

ASIAN DEVELOPMENT BANK
Operations Evaluation Department

PROJECT PERFORMANCE AUDIT REPORT

ON THE

LIVESTOCK DEVELOPMENT PROJECT
(LOAN 973-PAK[SF])

IN

PAKISTAN

In this electronic file, the report is followed by the Management response and the Chairperson's summary of a discussion of the report by the Board of Directors' Development Effectiveness Committee.

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May 2004

CURRENCY EQUIVALENTS

Currency Unit – rupees (PRs)

	At Appraisal (August 1989)	At Project Completion (February 1999)	At Operations Evaluation (November 2003)
PRs1.00 =	\$0.0474	\$0.020	\$0.017
\$1.00 =	PRs21.1027	PRs50.0	PRs57.455

ABBREVIATIONS

ADB	–	Asian Development Bank
EA	–	Executing Agency
EIRR	–	economic internal rate of return
LDDD	–	livestock and dairy development department
LETC	–	livestock extension training center
LSS	–	Livestock Sector Study
MINFAL	–	Ministry of Food, Agriculture and Livestock
NWFP	–	North-West Frontier Province
OEM	–	Operations Evaluation Mission
PCR	–	project completion report
PPAR	–	project performance audit report
SPU	–	semen production unit
VLEC	–	village livestock extension committee

NOTES

- (i) The fiscal year (FY) of the Government ends on 30 June.
- (ii) In this report, "\$" refers to US dollars.

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Operations Evaluation Department, PE-642

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Toshio Kondo, senior evaluation specialist (team leader) was responsible for the preparation of this report, led an operations evaluation mission to Pakistan, and conducted document reviews, key informant interviews, and guided the fieldwork undertaken by Kevin Rutter, international consultant (livestock specialist) and Syed Husaini, domestic consultant (rural development specialist). Additional research assistance was provided by Agnes Anabo, senior evaluation officer.

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| | 2. | Development Effectiveness Committee Chairperson's Summary of the Committee's Discussion on 25 August 2004 of the Project Performance Audit Report on the Livestock Development Project (Loan 973-PAK[SF]) in Pakistan |

BASIC DATA
Livestock Development Project (Loan 973-PAK[SF])

Project Preparation/Institution Building

TA No.	TA Project Name	Type	Person-Months	Amount	Approval Date
804	Livestock Sector Study	ADTA	25	188,000	13 Oct 1986
928	Livestock Sector	PPTA	4	75,000	27 Nov 1987

As per ADB Loan

Key Project Data (\$ million)	Documents	Actual
Total Project Cost	55.0	30.6
Foreign Currency Cost	18.2	9.2
Local Currency Cost	36.8	21.4
ADB Loan Amount/Utilization	43.0	23.9
ADB Loan Amount/Cancellation ¹		23.8

Key Dates

	Expected	Actual
Appraisal		10–25 April 1989
Loan Negotiations		22–25 August 1989
Board Approval		28 September 1989
Loan Agreement		22 November 1989
Loan Effectiveness	20 April 1990	5 December 1990
Project Completion	30 June 1996	30 June 1998 ²
Loan Closing	30 June 1997	6 January 1999
Months (Effectiveness to Completion)	74	91

Economic and Financial

Internal Rates of Return (%)	Appraisal	PCR	PPAR
Economic Internal Rate of Return	20.2	negative	0.9
Financial Internal Rate of Return ³	12.1 ⁴	n.c.	n.c.

Borrower Islamic Republic of Pakistan

Executing Agencies Federal Livestock Division, Ministry of Food, Agriculture and Livestock⁵
Livestock and Dairy Development Department, Government of Balochistan
Livestock and Dairy Development Department, Government of North West Frontier Province
Livestock and Dairy Development Department, Government of Punjab
Livestock and Fisheries Department, Government of Sindh

n.c. = not calculated, ADB = Asian Development Bank, ADTA = advisory technical assistance, FIRR = financial internal rate of return, PCR = project completion report, PPAR = project performance audit report, PPTA = project preparatory technical assistance, TA = technical assistance.

¹ The loan amount was equivalent to SDR34,201,000 at the time of loan approval. At loan closing, SDR17,583,272 was canceled, and the actual loan amounted to SDR16,617,728.

² Major physical activities were completed by June 1998. The last component, construction of slaughterhouses, was completed in December 1998.

³ Slaughterhouse component only.

⁴ This weighted FIRR was based on a phasing model of 1 large and 18 medium-sized slaughterhouses, which were to be built between Years 3 and 6 of the Project.

⁵ Formerly known as the Ministry of Food, Agriculture and Cooperatives.

Mission Data		
Type of Mission	No. of Missions	Person-Days
Pre-Appraisal	1	145
Follow-Up	1	18
Appraisal	1	96
Project Administration		
Review ⁶	11	114
Special Loan and Project Administration ⁶	13	121
Midterm Review	1	43
Pre-Project Completion Review	1	40
Follow up	1	2
Project Completion	1	69
Operations Evaluation ⁷	1	33

⁶ In conjunction with review of other related projects in Pakistan.

⁷ The Operations Evaluation Mission comprised Toshio Kondo, senior evaluation specialist and mission leader; Kevin Rutter, international consultant; and Syed Husaini, domestic consultant.

EXECUTIVE SUMMARY

Livestock is critical to rural Pakistan. Livestock provides food and draft power for crops, and storage of wealth. Millions of the rural poor depend on livestock for their livelihood, and urban demand is growing for livestock products. Therefore, the Livestock Development Project¹ (the Project) sought to address constraints such as weak services for extension, animal health, and livestock breeding, and limited feed sources during summer, to promote development of the livestock subsector in 17 districts of the provinces of Balochistan, Punjab, Sindh, and North-West Frontier Province (NWFP).

The Project was formulated through a project preparatory technical assistance,² which built on the Livestock Sector Study.³ The Study comprised two phases: (i) a review of the livestock sector (March–June 1987), and (ii) identification of priority investments in the Sector (September–November 1989). The project objective was to increase livestock production by improving livestock productivity in selected areas of Pakistan. The Project aimed to support the Government's livestock development efforts in (i) establishing a policy and institutional framework to encourage private investment in the subsector, (ii) increasing livestock production and improving meat and byproduct utilization, and (iii) accelerating livestock development to increase rural employment and income.

The Project had six components: (i) strengthening the planning, monitoring, and coordination capabilities of the Federal Livestock Division and the Provincial Livestock Departments in Balochistan, NWFP, Punjab, and Sindh; (ii) establishing 17 livestock production extension services (2 in intensive livestock production areas of Balochistan, 3 in NWFP, 10 in Punjab, and 2 in Sindh); (iii) breed improvement through improved artificial breeding services and increased production of semen from proven and selected sires of preferred local breeds of buffalo and cattle; (iv) rationalizing and improving animal health services by strengthening field services for disease control, providing drugs and vaccines, and gradually privatizing veterinary services; (v) slaughterhouse improvement by relocating or expanding selected slaughterhouses; and (vi) capacity building through training at an extension training center for livestock (yet to be established), overseas training, and consultancies.

At appraisal, the Project was expected to cost \$55 million, but only \$30.6 million was actually spent. The Asian Development Bank financed \$23.9 million and the Government of Pakistan, \$6.7 million. About \$23.8 million of the loan was canceled because the slaughterhouse component was canceled, and because of limited capacity to implement the ambitious extension activities.

Considerable resistance was encountered in reorientating the traditional health-based extension services to a more bottom up, production-based system. The Government's disease monitoring was improved, and extended through a subsequent project. Rivalry among the provincial executing agencies, caused by preferential resourcing of production-based activities, had a negative impact on overall project coordination. The appointment, training, and resourcing

¹ ADB. 1989. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Islamic Republic of Pakistan for the Livestock Development Project*. Manila (for \$43 million equivalent, approved on 28 September 1989).

² ADB. 1987. *Technical Assistance to the Islamic Republic of Pakistan for the Livestock Sector Project*. Manila (for \$75,000, approved on 27 November 1987).

³ ADB. 1986. *Technical Assistance to the Islamic Republic of Pakistan for the Livestock Sector Study*. Manila (for \$188,000, approved on 13 October 1986. This was co-financed with the Food and Agriculture Organization of the United Nations, which was also expected to contribute \$188,000).

of livestock extension staff to support the village livestock extension committees were partly effective, if judged by adoption of new technology packages—particularly those associated with on-farm production of fodder for milk production. But benefits were restricted to committee members and those with adequate land resources. Extension activities started late, so the opportunity for rapid expansion was not reached during project implementation.

Animal breeding initiatives were partly successful. But activities were delayed by the need to introduce the recording of herd activities before semen was collected from proven sires. (That activity ceased after project completion.) The rehabilitation and resourcing of semen production units, using both local and imported semen, helped improve the genetic quality of the livestock populations. This was complemented by the privatization of veterinary services—a major project accomplishment, despite the fact that private operators still under-declare their services to avoid taxes

The slaughterhouse initiatives must be considered a failure, because only two were completed. The slaughterhouse component was canceled because of conflicts between central and provincial administrations. Of the two completed slaughterhouses, one, in Balochistan, never went into production, and is up for sale. The other, in Sindh, required additional local government funding for equipment, and only recently started operation. But its structures are falling into disrepair, because of lack of use and maintenance.

The Project successfully completed an extensive training and study tour program that gave 288 person-months of international fellowships, 127 person-months of short study tours, and 822 person-months of in-country training. Local trainees did not highly regard the on-the-job training that the consultants provided. Consultants' inputs were often poorly coordinated. Sometimes the consultants, and thus their inputs, changed during implementation—causing conflicts in technical advice in areas such as slaughterhouses.

The only project-supported programs that still operate are those that involve the private sector, or where beneficiaries are charged for services, such as the semen production units and the private veterinary services. But one slaughterhouse, the extension committees, and the training centers that were devolved to lower administrations either no longer operate, or operate at considerably lower levels than during implementation.

The economic reevaluation of the Project confirmed findings of the project completion report of an almost negative economic internal rate of return due to limited incremental production, low adoption of technology, and delayed implementation of breeding and extension initiatives. Institutionally, the new, participatory approaches to extension and the integration of breeding and health extension services were appreciated—but rivalry among the provincial executing agencies limited or prevented their effectiveness. Project initiatives could be sustained only with adoption of the "user pays" principle. Extension initiatives were never institutionalized, so are not considered sustainable. Individual capacities may still be available to the subsector from temporary appointments, but the real impact remains uncertain. Planning and monitoring, since project completion, have continued in only one province—but even there, it remains under-resourced. Disease monitoring continues because of follow-up resourcing from another internationally funded project.

