



# Completion Report

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Project Number: 25054  
Loan Number: 1461  
March 2006

## NEP: Third Livestock Development Project

## CURRENCY EQUIVALENTS

Currency Unit	–	Nepalese rupee/s (NRe/NRs)	
		<b>At Appraisal</b> (14 June 1996)	<b>At Project Completion</b> (15 July 2005)
NRs1.00	=	\$0.0178	\$0.0143
\$1.00	=	NRs56.25	NRs70.35

### ABBREVIATIONS

ADB	–	Asian Development Bank
BME	–	benefit monitoring and evaluation
CPMO	–	central project management office
DDC	–	Dairy Development Corporation
DLS	–	Department of Livestock Services
DLSO	–	District Livestock Services Offices
EA	–	executing agency
ECBR	–	economic cost-benefit ratio
EIRR	–	economic internal rate of return
ENPV	–	economic net present value
FCBR	–	financial cost-benefit ratio
FI	–	financial institutions
FIRR	–	financial internal rate of return
FNPV	–	financial net present value
GDP	–	gross domestic product
IA	–	implementing agency
IDCC	–	Interdepartmental coordination committee
IMSC	–	interministerial steering committee
JT	–	junior technician
JTA	–	junior technical assistant
LAT	–	livestock action team
LIRA	–	livestock industry related association
MOAC	–	Ministry of Agriculture and Cooperatives
MTR	–	midterm review
NGO	–	nongovernment organization
NRB	–	Nepal Rastra Bank
PB	–	participating bank
PCR	–	project completion review
PMSS	–	Pokhara Milk Supply Scheme
RD	–	Regional Directorate
RPMO	–	regional project management office
SDR	–	Special drawing rights
TA	–	technical assistance

### NOTES

- (i) The fiscal year (FY) of the Government ends on 15 July. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2005 ends on 15 July 2005.
- (ii) In this report, "\$" refers to US dollars.

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## BASIC DATA

### A. Loan Identification

1.	Country	Nepal
2.	Loan Number	1461-NEP
3.	Project Title	Third Livestock Development Project
4.	Borrower	His Majesty's Government of Nepal
5.	Executing Agency	Department of Livestock Services
		Nepal Rastra Bank
6.	Amount of Loan	SDR 12.55 million
7.	Project Completion Report Number	NEP 908

### B. Loan Data

1.	Appraisal	
	– Date Started	30 May 1996
	– Date Completed	14 June 1996
2.	Loan Negotiations	
	– Date Started	12 August 1996
	– Date Completed	13 August 1996
3.	Date of Board Approval	19 September 1996
4.	Date of Loan Agreement	23 December 1996
5.	Date of Loan Effectiveness	
	– In Loan Agreement	23 March 1997
	– Actual	23 March 1997
	– Number of Extensions	None
6.	Closing Date	
	– In Loan Agreement	31 July 2003
	– Actual	20 September 2004
	– Number of Extensions	1
7.	Terms of Loan	
	– Interest Rate	1% per annum
	– Maturity (number of years)	40
	– Grace Period (number of years)	10

### 8. Disbursements

#### a. Dates

Initial Disbursement	Final Disbursement	Time Interval
21 July 1997	20 September 2004	86 months
Effective Date	Original Closing Date	Time Interval
23 March 1997	31 July 2003	76 months

## b. Amount (SDR)

Category or Subloan	Original Allocation	Last Revised Allocation	Amount Canceled	Net Amount Available	Amount Disbursed	Undisbursed Balance
Civil works	682,000	682,000	0	682,000	599,698	82,302
Vehicles	1,017,000	504,000	513,000	504,000	453,685	50,315
Equipment and Furniture	1,278,000	638,488	639,512	638,488	504,137	134,351
Credit	3,517,000	2,000,000	1,517,000	2,000,000	1,726,441	273,559
Training and Fellowships	1,026,000	526,000	500,000	526,000	343,094	182,906
Consulting Services	2,351,000	1,810,053	540,947	1,810,053	1,309,875	500,178
Project Administration	1,257,000	2,597,000	(1,340,000)	2,597,000	3,380,912	(783,912)
Service Charge	367,000	367,000	0	367,000	239,393	127,607
Unallocated	1,060,000	200,000	860,000	200,000	0	200,000
<b>Total</b>	<b>12,555,000</b>	<b>9,324,541</b>	<b>3,230,459</b>	<b>9,324,541</b>	<b>8,557,234</b>	<b>767,307</b>

9. Local Costs (Financed)	
- Amount (\$)	7.18
- Percent of Local Costs	96.61
- Percent of Total Cost	62.19

## C. Project Data

## 1. Project Cost (\$ million)

Cost	Appraisal Estimate	Actual
Foreign Exchange Cost	13.93	5.42
Local Currency Cost	13.96	16.47
<b>Total</b>	<b>27.89</b>	<b>21.89</b>

## 2. Financing Plan (\$ million)

Cost	Appraisal Estimate	Actual
Implementation Costs		
Borrower Financed	3.80	4.11
ADB Financed	18.29	11.54
Other External Financing	5.80	6.24
<b>Total</b>	<b>27.89</b>	<b>21.89</b>

ADB = Asian Development Bank.

## 3. Cost Breakdown by Project Component (\$ million)

Component	Appraisal Estimate	Actual
Part A: Livestock Productivity Improvement		
1. Expansion of Forage and Seed Production	1.70	1.21
2. Pasture Seed Production	1.30	0.90
3. Expansion of Private Sector of Animal Health	4.23	3.10
4. Sustaining of Public Sector Animal Health	0.70	0.50
5. Increased Accessibility of Livestock Credit	4.22	2.95
<b>Subtotal</b>	<b>12.15</b>	<b>8.66</b>
Part B: Expansion of Agro-Processing and Marketing	<b>6.19</b>	<b>7.50</b>
Part C: Institutional Strengthening and Organization Development		
1. Capacity Building and Upgrading Facilities	3.47	3.44
2. Farmer Group Development	0.33	0.31
3. Project Management	1.65	1.65
<b>Subtotal</b>	<b>5.45</b>	<b>5.40</b>
<b>Total Base Cost</b>	<b>23.79</b>	<b>21.56</b>
Physical Contingency	2.38	0.00
Price Contingency	1.18	0.00
Service Charge	0.54	0.33
<b>Total Project Cost</b>	<b>27.89</b>	<b>21.89</b>

## 4. Project Schedule

Item	Appraisal Estimate	Actual
Date of Contract with Consultants		
Package A	June 1997	8 January 1998
Package B	August 1997	August 1998
Completion of Work	December 2003	July 2004
Civil Works Contract		
Date of Award		April 1998
Completion of Work		January 2002
Equipment and Supplies Dates		
First Procurement		June 1998
Last Procurement	April 1997	January 2003
Other Milestones		
First Partial Cancellation		18 August 1997
Second Partial Cancellation		12 April 2001
Third Partial Cancellation		22 August 2002
Date of Loan Reallocation		12 April 2004
Extension of Loan Closing Date		13 August 2003
Final Cancellation of Undisbursed Loan Balance		20 September 2004

## 5. Project Performance Report Ratings

Implementation Period	Ratings	
	Development Objectives	Implementation Progress
From 19 Sep 1999 to 31 Dec 1996	Satisfactory	Satisfactory
From 01 Jan 1997 to 31 Dec 1997	Satisfactory	Satisfactory
From 01 Jan 1998 to 31 Dec 1998	Satisfactory	Satisfactory
From 01 Jan 1999 to 31 Dec 1999	Satisfactory	Satisfactory
From 01 Jan 2000 to 31 Dec 2000	Satisfactory	Satisfactory
From 01 Jan 2001 to 31 Dec 2001	Satisfactory	Satisfactory
From 01 Jan 2002 to 31 Dec 2002	Satisfactory	Satisfactory
From 01 Jan 2003 to 31 Dec 2003	Satisfactory	Satisfactory
From 01 Jan 2004 to 20 Sep 2004	Satisfactory	Satisfactory

## D. Data on Asian Development Bank Missions

Name of Mission <sup>a</sup>	Date	No. of Persons	No. of Person-Days	Specialization of Members
Appraisal Mission	30 May–14 June 1996	6	90	a, b, c, d, e, f
Inception Mission	18–26 Mar 1997	1	8	a
Review 1	8–13 July 1997	1	5	a
Special Review	9–17 May 1998	1	8	a
Review 2	4–14 Aug 1998	1	10	a
Review 3	2–7 Dec 1998	2	10	g, h
Review 4	7–23 July 1999	2	32	g, h
Mid-Term Review	25 Feb–23 Mar 2000	4	108	h, i, j, m
Review 5	6–22 Nov 2000	1	16	h
Review 6	18 Apr–4 May 2001	2	32	h, l
Review 7	10–30 Apr 2002	2	40	h, l
Review 8	27 Dec 2002– 23 Jan 2003	2	54	h, l
Review 9	19 June–11 July 2003	2	44	h, l
Project Completion Review <sup>b</sup>	22 Dec 2004– 14 Jan 2005	5	115	h, i, l, m

