.																									
2. Conduct training sessions with coordinators and documentation center.																									
3. Describe projects.																									
4. Data processing training & implementation.																									

^{1/2} / C= Critical to success
I= Important

	2 Year												3 Additional Year												Critical Indicator Ranking C-I ^{1/}
	77			78			79			80			81			82									
	Month	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12					
H) Commodity Procurement & Maintenance.																									C
1. Establish review procedures for commodity requests for project support.	_____																								
2. Establish procedures for equipment maintenance and accountability.	_____																								
3. Delegate disbursement authority to coordinators within approved budget allocation.	_____																								
2. Establish New ARC Organization.																									C
A) Internal Disciplinary and Functional Relationships.																									C
1. Define current system.	_____																								
2. Redesign system.	_____																								
3. Approval.	_____																								
4. Implement.	_____																								
5. Monitor by Interview.	_____ X X X X X X X X																								
B) Reorganize Duties.																									C
1. Define current duties & redefine with job descriptions.	_____																								
2. Approval.	_____																								
3. Implementation.	_____																								
4. Monitor by interview.	_____																								
C) Reorganize Committees.																									H
1. Define current committees	_____																								
2. Redesign.	_____																								
3. Approval and implementation.	_____																								
4. Monitor by attendance.	_____ X X X X X X X X																								
D) Establish Merit System.																									H
1. Define & describe system.	_____																								
2. Approval.	_____																								

^{1/} C= Critical to success
I= Important

	2 Year												3 Additional Year												Critical Indicator Ranking C-I ^{1/}
	Year 77			78			79			80			81			82									
	Month	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12					
3. Establish Peer Evaluation Panel.																									
4. Establish budget.																									
5. Identify principal investigators.																									
6. Implement annual accomplishment report and evaluation.																									
7. Repeat annually.																									
3. Improve Personnel and Technical Manpower.																									
A) Technical Assistance.																						C			
1. Develop concepts, tentative plans, schedule, and forms.																									
2. Schedule first year and approve.																									
3. Prepare TA plans from project requests.																									
4. Approval by ARC.																									
5. Schedule and contract contractors.																									
6. Prepare 5-year program and review annually.																									
B) Training Program.																						C			
1. Develop tentative plan & schedule.																									
2. Develop opportunity and selection procedure plan with local institutions.																									
3. Develop training programs & committees.																									
4. Approval.																									
5. Implement.																									
4. Develop PARC Research Capability.																									
A) Systems Design.																						H			

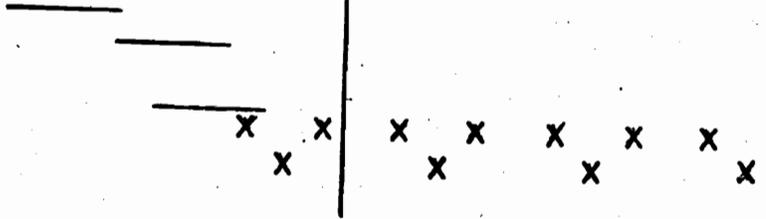
^{1/} C= Critical to success
I= Important

Year Month	2 Year												3 Addition Year											
	77			78			79			80			81			82								
	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12					

Critical Indicator
Ranking: C-I ^{1/}

D) Develop Library & Documentation Center.

1. Identify current capability.
2. Develop appropriate system.
3. Determine commodity and training needs.
4. Monitor.
5. Review annually.



I

^{1/}C= Critical to success
I= Important

Table I - Future Building Priorities & Estimated Cost (000 Rs. + \$)

Component	1977-78	1978-79	1979-80	1980-81	1981-82
1. 3 Multi-purpose Farm Facility (A, B, C) (20,000 S. Ft.)	1,800	-	-	-	-
2. 4 Farm sheds (complete)	100	-	-	-	-
3. 3 Lab. Blocks (6,000 S. Ft. each)	-	1,200	1,200	-	1,200
4. Communications, Library (6,300 S. Ft.)	-	1,260	-	-	-
5. ARC Secretariat (24,000 S. Ft.)	-	1,600	1,600	1,600	-
6. Training Center Hostel, Cafeteria (10,000 Sq. Ft.)	-	-	-	2,000	-
7. 11 Staff Houses	-	-	1,150	-	-
8. Head house & greenhouses	-	-	320	-	-
9. Site Development Services, etc.	100	500	650	100	-
10. Architect fees	200	700	300	300	50
11. Contingencies	200	500	500	400	100
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Rupee cost:	2,400	5,760	5,720	4,400	1,350
Dollar costs for air-conditioning and special equipment:	20	100	100	50	-
Total: Rs.	19,630				
Total: \$	270				

Annex E

Table II - Training Cost^{1/} (in 1,000 \$ + Rs.)