Twenty-five percent of livestock owners are landless, with high poverty incidence. Thus, the Project was well targeted for impact on the poor. But participation of livestock owners in village livestock extension committees was not required, and technical messages rarely

extended beyond committee members. Thus, the potential socioeconomic impact was not fully realized.

The appointment of female livestock production officers, however, was effective. Working with females—Pakistan’s traditional livestock managers—circumvented cultural barriers.

Linkages between poverty reduction and livestock development were recognized. The nonquantifiable benefits were sufficient to justify further development assistance to the livestock subsector. There were no negative environmental impacts from on-farm production technologies that were introduced. Nor were there negative impacts from slaughterhouse development, because effluent management systems were incorporated in the designs.

The Project is assessed as relevant, considering the poverty level in rural Pakistan and the importance of livestock as a food source, for storage of wealth, and a means of cushioning the effects of drought. But the Project is rated as inefficacious, because of poor coverage and low productivity increases from the technical packages. The Project is rated as inefficient because of its almost negative economic internal rate of return, operational inefficiencies of the slaughterhouses, and poor institutional cooperation during implementation. Overall, the Project’s sustainability is considered less likely because sustainability cannot be achieved for either institutional development initiatives or mechanisms for improved extension services. Success was at least limited in the sustained operation of private veterinary services and semen production units, where there was full cost recovery. Overall, the Project is rated as unsuccessful.

Key issues for the future include (i) the appropriateness of developing public extension services that cannot be sustained after project completion, (ii) the need to institutionalize improved capacity for monitoring in institutions that will be retained and resourced after completion, and (iii) the appropriateness of appointing temporary staff to public institutions for duties that cannot be sustained after completion.

Lessons learned include the importance of (i) a phased approach for new and innovative delivery mechanisms to ensure that activities are tested and modified on a small scale before large-scale adoption; (ii) carefully looking at producer incentives to use new technologies, and promotion of their cost effectiveness; (iii) an early warning mechanism to alert managers and, hopefully, steering committees when project progress is slow or barriers are encountered; (iv) post-project monitoring through the institutionalization of monitoring procedures during implementation; and (v) a thorough assessment, during the design phase, of an institution’s willingness and capacity to change.

An opportunity exists for greater poverty reduction through livestock development, if alternative mechanisms can be identified for providing support services that involve the private sector, and with sustainable extension mechanisms.

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I. BACKGROUND

1. In 1985, the Government of Pakistan (Government) asked the Asian Development Bank (ADB) to support the accelerated and sustainable development of its livestock subsector by financing several initiatives to improve livestock productivity. ADB approved an advisory technical assistance¹ for \$188,000 on 13 October 1986. The Livestock Sector Study (LSS) comprised two phases: a review of the livestock sector (March–June 1987), and the identification of priority investments in the sector (September–November 1989). After the first phase of LSS, in October 1987, the Government requested ADB for a small-scale project preparatory technical assistance² to prepare the Livestock Development Project (Project), which would build on the previously financed LSS in preparation for a potential loan.

A. Rationale

2. The livestock subsector provides one of the main sources of protein and energy for Pakistan's rural poor, and is widely recognized as the main source of cash income for the landless. There is an important interrelationship between livestock and farms engaged in cropping, apart from the value of livestock as a food source and for storage of household wealth. Livestock also provide both manure and draught power for farming, and animal dung is used extensively as a heat source in domestic cooking. Demand is growing for milk, dairy products, and other livestock products in the urban centers, which now have better access to the more perishable livestock products through improved road networks. But inadequate cold chain delivery systems limit opportunities for greater urban use of livestock products. Only 25% of the milk produced is marketed; the rest is consumed in the immediate location of production. Limited feed sources during the summer severely restrict opportunities to supply peak market demands. Furthermore, livestock productivity is constrained by weak services for extension, animal health, and livestock breeding. The Government has identified each of those services as in urgent need for development. The Project was intended to address these constraints; to promote improved livestock productivity; and to identify a more appropriate role for Government in planning and monitoring, to facilitate making the private sector the main mechanism of livestock subsector support.

B. Formulation

3. Consultants were hired in late 1987 to prepare a draft design. ADB modified the draft design during subsequent processing. A pre-appraisal mission was fielded in June–July 1988, followed by an appraisal mission 10–25 April 1989. The Project was consistent with the overall thrust of the LSS. The final design and feasibility study were discussed during those missions with the Government and the provincial governments of Balochistan, North-West Frontier Province (NWFP), Punjab, and Sindh.³ The loan⁴ to finance the Project was approved on 28 September 1989 and closed on 6 January 1999, about 1.5 years later than expected at appraisal. One major change in scope during implementation was cancellation of slaughterhouse relocation/rehabilitation. That was made necessary by delays in identifying

¹ ADB. 1986. *Technical Assistance to the Islamic Republic of Pakistan for the Livestock Sector Study*. Manila (for \$188,000, co-financed with the Food and Agriculture Organization of the United Nations, which was also expected to contribute \$188,000).

² ADB. 1987. *Technical Assistance to the Islamic Republic of Pakistan for the Livestock Sector*. Manila (for \$75,000, approved on 27 November 1987).

³ The project area comprised 17 districts within these provinces.

⁴ ADB. 1989. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Islamic Republic of Pakistan for the Livestock Development Project*. Manila (for \$43 million equivalent, approved on 28 September 1989. The Government was to finance the \$12 million remainder of the project cost).

candidate slaughterhouses for renovation, as well as problems with provincial administrators over land allocation and ownership issues.

C. Purpose and Outputs

4. The objective of the Project was to increase livestock production by improving livestock productivity in selected areas of Pakistan. The Project aimed to support the Government's efforts in livestock sector development by (i) establishing a policy and institutional framework to encourage private investment in the subsector, (ii) increasing livestock production and improving use of meat and other byproducts, and (iii) accelerating development of the subsector to increase rural employment and income.

5. The Project had six outputs: (i) strengthening the planning, monitoring, and coordination capabilities of the Federal Livestock Division and the provincial livestock departments in Balochistan, NWFP, Punjab, and Sindh; (ii) development of extension services in livestock production by establishing some 17 livestock production extension services. Two would be in intensive livestock production areas of Balochistan, 3 in NWFP, 10 in Punjab, and 2 in Sindh; (iii) breed improvement through improved artificial breeding services and increased semen production from proven and selected sires of preferred local breeds of buffalo and cattle; (iv) rationalization and improvement of animal health services by strengthening field services for disease control, providing drugs and vaccines, and gradually privatizing veterinary services; (v) slaughterhouse improvement by relocating or expanding selected slaughterhouses; and (vi) capacity building through training at a livestock extension training center (LETC) to be established, overseas training, and consultancies.

D. Cost, Financing, and Executing Arrangements

6. The project cost was originally estimated at \$55 million (\$18.2 million for foreign and \$36.8 million for local costs). After the cancellation of part of the slaughterhouse component, the much lower than expected number of village livestock extension committees (VLECs) actually established, and the depreciation of the Pakistan rupee vis-à-vis the dollar during implementation, the actual cost was \$30.6 million, comprising \$9.2 million for foreign and \$21.4 million for local costs. With the downsizing of project scope, \$23.8 million⁵ of the loan was canceled.

7. Actual ADB loan disbursements were \$23.9 million. Government and beneficiary contributions were \$5.5 and \$1.3 million respectively, in local currency. The Executing Agency (EA) at the national level was the Ministry of Food, Agriculture and Livestock (MINFAL). At the provincial level, EAs were the livestock and dairy development departments (LDDDs) at Quetta, Peshawar, and Lahore, and the Livestock and Fisheries Department in Hyderabad.

E. Completion and Self-Evaluation

8. The target completion date in the Loan Agreement was 30 June 1996, but actual completion was 30 June 1998.⁶ In September 1999, the project completion report (PCR) was circulated to the Board, which rated the Project as unsuccessful.⁷ This assessment was

⁵ The loan amount was equivalent to SDR34,201,000 at the time of loan approval. At loan closing, SDR17,583,272 was canceled, and the actual loan amounted to SDR16,617,728.

⁶ Major physical activities were completed by June 1998. The last component, construction of slaughterhouses, was completed in December 1998.

⁷ Based on a three-category rating system: generally successful, partly successful, and unsuccessful.

because of the relatively low productivity gains and limited adoption of the introduced technologies, combined with little evidence of institutional sustainability of project initiatives. The Project contributed to changing the views of government extension services by broadening their approach to livestock extension, combining production extension with animal health activities, and developing awareness of participatory techniques—even though these approaches could not be sustained after project completion.

F. Operations Evaluation

9. This project performance audit report (PPAR) presents the findings of the Operations Evaluation Mission (OEM) that visited Pakistan in November–December 2003. The PPAR assesses how effectively the Project achieved its objectives, generated and maintained benefits of improved livestock productivity, and sustained capacity-building initiatives at the national level and in provincial departments. The PPAR is based on (i) a review of project files and related documents, (ii) discussions with provincial and national staff that dealt with the Project during implementation, (iii) surveys conducted at project completion to assess impacts, and (iv) project site inspections, including group discussions with beneficiary farmers and former members of VLECs. The PPAR also reviewed information in the PCR and held discussions with ADB's Pakistan Resident Mission and related organizations in Islamabad.

II. PLANNING AND IMPLEMENTATION PERFORMANCE

A. Formulation and Design

10. The project design was consistent with the Government's National Commission on Agriculture and the development objectives outlined in its Seventh Five-Year Plan (1989–1993) that (i) promoted unit productivity rather than increased numbers of livestock; (ii) encouraged livestock owners to adopt improved methods of animal husbandry; (iii) increased the quantity of animal feed; and (iv) modernized market channels for livestock and animal products, eliminating government interference. The project design was also consistent with LSS, which emphasized (i) a shift from increasing livestock numbers to higher per-animal productivity, (ii) an increased role of the private sector, and (iii) a rationalized role for the public sector in developing its policy and regulatory framework.

11. The project goal was also consistent with ADB's objectives for the subsector at the time. The Project focused on alleviating rural poverty, emphasizing gender issues—and women dominate livestock management in Pakistan. ADB's strategy in the mid-1990s emphasized development of human resources and private sector participation. But as poverty worsened in the 1990s, ADB's strategy shifted to address poverty issues. The project goal remains consistent with ADB's overall goal of poverty reduction and the ADB country strategy program for Pakistan's agricultural sector, which links poverty reduction with improved social services and growth in the agricultural sector.