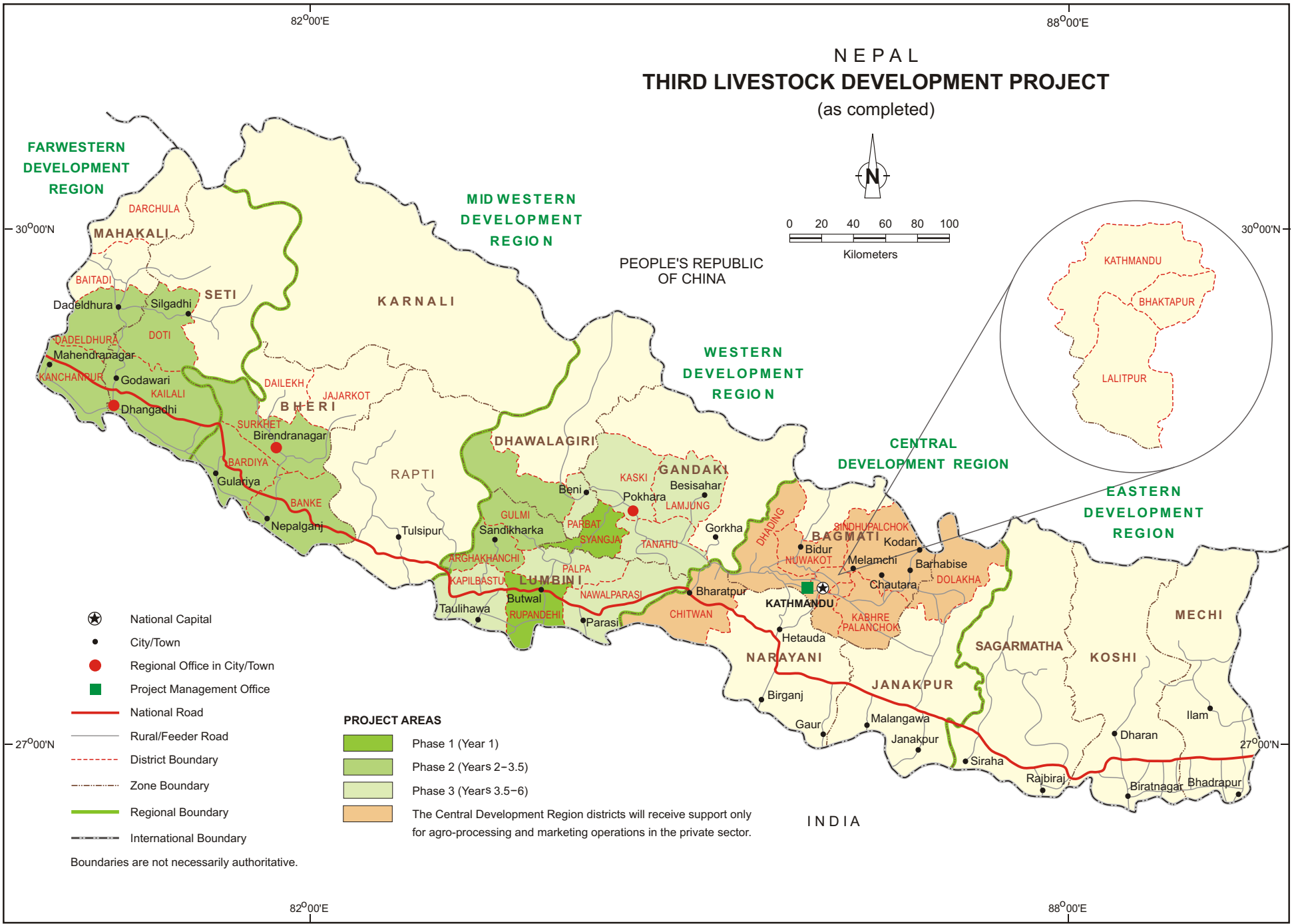
<sup>a</sup> a – senior livestock specialist (mission leader), b – senior financial analyst, c – economist, d – counsel, e – financial analyst, f – manager, forestry and natural resources division (west), g – livestock specialist (mission leader), h – project implementation officer (mission leader), i – gender and development specialist, j – loan administration consultation, k – project analyst; l – assistant disbursement analyst, m – consultant.

<sup>b</sup> The project completion report was prepared by Govinda Gewali, Project Implementation Officer, Nepal Resident Mission.

# NEPAL

## THIRD LIVESTOCK DEVELOPMENT PROJECT

(as completed)



- ★ National Capital
- City/Town
- Regional Office in City/Town
- Project Management Office
- National Road
- Rural/Feeder Road
- - - District Boundary
- · - · - Zone Boundary
- Regional Boundary
- International Boundary

- PROJECT AREAS**
- Phase 1 (Year 1)
  - Phase 2 (Years 2–3.5)
  - Phase 3 (Years 3.5–6)
  - The Central Development Region districts will receive support only for agro-processing and marketing operations in the private sector.

Boundaries are not necessarily authoritative.

## I. PROJECT DESCRIPTION

1. Raising livestock is one of the main sources of rural livelihood in Nepal. The majority of rural households raise livestock to (i) support agriculture production (compost); (ii) meet nutritional requirements (through consumption of milk, ghee, and meat); and (iii) earn cash income (by selling livestock such as goat, poultry, pig, buffalo, and livestock products). At the time of project preparation (1995/96), the agricultural sector accounted for 56% of the gross domestic product (GDP). The livestock subsector contributed 15% of the GDP and 31.5% of the agricultural GDP. The Eighth Five-Year Plan (FY1992–FY1997), the Agriculture Perspective Plan (1996), and the Livestock Master Plan (1993) emphasized livestock development — through increased farmer and private sector participation — as one of the main sources of rural poverty alleviation. The Government requested Asian Development Bank (ADB) technical assistance (TA)<sup>1</sup> to prepare a livestock development project covering 27 districts: (i) intensive livestock development programs, agro-processing, and marketing (19 districts from the Farwestern, Midwestern, and Western Development regions), and (ii) agro-processing and marketing (8 districts from the Central Development Region). The Project was jointly prepared with the Government in August 1996, building on lessons learned from the previous two ADB-supported livestock development projects in Nepal.<sup>2</sup>

2. ADB approved a loan of SDR12.55 million (\$18.30 million at the time) for the Third Livestock Development Project on 19 September 1996, signed the Loan Agreement on 23 December 1996, and the loan became effective on 23 March 1997. The Government of Australia, through ADB, cofinanced the Project with a grant of \$0.75 million.<sup>3</sup> The Project's objectives<sup>4</sup> were to (i) increase livestock productivity; (ii) develop alternative market outlets for livestock and livestock products; (iii) reorient the Department of Livestock Services (DLS) towards self-sustainable private sector growth; (iv) strengthen the institutional capacity of livestock farmer groups; and (v) strengthen DLS' capacity to coordinate, monitor, and manage the livestock subsector—jointly with stakeholders—following a process approach. The Project had three components:

- (i) **Livestock Productivity Improvement.** This comprised five subcomponents:
  - (a) **Expansion of forage and feed production.** Promotion of forage and feed production on communal and private lands (including marginal areas of forests), and training for farmers to better manage farming system.
  - (b) **Pasture and forage seed production.** Production of pasture and fodder seeds by improving local availability.
  - (c) **Expansion of private sector services.** Replacing government system with effective and accessible private veterinary, breeding, and advisory services.
  - (d) **Sustaining of public sector services.** Upgrading animal health, livestock extension, and artificial breeding services by district livestock

<sup>1</sup> ADB. 1994. *Technical Assistance to Nepal for the Third Livestock Development Project*. Manila.

<sup>2</sup> ADB. 1979. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Livestock Development Project*. Manila.

ADB. 1984. *Report and Recommendation of the President to the Board of Directors for a Proposed Loan to the Kingdom of Nepal for the Second Livestock Development Project*. Manila.

<sup>3</sup> ADB. 1997. *Technical Assistance to Nepal for the Third Livestock Development Project*. Manila.

<sup>4</sup> ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Third Livestock Development Project*. Manila.

offices and service centers for areas not likely to be served by private sector.

- (e) **Increased accessibility to livestock credit and insurance.** Making credit and livestock insurance accessible to farmers through financial institutions (FIs).
- (ii) **Expansion of Agro-Processing and Marketing.** This included (a) promotion and strengthening of small-scale agro-processing; (b) improvement in quality control and marketing of milk, meat, and processed products; (c) establishment of related regulations; (d) monitoring quality of animal feeds and feed ingredients; (e) training and observation visits; and (f) consumer awareness.
- (iii) **Institutional Strengthening and Organizational Development.** This comprised three subcomponents:
  - (a) **Capacity building and upgrading of facilities.** This included (1) participatory planning and systemic learning to facilitate working together; (2) strengthening DLS's capacity in training, monitoring, management, physical infrastructure, and equipment; and (3) long- and short-term participatory and technical training.
  - (b) **Farmer group development.** Establishment of enterprise-focused farmer groups as a basis for program planning, implementation, and monitoring.
  - (c) **Project management.** Strengthening DLS's capacity to apply the process approach to livestock development, monitoring, and evaluation; and effectively manage the Project through provision of office equipment, transport, and related materials.

3. DLS—under the Ministry of Agriculture and Cooperatives (MOAC)—was the lead Executing Agency (EA). The Nepal Rastra Bank (NRB)—the central bank of Nepal—was the EA for credit programs. Livestock Directorates in the Western, Midwestern, and Farwestern Development Regions were responsible for managing and monitoring field programs. District Livestock Services Offices (DLSOs) and local nongovernment organizations (NGOs) were the implementing agencies (IAs) for livestock programs and social mobilization. FIs were the IAs for the credit program.

## II. EVALUATION OF DESIGN AND IMPLEMENTATION

### A. Relevance of Design and Formulation

4. The Project's design and formulation were consistent with the Government's strategy as detailed in the Eighth Five-Year Plan (FY1992–FY1997), Ninth Five-Year Plan (FY1998–FY2003), and the Agriculture Perspective Plan (1996). These accorded high priority to livestock development for reducing poverty in rural areas. The Project's objective was consistent with the principal strategic of ADB's operations in the country.<sup>5</sup> Although broad measures to deliver project benefits to smallholder and marginal farmers were incorporated in the project design, suitable means were developed during implementation. The main strength of the project design was its focus on a process approach and greater private sector role in livestock extension and marketing. This enhanced farmers' access to animal health, breeding, and credit services from

<sup>5</sup> ADB prioritized promotion of livestock production and processing through genetic improvement and market development in rural areas to achieve poverty reduction.

public and private sectors. Milk and meat marketing problems were eased through promotion and strengthening of small-scale dairies and meat shops. Increased production of forage in private and communal lands was relevant to reduce the high degradation rate of forestlands from grazing or collecting fodder for animals.