Level	Year of Loan				
	4	5	6	7	8
Practical (A)	Rs. 105	225	300	300	75
	\$ 49	105	140	140	35
M.Sc. (P)	Rs. 120	570	900	900	450
	\$ 3.2	15.2	24	24	12
Ph. D. (F)	Rs. 75	300	535	450	225
	\$ 2	8	14	12	6
Ph. D. (A)	Rs. 120	120	120	-	-
	\$ 50	100	150	100	50
Post Doc. (A)	Rs. -	120	240	240	240
	\$ -	50	100	100	100
Total:	Rs. 420	1,335	2,095	1,890	990
	\$ 104.2	278.2	428	376	203
Grand total:	<u>Year 4 and 5</u>		<u>Years 4 to 8</u>		
	Rs. 1,775		6,730		
	\$ 382.4		1,389.4		

<u>1/</u> Calculations of cost: Practical	Rs. 15,000/person/year \$ 7,000/person
M.Sc., Ph. D. (P)	Rs. 15,000/person/year \$ 400/person/year
Ph. D. (A) + Post Doc.	Rs. 24,000/person/training period \$ 10,000/person/year

Assume practical and Post Doc. is one year or less - M.Sc. is two years and Ph. D. /F+A are three years.

Costs are calculated on number of persons in training, not the number of starts.

Table III - Proposed Technical Assistance Costs^{1/} USDA-IRRI-CIMMYT

		Year 4	5	6	7	8
Long-term	Man years	4.0	5.66	5	5	1.5
	\$ Rs.	240 1,000	365	324	340	90
Short-term	MM	22	53	73	73	71
	\$ Rs.	110 704	265 1,695	365 2,336	365 2,336	355 2,272
Total:	\$	350	630	689	705	445
	Rs.	1,704	3,590	4,123	4,186	2,647

^{1/} Costs calculation:

Short Term (ST)

\$5,000/MM
Rs. 32,000/MM

Long Term(LT)

\$60,000/year
Rs. 250,000/year

Table IV - Expenditures for Coordinated Research
Programs to 30th June 1977 (Rs. x 1,000)

<u>Program</u>	<u>Expenditure</u>
1. <u>Wheat</u>	
Punjab	996
Sind	644
Baluchistan	320
N. W. F. P.	497
ARC/FARC	763
2. <u>Rice</u>	
Punjab	593
Sind	638
Baluchistan	-
N. W. F. P.	253
ARC/FARC	362
3. <u>Maize Sorgham</u>	
Punjab	1,171
Sind	580
Baluchistan	225
N. W. F. P.	834
ARC/FARC	392
4. <u>Fodder & Forage</u>	
Punjab	814
Sind	445
Baluchistan	361
N. W. F. P.	365
ARC/PARC	1,551
5. <u>Oil Seed</u>	
Punjab	152
Sind	158
Baluchistan	102
N. W. F. P.	153
ARC/PARC	14

Annex F

Table I - Proposed Technical Assistance for ARC, both Long-term (L. T.) and Short-term (S. T.) July 1977 to June 79

<u>Subject Area</u>	MM		<u>Total MM^{7/}</u>	<u>Starting Date</u>
	<u>L. T.</u>	<u>S. T.</u>		
Senior Research Advisor	22		22	8-77
Livestock Mgt.	16		16	2-78
Oilseeds	16	10	26	2-78
Production Systems	7		7	11-78
Production Economics	24 ^{1/}		-	-
Agricultural Engineer	12 ^{2/}		12	7-78
Commodity Procurement		4	4	2-78
Fiscal Mgt.		7	7	2-78
Forage		12	12	4-78
Pulses		4	4	5-78
Maize, Sorghum, Millet	8 ^{3/}	3	11	4-78
Wheat, Triticale, Barley	21 ^{4/}		21	-
Potato	24 ^{5/}		-	-
Rice	21 ^{6/}		21	8-78
Research Station Advisor		4	4	3-78
Extension Methods		4	4	7-78
Miscellaneous		24	<u>24</u>	-
			195	

- 1/ Ford Foundation to 6-79
 2/ AID/TAB + IRRI funding to 6/78
 3/ CIMMYT to 2-78
 4/ CIMMYT to 6-79
 5/ CIP to 6-79
 6/ IRRI to 2-79
 7/ Other than 1+5 above

Annex F

Table II - Proposed Technical Assistance for ARC both Long-term (LT) and Short Term (ST) July 79 to June 82

<u>Subject Area</u>	MM		<u>TCTAL (MM)</u> <u>3 year</u>
	<u>LT.</u>	<u>ST.</u>	
Senior Research Advisor	x		37
Livestock Management	x		30
Oilseeds	x	x	49(10)
Production systems	x		30
Agricultural Engineer	x		24
Production Economics		x	5
Dairy		x	8
Fiscal Management		x	3
Fisheries		x	3
Forage (2-3 in different areas)		x	18
Fruits		x	8
Human Nutrition		x	2
Livestock Health		x	8
Livestock Nutrition		x	8
Livestock Physiology		x	3
Wheat - Triticale, Barley		x	8
Pulses		x	8
Potatoes		x	6
Rice	x	x	12
Sorghum, Millet		x	5
Sugar Crops		x	9
Research Station Advisor		x	4
Extension Methods		x	8
Miscellaneous			36
	Total:		<u>350</u>

Annex F

TABLE III
PROPOSED TRAINING STARTS SCHEDULE

Level of training 1/	Year of Loan					Total
	4	5	6	7	8 ^{2/}	
Practical (A)	7	15	20	20	5	67
M. Sc. (F)	8	30	30	30	-	98
Ph. D (F)	5	15	15	-	-	35
Ph. D (A)	5	5	5	-	-	15
Post Doc. (A)	-	5	10	10	10	35
Total:	25	70	80	60	15	250

1/ A = Abroad (U. S. or 3rd country)
B = Pakistan

2/ All training completed by June 1982 to accommodate terminal disbursement date of December 31, 1982.