B. Achievement of Outputs

12. The broadening of LDDD operations in the provinces included incorporation of livestock husbandry extension to complement the traditional livestock health services—which were also to be delivered more responsively, and more demand-driven. This was to be achieved by appointing and training livestock extension staff, resourcing their outreach activities, and developing a network of extension facilities, including VLECs, to introduce improved technical packages. During implementation, the livestock production officers established 2,379 VLECs.

LDDD was expected to provide access to technical and other input services, such as credit, and even help in produce marketing, through the appointment, as VLEC committee members, of staff from the animal health and breeding directorates, and of officers from the Agricultural Development Bank of Pakistan. Under such arrangements, about 17,850 of an anticipated 130,000 beneficiary farmers received direct access to improved extension and other support services. But no VLEC remained in operation after project completion.

13. The relatively poor achievement of LDDD is partly explained by the shortened effective period of operation. Extension initiatives began 2 years after loan effectiveness but ceased upon loan closure, as originally intended. That limited the opportunity for significant expansion of these activities. Establishment and training took time; the envisaged extension coverage was ambitious, involving VLECs and specialist support staff appointed for the project duration. The poor achievement can also be partly attributed to the politically influenced appointment of young veterinarians, with limited participatory development skills, as livestock production officers. They did little to broaden the nature of extension services. The resourcing of production-oriented extension activities caused resentment from animal health staff. Furthermore, demonstrations and training funded under the Project rarely extended past the VLEC committee members. Training was provided in nutrition and flock management for small ruminants. A program for vaccination and deworming was developed, but not implemented comprehensively because of delays in field staff appointments. The species *Attriplex*, a palatable winter forage plant that is adapted to rangeland conditions, was introduced but failed to survive successive droughts.

14. Despite these unsatisfactory outcomes, several positive achievements have changed livestock production and marketing arrangements. The Project was responsible for the introduction and proliferation of mott grass and other nitrogen-fixing legumes for fodder, and for the increased use of mineral and other concentrate licks. The increased allocation of land, where available, to fodder crops to support livestock recognizes both the value of livestock in local farming systems, and farmers' need to balance requirements for both cash and immediate subsistence. Other benefits of project activities are reduced calf mortality because of feeding colostrums to newborn calves, and the introduction of a cool chain for liquid milk, with farm gate prices based on quality considerations.

15. Most capacity-building activities, such as training and study tours, were completed according to the design, but had minimal impact because the mechanism for extending technical information was far too ambitious and could not be sustained. Only 2,379 of a planned 11,600 VLECs were formed, and they had little educational effect on other potential beneficiaries. But there was evidence of adoption of on-farm fodder production, where land resources permitted, among the limited beneficiaries.

16. Because of delays in land acquisition and contractual complications, slaughterhouses were built only in Sindh and Balochistan. Even there, success was limited. The slaughterhouse in Balochistan is still not in operation, and the Sindh slaughterhouse operated only after the local government purchased processing equipment that ADB did not fund. That delayed any benefits considerably. Similarly, delays in construction restricted the use of LETCs during project implementation.

17. The establishment of planning and monitoring sections strengthened livestock departments—but operation ceased after project completion. Training was implemented as planned, and a limited number of farmer organizations were established. The farmer organizations remained active during the Project but, without financial and other types of support, have since disbanded.

C. Cost and Scheduling

18. The costs were substantially less than envisaged partly because only two of the four planned slaughterhouses were rehabilitated (Appendix 1). In addition, full disbursement was not feasible as this would have meant establishment of four times as many VLECs as were actually established, which was too ambitious. The implementation agency did not have the capacity to disburse the funds identified in the Loan Agreement. An extension of the loan closing date by 1 year and 7 months was granted.

D. Procurement and Construction

19. Goods and services were procured, and facilities constructed, in general conformance with ADB's *Guidelines for Procurement* and the Government's and ADB's standard procedures. Other than anomalies associated with tendering and award of the contract for slaughterhouse construction,⁸ such as overpricing and deliberate attempts to limit the contracts to selective suppliers, procurement by national and provincial implementation units was as specified in the Loan Agreement. Both national and local governments recruited international and domestic consultants for the main consulting service contracts and direct engagements in accordance with ADB's *Guidelines for the Use of Consultants*. Procedures for awarding civil works contracts were generally satisfactory. The quality of construction of the completed structures was satisfactory. Maintenance provisions were in accordance with industry norms, although the lengthy idle period affected surface finishes. But the supply and installation of slaughterhouse equipment in Sindh could not be accomplished because of inadequate finances of the supplier, who failed to furnish a bank guarantee (a prerequisite for payment of the first advance).

20. Vehicles and equipment were procured through international shopping procedures. In Punjab, veterinary and office equipment were procured in smaller packages to avoid ADB's requirement to follow international competitive bidding procedures in favor of international shopping procedures⁹ and to limit the supply contract to selected bidders. The resulting tender prices were above prevailing market prices. At ADB's insistence, the matter went to arbitration and the prices were reduced.

E. Organization and Management

21. Each EA was responsible for project planning, implementation, and administration in its respective jurisdiction. For coordination and implementation support, a National Steering Committee was established. It met infrequently. The provincial steering committees met more regularly, but were still considered ineffective, failing to provide the guidance and coordination needed for this multifaceted project.

22. Seven loan covenants were agreed with Government in loan negotiations. Three of the covenants related to administrative requirements for loan effectiveness. Two substantive conditions were the contracting of fodder seed production to farmers, and the privatization of veterinary services. The Government respected both conditions. The sixth covenant required that Government meet all recurrent project expenditures by completion. This was achieved, although the budgetary support ceased immediately after project completion. The final covenant sought financial support from the Agricultural Development Bank of Pakistan to support

⁸ ADB intervention ensured that anomalies were rectified during implementation, but this action delayed slaughterhouse construction considerably.

⁹ This was not approved by ADB and thus resulted in Punjab funding these contracts with its own resources.

beneficiary adoption of project initiatives. The outcome was desirable, but the Government should not influence the independence of financial institutions in issuing credit.

III. ACHIEVEMENT OF PROJECT PURPOSE

A. Operational Performance

1. Strengthened Capabilities of Executing Agencies

23. The Project attempted to facilitate the reorientation of MINFAL and the four provincial LDDDs in their attempts to promote livestock development through more appropriate planning, formulation, and monitoring of role policy. Additional staff were appointed to new planning and monitoring sections in the provincial departments, and training was provided in planning, monitoring, and coordination. In Balochistan, the section has been retained and is functioning, although at a far-reduced level. The other provincial planning sections have disbanded since the Project ended.

24. At the federal level, a disease reporting system was developed to monitor the incidence of livestock diseases. The activity continues, although software introduced under the Project has since been superseded to conform to Office Internationale Epizootique standards. Unfortunately, the disease reporting system does not receive all reports from private veterinarians because they sometimes do not report all of their services for income tax reasons. Despite this weakness, the reporting system has been maintained and is proving a useful tool in confirming the disease status with Pakistan's potential trading partners in livestock and livestock products. A disease monitoring system, developed during implementation, was not institutionalized because of inadequate staff training and resourcing. The monitoring system no longer operates. Therefore, the OEM has reverted to secondary data to reassess the overall project impact.

25. Institutional issues and professional jealousies clearly reduced the impact of capacity-building initiatives. Resistance to the appointment of staff who were not trained in veterinary medicine to the newly created positions for planning and monitoring severely retarded broadening of the EAs' responsibilities. The impact of this attitude is evident across a number of components.

2. Breed Improvement

26. Project activities were directed at improving the genetic composition of livestock, using a combination of imported semen and selected local breeds, based on herd records, to identify elite cows. These initiatives required the upgrading of semen production units (SPUs) and resourcing facilities with additional staff, transport, and equipment. The lack of herd records delayed commencement of the bull purchase program; it was effective only in Punjab. Bull calf purchases totaled 290 versus a target of 1,000, because of the 4-year delays in developing herd record keeping. In Quetta, the SPU continues to operate satisfactorily and actively supplies semen, and exchanges it with other regions. Other SPUs continue to sell other breeding supplies to provincial livestock departments, who sell in turn to farmers. But the lack of coordination between VLECs and the animal breeding departments resulted in low insemination rates throughout the project area.

3. Rationalization of Animal Health Services

27. The objectives of animal health services were to increase vaccination, improve the supply of veterinary drugs, and promote privatization of veterinary services. This was to be through the resourcing of government animal health directorates and, in areas where there were no government hospitals, by establishing revolving funds to finance the supply of drugs and medicines. The animal health departments work in close cooperation with the more production-oriented VLECs. Given professional jealousies,¹⁰ there was little cooperation between the two disciplines, and exposure of target beneficiaries to this initiative was limited. Privatization of veterinary services was aided first, by charging the full price of medicines and thus, removing the incentive to remain with government services; and second, because government resources were insufficient to maintain free distribution of drugs. The Project was successful in having provincial governments accept this policy. Donors continue to reinforce the policy. But the status of animal health is still constrained by the system of payment for veterinary services to government. The chit system gives incentives to veterinary practitioners to not declare full activities, including full information on disease incidence (para. 24). The chit system also contributes to the lack of enforceable quality by the European Union.¹¹

4. Slaughterhouse Improvement

28. Slaughterhouse improvement was the Project's worst performing component. Performance was so bad that, after ADB reviews, the NWFP initiative was canceled in September 1996, and the Punjab initiative, in 1997. Contributing to slaughterhouse failure was the inability to identify target slaughterhouses for relocation/rehabilitation, and to identify butcher associations that could manage the facilities after renovation. Other problems associated with failure were administrative difficulties associated with land identification and allocation, together with the intermittent and changing inputs of specialists. Dialogue among stakeholders was insufficient throughout the Project's identification phase. Two slaughterhouses were established in Balochistan and Sindh. The plant at Quetta, Balochistan, had the capacity to slaughter 190 large and 700 small animals per shift. But the facility has not operated and has been offered for sale. The local government rejected a bid for twice the establishment cost, yet the facility remains under the control of the local administration and idle. Immediately adjacent is an inadequately covered "holding yard" that is currently used as a slaughterhouse. The slaughterhouse in Sindh only recently became operational after difficulties with the contractor for equipment supplies. The local government had to step in and finance the processing equipment before the plant could operate.