5. The project design emphasized implementation of livestock programs in collaboration with local NGOs, FIs, and private service providers. However, it did not provide criteria, procedures, or mechanisms to involve them and clarify their roles. The Midterm Review (MTR) Mission in February 1999 prepared the necessary guidelines and modalities. The project management structure was simple and sustainable because DLS district offices had primary responsibility for implementation and monitoring of field programs. This was consistent with the Government's policy not to increase staffing levels and create temporary structures for project management. Loan consultants' input (Package B consultant) was formulated to be flexible so that they could respond to requirements. This permitted increased consultant input in dairy and meat processing, marketing, and forage development. However, the terms of reference and input of the resource-business-marketing advisor (Package A consultant) engaged under the TA grant—team leader for both packages—were too broad and not properly scheduled.

6. Although poverty reduction was the Project's main objective, the design did not provide adequate mechanisms to select and deliver benefits to marginal and landless households, disadvantaged communities, and women. Identification and grouping of target people, and delivery of suitable services—mostly goat raising on a cost-sharing basis through local NGOs—began after the MTR, following successful pilot testing. The Project Completion Review (PCR) Mission considers that the Project would have had greater impact on poverty reduction if the mechanisms had been prepared during the project formulation and implemented from the beginning.

## **B. Project Outputs**

7. The PCR Mission assessed the project immediate objectives against appraisal targets as far as applicable, and the Project achieved its immediate objectives (Appendix 1 and 2). Achievements under all three components were in line with those envisaged at appraisal.

### **1. Livestock Productivity Improvement**

8. This component was intended to improve livestock productivity through support for (i) increased forage, feed, and pasture seed production; (ii) expansion of animal health, breeding, and husbandry; and (iii) increased access to livestock credit and insurance. The PCR Mission estimated that this component achieved about 98% of its immediate objective.

#### **a. Expansion of Forage and Feed Production**

9. The Project substantially increased supply of seasonal and perennial feed through cultivation of forage in communal and private lands, and over-sowing landslide and roadside areas. It first imported a range of forage seeds, undertook field demonstrations, encouraged farmers to grow suitable forage, and supply forage seed locally. Out of 32 species of forage introduced, stylo, joint vetch, wynn cassia, forage-peanut, oats, and berseem were most commonly adopted. A total of 50,515 farmers (51% women) were involved in growing forage in 10,680 hectares (ha) of private land, compared with almost none before the Project. Forage was also grown along 2,564 kilometers (km) of roadside and about 500 ha of community forestland. About 20% of the animal feed requirement was met from the forage program. The Project also

helped DLS establish a forage and seed unit and construct an office building, provided necessary equipment and vehicles, and trained field staff and farmers on forage production.

#### **b. Pasture and Forage Seed Production**

10. For intensification of pasture and forage programs, the Project emphasized production of pasture and forage seed from farmers. Forage legume (including limited annual fodder and grasses) was grown by contracting smallholder farmer groups. Seed production was rapidly expanded within and outside the project area through promotion of suitable fodder and forage cultivation. The PCR Mission estimated that farmer groups produced about 230,500 kilograms (kg) of seed in 2004 compared with 7,080 kg in 1997. As farmers were growing fodder and forage in community and private lands, and the selling price of seed was about NRs400/kg in 2004, this became one of the main sources for group and household incomes. It also reduced the cost of milk and meat production by about 20%. The Project promoted seed entrepreneurs in six project districts (Banke, Kailali, Lamjung, Nawalparasi, Palpa, and Rupandehi), and strengthened DLS's capacity—supporting the seed production unit, equipment for laboratories and livestock farms, building renovation, staff training, and preparation of manuals.

#### **c. Expansion of Private Sector Services**

11. The Project's initial plan was to assist graduate veterinarians to establish and develop private veterinary, artificial insemination, and other extension services from Pokhara (Kaski district) and replicated to Butwal (Rupandehi district) and Chitwan (Chitwan district), based on lessons learned. This assumed that veterinary graduates would be available for professional training abroad and practice private clinical services upon their return. However, the DLS could not find veterinary graduates interested in establishing private veterinary clinical services because the Government and NGOs offered more job security. The MTR modified the provision and the Project selected 30 qualified junior technicians (JTs) and junior technical assistants (JTAs)—known as paravets—and trained them on the latest extension technology and business management. They were given basic equipment on a cost-sharing basis under the Project's private-public partnership program. The paravets established animal health and artificial insemination services in 30 sites in eight project districts. Each paravet was serving on average 3,000 animals per year, covering up to four village development committees. They charged prevailing rates for services, which were generally effective and efficient.

#### **d. Sustaining of Public Sector Services**

12. The Project upgraded DLS's capacity for animal health and artificial breeding services in the 19 intensive program districts and service centers by constructing and renovating office buildings, providing basic laboratory and surgical instruments, and training relevant staff. The PCR Mission estimated that public sector animal health, extension, and breeding services in the project area have increased by about 25% compared with 1997. The Lamapatan Animal Breeding Center in Pokhara was upgraded to the National Animal Breeding Center to assist DLSOs and service centers with breeding materials and skills. The Project constructed laboratory buildings, breeding bull sheds, and provided necessary equipment, vehicles, breeding bulls, and short-and long-term staff training. The PCR Mission observed that project facilities were properly maintained and services were being delivered, although the existing capacity was inadequate to meet increasing demand.

### **e. Increased Accessibility to Livestock Credit and Insurance**

13. The Project had initial difficulties in implementing its credit program because (i) only two commercial banks, with limited interest in rural finance, were engaged; and (ii) there was limited consultant input to assist implementation of the credit program. These constraints were removed during the MTR by allowing various types of FIs to participate (such as NGOs, cooperatives, and development banks) and providing input of a local credit consultant. A total of 19 FIs participated in credit delivery, most of them based in project districts (Appendix 3). About 9,800 farmers received livestock credit worth about \$2.3 million. However, about half the partner FIs, with adequate liquidity, used their own funds to deliver credit to about 10,000 additional farmers, because the borrowing rate under the Project became 1.5% higher than decreased market rate. This resulted in \$2.8 million loan savings under the credit category, and its cancellation during project implementation and at the loan closure. Despite the Project's pro-poor focus, credit delivery achievements on a group guarantee basis remained dismal. Most FIs were reluctant to deliver credit to farmers without collateral—partly because the livestock insurance services envisaged in the project design remained dysfunctional and FIs were not assured of timely repayments. As a result, many farmer groups borrowed from group funds and operated informal group insurance schemes, offering up to 80% compensation in case of animal death.

### **2. Expansion of Agro-Processing and Marketing**

14. The main objective of this component was to promote private sector participation in processing and marketing of milk and meat by developing technical and management capacity and promoting links between farmers, processors, and marketers. The PCR Mission estimated that this component achieved 99% of the immediate objective. Private sector participation in milk processing and marketing has increased by about 20% compared with pre-Project levels, and about 15% more than the appraisal target. It is expected to further increase once the recently privatized Pokhara Milk Supply Scheme commences full-scale operations. The Project promoted and strengthened 81 small-scale dairies in rural and peri-urban areas through milk processing, product diversification, and business management training (Appendix 4). These dairies were procuring up to 30,000 liters/day for liquid milk sales and dairy products after the Project. On average, each dairy was providing a market outlet for 400 liters of raw milk from 152 farmers and generated employment opportunities for four people, providing increased income for entrepreneurs and their families.

15. The Project intended to improve the quality of meat production, processing, and marketing, which was exclusively undertaken by the private sector, mostly in an unhygienic way. The Project (i) identified specific areas where improvements were warranted; (ii) held workshops and awareness campaigns among butchers, consumers and planners; and (iii) organized public hearings in all project districts. Ten butchers were taken to India to observe how meat was handled hygienically. In collaboration with meat entrepreneurs, improved slaughter slabs were constructed in three project districts (Lalitpur, Surkhet and Syangja) for demonstration. Through the Project's technical support, two slaughterhouses were established in Kathmandu (Thankot) and Nuwakot (Kakani). With the participation of owners, 43 retail meat shops were upgraded. A total of 225 butchers (17 female) were provided slaughtering, butchery, and meat hygiene training; 110 established hygienic meat shops in project districts. About 9,000 consumers benefited directly from improved quality meat products and 500 people are directly employed in the meat shops. About 100 meat shops improved through project support in 13

project district headquarters.<sup>6</sup> The Project also developed environmental guidelines for meat entrepreneurs, which are being applied.

16. The Project planned to support the establishment of organized live animal markets—in collaboration with municipalities and the private sector—in districts where transaction of live animals was high. Markets were established in Thankot (Kathmandu district), Ratnanagar (Chitwan district), and Parasi (Nawalparasi district). The PCR Mission observed that all the markets were operational, although facilities were still under improvement (such as approach road, fencing, water supply, animal shed, veterinary pharmaceutical shop, and market information system). Over 200,000 live animals—about 50% buffaloes—were marketed annually in these markets.

### **3. Institutional Strengthening and Organizational Development**

17. The main objective of this component was to build the capacity of institutions involved in project implementation and management, and reorient DLS staff to more inclusive and community-oriented service delivery. It was estimated that this component achieved 100% immediate objective, which was implemented under the subcomponents of capacity building, farmer group development, and project management.

#### **a. Capacity Building and Upgrading of Facilities**

18. Livestock action teams (LATs) were formed for each of the 19 intensive livestock program districts, comprising chief district line agencies for livestock, forestry, soil conservation, agriculture, and women's development; and representatives from the district development committee, partner NGOs, and FIs. The main responsibilities of LATs were to (i) identify needs; (ii) prepare financially, socially, and environmentally viable programs; (iii) make arrangement of financial resource; and (iv) monitor field programs. LATs are operational in all project districts. DLS's capacity was strengthened through long- and short-term training in Nepal and abroad to staff at service centers; and district, regional, and central offices. Master's degree training was provided to 22 officers—13 in Australia (1 on forage and 12 on system learning approach), 1 in India (meat technology), and 8 in Nepal (1 on forage, 3 on meat technology, and 4 on milk technology). The system learning approach training for DLS staff was useful in delivering extension services to farmer groups.