FINAL ENVIRONMENTAL EXAMINATION

Project Location: Pakistan

Project Title: Agricultural Research (Redesign)

Funding: FY 75 Loan: \$ 7.6 million.
Grant: \$ 1.5 million.
FY 78 : No additional Funding.

Life of Project: Original: 5 years (of which 3 years have elapsed)
Redesign: 8 years total (5 original years plus
3 additional years).

IEE Prepared by:

Hasan A. Hasan 11/28/77
Hasan A. Hasan Date
DAD/CDE

Environmental Action Recommends: Section 216.2(b) of AID Environmental Rules and Regulations (Regulation 16) specifically single out research projects as those that normally would not have a significant effect on the human environment. The following examination indicates that this project is no exception. A Negative Determination is therefore recommended.

Concurrence:

R. M. Cashin
Richard M. Cashin
Mission Director

11.28.77
Date

Assistant Administrator for Asia Decision:

Approved _____

Disapproved _____

Date _____

Description of Project

This project was originally authorized in 1974, and had as its purpose the enhancement of the agricultural research capability through the strengthening of the Agricultural Research Council (ARC) of Pakistan. This purpose was to have been achieved through training, technical assistance (to improve the technical capability and administrative procedures), procurement of related commodities and the renovation and expansion of the physical plant of ARC.

The proposed redesign was carefully developed over a two year period and incorporates the recommendations of two in-depth evaluations of the original project performance thus far. In essence, the redesign emphasizes the strengthening of the institutional base of ARC and the scaling down of the original output targets of the project to more achievable proportions.

Identification and Evaluation of Environmental Impacts

As the attached impact evaluation schedule indicates, this project does not have a foreseeable significant effect on the human environment. Direct impacts, resulting from the projects, including the minor construction activity, and secondary impacts, resulting from the dissemination of research findings to small farmers, are predictably insignificant. Even tertiary impacts which may result from the application of the new technology by the small farmer will not be significant. This is true because research projects will be designed to be in harmony with what small farmers now do, and the resulting changes in small farmer actions will be limited in scope.

In sum, this is one of the few projects where one can predict with confidence that the environmental effects of activities carried out under the project will be minimal, if any at all.

Recommendation for Environmental Action

Based on the above discussion, and in accordance with AID's environmental rules and regulations this project clearly merits a Negative Determination. It is therefore recommended that no further environmental analysis be carried out for this project (i. e. environmental assessment or impact statement) and that the threshold decision indicate a negative determination.

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact
Identification and
Evaluation^{2/}

Impact Areas and Sub-areas ^{1/}

A. LAND USE

1. Changing the character of the land through:

- a. Increasing the population _____ N
- b. Extracting natural resources _____ N
- c. Land clearing _____ N
- d. Changing soil character _____ N

2. Alternating natural defenses _____ N

3. Foreclosing important uses _____ N

4. Jeopardizing man or his works _____ N

5. Other factors

_____ N

B. WATER QUALITY

1. Physical state of water _____ N

2. Chemical and biological states _____ N

3. Ecological balance _____ N

4. Other factors

_____ N

^{1/} See Explanatory Notes for this form.

^{2/} Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

- 1. Air additives _____ N
- 2. Air pollution _____ N
- 3. Noise pollution _____ N
- 4. Other factors
_____ N
_____ N

D. NATURAL RESOURCES

- 1. Diversion, altered use of water _____ N
- 2. Irrevocable, inefficient commitments _____ N
- 3. Other factors
_____ N
_____ N

E. CULTURAL

- 1. Altering physical symbols _____ N
- 2. Dilution of cultural traditions _____ N
- 3. Other factors
_____ N
_____ N

F. SOCIOECONOMIC

- 1. Changes in economic/employment patterns _____ N
- 2. Changes in population _____ N
- 3. Changes in cultural patterns _____ N
- 4. Other factors
_____ N
_____ N

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

- | | |
|-------------------------------------------|---|
| 1. Changing a natural environmental _____ | N |
| 2. Eliminating an ecosystem element _____ | N |
| 3. Other factors | |
| _____ | N |
| _____ | N |

H. GENERAL

- | | |
|---------------------------------|---|
| 1. International impacts _____ | N |
| 2. Controversial impacts _____ | N |
| 3. Larger program impacts _____ | N |
| 4. Other factors | |
| _____ | N |
| _____ | N |

I. OTHER POSSIBLE IMPACTS (not listed above)

- | | |
|-------|---|
| _____ | N |
| _____ | N |
| _____ | N |

See attached Discussion of Impacts