5. Training, Fellowships, and Consultancies

29. Considerable training was undertaken to support the integration of production extension with animal health services through the establishment of a LETC. After considerable debate, the center in Bahadurnagar, Lahore, was commissioned in June 1998, and training began later that year. The facility continues to provide contract training services to nongovernment organizations, other project staff, and farmers on semi-commercial terms, relieving the pressure on local government budgets. The Project provided 288 person-months of international fellowships, 127 person-months of short study tours, and 822 person-months of in-country training. Balochistan, NWFP, Sindh, and the Livestock Division used almost all of the international training provisions. However, staff of Punjab's livestock department did not benefit

¹⁰ One manifestation was the failure of the livestock departments to prepare integrated work plans to ensure that staff of the animal health and animal breeding directorates cooperated with one another when working with VLECs.

¹¹ Strengthening of Livestock Services, Project No. PAK/RELEX/2001/0129 for Euro 26 million.

much due to the very slow processing of training proposals by the Punjab government. The Livestock Division also recruited international and domestic consulting firms, while the provinces recruited individual international consultants to provide consulting services in planning, epidemiology, extension and extension training, ruminant management, and slaughterhouse design, among others. However, with the delays in some procurement, and in the recruitment and training of local staff, several consultants were fielded too early. Thus, the objective of building capacity of local associates was not fully achieved.

30. The national and provincial EAs recruited consultants independently, amounting to 219 person-months of international and 204 person-months of domestic specialists. Some of the domestic consultants were recruited through firms and others, independently. The general opinion was that inputs of the individual specialists were poorly coordinated with other project activities that required technical specialist inputs and were sometimes of poor quality themselves. Some consultants were replaced during scheduled inputs, causing confusion when technical opinions of specialists in the same position differed. Technical specialists left few guidelines for the future support of local staff.

B. Performance of the Operating Entity

31. This assessment is directed first at performance of the institutions: EAs and the extension training institutions; and second, at performance of the municipal slaughtering facilities. Technical staff appointed through the Project were retained as department staff after project completion only in Balochistan. In the other provinces, the technical and extension specialists were released from their duties, so the local governments lost any skills developed during implementation. Furthermore, the VLECs, or the extension networks developed under the Project could not be maintained after completion. Resources were not available to continue the participatory approaches, nor were funds allocated to mobilize extension staff. Similarly, equipment installed in the provincial departments has not been adequately maintained because of insufficient budgets. The Project was effective in establishing a training capacity in the training institutions. Training continues on a semi-commercial basis, with part of the operating costs recovered through fees charged. With the devolution of regional training facilities to district administrations for maintenance and operations, there is a risk that technical skills in the regional centers will gradually disappear.

32. The independent financial entities supported by the Project include two slaughterhouses and the SPUs. With the farmers' growing acceptance of meeting the cost of artificial insemination and other animal health services, SPUs could be privatized, even though their output is sold to provincial departments. Management of the genetic improvement process is no longer a government responsibility, other than to ensure that farmers receive quality semen for the price paid. The single operating slaughterhouse is still partly financially dependent on local government, because killing charges do not cover operating costs. Public health issues such as maintenance of adequate hygiene should remain a government concern, but for financial independence and sustainability, the private sector can best manage slaughterhouses.

C. Economic Reevaluation

33. At appraisal, the economic internal rate of return (EIRR) was estimated at 20.2% and was assessed as being robust to delays in project startup as well as to project coverage, or beneficiary participation. Factors influencing the negative EIRR that were reported in the PCR include delayed project startup, the small number of beneficiary farmers, failure to realize incremental output from technical packages delivered, the capital intensive nature of

slaughterhouse investments, the lack of benefits following the investments, and the high overhead costs of project management and implementation.

34. A reevaluation by the OEM concluded that the EIRR is now near zero. The change from the EIRR during the PCR period is attributed to higher milk prices. But the OEM assessment does not change the overall view of the Project's impact. Poor results reflect a delay in benefits, low adoption rates, and a limited flow and nonsustained spread of introduced technologies. There is some evidence that the low adoption rate is also due to land availability among beneficiary farmers. Much of the target population is landless, with limited opportunity to improve feed supplies through fodder production. Small farmers' attitudes to risk may be another factor. The reallocation of land from cropping to fodder production may be seen as increasing risk and threatening subsistence food supplies (Appendix 2).

35. Evidence is sufficient that the Project contributed to a change in the approach used by animal health specialists—from a top down approach to a more responsive bottom up approach. Specialists have also benefited from exposure to production-based technical solutions, rather than focusing narrowly on animal health. The Project has also contributed to privatization of veterinary services by adopting the "user pays" principle. The impact of these changes is expressed collectively through incremental gains in productivity, as measured through changes in real household incomes.

D. Sustainability

36. Institutional capacity building was directed at the planning and monitoring activities of provincial administrations. Some success was achieved, particularly in disease monitoring, but less in sector planning. The impact is less clear for technical capacity building and participatory approaches for extension. There is awareness that participatory techniques are valuable in increasing beneficiary ownership, and that broadening the focus of livestock extension can give considerable benefits. The specialists that extension services hired for the project duration were subsequently released. It is unknown whether or not these trained specialists have sought similar positions where they might use the skills they have developed.

37. An important issue is that of capacity building of extension services in an organization that cannot maintain the service after project completion. The Government has accepted that beneficiaries should bear the cost of livestock health services (hence the privatization of veterinary services). But beneficiaries are more reluctant to pay for production extension services. The mechanisms developed to operate broader extension services under the Project have disappeared. The farmer-level committees are only a memory, and then only among committee members. Some aspects of livestock breeding initiatives have been retained, including the SPU operations and the cow bank-calf return schemes. But the herd recording activities are no longer practiced, as the herd recording teams no longer operate.

38. MINFAL has further developed its disease surveillance capacity with ongoing support of the European Union. The Project's achievements in promoting full cost recovery for drugs and treatments have contributed significantly to the sustainable operation by private veterinarians of future animal health services. One can conclude that there has been some sustainable impact from project initiatives, particularly in strengthening of the private sector and developing an attitude among beneficiaries that they must pay for animal health services. The Government has sustained and adopted this attitude more widely—one of the more significant outcomes of the Project.

IV. ACHIEVEMENT OF OTHER DEVELOPMENT IMPACTS

A. Socioeconomic Impact

39. Realization of anticipated socioeconomic impacts was generally constrained by the ambitious, top down approach; a lack of focus and ownership; delays in project commencement; lack of balance among health, production, and extension activities; the relative lack of a participatory approach; failure to construct or privatize slaughterhouses; and poor performance of consultants. Drought worsened the situation by interrupting pasture development initiatives in the rangelands.

40. Adoption of improved husbandry practices was far less than anticipated. Nevertheless, the early adopters have had modest benefits such as increased milk and animal live weight productivity, lower disease and mortality incidence, and higher lambing rates. The demonstration plots for fodder were generally successful in stimulating wider adoption of better fodder varieties, with higher yields, among farmers with sufficient land. Project support to SPUs also helped in replacing low-producing milk animals with improved breeds. The Project was well targeted to reduce poverty; 25% of the livestock ownership is by the landless, the poorer members of communities. Unfortunately, the technological packages rarely extended past those directly involved in the Project—VLEC members—so the flow and effect of introduced technologies were not significant.

41. Although the quantifiable benefits of the Project are much lower than anticipated at appraisal, the nonquantifiable benefits are pro poor. These include farmer awareness of the need for improved technologies; farmer awareness of the importance of health and feed management; awareness in the LDDDs of the participatory approach; LDDD awareness of the importance of non-health interventions such as feed management and better husbandry; privatization of veterinary services; and promotion of private seed and feed marketing services.

42. The close linkage between livestock production and poverty was reinforced. It was evident that the livestock subsector is one of the more appropriate vehicles for addressing poverty reduction. Small ruminants and poultry are common among the rural poor; improving their productivity can have significant impact. In some locations such as Sindh, the appointment of women as livestock extension officers demonstrated the value of female participation in what has traditionally been a male-dominated activity in rural Pakistan. Female extension officers and support staff circumvented cultural barriers and dealt more effectively with female livestock managers. Appendix 3 describes achievement of other development impacts.

B. Environmental Impact

43. The project activities were generally environment friendly. Adoption of appropriate fodder varieties enhanced soil fertility. Production of additional animal manure improved soil productivity and structure, highlighting the positive relationship between livestock and crop production. Increased animal manure gives the potential to reduce inputs of artificial inorganic fertilizers that, if leached, can pollute waterways.

44. Safe disposal systems of the washdown and other effluents into the drainage systems were incorporated into the processing infrastructure (milk chilling centers and slaughterhouses). The oxidation plants attached to the slaughterhouses (when operational) and washdown disposal not only ensure safe disposal of effluents but will also reduce pollution.

C. Impact on Institutions and Policy

45. The linkage between poverty reduction and livestock production, especially for landless and female-headed rural households, has been well understood at the senior policy and planning levels. The importance of the livestock subsector as a major contributor to the national economy has been recognized. So has the key role of livestock in combating poverty. Provincial departments have not maintained planning and monitoring activities after project support ended. Adoption of a participatory bottom-up approach has had a positive impact on policy, but a lack of resources restricts its widespread practice. The Project was also instrumental in developing the "user pays" principle for providing animal health services; it has been adopted on a fairly broad scale. But the Project's effect was negligible in terms of overall impact on institutional development. The implementation structures were dismantled upon project completion, and institutions lost much of the capacity that had been built.

V. OVERALL ASSESSMENT

A. Relevance

46. The project design was consistent with the goals of the Government's National Commission on Agriculture, the development objectives outlined in the Seventh Five-Year Plan (1989–1993), and the objectives of the LSS (para. 11). The project goal, with its potential impact on poverty reduction, was also consistent with ADB's objectives for the subsector. The participatory approaches adopted during implementation were highly appropriate in identifying local needs, although needs were not always met effectively. The project goal was consistent with ADB's Country Strategy Program for Pakistan's agricultural sector, which links poverty reduction with improved social services and growth in the agricultural sector. The mechanism for extending technology in the project design was not necessarily appropriate for increasing livestock production. The project design was consistent with strategies except that it was over ambitious in scope. Overall, the Project is assessed as relevant, considering the level of poverty in rural Pakistan and the importance of livestock as a food source, a means of storing wealth, and a means of cushioning the effects of drought. The rating recognizes the modest incremental productivity gains from the Project.