19. Short-term training on participatory program planning and monitoring, community development, microfinance, conflict management, forage development, and dairy and meat processing was provided in India and Bangladesh to an additional 52 officers, 66 JTs/JTAs, and 49 milk and meat entrepreneurs. A total of 207 officers, 905 JTs/JTAs, and 1,114 entrepreneurs were provided short in-country training on social mobilization, participatory program planning, monitoring and evaluation, gender awareness, and business management. Short-term training was also provided to about 30,000 farmers on group development, social mobilization, credit management, and resource mobilization. The Project met the appraisal target for short- and long-term training. However, only about 50% of the appraisal-targeted observation visits for the project stakeholders could be implemented. This is because the new Foreign Aid Policy of the Government (2002) restricted financing any observation visit abroad utilizing loan funds.

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<sup>6</sup> Baglung, Bhairahawa, Butwal, Chitwan, Damauli, Dhangadhi, Gulariya, Kusma, Nepalgunj, Parasi, Sandhikharka, and Surkhet.

## **b. Farmer Group Development**

20. The Project followed the group approach for service delivery, although input was also provided to individual farmers. A total of 1,395 groups were formed from 348 program pockets covering 17,522 farm families. An additional 38,933 families benefited from the Project on an individual basis (Appendix 5). Raising cattle, buffalo, pig, and poultry, and growing forage were the main activities. Considerable input was provided to form and strengthen groups, develop them as viable institutions to implement field programs, and sustain them. About 100 groups were united and graduated into 20 milk and 2 meat production, processing, and trading associations, known as livestock industry related associations (LIRA) (Appendix 6). The establishment of 12 additional LIRAs—on milk and meat processing and marketing, and forage development—is in process. The group approach was particularly effective in implementing the poverty reduction program (goat raising) for poor families, disadvantaged communities, ex-bonded laborers, and women. The program was implemented in 86 pockets in collaboration with 72 local NGOs (Appendix 7). The NGOs identified target people, formed groups, and developed their capacity, while the Project provided financial (on a cost-sharing basis) and technical support. Each group had generated on average NRs20,000 (July 2004) through internal resource mobilization, which was mainly used for income-generating activities.

## **c. Project Management**

21. DLS's capacity to implement the Project following the process approach was significantly strengthened due to short- and long-term staff training on participatory development. The Project renovated buildings and provided the necessary equipment and vehicles for central, regional, and district offices. Nineteen technical manuals were prepared on milk and meat processing and marketing, forage cultivation, credit delivery, and NGO and FI partnership. DLS is an innovative and efficient government department with capacity to implement participatory programs. However, it could not establish an effective benefit monitoring and evaluation (BME) system, which was critical for systematic feedback to project management and effective reporting.

## **C. Project Costs**

22. At appraisal, the total project cost was estimated at \$27.90 million (\$13.93 million in foreign exchange costs and \$13.96 million equivalent in local currency costs). ADB was to provide a loan of \$18.29 million, the Government (\$3.80 million equivalent), FIs (\$3.5 million equivalent), farmers and entrepreneurs (\$2.3 million equivalent). The actual project cost amounted to about \$21.89 million,<sup>7</sup> comprising \$5.42 million in foreign exchange costs (including \$0.33 million for service charges during implementation). Expenditure by component was about \$8.66 million (40%) for livestock productivity improvement, about \$7.5 million (34%) for agro-processing and marketing, and \$5.4 million (25%) for institutional strengthening and organizational development. ADB financed the entire foreign exchange cost of \$5.42 million as well as \$6.12 million equivalent in local currency costs. About 53% of the total project cost was

<sup>7</sup> The first partial cancellation of \$0.75 million was in August 1997 after the Government of Australia cofinanced TA 2851 by an equal amount. The second partial cancellation (April 2001) was due to loan savings of \$1.5 million, the third partial cancellation (August 2002) was caused by loan savings of \$2.0 million, and the fourth partial cancellation (loan closure, September 2004) was due to loan savings of \$1.13 million. The main reasons for the loan savings were (i) steep devaluation of Nepalese rupee against US dollar; (ii) substantially lower than estimated cost of procuring project vehicles; (iii) low bidding prices by civil works contractors, and equipment and furniture suppliers; and (iv) 1.5% higher borrowing rate for credit delivery by FIs under the Project compared with the market rate.

financed by ADB, below the appraisal target of 66%, due to the cancellation of about \$5.38 million at different stages of the Project. The contribution of the Government rose from the appraisal estimate of 14% to 19%, beneficiaries' participation grew from 8% to 10%, and FIs' input increased from 13% to 15%. The share of the grant TA was about 3%. Actual project costs by category at project completion are in Appendix 8.

#### **D. Disbursements**

23. The loan amount at appraisal was SDR12.55 million, of which SDR8.55 was disbursed and SDR4.00 million was cancelled. As provided in the Loan Agreement, two imprest accounts (one for credit and one for noncredit programs) were established with \$0.50 million each to ensure timely disbursement and efficient project implementation. The imprest accounts were fully liquidated on 14 July 2004. The statement of expenditure procedure was also used under the loan. Because of the small amount of individual expenditures under the Project, the imprest accounts and statement of expenditure procedure were very useful and provided significant support for smooth project implementation. The loan account was closed on 20 September 2004. Annual and quarterly loan disbursements are in Appendix 9.

#### **E. Project Schedule**

24. The Project was originally envisaged to be implemented in three phases over about 6 years, from April 1997 to December 2002. The appraisal loan account closing date was 31 July 2003. Effective implementation started from July 1997 on a pilot basis with Phase one Syangja and Rupandehi intensive program districts. Based on lessons learned, the Project was expanded to other districts. Three Phase two intensive program districts (Kaski, Palpa and Tanahun) were included in 1999. Three more intensive program districts (Lamjung, Nawalparasi, and Kapilbastu) and three agro-processing and marketing districts (Chitwan, Kathmandu and Lalitpur) were included in 2000. However, the MTR brought forward the inclusion of Parbat, Arghakhanchi, Gulmi, Surkeht, and Baglung by one year to implement programs together with their adjacent districts. Thus, under Phase three, two intensive program districts (Arghakhanchi and Kanchanpur) were included in 2001. The remaining eight intensive program districts (Baglung, Banke, Bardiya, Dadeldhura, Doti, Gulmi, Kailali, and Surkhet) and five agro-processing and marketing districts (Dhading, Dolakha, Kavre, Nuwakot, and Sindhupalchowk) were included in 2002. However, due to escalating security problems, poverty alleviation, private sector promotion, and forage program targets could not be met in some project districts. Upon the Government's request, ADB approved extension of the loan closing date by 1 year until 31 July 2004 to meet the targets. The original and actual project implementation schedule is in Appendix 10.

#### **F. Implementation Arrangements**

25. The implementation arrangement envisaged at project design was simple, and there were no major changes during implementation. DLS (under MOAC) was the lead EA with responsibility to plan, coordinate, review progress, and report on overall project implementation. NRB was the EA for implementation of the credit program. A central project management office (CPMO), headed by a class one officer, was responsible for coordination, management, and monitoring of the Project from the center. A regional project management office (RPMO) headed by a Class one officer facilitated project implementation and monitoring in the Western Development Region. Regional directorates, headed by Class I officers, were responsible for monitoring project activities in the Midwestern and Farwestern Development Regions. DLSOs were responsible for planning and implementation of programs in all 19 intensive program

districts in cooperation with farmer groups, partner NGOs, and private service providers; and FIs were responsible for credit delivery. The central project management office directly implemented, managed, and monitored agro-processing and marketing programs in all eight districts from the Central Development Region. A total of 72 NGOs, 30 private service providers, and 19 FIs were involved in project implementation.

26. An interministerial steering committee (IMSC) was established at MOAC to facilitate the integration and coordination of activities between agencies (such as the Ministry of Finance, National Planning Commission, MOAC, Ministry of Forest and Soil Conservation, Ministry of Water Resources, Ministry of Local Development, and NRB). An interdepartmental coordination committee (IDCC) was led by the Director General of DLS and members included directors general from the Department of Forest, Department of Soil Conservation and Watershed Management, Department of Agriculture, Department of Women Development, and NRB's Microfinance Development Department. Because the IMSC met once a year and the IDCC remained almost dormant, a project monitoring and management committee was established during the MTR to fill the gap—led by the Secretary of MOAC, with officials from DLS, Ministry of Finance, National Planning Commission, MOAC, and NRB as members. This committee initially met once a month to resolve operational issues, then met as needed. At the district level, LATs played an important role in planning, implementation, and monitoring of field programs. The implementation arrangements at project design—and simplified during the MTR—significantly contributed to smooth project implementation.

## **G. Conditions and Covenants**

27. The loan was declared effective following fulfillment of the loan effectiveness conditions. Audited project accounts and the auditor's report were submitted to ADB on time and in accordance with sound auditing standards.

28. The Project included 28 major loan covenants to be complied with during the project period. Five covenants were linked to the livestock subsector—two were complied with, one was complied with late, and two were partly complied with. The social (one), environmental (one) and financial (four) covenants were all complied with. Out of the remaining 17 covenants covering other issues, 12 were complied with, three were partly complied with, and two were modified based on project implementation experience. Details are in Appendix 11. The covenant complied with late was the privatization of Pokhara Milk Supply Scheme due to unstable political situation and prolonged resistance by employees. Those partly complied with were (i) adoption of noninterventionist milk and milk product pricing policy; (ii) enforcement of quality control of livestock product, feed, medicines, and quarantine by-laws; (iii) constitution of IMSC and IDCC and holding periodic meetings regularly; and (iv) DLS-wide application of BME system. These constrained setting milk and milk product prices according to demand and supply, control quality of livestock inputs and outputs, timely resolution of project-related policy and operational issues, and collection of disaggregated data on livestock subsector. The covenants modified during MTR include the establishment of a RPMO in Dhangadhi and replacement of government veterinary clinical services in Pokhara by private service providers. The RPMO was not established because the Midwestern and Farwestern Regional Directorates were monitoring field programs effectively leaving very limited role for a full-fledged RPMO. Justifications for not replacing government veterinary clinical services in Pokhara are in para. 11.

## H. Related Technical Assistance

29. The Third Livestock Development Project (footnote 3) was approved on 18 August 1997 for \$0.75 million, cofinanced by the Government of Australia and administered by ADB. The TA's objective was to support strengthening of DLS's institutional, technical, and management capacity to implement the Project, and promote processing and marketing of livestock and related products through increased private sector participation. DLS was the EA. An international consultant (23 person-months) and a domestic consultant (60 person-months) were recruited to support the TA. The international consultant's input was increased by 6 person-months and the domestic consultant's input was increased by 10 person-months (by utilizing surplus TA funds), as the original input was insufficient to meet the Project's objective and targets.

30. The TA helped to plan livestock programs with target groups and implement them in collaboration with DLSOs, NGOs, private service providers, and beneficiaries on a cost-sharing basis. MOAC adopted the modalities and guidelines prepared by the Project for working with NGOs and the private sector. The TA also assisted in designing strategies and mechanisms for collaboration with FIs for credit delivery. This strengthened credit delivery capacity in rural areas. DLS institutionalized the participatory approach through orientation programs and short- and long-term training arranged by the TA. Consequently, DLS has qualified and committed human resources to implement participatory programs.

31. The TA contributed to increasing private sector participation in milk processing and marketing by training small and medium-sized dairy cooperatives, and private milk and meat processors at district and regional levels. The TA facilitated observation visits to India for proprietors and technicians of dairy cooperatives, which helped diversify dairy products and optimize procurement of milk during surplus production season (August–December). The TA helped establish live animal markets jointly with municipalities in three project districts, and facilitated observation visits to India for butchers on hygienic meat handling and processing. It also assisted upgrading slaughter slabs, which resulted in improved quality in meat handling and processing. Business management training was provided to proprietors and technicians of slaughterhouses in Kathmandu. The consultants performed well, maintained excellent working relations with the EAs and ADB, and submitted all reports on time. DLS was satisfied with the overall TA outputs. Overall, the TA was rated successful.<sup>8</sup>

## I. Consultant Recruitment and Procurement

32. ADB recruited Package A consultants and DLS recruited Package B consultants. Package A (TA grant) provided for 87 person-months of consulting services—27 person-months international and 60 person-months domestic. A total of 23 person-months of international consultant input was allocated to the team leader and resource-business-marketing advisor, and 4 person-months for the livestock project design and management specialist. A total of 60 person-months of domestic consultant input was assigned to the deputy team leader/senior development facilitator. Package B consultant was financed under the loan with 80 person-months of international and 416 person-months of domestic consultant input. International consultant input was for forage and seed production, veterinary practice, curriculum development, abattoir design, dairy processing, live animal marketing, credit delivery, and feed formulation. Domestic consultant input was for veterinary practice, training, gender mainstreaming, development facilitation, forage development, meat and live animal marketing,

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<sup>8</sup> The TA completion report was circulated to the Board in January 2005.

meat processing and abattoir design, and legal services. DLS took 14 months to recruit the Package B consultant and mobilized only in January 1998, which delayed consultant input by about 6 months.

33. The TA input under Package A was fully utilized. The team leader's total input was increased by 6 person-months to 29 person-months (utilizing 4 person-months originally assigned to a livestock project design and management specialist, and adding 2 person-months utilizing surplus TA funds). The domestic consultant's input was also increased by 10.5 person-months to 70.5 person-months (utilizing surplus TA funds). The Package B consultant was streamlined at MTR and the periodic review missions, according to changes in project requirements. Total international consultant input was reduced by 20 person-months to 60 person-months (by reducing input on veterinary practice, live animal market, dairy production, credit, and curriculum development, and increasing input on forage development and seed production). Total domestic consultant input was increased by 72 person-months (particularly on dairy processing, meat marketing, and forage management) and new input was provided for credit delivery (Appendix 12).

34. Consulting services, equipment, and materials were procured through international competitive bidding, international shopping, local competitive bidding, or direct purchase in accordance with ADB's *Guidelines for Procurement*. Package A and Package B consultants were procured through international competitive bidding. Vehicles were procured following international shopping procedures (3 minibuses, 24 pickup trucks, and 66 motorcycles). Necessary office equipment was procured following international shopping and direct purchase procedures. Eighteen civil works were procured through local competitive bidding (involving new construction and renovation of regional training centers; staff quarters; and central, regional, and district office buildings). Details on procurement are in Appendix 13. However, six pickup trucks for the project districts, included in 2001 and 2002, could not be procured because the Government introduced a policy to rationalize vehicle procurement and some project vehicles were misused by security forces. The PCR Mission observed that the vehicles, equipment, and buildings were in good condition, generally being used for the purpose intended, and facilities have greatly enhanced DLS's institutional capacity.

#### **J. Performance of Consultants, Contractors, and Suppliers**

35. The performance of the Package A consulting firm and individual consultants was rated satisfactory, although the team leader's input was not properly scheduled. Performance of the Package B consultant was weak throughout the Project in terms of management of the TA, responding to queries from DLS and ADB, and submitting periodic progress reports. However, individual consultants' performance on forage, milk and meat, and credit was satisfactory. Hence, the performance of the Package B consultant was rated partly satisfactory. The performance of contractors and suppliers was rated satisfactory.

#### **K. Performance of the Borrower and the Executing Agency**

36. The performance of the Borrower and the EAs was rated satisfactory. Decisions were generally made on time, and adequate project staff and counterpart funds were provided. There was continuity in key project staff at central, regional, and district offices. Only two project managers—both competent DLS Class I officers—served the Project. The EAs were committed to the Project, which contributed to resolution of implementation issues during the initial project period. Despite the difficult security situation, field programs were monitored by DLS, Regional Directorates, NRB, RPMO, and DLSOs. The EAs designed guidelines and modalities to work

with local organizations,<sup>9</sup> which facilitated smooth implementation and monitoring of field programs. Based on indicators prepared jointly by the Government and ADB, the project management team received the best performance award from the Government and ADB for 2000, 2002, and 2003. The Borrower's and EAs' performance is rated satisfactory.

#### **L. Performance of the Asian Development Bank**

37. ADB's performance was satisfactory, although supervision was irregular and field visits were limited during initial implementation. The Project suffered from credit delivery constraints in the first 2 years. This was resolved after administration was delegated to NRM, which allowed closer interaction with the EAs and more intensive field monitoring. ADB provided essential support, including assistance and feedback in supervising project implementation, distribution of timely and adequate funds, and regular review missions. ADB fielded 13 missions, including appraisal, inception, and midterm review missions. Each mission provided a time-bound action plan that could be readily monitored. ADB was flexible and agreed to a number of adjustments to overcome problems in the light of changing circumstances. ADB agreed to a 1-year extension of the loan closing date to allow components and covenants—delayed by insurgency and other factors beyond the EAs' control—to be completed.

### **III. EVALUATION OF PERFORMANCE**

#### **A. Relevance**

38. The Project was fully consistent, at the time of approval, with the Government's and ADB's development strategies of increasing livestock production to reduce rural poverty. Current government and ADB development strategies continue to support the livestock subsector for increasing income and reducing poverty through participatory livestock development, and improving farmers' access to livestock processing and marketing services. Institutional and management arrangements were generally well designed, although they required some adjustments and preparation of guidelines during project implementation. Project outputs were relevant to achieving goals and purpose at the time of approval and now.

#### **B. Efficacy in Achievement of Purpose**

39. The Project was efficacious in achieving its purpose, although it had to be extended by 1 year to meet its objectives fully. The Project's indirect benefits included social and economic empowerment of the poor, disadvantaged communities, and women—through formation and strengthening of farmer groups, improving the capacity of partner NGOs, and increasing the financial position of FIs. Appraisal estimated that the Project's key quantifiable benefits would be annual growth in production of milk and meat during the project period. The PCR Mission found cow milk grew by 3.07% per year (354 liters/cow), which was much lower than the appraisal target to increase from 3% to 13.5% (420 liters/cow). The low growth rate was because only about 15% of farmers raised improved cows for milking against appraisal expectations of 85%. There were two main reasons: cows (and bulls) could not be sold for meat once they become unproductive (as Nepal is a Hindu Kingdom), and bulls could not be used for ploughing because they do not have proper humps for ploughing. However, the PCR Mission found annual growth in buffalo milk production about 9% (495 liters/buffalo), which was much higher than the

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<sup>9</sup> MOAC. 2004. *Guidelines for Implementation of Development Programs through Contract-out and Partnership*. Kathmandu.

appraisal target to increase from 1.46% to 4.2% (170 liters/buffalo). The high growth was because 85% of farmers raised crossbred buffaloes against the appraisal target of 15%. The main reasons were that buffalo (and bulls) could be easily sold for their meat after they become unproductive, and buffalo bulls could be used for ploughing and meat. The Project increased buffalo meat production per animal by 35% against the appraisal target of 20%, goat by 40% compared with 15%, and pig by 25% compared with 30%. There was no significant increase in production of poultry meat and eggs because inadequate extension services and transport facilities prevented poultry farming from becoming popular in rural areas.

### **C. Efficiency in Achievement of Outputs and Purpose**

40. The Project was efficient in achieving its outputs and purpose on the basis of financial and economic analyses, following the same methodology used at appraisal (Appendix 14). The overall financial internal rate of return (FIRR) for the Project as a whole was 24.6%, compared with the appraisal target of 17.8% (Appendix 14, Table A14.14). FIRR for the buffalo farm model was 18.1%, which was below the appraisal target of 31.8% because of higher investment costs than appraisal estimates (Appendix 14, Table A14.2). FIRR for the cow farm model was 17.4%, which was slightly lower than the appraisal target of 19.7% because of higher investment costs and lower productivity (Appendix 14, Table A14.3). FIRR for goat raising was 17% and the pig raising FIRR was 18%, similar to appraisal targets (Appendix 14, Table A14.4–Table A14.5).