B. Efficacy

47. The Project's main objective—to increase livestock production by improving livestock productivity—was not achieved. Performance in related activities was mixed. The establishment of VLECs reached only 20% of the target. The number of farmers reached by livestock extension activities was 14% of the anticipated figure. In the breeding program, only 30% of the planned 1,000 progeny tested bulls for semen collection were purchased. Rehabilitation of the SPUs was considered successful, but the impact on farmers in the project area was lower than anticipated because cooperation was poor between project extension activities and the department's artificial insemination technicians. Rehabilitation of slaughterhouses was poorly coordinated. Only two slaughterhouses were completed; one has never processed an animal. Finally, activities in training and capacity building were considered to have been well received and effective, although there is criticism about the low retention of trained specialists. Considering these factors, the overall Project is rated as inefficacious, reflecting the poor coverage and low incremental increases in productivity from technical packages offered.

C. Efficiency

48. The PCR assessed the Project to have a negative EIRR for reasons specified in para. 33. This assessment is predictable given the relatively few beneficiaries, the limited incremental benefits achieved from technical packages, and the significant investment in the slaughterhouses that provided no benefit stream. The matter was exacerbated by the fact that delays of 2 years were experienced in Project start up and a further delay of 2 years in the animal breeding component.

49. Efficiency of the implementing institutions was also rated poorly. Professional divisions about who should receive incentives under the Project contributed to poor cooperation and jealousies. The same prejudices affected appointment of project staff. Staff appointment was the subject of considerable political pressure that did little to promote smooth implementation. The unit costs of this public investment were high, considering the relatively few project beneficiaries reached, the high management overheads, and the high ratio of consultant costs to beneficiaries. Ministry supervision was inadequate. Many difficulties and impediments went undetected for long periods before being addressed because of the failure to develop a satisfactory monitoring system during implementation.

D. Sustainability

50. The sustainability of the Project is of major concern. Any benefits achieved during implementation might not be sustained during the anticipated benefit period of 20 years. Items of concern include (i) the extension mechanisms collapsed upon completion, (ii) trained staff in participatory procedures and extension techniques are no longer involved in the executing departments' activities, and (iii) planning and monitoring sections ceased to exist after the Project ended. The only activities that could be maintained are those where full cost recovery and market prices prevailed for the provision of services. The following will most likely be sustained: the artificial insemination initiatives, provision of drugs and supplies for treatment, and provision of animal health services through private veterinarians. Also, some of the introduced technologies should continue to have an impact on benefit streams because they have been adopted on a fairly wide scale, and seem to be accepted in mixed farming systems where land is not a constraint. Productivity gains through improved fodder and supplementary feeds, improved animal health, and breeding have resulted in sustained incremental increases in production in the project area.

51. In terms of institutional sustainability, many LDDD staff are aware of the need for a balanced approach between animal health and livestock production. Staff are also aware of the need to adopt a more participatory and bottom up approach to providing services to farmers. But without the resources to operationalize these approaches, their chance of survival in the government institutions is limited. Therefore, overall project interventions are considered less likely to continue over the Project's economic life. Greater attention should be given to identifying alternative means of involving the private sector in the provision of extension and other support services to livestock farmers, possibly through product marketing groups.

E. Institutional Development and Other Impacts

52. Realization of the role of the private sector in development of the livestock subsector is the only notable institutional achievement apart from increased awareness of the need for participatory techniques and a bottom up approach in identifying extension topics. The "user pays" principle should be applied to encourage a greater role for the private sector. In terms of

impact on the poor, VLECs were observed not to function as truly representative village committees. Instead, VLECs functioned more like vehicles through which the privileged few received direct project support. Benefits were not realized among all groups, particularly among the poor, because the participatory process was not fully developed for maximum impact. The overall rating for institutional development and impact on poverty is assessed as negligible, despite some success through the appointment of female livestock extension and support staff in Sindh.

F. Overall Project Rating

53. The overall rating of the Project is unsuccessful, based on the assessment presented here, including the revised economic assessment of the completed Project (Appendix 2).

G. Assessment of ADB and Borrower Performance

54. ADB fielded 27 missions after loan approval, from March 1990 until the PCR mission in February 1999. Visits were most frequent in 1992, when five missions were made during the main startup period of project activities. One or two visits per year were made subsequently. ADB supervision was considered insufficient, considering the design complexity and early indications of difficulties in disbursement. ADB failed to insist on the establishment of progress indicators and performance targets during implementation, other than the usual financial projections of drawdowns from the loan account. But such indicators and targets might have drawn earlier attention to project limitations, from the number of farmers involved and extension committees formed. The time that ADB took to react to the poor performance during implementation made it difficult to redirect activities and reallocate funds. ADB maintained constant dialogue with the Government on rationalization of animal health services, which led to a positive outcome within the Project. But ADB's overall performance is rated as partly satisfactory.

55. The EAs had a challenging task: to implement, with limited experience in the implementation of internationally funded development projects, a complex project that was broad in both scope and geographic focus. The early establishment phase was characterized by interference of provincial authorities in the appointment of provincial staff, rather than recruiting the best-qualified persons for the jobs. Poor coordination between the animal health disciplines—breeding and health—hindered the Project throughout its entire implementation. That problem was partly caused by differences in support provided to extension activities for livestock production versus for animal health. The institutional reluctance to accept a new approach to livestock extension is due to well-established practices in the animal health departments, which focus only on animal health services. Project management and guidance from the steering committees were inadequate. The steering committees met less frequently than was required in the Loan Agreement. Overall, performance of the Borrower is rated as unsatisfactory, and caused considerable delays in implementing project activities. That has deferred potential benefits well into the implementation period—by as long as 4 years in some cases.

VI. ISSUES, LESSONS, AND FOLLOW-UP ACTIONS

A. Key Issues for the Future

56. **Enhanced Extension with Sustainability.** Poor coordination between EA staff and project-appointed staff limited the effectiveness of some extension activities. The broader

approach of integrating livestock production extension with animal health services needs further reinforcement, especially when dealing with historically entrenched attitudes. The more familiar top down approach of veterinary service providers is a significant hindrance to the adoption of more participatory approaches that have proven effective in livestock development in other South Asian countries.

57. The sustainability of public extension services must also be questioned where budgetary allocations are unlikely to be maintained after project completion. One must question the value of extensive capacity building in an organization that lacks the willingness and finances to deliver an effective extension service to a subsector that requires future budgetary support to continue its services. The VLEC concept was good because it promoted bottom up participation in identifying technical extension messages. But the lack of financial and technical support to maintain VLEC operations limited the long-term impact of these initiatives. This raises the question of how to design appropriate extension mechanisms in future projects. More attention should be given to identifying alternate extension mechanisms that may survive after project completion. Although the private sector will not accept nonprofit activities, it may be the more appropriate vehicle through which extension services operate. Setting up a relevant policy and regulatory environment to promote the private sector will be a key issue for sustainable development of the livestock subsector.

58. **Institutional Considerations.** The Project's capacity building was considered effective in improving both technical skills and approaches of the extension specialists. The limited LDDD resources necessitated recruitment and training of additional staff to implement the adopted approaches. But unfortunately, the trained staff were not incorporated into the implementing agencies, so their skills and expertise were lost when the Project was completed.

59. **Project Benefit Monitoring.** The importance of continual monitoring has been highlighted to assist both in supervising project implementation, and in assessing the impact of the overall Project. Such assessments are not possible unless data are routinely gathered during and after project completion.

B. Lessons Identified

60. **Design.** The Project was implemented at two levels of government, and across four geographic areas and a diverse scope of activities. Thus, the design is considered complex, difficult to implement, and overly ambitious. Implementation arrangements proposed in the original design required establishment of an extension network, through VLECs, that required considerable effort to become operational and effective in delivering new technical packages. But the design failed to incorporate serious dialogue with the stakeholders, including potential beneficiaries. Neither the implementing institutions nor their lower levels adopted participatory processes. Therefore, many technologies that were introduced were never presented to the broader community. Coverage ultimately suffered due to the lack of design flexibility to accommodate this diversity. Future attempts to increase production should carefully examine producer incentives to use improved technology, and should promote cost effectiveness and practicality. Also, project loans to individual provinces could be favored over umbrella-type countrywide projects with the Government considering the diversified feature of the provinces.¹²

61. **Value of Participatory Approaches.** Participatory approaches should be used more when designing and implementing projects, especially those targeted at reducing poverty in

¹² As agreed in the Pakistan Country Strategy and Program (May 2002) para. 76.

rural areas. The participatory approach increases the sense of ownership of a process and facilitates accomplishment of objectives. Furthermore, a participatory approach can better deal with the more diverse characteristics of the target beneficiary population. Its social and resource diversity reinforces the need to develop different technical recommendations for different situations. For example, target beneficiaries who own land have a different approach to fodder production than the land-scarce or landless (Appendix 3). Finally, participatory approaches tend to result in more sustainable interventions, because beneficiaries help determine how to address problems they identify.

62. **Need for Systematic Project Monitoring.** This Project, again, is evidence of the importance of establishing sound monitoring procedures. Apart from the traditional efficiency and effectiveness monitoring required by ADB projects, the lack of an adequate physical monitoring process during implementation caused several project delays. An early warning mechanism to alert managers and, hopefully, steering committees of slow progress or barriers to projects are necessary for efficient implementation. Such a mechanism can also be used to guide future activities, particularly if the project is implemented over a long time period. Attention should also be given to post-project monitoring through the institutionalization of monitoring procedures used during implementation. Without the routine collection of information by verifiable indicators, it is difficult to assess what benefits the Project generates versus benefits from external influences.

63. **Institutional Analysis at Design Stage.** An important lesson from this Project is the need for assessment during the design phase. Then it can be determined if the institution is likely or not to have the will to change its approach from an animal health orientation to a broader goal of service to livestock production and, if so, if it can maintain the broader approach after completion. If so, will the institution have the financial resources to maintain that service capacity? Designers must also determine if the public sector is most appropriate for delivery of extension services. If not, then investments in capacity building for extension are misdirected.

64. **Development of Private Sector Support Services for Livestock.** Greater focus should be given to helping the private sector in future livestock development projects. Some animal health services are mostly of a public nature. For example, the Government should bear part of the costs of disease monitoring and meat hygiene. But private sector involvement is essential for any sustainable impact on farm productivity. This includes those who provide inputs and services to agriculture, and may include credit providers, risk minimization or insurance organizations, input suppliers, and produce marketers. If the Government is to initiate development through direct investment, it should demonstrate a clear ability to respond in a timely and cost-effective manner. Thus, future support for development of the livestock subsector in Pakistan should pay greater attention to mechanisms by which it can support private sector development.

C. Follow-Up Actions

65. **Development of Livestock Production Extension Services.** The Project showed how the broadening of extension services can benefit the poor, although through a temporary mechanism. Staff of the provincial LDDD now better appreciate the importance of combining services for animal production and health, even though the services were not widely adopted. Senior MINFAL staff also acknowledge the advantages of this approach, and support the development of extension services with this objective. The inability to resource extension activities will continue to be the main impediment to achieving desired outcomes. Such resourcing will continue to depend on external financing. There is an opportunity for further

dialogue with the Government about livestock extension services that remain in the public domain. It is recommended that the Pakistan Resident Mission raise issues about the desired nature of the Government's livestock extension activities with MINFAL during the 2004 donor coordinating meeting. This issue is closely linked with that of private sector participation in extension (para. 64). Such a meeting could be a useful forum for coordination of consistency in donor support of Pakistan's livestock subsector.

66. Poverty Reduction Initiatives Through Livestock Development. The importance of the livestock subsector cannot be overstated. A significant proportion of the landless poor raise and depend on livestock for subsistence. The interrelationship between livestock production and cropping is strong. Also, donors increasingly recognize the relationship of livestock production and reduction of rural poverty and thus, increasingly support development of the livestock industry. Several new and highly relevant initiatives should be monitored closely, to see if innovative approaches can address poverty more effectively. The implementing agencies are the Food and Agriculture Organization of the United Nations, the European Union, and other bilateral agencies. Close coordination and cooperation with other donors who are active in the livestock subsector is recommended, through donor coordination meetings led by the Pakistan Resident Mission, in 2004.

PROJECT COSTS
(\$ million)

Item	Appraisal			Actual		
	FC	LC	Total	FC	LC	Total
A. Livestock Support Services						
1. Planning, Monitoring, and Coordination	0.35	1.67	2.01	0.38	1.10	1.47
2. Production Extension	3.61	11.53	15.14	1.93	13.60	15.53
3. Breed Improvement	1.97	4.77	6.74	1.78	4.02	5.80
4. Animal Health	1.07	1.50	2.57	0.35	1.02	1.37
Subtotal	6.99	19.47	26.46	4.44	19.73	24.17
B. Slaughterhouse Improvement	1.33	3.04	4.38	0.17	1.21	1.37
C. Training, Fellowship, and Consulting Services						
1. Local and International Training	2.26	0.19	2.44	1.43	0.09	1.52
2. Consulting Services	2.74	1.04	3.78	2.53	0.33	2.86
Subtotal	4.99	1.23	6.22	3.96	0.42	4.38
Base Cost	13.31	23.75	37.06	8.56	21.36	29.93
D. Physical Contingencies	1.33	2.38	3.71	0.00	0.00	0.00
E. Price Escalation Contingencies	2.12	10.72	12.84	0.00	0.00	0.00
F. Service Charges During Construction	1.39	0.00	1.39	0.66	0.00	0.66
Total Cost	18.16	36.85	55.00	9.23	21.36	30.59

FC = foreign exchange currency, LC = local currency.

Source: ADB. 1999. *Project Completion Report on the Livestock Development Project in Pakistan*. Manila.

ECONOMIC REEVALUATION

A. Background

1. The Livestock Development Project¹ was approved on 28 September 1989 for \$43 million. The Project became effective on 5 December 1990 and closed on 6 January 1999 after one extension. At appraisal, it was estimated that the economic internal rate of return (EIRR) for the Project would be 20.2%. Benefits would be from increased production of milk, wool, and meat generated by improved productivity of dairy cattle, buffalo, sheep, and goats. A project completion report (PCR), circulated in September 1999, reported significant underachievement of output targets, which were considered realistic at appraisal. Incremental gains in unit productivity and adoption of new technologies were significantly lower than expected, which resulted in low benefit streams. The low outputs, combined with delays in disbursement and benefits (and in some cases, no benefits at all) resulted in a negative EIRR. The basic methodology for the economic analysis follows the approach in the Asian Development Bank's *Guidelines for the Economic Analysis of Projects* and recommendations in the *Guidelines for the Preparation of Project Performance Audit Reports*.

B. Methodology and Assumptions

2. In the appraisal evaluation, benefit streams from incremental milk, meat, and fiber production were assessed at border prices with assumed levels of increased productivity that were, in hindsight, overly ambitious. The method used to evaluate the benefit stream assumed progressive adoption rates over 4 years within each cell serviced by each livestock production officer appointed through the Project. These rates also proved to be overly ambitious. To provide consistency of approach, the analysis adopted here uses the same analytical approach as for the PCR, with updated figures to 2003 Pakistan rupees, with one exception. In the PCR, milk producing beneficiaries were grouped into early adopters (within the first 4 years of implementation) and late adopters (in the last 4 years of implementation). Both groups were assigned different levels of productivity. From field interviews, there appeared to be no difference in incremental production of the two groups. Any incremental benefit due to the Project was applied to all milk beneficiaries in this analysis.

3. The difficulty with assessing post-implementation benefits is determining if the Project actually caused the increased production. Benefits can be assessed by comparing developments in the target area with developments in similar circumstances, but outside the target area. But no suitable "control" for comparison could be identified, because of the Project's complexity and wide-ranging scope of activities, and because of other donor-funded livestock initiatives. Instead, the approach used compares incremental output in the target area, during and after implementation, that can reasonably be attributed to combined project activities, including extension for animal health and production, animal breeding, institutional development, provision of animal health services, and training for capacity building.

4. In quantifying incremental output, assumptions were made based on field observations and information contained in the provincial impact surveys (1998). In the PCR, incremental benefits for milk were assumed to increase up to year 7 (1999) and the full impact, by year 9 (2001). For meat and wool production from sheep, the full impact was anticipated by year 8 (2000). Incremental output was assumed to remain stable afterward. With the limited sustainable

¹ ADB. 1989. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Islamic Republic of Pakistan for the Livestock Development Project*. Manila.

building of institutional capacity under the Project, and its relatively limited coverage, the assumption of further increases due to wider adoption of introduced technologies cannot be justified. Furthermore, the opportunity for further adoption of milk technology is limited, because much of the milk benefit is from increased fodder availability, and few beneficiaries have sufficient land to grow fodder crops.

5. Costs for rehabilitation of the two slaughterhouses in Quetta, Balochistan, and Sindh were included in the assessment, even though one plant never operated. Those costs were converted to 2003 Pakistan rupees, but incremental output was valued at border prices in US dollars. The price of tradable goods, such as milk, was derived from international prices converted to economic border prices after quality adjustments for the higher fat content of buffalo milk. The prices of non-tradable goods such as meat and fibers were converted to economic prices using a standard conversion factor of 0.9. Wages for farm labor were converted to economic wages at the "shadow wage" conversion factor of 0.8 (except in Balochistan, where a 0.75 conversion factor was used, reflecting its lower opportunity cost of labor). Incremental net benefits were assessed over 20 years, with no residual values. Recurrent costs from project activities were assumed to be zero, because all extension mechanisms were disbanded upon project completion.

C. Assessment of Farmer Incentives

6. The four project provinces, and their livestock production systems, differ significantly. In Balochistan, farmers depend more on natural pastures as a feed source, but farmers in Punjab depend more on crop residues and fodder grown specifically as livestock feed. The report and recommendation of the President (RRP) clearly identified that the key to improving livestock productivity was through a 15–20% increase in energy in livestock diets, and a 25% increase in protein levels. The RRP noted that the best way to address this requirement was through increased fodder production, and also claimed that this did "not necessarily increase the area of land devoted to fodder crops." In Balochistan, 50% of all livestock feed is reported to be from rangelands and forest grazing, about 25% from grazing crop stubble, and the remaining 25% from crop residue. In North-West Frontier Province, rangelands provide most livestock feed, except for irrigated valleys where crop stubble is an important alternative that makes some dairy activities possible, especially around Peshawar. In Punjab, more than 85% of livestock feed is from cultivated crops, including fodder crops, and the grazing of crop stubbles. In Sindh, crop residues provide 75% of the livestock feed.

7. With such high dependence on the crop subsector, the integration of livestock and cropping activities is complex and interdependent. Livestock contribute inputs to cropping through both draught power and dung. The balance between the two depends on arable land available to farmers in each location, the relative returns from each activity, and farmers' attitudes about risk (also a function of farm size). Analysis of the distribution of livestock by farm size shows that about 70% of all livestock are found on farms of less than 5 hectares, or are owned by the landless. (The landless comprise 20 to 30% of livestock ownership.) This suggests that other cropping activities must be considered when considering opportunities to expand fodder production. If the incentives, in cash returns, are greater for cropping activities, then the reallocation of land for fodder production will be difficult. Fodder production is certainly not an option for the 25 to 30% of livestock owned by the landless.

8. When reviewing the sustainability of technology packages delivered under the Project, the issue of cropping systems may help explain the relatively poor adoption rates of livestock technology, rather than blame low adoption on the ineffectiveness of the village livestock extension committees and the temporary appointments of livestock production extension staff

who promote the technological packages. This also suggests that technological packages to improve livestock productivity must be developed using a whole-farm approach, rather than isolating livestock from the overall farming systems. The broadening of the focus of extension services from animal health to the incorporation of animal production, which was attempted under the Project, may have been impractical because farmers' cropping activities were not adequately considered. The Project successfully introduced fodder production technologies in only a few farming situations. The widespread adoption of fodder was constrained by limitations imposed by land availability, more profitable cropping alternatives, or, where land is limited, the need to meet subsistence grain requirements of households.

D. Project Benefits

1. Milk Production: Dairy

9. Based on surveys at project completion, incremental milk production was estimated at 11%. This figure represents the cumulative benefit from improved animal health services, production extension, animal breeding initiatives, and the extensive training that the Project provided for farmers and support institutions. Annual production statistics in the provinces are based on assumed outputs rather than actual production, and therefore are not considered a reliable estimate of incremental production in the target districts. General comments made during farmer interviews suggest that incremental production could have been about 40%. But this figure is not considered representative of the entire project area because it was obtained close to the Peshawar city market, and to the Animal Health Industries Training Institute, where project impact would be greatest. For the purpose of this analysis, benefits were first realized in 1993 with an increasing number of beneficiaries as identified in the project completion reports (PCRs). Incremental milk production is, therefore, estimated to be about 12% higher than in the without project scenario. The increase of 4.9 million liters is less than 16% of the 31 million liters of incremental production considered achievable at appraisal.