41. The overall economic internal rate of return (EIRR) on the basis of cost and benefit streams for the Project was 23.4%, higher than the appraisal target of 17.8% (Appendix 14, Table A14.16). The main reasons the EIRR exceeded expectations were higher than expected overall milk and meat production and total project cost 20% (\$6 million) below appraisal estimates. About 56,500 farm families benefited from improved livestock productivity, about 3% higher than the target. These families' annual average income has increased by about 35% compared with the baseline level.<sup>10</sup> The Project has further potential to increase the EIRR and family income if benefits accrued from agro-processing and marketing, and income from selling forage seed, are accounted. Major nonquantifiable benefits were (i) improvement in agriculture production due to increased supply of farmyard manure, (ii) import substitution of concentrates from India by increased production of forage, (iii) improved access to milk and meat markets, (iv) improved skills, and (v) secondary and tertiary benefits to inputs suppliers and traders, resulting from raising productive livestock and livestock production.

### **D. Preliminary Assessment of Sustainability**

42. The Project significantly improved the institutional capacity of DLS, partner NGOs, FIs, and the private sector to implement participatory livestock programs through training, and machinery and equipment support. Dairy enterprises were promoted and capacity enhanced; they now procure increased amounts of milk from farmers, and process and sell milk and milk products locally. Processing capacity and cleanliness of meat shops have improved in project districts. The PCR Mission found DLS, NGOs, FIs, and private enterprises were providing effective services to milk and meat producers and consumers. Coverage of forage programs in public and private lands is increasing as seeds are available locally. Office, training, laboratory, and dormitory buildings constructed under the Project are maintained. This indicates that the Government, NGOs, FIs, private sector, and community groups are likely to sustain the project outputs.

<sup>10</sup> DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu.

## **E. Environmental, Sociocultural, and Other Impacts**

43. All agro-processing units established through project support (with the exception of two slaughterhouses in Kathmandu and Nuwakot) were small-scale enterprises and had no adverse environmental impacts. The PCR Mission observed that the new practice of dairy processing and animal slaughtering has improved the environment of the sites. Extensive forage cultivation has improved the natural environment of the project area, creating a positive environmental impact.

44. The PCR Mission found that 55.4% of the total beneficiary families—defined as below the poverty line according to project design—held less than 0.5 ha. About 30% of the families were from disadvantaged and low caste communities. Overall women's participation in the Project increased from 15% in 1997 to 47% in 2004 against the appraisal target of 35%. About 44% of representatives in partner NGOs' executive committees were women. As a result, the Project helped increase women's participation and access to training and technology. Practical benefits accrued by women were better livelihood options, increased income, and time-savings due to the proximity of forage and fodder. Increased income was spent on essentials such as food, oil, clothes, education, and family healthcare. Strategic changes in gender relations were also evident at household and community level, where there was acceptance of new roles for women as members of livestock groups, and women played an increased role in family decision making. The Project's gender action plan served as an effective tool for gender mainstreaming. All these benefits had a significant impact on poverty reduction and socioeconomic empowerment of women.

## **IV. OVERALL ASSESSMENT AND RECOMMENDATIONS**

### **A. Overall Assessment**

45. The Project was rated successful in accordance with the review of its relevance, efficacy, efficiency, sustainability, and impact on institutional development.<sup>11</sup> Appendix 15 includes the quantitative assessment of project performance using ADB criteria to determine the Project's rating. The Project was generally implemented as conceived, although implementation modalities were modified as the Project progressed. The implementation period was extended by 1 year to achieve project objectives fully. The Project's impact was highly effective in improving productivity of livestock, income, social empowerment of poor households and women, and preservation of the natural environment. The capacity of DLS and partner NGOs to implement participatory livestock development program increased considerably. The capacity of the private sector to process and market milk and meat increased significantly. The impact of the Project on rural inhabitants' livelihoods would be much higher during the remaining economic life of the Project, as incremental benefits from investment in capacity building at local levels are greater in the medium and longer-term.

### **B. Lessons Learned**

46. Greater involvement of stakeholders at different levels is necessary during project design. Local knowledge should be utilized, people's needs should be analyzed, and their participation should be ensured in implementation and monitoring. Strategies and modalities for project implementation should be adjusted according to changing situations.

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<sup>11</sup> This PCR is a part of a sample of PCRs independently reviewed by the Operations Evaluation Department. The review has validated the methodology used and the rating.

47. Continuation of project staff (particularly the project manager and other key staff) has contributed significantly to successful project implementation. It has also ensured continued feedback about field experiences to policy level, and served as a basis for better project design.
48. Involvement of local stakeholders—to identify needs and deliver services to poor and disadvantaged people and women—was critical to achieving project objectives.
49. When recruiting consultants, careful consideration should be given to the background, suitability, and timing for individual consultants' inputs. Consultant input should be properly interrelated and coordinated (with each other as well as counterparts) to maximize collaborative efforts and allow effective transfer of knowledge.
50. The private sector has been effective in delivering extension services to farmers where there is good accessibility and capacity to pay for services. Thus, increased involvement of private sector is needed to meet the demand for services.
51. The inclusion of districts for project implementation should be planned properly. More programs for relatively longer periods should be targeted at poorer districts. The impact will suffer if the Project is implemented in a district for a very short period of time.
52. Baseline project area data should be collected before project implementation to facilitate periodic monitoring and impact evaluation. A monitoring system should be established before the Project begins, and staff should be trained and assigned to implement the system with clear terms of reference.

## **C. Recommendations**

### **1. Project Related**

53. As part of its regular program, DLS should (i) monitor project impacts on the livelihood of poor, disadvantaged people, and women; and (ii) update ADB of the impact during review mission of the forthcoming Community Livestock Development Project. This will help the Government and ADB to design future policies and strategies for the livestock subsector, and to ascertain the extent this subsector has assisted poverty reduction in rural Nepal.
54. The number of private animal health service providers has increased significantly in many parts of the Project. The Government should phase out its services in the next 5 years in areas where private services are established, or provide only those services that are not available from the private sector.
55. Guidelines and modalities for collaboration with local stakeholders should be prepared during project design for smooth project implementation. The Project's impact would have been much greater and extension of its closing date would not have been required if preparatory works had been completed during or immediately after project design.

### **2. General**

56. Milk and milk product prices should be allowed to fluctuate according to demand and supply, which will further encourage private sector participation. For this, the Government

should gradually privatize the government-owned Dairy Development Corporation, which still influences setting milk and milk product prices, although to a decreasing degree.

57. Quality control of livestock product, feed, medicines, and quarantine is still a major problem in the livestock subsector. Appropriate institutions should be established to effectively control quality of livestock products as per the Government's Act<sup>12</sup> to ensure that Nepalese livestock products meet quality standards for export.

58. The Government should collect baseline data and establish a BME system before beginning a project. Independent and timely monitoring systems—with appropriate procedures to provide feedback and ensure actions based on BME findings—are necessary. Each review mission should assess whether the system is operating effectively and EAs are using information for periodic progress reports.

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<sup>12</sup> MOAC. 1999. *Nepal Slaughterhouse and Meat Inspection Act*. Kathmandu.

## PROJECT FRAMEWORK

Design Summary	Performance Indicators/Targets	Assessment after Completion	Remarks																												
<p><b>Goal</b> Reduce poverty by assisting rural communities in the project area to identify and develop environmentally sustainable and socially equitable opportunities that will increase family incomes and improve household nutrition by increasing livestock productivity.</p>	<p>Average income of participating families to increase by 30% above the established baseline levels within 7 years of Project-initiated activities</p>	<p>On average, about 35% of the participating families' incomes have increased above the baseline levels.</p>	<p>This is based on the Borrower's project completion report, and staff's random verification during the project completion review mission.</p>																												
<p><b>Purpose</b></p> <p>2.1 Improve the productivity of livestock through better access to improved technical support services, feed and input supplies, genetic material, and credit, consistent with the farming systems approach.</p> <p>2.2 Develop alternative market outlets for farmers' livestock and livestock products (including milk, meat, fiber, and live animals) through diversified agro-processing activities, and improved marketing practices and market access.</p> <p>2.3 Develop the institutional capacity of DLS and related agencies in technical and social spheres to facilitate a reorientation of the livestock sector towards self sustainable growth.</p>	<p>Increase per unit production of livestock products from targeted livestock on individual farms, 7 years from initiation of Project initiatives :</p> <table border="0"> <tr> <td>Cow milk</td> <td>70%</td> </tr> <tr> <td>Buffalo milk</td> <td>23%</td> </tr> <tr> <td>Buffalo meat</td> <td>20%</td> </tr> <tr> <td>Goat meat</td> <td>15%</td> </tr> <tr> <td>Pig meat</td> <td>30%</td> </tr> <tr> <td>Chicken meat</td> <td>30%</td> </tr> <tr> <td>Eggs</td> <td>20%</td> </tr> </table> <p>Increased delivery of liquid milk to processors and chilling centers. Increased production of processed milk products. Increased quality of farm milk delivered for processing or fresh consumption. Increased livestock offtake from farms.</p> <p>LIRAs established and effectively operating. DADCCs established in each project district. A hierarchy of LIRAs operating under the DADCC to facilitate livestock development programs initiated.</p>	Cow milk	70%	Buffalo milk	23%	Buffalo meat	20%	Goat meat	15%	Pig meat	30%	Chicken meat	30%	Eggs	20%	<p>Increase per unit production of the livestock products achieved as follows:</p> <table border="0"> <tr> <td>Cow milk</td> <td>24%</td> </tr> <tr> <td>Buffalo milk</td> <td>82%/year</td> </tr> <tr> <td>Buffalo meat</td> <td>24%</td> </tr> <tr> <td>Goat meat</td> <td>54%</td> </tr> <tr> <td>Pig meat</td> <td>32%</td> </tr> <tr> <td>Chicken meat</td> <td>NS</td> </tr> <tr> <td>Eggs</td> <td>NS</td> </tr> </table> <p>81 small-scale dairies procuring 30,000 liters of raw milk per day for sale of fresh milk and dairy products. These dairies increased procurement of milk from farmers and delivery of quality milk and milk products locally. Hygienic meat processing capacity significantly increased through training to meat entrepreneurs.</p> <p>About 100 groups were united, from which 22 graduated into milk (20) and meat (2) production, processing, and trading LIRAs. DADCCs established in all 19 intensive program districts and facilitated livestock development programs.</p>	Cow milk	24%	Buffalo milk	82%/year	Buffalo meat	24%	Goat meat	54%	Pig meat	32%	Chicken meat	NS	Eggs	NS	<p>Since cows cannot be sold for meat, and improved bulls cannot be used for ploughing due to improper humps, only 15% of the targeted 85% farmer-raised improved cows for milking. The insignificant increase in chicken meat and eggs is due to inadequate extension services and transport facilities in rural areas.</p> <p>Establishment of 12 additional LIRAs on milk and meat processing and marketing and forage development is in process.</p>
Cow milk	70%																														
Buffalo milk	23%																														
Buffalo meat	20%																														
Goat meat	15%																														
Pig meat	30%																														
Chicken meat	30%																														
Eggs	20%																														
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Chicken meat	NS																														
Eggs	NS																														