2. Meat Production: Sheep and Goats

10. Incremental benefits for sheep farmers were derived from increased lambing, higher liveweight gains of young animals, meat from culled animals, and wool produced from breeding stock retained by farmers. The PCR attributed a 20% improvement in lambing rate to these benefits. The PCR also attributed 50% of the increased feed costs to the higher lambing rate. The other increased feed costs were attributed to production of ewe meat and wool (which were not assessed in the benefits). The same approach was used in this reevaluation over the 1,400 sheep-raising households that benefited from the Project. Benefits were introduced progressively over 4 years. Maximum incremental production coincided with the levels observed in the PCRs.

E. Reestimated Economic Returns

11. Benefits were assessed in 2003 terms after adjusting historic costs to provide net economic benefit streams over 20 years. The significant difference between the 2003 assessment, compared with that in the 1998 PCR, is due to the economic price of milk: PRs15.9/liter (ltr) in December 2003 versus PRs14/ltr when the PCR was prepared. The financial prices of milk were 20 and 9.5 PRs/ltr, respectively, reflecting increased liberalization of domestic milk prices in Pakistan. With the increased economic prices, the EIRR became positive in 2003 assessment; it was negative at PCR. This assessment does not change the overall view of the Project's impact. The poor performance of the Project reflects the delay in benefits, the low adoption rates, and the limited effect of technologies introduced.

12. A sensitivity test was conducted to measure the magnitude by which the Project fell short in terms of benefited households. Household members would have to more than double for the Project to be economically viable. Sensitivity tests indicate that household members would have to increase by 118% to raise the EIRR to 120%. This equates to beneficiary households of about 36,000 cattle and 3,000 sheep.

Table A2.1: Economic Farm Gate Price Derivation for Buffalo Milk

Item	Unit	Value	
		Financial	Economic
FOB European Port	\$/t	1,725.0	1,725.0
Freight and Insurance to Karachi	\$/t	15.0	15.0
Landed Price at Karachi	\$/t	1,740.0	1,740.0
Landed Price at Karachi	PRs/t	100,050.0	100,050.0
Port Handling Charges	PRs/t	250.0	225.0
Losses at Port (est 1%)	PRs/t	1,000.5	1,000.5
Traders' Margin (est 1%)	PRs/t	1,000.5	1,000.5
Transport from Port to Project Area	PRs/t	1,100.0	990.0
Factory Door Price of WMP	PRs/kg	103.4	103.3
WMP Cost for 1 kg Milk (12.5%)	PRs/kg	12.9	12.9
Cost of Reconstitution	PRs/ltr	2.0	1.8
3% Fat for Buffalo Milk Adjustment	PRs/ltr	4.0	3.0
Factory Door Price of Liquid Milk	PRs/ltr	18.9	17.7
Collection and Chilling Cost	PRs/ltr	2.0	1.8
Import Parity Farmgate Price Equivalent	PRs/ltr	16.9	15.9
Actual Farmgate Price	PRs/ltr	20.0	

Est = estimate, FOB = free on board, kg = kilogram, ltr = liter, PRs = Pakistan rupees, t = ton, WMP = whole milk powder.

Source: OEM estimates.

Table A2.2: Sheep Enterprise Household Gross Margin (6 Ewes)

Item	Unit	Economic Price/Unit	Without Project		With Project	
			Number	Value	Number	Value
Outputs						
Number of Head/HH	Hd		6		6	
Milk Produced	L	15.91	180	2,863.00	210	3,341.00
Increase in Liveweight	Kg	45.00	18	810.00	36	1,620.00
Manure	Kg	0.18	960	173.00	1,080	194.00
Total Outputs				3,846.00		5,155.00
Inputs						
Green Fodder	Kg	0.63	2,400	1,512.00	3,000	1,890.00
Animal Health Services	Unit	135.00	1.5	203.00	1.5	203.00
Farm Labor	p/days	60.00	25	1,500.00	30	1,800.00
Total Inputs				3,215.00		3,893.00
Gross Margin						
Per Household				632.00		1,263.00
Per Sheep				105.00		210.00
					PRs	631.00
					US\$	20.91

Hd = head, HH = household, kg = kilogram, L = liter, p = person.

Source: OEM estimates.

Table A2.3: Dairy Model Gross Margin: Unit Cost for Buffalo

Item	Unit	Economic Price/Unit	Without Project		With Project	
			Number	Value	Number	Value
Outputs						
Milk ^a	liters	15.91	1,470	23,385.00	1,646	26,191.00
Male Calves	head	6,750.00	0.27	1,823.00	0.28	1,890.00
Female Calves	head	7,560.00	0.27	2,041.00	0.28	2,117.00
Dung	kg	0.18	4,800	864.00	5,500	990.00
Cull Cows ^b	head	13,500.00	0.15	2,025.00	0.15	2,025.00
Total Outputs				30,138.00		33,213.00
Inputs						
Berseem	ha	11,250.00	0.06	706.00	0.126	1,412.00
Maize	ha	7,200.00	0.06	408.00	0.057	408.00
Sorghum	ha	10,800.00	0.08	875.00	0.081	875.00
Cottonseed Cake	kg	10.80	200	2,160.00	100	1,080.00
Wheat Flour	kg	9.00	28	252.00	0	0
Wheat Bran	kg	7.20	28	202.00	0	0
Wheat Straw	kg	0.45	1,100	495.00	1,100	495.00
Milk (for Calves)	liters	14.11	125	1,764.00	125	1,764.00
Replacement Heifers ^c	head	45,000.00	0.2	9,000.00	0.2	9,000.00
Repairs and Maintenance	unit	450.00	1	450.00	1	450.00
Animal Health Services	unit	135.00	1	135.00	1	135.00
Artificial Insemination	service	405.00	1	405.00	1	405.00
Farm Labor	p/days	60.00	25	1,500.00	40	2,400.00
Total Inputs				18,351.00		18,424.00
Gross Margin						
Per Cow				11,786.00		14,789.00
Per Liter				8.02		8.98
				Incremental Value of Production	PRs	3,003.00
				Incremental Value of Production	US\$	51.11

ha = hectare, kg = kilogram, p = person.

^a Based on a lactation of 270 days at 5.4 liters per cow/day without project and 12% increase with project.

^b Replaced after 6 years of lactation.

^c One in-calf heifer every 5 years.

Source: OEM estimates.

Table A2.4: Economic Cost and Benefit Streams (2003 Prices)

Year	Cattle and Buffalo Benefits			Sheep Benefits			Adjusted Costs (\$'000)	Total Benefits (\$'000)	Net Benefits (\$'000)
	No. of HH ^a	No. of Milking Animals ^b	Incremental Value of Production Economic (\$'000)	No. of HH	No. of Ewes	Incremental Value of Production Economic (\$'000)			
1992			0			0	3,287.00	0	(3,287)
1993	1,650	2,805	143	350	2,100	7	3,094.00	151	(2,944)
1994	3,300	5,610	287	700	4,200	15	4,763.00	301	(4,462)
1995	8,250	14,025	717	1,050	6,300	22	5,686.00	739	(4,947)
1996	13,200	22,440	1,147	1,400	8,400	29	6,390.00	1,176	(5,213)
1997	16,500	28,050	1,434	1,400	8,400	29	2,509.00	1,463	(1,046)
1998	16,500	28,050	1,434	1,400	8,400	29	1,088.00	1,463	375
1999	16,500	28,050	1,434	1,400	8,400	29	(475.00)	1,463	1,938
2000	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2001	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2002	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2003	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2004	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2005	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2006	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2007	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2008	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2009	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2010	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2011	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
2012	16,500	28,050	1,434	1,400	8,400	29		1,463	1,463
Net Present Value (12%)								(9)	
Economic Internal Rate of Return								0.9%	

HH = household, No. = number.

^a Based on assumed adoption rate of 10%, 20%, 50%, 80%, and 100% after a 2-year delay during implementation.

^b In the project completion report, the average number of milking cows per family was determined to be 1.7 per household throughout the project beneficiaries.

Source: OEM estimates.

ACHIEVEMENT OF OTHER DEVELOPMENT IMPACTS

A. Introduction

1. The impact of the Livestock Development Project (Project) was less than anticipated in terms of increased livestock productivity. The various reasons include (i) an ambitious and top down approach; (ii) a lack of focus and ownership; (iii) a lack of the participatory approach; (iv) delays in project commencement; (v) an inadequate balance among livestock health, livestock production, and extension activities; (vi) failure to construct and/or privatize slaughterhouses; and (vii) poor performance of consultants. A drought worsened the situation. These factors also constrained realization of anticipated socioeconomic and environmental impacts, and desired policy and institutional changes.

2. Unfortunately, no systematic studies were conducted to assess adoption of recommendations, impact on production and income, or factors constraining the wider adoption. The available studies are restricted to information on members of village livestock extension committees (VLECs) or, at best, nonmember farmers in the selected villages. This lack of information, especially with no benchmark data, makes it difficult to assess if there were any demonstration and spillover effects. Furthermore, most studies are inconclusive and deal in generalities.

3. This assessment is based on limited interviews with farmers of the defunct VLECs, and other farmers in those villages. An attempt was made to ground truth in the sustainability of the trends that were achieved during project implementation and observed at the Project Completion Report.

4. Despite the constraints that inhibited realization of desired quantitative and nonquantitative impacts, the Project brought some positive changes, suggesting the possibility of high payoffs for future investments in the subsector. Positive changes include (i) a trend for farmers to adopt preventive and curative recommendations due to extended drought; (ii) a realization of the judicious balance among investments in livestock health, livestock production, and extension; (iii) the increased role, over time, of the private sector in delivering health services, animal feed production, and marketing; (iv) increased demand for live animals and livestock products (beef and mutton) in Afghanistan, Iran, and the Gulf countries; (v) increased capability of the provincial livestock and dairy development departments (LDDD) as a result of project training; and (vi) a realization of the importance of the livestock subsector and its linkage with poverty reduction objectives, especially for landless households and female-headed rural households.

5. Although the quantifiable benefits are far lower than anticipated at appraisal, the nonquantifiable benefits are significant enough to attract major future investments. These include (i) awareness among the farmers of qualitative improvement and the importance of health and feed management, (ii) LDDD awareness of the participatory approach and the importance of non-health related interventions such as feed management and better husbandry, and (iii) privatization of veterinary services, and promotion of private seed and feed marketing services.

6. It is worthwhile to report observations and trends in fodder cultivation in all four provinces. About 80% of Pakistan's farms are smaller than 5 hectares. According to the Agricultural Census of 2000, these farmers allocate an average of 12 to 14% of their farmland to fodder. The scope for increasing fodder area, considering the relative profitability of staple and

cash crops versus livestock, is limited. Any increase in fodder availability must be through vertical increase, or higher per-hectare productivity, rather than through increased area planted. A shift in cropping patterns to favor fodder is possible only if livestock profitability increases enough to warrant an expansion in livestock number. This would require holistic interventions such as introduction of improved livestock breeds and fodder cultivars, dissemination of improved feed management practices, and better marketing of livestock and livestock products (such as through value-added chains). Given the relative profitability of various farm enterprises, there is significant potential to increase livestock productivity and household incomes by only bridging the gap between yield and productivity.

B. Provincial Impact

7. This appendix presents the Project's achievement of development objectives—socioeconomic and environmental impacts, and impact on institutions and policy—at the provincial level.

8. **Balochistan.** The main emphasis in Balochistan was on small ruminants. Adoption of recommended practices, although lower than anticipated, was satisfactory. The early adopters had modest increases in productivity, lower disease incidence, reduced animal mortality, and higher lambing rates.

9. The fodder demonstration plots were generally successful in disseminating wider adoption of improved fodder varieties, and demonstrating their higher yields. But benefits were limited to farmers who participated in the demonstration programs in villages where VLECs were active. Also, the persistent drought during and after the Project constrained wider adoption and dissemination of fodder.

10. Grazing lands are the main source of feed in Balochistan. *Atriplex canescens* was identified as a good, high-yielding fodder and fuel variety for the rangelands. Field demonstration plots were established to propagate it. But these efforts were not successful because of the persistent drought and the lack of local capacity for seed production. Similarly, even though improved Lucerne and oat varieties were identified and widely adopted in irrigated areas, their use could not be sustained because of limited capacity for seed production.

11. The ewe flushing and feeding recommendations, including for feeding in late gestation, were adopted, but slowly. Adoption was also limited to VLEC members. VLEC had a 95% lambing rate versus 70% for non-adopters. Progress in the lamb and goat-feeding program was not encouraging. The Project provided the improved feed for free—and the practice ceased after project completion. Furthermore, the increase in live weight was not enough an incentive for its wider adoption. The mechanized wool shearing recommendation was successfully adopted. But adoption of recommended practices could not be sustained because of the lack of backup support.

12. Project support to the semen production units also helped replace low-producing milk animals with improved breeds. Balochistan now has a yearly demand for about 25,000–30,000 semen straws, which is being met by the semen production unit in Quetta. Farmers who use artificial insemination report 15–20% increased milk production. But artificial insemination centers are constrained by inadequate facilities and limited access of small farmers. Each farmer must pay an extra cost of RPs200–300 for such services. The adoption rate for improved goat and sheep breeds is quite reasonable. Although distribution of improved breeds was later discontinued, the Project created farmer awareness of the benefits of maintaining pure breeds.

13. A major project benefit was strengthening of LDDD, both through training and the establishment of planning directorates. The Project also provided a statistical officer and a livestock marketing specialist, whose positions are now permanent.

14. The envisaged benefits of the slaughterhouse—hygienic livestock products, promotion of the private sector, environmental improvements through safe disposal of effluents—were not achieved, as the slaughterhouse is not operational. The disposal system of slaughterhouses and their attached oxidation plants, when operational, not only would ensure safe disposal of effluents but would also reduce pollution generated by the existing system of improper disposal.

15. **North-West Frontier Province (NWFP).** Adoption of improved husbandry practices in NWFP was far lower than anticipated. Nevertheless, early adopters had a modest increase in productivity (milk and liveweight), lower disease incidence, lower mortality, and higher lambing rates.

16. The fodder demonstration plots were generally successful in disseminating wider adoption of improved fodder varieties, and demonstrating the impact of higher yield. But their success was only in villages with active VLECs.

17. Project activities were generally environmental friendly. Adoption of improved fodder varieties improved soil fertility, while increased production of farmyard manure has improved soil structure and productivity.

18. At the senior policy and planning level, the linkage between the subsector level and poverty reduction is well-understood—especially for landless and female-headed rural households. The livestock subsector is recognized as a major contributor to Pakistan's national economy, and for its significant role in combating poverty.

19. **Sindh.** The Project's performance and impact in Sindh were lower than desired. Adoption of improved husbandry practices was significant only in villages with effective VLECs. Adoption of recommended fodder varieties and feed management practices was encouraging. But most early adopters were commercial livestock farmers, and adoption by small-scale farm households was low.

20. Outreach of the departments was reasonable in disseminating technologies for higher production. Consequently, farmer-adopters reported a modest increase in milk and liveweight productivity. The VLECs are now defunct—but they provided a good base for demonstration and dissemination of improved agricultural packages.

21. The Project's Impact Assessment Study for Sindh¹ reported on, and confirmed during the field visit, the successful and cost-effective role of nongovernment organizations (NGOs), and especially women NGOs, in disseminating health- and livestock-related messages. Furthermore, the hiring of female staff facilitated reaching women, who handle livestock management on most Pakistan farms. It was observed that the daily milk production has increased by about 1 to 1.5 liters since the Project began. Women generally manage income from milk sales in Sindh. The women allocate this income to meet medical emergencies and, occasionally, to meet daily expenditures for consumption.

¹ Indus Development Foundation. 1998. *Hyderabad: Impact Assessment Study of Livestock Sector Development Project, Sindh (Draft Report)*. Sindh.

22. Services for artificial insemination in Sindh are constrained by the lack of artificial insemination centers and inadequate production of semen straws (now 8,000–10,000 straws/year). The adoption rate of improved breeds is discouraging. Similarly, health services and awareness of improved practices are poor. Nevertheless, due to high demand for livestock and dairy products, there is a concentration of commercial herds in districts that adjoin Hyderabad, Karachi, and other cities. Those herders are generally more aware of health and feed management practices than other herders.

23. In Sindh, the persistent shortage of water in canals has reduced the grazing lands and increased reliance on cultivated fodder. This has encouraged stall-feeding. The introduction of improved fodder varieties has been limited to the existing fodder areas, because of the relative profitability of crops.

24. Like in Balochistan, the Sindh slaughterhouse does not operate. Operation of the disposal systems and oxidation plants attached to the slaughterhouses would ensure safe disposal of effluents, and reduce pollution caused by improper disposal.

25. The Project activities were generally environmentally friendly. The project training program increased LDDD's capacity to implement similar projects in the future, with higher emphasis on production and related extension initiatives.

26. **Punjab.** The Project's performance and impact were less encouraging in Punjab. The adoption rate of improved husbandry practices was far lower than anticipated. VLECs were generally ineffective. The impact assessment study² carried out by the Punjab Economic Research Institute (June 1998) reported that the department was poor in disseminating better production technologies. Consequently, adopters reported low increases in milk production and liveweight animal productivity. The lack of land for the slaughterhouse also meant that the anticipated benefits could not be achieved.

27. The rate of adoption of recommended fodder varieties and feed management practices was low, and limited to villages with active VLECs. Similarly, the Project's impact on mortality rates was insignificant. Almost no farmers reported adoption of recommended feeds like urea-molasses blocks, urea-treated straw, and green fodder preservation.

28. Recommendations for vaccination were widely adopted. Vaccination decreased diseases significantly. The mortality rate dropped from about 2 to 1%. Better health practices improved the value of livestock by about 10 to 20%. The average daily milk production was reported to have increased from 6.5 liters to about 7.7 liters/cow. Farmers generally sell about 50% of the milk produced. Adopter farmers usually sold the additional milk for an additional daily additional income of PRs10 to PRs15.

29. The Project activities were generally environmental friendly. The Project's training program increased LDDD's capacity to implement similar projects in the future, with higher emphasis on production- and extension-related initiatives.

² Punjab Economic Research Institute. 1998. *Impact Assessment of Livestock Development Project – Punjab.* (Publication No. 330). Lahore.

**Management Response
on the
Project Performance Audit Report on the
Livestock Development Project in Pakistan
(Loan 973-PAK[SF])**

Management supports the PPAR's overall assessment of the relevance and importance of livestock as a source of food and as a means of cushioning the effects of drought in rural Pakistan despite the minimal productivity gains of the Project.

Since the Project's approval in 1989, ADB had already begun applying the lessons learned from completed projects. The most recent livestock projects in South Asia and Mekong regions were focused toward small-scale household or community-level livestock operations. The approaches are more participatory now with a focus on group mobilization (particularly those which empower women). Project designs have also been simplified and careful institutional analyses of stakeholders were undertaken. These new thrusts had been fully acknowledged by Management.

BOARD OF DIRECTORS

DEVELOPMENT EFFECTIVENESS COMMITTEE

Chairperson's Summary of the Committee's Discussion on 25 August 2004 of the Project Performance Audit Report on the Livestock Development Project (Loan 973-PAK[SF]) in Pakistan

1. With its meeting on 25 August 2004, the Development Effectiveness Committee (DEC) started its August 2004 – July 2005 review cycle. At the meeting, the DEC considered two reports by the Operations Evaluation Department (OED): (i) *Special Evaluation Study on Project Cost Estimates*; and (ii) *Project Performance Audit Report on the Livestock Development Project (Loan 973-PAK[SF]) in Pakistan*. This Chairperson's Summary covers the DEC's discussion of the second report.
2. The DEC appreciated Management's summary response, which emphasized (i) the continued relevance and importance of livestock as a means of poverty reduction in Pakistan despite the evaluated project's unsuccessful rating; and (ii) application of the lessons learned from past projects to more recent livestock projects in the South Asia and Mekong regions in general, with ADB project approaches now more participatory and focusing on increased empowerment of women.
3. The DEC generally endorsed the key issues and lessons that the project performance evaluation report recommended be addressed in future livestock projects. Indeed, the DEC recognized that, as indicated in the Management and staff response, lessons learned from this project as well as from ADB's wider experiences in participatory rural development, had already started to be incorporated in other projects, not just by ADB but also by other multilateral and bilateral agencies involved in the sector. In that light, this evaluation experience could be considered a model for a successful lessons-learning process. The experience also indicated that progress was being achieved towards an increased results orientation in projects.
4. The DEC emphasized that a key lesson learned was that the effective commitment and support of government at the local level was crucial to such a project; a 'top-down' approach to implementation – and development in general - did not work. Another key element to success is involvement of the private sector.
5. In the interest of capturing the lessons learned and improvements achieved in greater detail, for purposes of dissemination, the DEC requested staff to submit a more thorough summary of recent approaches to livestock development as undertaken in South Asia. Attached for information is a copy of such a memorandum received from staff immediately following the DEC meeting.

Jusuf Anwar
Chairperson
Development Effectiveness Committee

27 August 2004