Design Summary	Performance Indicators/Targets	Assessment after Completion	Remarks
<p>2.4 Develop livestock farmer groups so they are able to plan, manage, monitor, and evaluate their own development process and become self-reliant.</p> <p>2.5 Expand the capacity of DLS to coordinate, manage, and monitor the execution of an integrated livestock development project according to agreed guidelines and which follows a process approach involving all stakeholders in the design, planning, and management of Project investments.</p>	<p>LIRAs formed and operating in each village development committee in the Project districts. Farmer groups formed to coordinate development activities within their areas of interest. At least four groups formed per selected village development committee per year.</p> <p>Project management offices established and staffed at Kathmandu. Regional project offices established and staffed at Dhangadhi and Pokhara. Private and public investment resulting from project facilitation effected by DLS staff.</p>	<p>LIRAs were formed in potential village development committees only. On average, 10 groups are associated with a LIRA.</p> <p>Central project management office established at Kathmandu and a regional project management office established at Pokhara. Regional directorates worked as regional project management office for mid- and far-western development regions. DLSOs, partner NGOs (72), private service providers (30) and FIs (19) were involved in project implementation.</p>	
<p><b>Outputs</b></p> <p>3.1 Livestock productivity improvement</p> <p>3.2 Expansion of agro-processing and marketing</p>	<p>(i) Increased forage, feed and pasture seed production;</p> <p>(ii) Expansion of animal health, breeding, and husbandry; and</p> <p>(iii) increased access to livestock credit and insurance.</p> <p>Private sector participation in processing and marketing of milk and meat</p>	<p>(i) 50,515 farmers (51% women) grew forage on 10,680 hectares (ha) of private land, compared with almost none before the Project.</p> <p>(ii) 30 JTs/JTAs trained on latest extension technology and business management to strengthen animal health and breeding programs.</p> <p>(iii) 9,800 farmers received livestock credit worth about \$2.3 million.</p> <p>Private sector participation in processing and marketing of milk and meat increased by about 20%. Project promoted 81 dairies procuring 30,000 liters/day for liquid milk sales and dairy products. On average, each</p>	<p>Forage was also grown along 2,564 km of roadside and about 500 ha of community forestland. A forage and seed unit was established at DLS. Fodder and forage production reduced milk and meat production cost by 20%.</p> <p>MTR endorsed training to JTs/JTAs for private veterinary practices, as veterinary graduates were not interested in training for private practice.</p> <p>Animal health, extension, and breeding services increased by about 25% compared with 1997.</p>

Design Summary	Performance Indicators/Targets	Assessment after Completion	Remarks
3.3 Institutional strengthening and organizational development	<p>(i) Capacity building and upgrading of facilities;</p> <p>(ii) Farmer group development; and</p> <p>(iii) Strengthened project management</p>	<p>dairy provided a market outlet with 400 liters of raw milk. 43 retail meat shops upgraded. A total of 225 butchers (17 female) trained on slaughtering, butchery, and meat hygiene; and 100 hygienic meat shops established in project districts.</p> <p>19 LATs and 22 officers provided masters training. 52 officers, 66 JTs/JTAs, and 49 dairy and meat entrepreneurs trained abroad. A total of 207 officers, 905 JTs/JTAs and 1,114 entrepreneurs given short-term in-country training. Service vehicles, equipment, and civil works procured.</p> <p>(ii) 1,395 farmer groups formed in 348 pockets covering 17,522 farm families. An additional 38,933 families directly benefited on individual basis.</p> <p>(iii) 19 technical manuals on milk and meat processing and marketing, forage cultivation, credit delivery, and NGO and FI partnerships prepared and being utilized.</p>	
<b>Activities</b>			
4.1 Formation of LATs	19 LATs formed	19 LATS formed (one for each of the 19 intensive program districts).	LAT comprised chief of district line agencies for livestock, forestry, soil conservation, agriculture, women, and partner NGO and FI representatives.
4.2 DLS capacity strengthened	Master's degree training provided to 22 officers	Master's degree training provided to 22 officers.	13 in Australia (1 forage and 12 SLA); 1 in India (meat technology); 8 in Nepal (1 forage production, 3 meat technology and 4 dairy processing).
4.3 In-country training	Short-term in-country training to officers, JTs/JTAs and entrepreneurs on social mobilization, participatory program planning, monitoring and evaluation, gender awareness, and business management	Short-term in-country training provided to 207 officers, 905 JTs/JTAs and 1,114 entrepreneurs on social mobilization, participatory planning and monitoring, gender awareness, and business management.	

Design Summary	Performance Indicators/Targets	Assessment after Completion	Remarks
4.4 Farmer Group Development	A total of 1,395 groups formed from 348 program pockets	A total of 1,395 groups formed in 348 pockets covering 17,522 farm families.	In addition, 38,933 families directly benefited from the Project on an individual basis.
4.5 Short-term training to farmers	About 30,000 farmers provide training on group development, social mobilization, credit management and resource mobilization	Short-term training on group development, social and resource mobilization, and credit management provided to about 30,000 farmers.	
4.6 Establishment of LIRAs	Twenty-two LIRAs created	22 LIRAs created (20 on dairy and 2 on meat production, processing and trading).	Establishment of 12 additional LIRAs on milk and meat processing and marketing and forage development is in process.
<b>Inputs</b> 5.1 Finance	Source of financing:	Actual project cost at completion:	
Foreign - \$13.90 million Local - \$14.00 million	ADB - \$18.29 million Government - \$3.8 million Beneficiaries - \$2.3 million Fls - \$3.5 million	ADB - \$11.54 million Government - \$4.11 million Beneficiaries - \$2.3 million Fls - \$3.2 million Grant TA - \$0.75 million	
5.2 Consulting Services			
Package A 87 person-months	International – 27 person-months Domestic – 60 person-months	International – 29 person-months Domestic – 70.5 person-months	
Package B 496 person-months	International – 80 person-months Domestic – 416 person-months	International – 60 person-months Domestic – 488 person-months	

DADCC = district agriculture development coordination committee; DLS = Department of Livestock Services; Fls = financial intermediaries; LATs = livestock action teams; LIRAs = livestock industry related association; JT = junior technicians; JTAs = junior technical assistants; NS = not significant; VDC = village development committees.

Sources: ADB. 1996. *Report and Recommendations of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Third Livestock Development Project*. Manila.

DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu.

PCR Mission, December 2004.

**ACHIEVEMENT OF IMMEDIATE OBJECTIVES**  
(as of 31 July 2004)

Component	Immediate Objective %	Component/ Activity-Wise Weight
<b>1. Livestock Productivity Improvement</b>		
- Expansion of Forage and Feed Production	100	7.00
- Pasture Seed Production	100	5.30
- Expansion of Private Sector Delivery of Animal Health, Breeding, and Husbandry Services	97	18.00
- Sustaining of Public Sector Services Delivery of Animal Health, Breeding, and Husbandry	100	2.90
- Increased Accessibility of Livestock Credit and Insurance	97	17.80
<b>Status</b>	<b>98</b>	<b>51.00</b>
<b>2. Expansion of Agro-Processing and Marketing</b>		
- Milk Processing and Marketing	100	12.10
- Meat Processing and Marketing	100	12.20
- Live Animal Markets	90	2.00
<b>Status</b>	<b>99</b>	<b>26.30</b>
<b>3. Institutional Strengthening and Organizational Development</b>		
- Capacity Building and Upgrading of Facilities	100	14.50
- Farmer Group Development	99	1.30
- Project Management	100	6.90
<b>Status</b>	<b>100</b>	<b>22.70</b>
<b>Overall Status</b>	<b>99</b>	<b>100.00</b>

Source: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu. PCR Mission, December 2004.

## FINANCIAL INTERMEDIARIES INVOLVED IN CREDIT DELIVERY

Serial No.	Financial Institutions
1.	Paschimanchal Grameen Bikas Bank Ltd., Butwal
2.	Nepal Bank Limited, Kathmandu
3.	Rastriya Baniya Bank, Kathmandu
4.	Nirdhan Utthan Bank Limited, Sidharthanagar
5.	Sidhartha Bikas Bank Limited, Tikapur
6.	Malika Bikas Bank Limited, Tikapur
7.	Sudur Paschimanchal Grameen Bikas Bank, Dhangadi
8.	Everest Cooperative Institution, Pokhara
9.	VYCCU Saving and Credit Cooperative, Nawalparasi
10.	Dev Aadarsha Yuva Club, Chitwan
11.	Grameen Jagaran Manch, Baglung
12.	Madhya Paschimanchal Grameen Bikas Bank, Nepalgunj
13.	Fishtail Cooperative Ltd., Pokhara
14.	Biswash Saving and Credit Cooperative Limited, Parbat
15.	Udayadev Multipurpose Cooperative, Kanchanpur
16.	Sewar Milk Producers Cooperative Ltd., Tanahu
17.	Nawa Chetana Saving and Credit Cooperative Ltd., Parbat
18.	Gramin Jagaran Saving and Credit Cooperative Limited, Surkhet
19.	Uddhyam Development Bank, Chitwan

Sources: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu. PCR Mission, December 2004.

### SMALL-SCALE DAIRIES PROMOTED/SUPPORTED BY THE PROJECT

District	Dairy Name	Milk (liters/day)		Investment (NRs)	Milk Products	Farmers Benefited	Employment Generated	Remark
		Capacity	Handled					
<b>A. Western Development Region</b>								
1. Kaski	Sanjiwani Dairy, Pokhara	500	400	1,000,000	PM,Y,C,G,IC	55	6	
	Sapta Gandaki Milk Coop., Pokhara	1,000	1,000	700,000	PM,Y,C,G	240	10	
	Nagdanda Milk Coop., Nagdanda	1,000	700	700,000	PM,Y,C,G	150	5	PP
2. Baglung	Bajgain Dairy	200	200	200,000	PM,Y,IC,C,G	20	2	
	District Milk Coop. Union, Baglung	800	900	1,200,000	PM,Y,P,IC	760	8	PP
3. Parbat	Sheetal Dairy Udyog, Kusma	1,000	500	3,000,000	PM,Y,G,L,IC	100	5	PP
	Om Prakash Bashyal, Triveni	60	60	25,000	SM	50	2	
	Shivalaya Dairy, Kusma	500	200	180,000	PM,Y,P,L,IC	50	5	
	Milk Coop. Society, Patichaur	100	100	100,000	PM,Y,P,L	30	2	PP
4. Nawalpa- rasi	Gyanodya Dairy Udyog, Sunawal	700	600	400,000	PM,Y,G,P,IC	135	5	PP
	Shalik Ram Neupane, Sunawal	1,000	400	300,000	PM,G	70	2	
	Amarish P. Sharma, Ramgram	1,000	500	200,000	PM,G	130	2	
	S. K. Milk Sales Centre, Parasi	800	400	300,000	PM,G	140	2	
	Milk Producer Coop. Society, Kawasoti	1,000	200	500,000	PM,Y,P,C	100	4	PP
	Shivashakti Dairy Coop., Gaidakot	500	500	150,000	PM,Y,P,L	80	4	
	Nav Durga Dairy, Gaidakot	1,000	800	500,000	PM,P,B,IC	165	8	
5. Lamjung	Deurali Coop. Society, Enaneswor	100	50	250,000	M	25	2	PP
	Marsyangdi Dairy Coop., Bhorletar	1,000	300	700,000	PM,Y,P,G	60	3	PP
	Chakratirtha Dairy, Besisahar	100	50	30,000	M	15	2	
6. Kapilbastu	Marsyangdi Dairy Coop., Bhakunde	100	90	20,000	M	39	3	
	Mahila Sewa Dairy Coop., Gorusinghe	1,000	600	900,000	PM,Y	100	4	PP
7. Palpa	Palpa Dairy, Tansen	300	300	400,000	PM,Y,P,K	40	3	

District	Dairy Name	Milk (liters/day)		Investment (NRs)	Milk Products	Farmers Benefited	Employment Generated	Remark
		Capacity	Handled					
8. Rupandehi	District Dairy Coop. Union, Tansen	2,000	1,200	3,000,000	PM,Y,P,K	360	4	PP
	Jay Jawan Jay Kishan Dairy Coop., Dumre	400	400	180,000	M	68	7	
	Shanti Dairy Coop. Center, Bhairahawa	500	200	300,000	M,Y,P	150	2	
	Panchamrit Dairy Coop., Butawal	500	200	300,000	M	100	2	PP
	Bashyal Dairy, Bhairahawa	165	200	70,000	M,Y,P,G	170	3	
	Pandav Dairy, Bhairahawa	2,400	1,200	750,000	PM,P,G,C,B	1,000	11	
9. Tanahun	Siddharth Dairy Coop., Butawal	1,000	500	500,000	M	450	2	
	Siddhartha Dairy Coop., Butwal	500	100	300,000	M	100	2	
	Laxmi Dairy, Bhairahawa	150	150	38,000	M,Y,P	160	1	
	Dairy Coop. Union, Damauli	1,000	700	800,000	PM,Y,L,P,G	195	6	PP
	Byas Dairy, Damauli	600	600	850,000	PM,Y,G,P,B	130	8	
	Tanahun Ice Cream and Bakery, Damauli	100	100	500,000	Y,G,IC,L,P	7	4	
	Digad Lamsal Dairy, Damauli	100	50	150,000	Y,L,IC	2	1	
10. Syangja	Damauli Ice Cream, Damuli	100	50	85,000	L,Y,G	1	1	
	Gaon Sudhar Dairy Coop. Jholpe	250	250	300,000	PM,IC,Y	350	3	PP
	Chandikali Ice- cream Bhandar, Putalibazar	100	80	150,000	IC,Y	40	3	
	Gautam Dairy, Putalibazar	50	50	120,000	IC,Y	3	2	
	Safal Dairy, Waling	500	200	500,000	PM,Y,L,P,IC	60	5	
	Suryodaya Dairy, Putalibazar	500	500	350,000	PM,Y,L,P,IC	100	8	PP
11. Arghak- hachi	Bindabasini Dairy, Waling	500	120	300,000	M,Y	60	5	
	Kailash Sangam Buffalo Group, Thada	100	100	100,000	M,Y,P,G	52	2	
12. Gulmi	Maitri Multipurpose Coop. Society, Tamghas	500	100	500,000	M,Y,G	50	2	PP
13. Myagdi	Koshananda Acharya, Barana	120	200	400,000	PM,Y,IC,G,L	45	2	
	Ram Chandra Sapkota, Baglung	80	120	250,000	PM,Y,IC,G,L	35	2	

District	Dairy Name	Milk (liters/day)		Investment (NRs)	Milk Products	Farmers Benefited	Employment Generated	Remark
		Capacity	Handled					
14. Gorkha	Chandra Jyoti Dairy Coop., Gorkha	400	320	800,000	PM,Y,G,P,C	135	6	
<b>B. Midwestern and Farwestern Development Regions</b>								
15. Banke	Jaya Bageswori Milk Production Services, Nepalgunj	500	400	200,000	M,Y,C,G,L	75	4	PP
	Guru Dev Dairy, Nepalgunj	1,000	1,000	1,000,000	PM,,IC,G,F,M	200	10	PP
	Srijana Coop. Society, Kohalpur	1,000	700	800,000	PM,Y,C,G,L	100	10	PP
	Janata Dairy Coop., Khajura	1,000	600	1,000,000	PM,Y,G,F,M	120	6	PP
16. Dang	Khanal Dairy, Ghorahi	200	120	300,000	PM,Y,G,IC,F,M	40	4	PP
17. Bardiya	Radha Krishna Dairy, Gularia	200	200	100,000	M,P,G,Y,C	60	3	PP
	Janapriya Dairy Coop., Bardiya	400	400	250,000	M,P,G,Y,C	130	5	PP
18. Surkhet	Shiva Vihar Dairy Coop., Surkhet	750	300	500,000	M,Y,C,G,L	150	6	PP
	Laxmi Dairy, Birendranagar	500	400	500,000	PM,Y,C,G,L	120	5	PP
19. Kailali	New Aama Dairy, Tikapur	200	200	90,000	PM,Y,C,G,L	25	3	PP
	Aama Dairy Udyog, Dhangadhi	500	500	150,000	PM,Y,C,G,L	35	6	PP
	Seti Dairy, Dhangadhi	500	500	150,000	PM,Y,C,G,L	30	5	PP
	Yogya Bahadur Oli, Shreepur	200	200	100,000	M	30	3	
	Navin Kant Pant, Taranagar	100	100	50,000	M	20	3	
20. Kanchanpur	Bhageswori Dairy, Jhalari	100	60	60,000	PM,Y,C,G,L	20	3	PP
	Nampha Dairy, Mahendranagar	100	60	60,000	PM,Y,C,G,L	20	3	PP
21. Doti	Simayal Navdeep Dairy, Shilgadhi	300	100	175,000	PM,Y,C,G,L	50	4	PP
	Laxmi Vainsipalan Samiti, Kalena	300	100	137,000	M,Y,C,G,L	40	4	PP
22. Dadeldhura	District Milk Producers' Coop. Union, Amargadhi	500	130	800,000	PM,Y,G,C,P	60	5	PP
<b>C. Central Development Regions and Other Regions</b>								
23. Ilam	Mahat Olan Dairy, Ilam	500	450	325,000	PM,Y,C,G,L	100	4	

District	Dairy Name	Milk (liters/day)		Investment (NRs)	Milk Products	Farmers Benefited	Employment Generated	Remark
		Capacity	Handled					
24. Dhading	Ilam Dairy Coop., Ilam	300	300	300,000	PM,Y,C,G,L	80	5	
	Mahalaxmi Dairy, Dhadingbesi	500	200	400,000	PM,Y,G,C Paneer	100	4	
	Indrayani Milk Center, Pida	300	250	350,000	PM,Y,G,C,P,B	75	4	PP
	Lagnsil Dairy Producers Coop., Mahadevbesi	1,000	300	500,000	PM,Y,G,C,P	75	4	PP
25. Kavre	1. District Dairy Coop. Union, Banepa	1,000	1,000	800,000	PM,Y,G,C,P	100	6	PP
26. Dolakha	Dolakha Dairy Udyog, Dolakha	5,000	400	8,500,000	PM,Y,G,C,P	100	9	PP
27. Bhakta- pur	Kisanjagan Dairy Coop., Sllaghari	200	100	200,000	PM,Y,G,C,P	80	4	PP
28. S'palch- owk	Rajesh Dairy, Chautara	200	100	10,000	PM,Y,G,P	50	3	PP
	Annapurna Dairy, Barhabise	300	200	50,000	PM,Y,IC,P,G	80	5	PP
	Nepane Dairy Producers Coop., Talamarang	200	100	10,000	PM,Y,G,P	50	3	PP
29. Nuwakot	Bhuwaneswori Dairy Coop., Khadga Bhanjyong	1,000	750	800,000	PM,Y,G	550	13	PP
	District Multipurpose Coop. Society, Bidur	1,000	200	500,000	PM,Y,C,G,L	80	4	PP
30. Dhanku- ta	Nishan Dairy, Dhankuta	200	200	150,000	PM,C,Y,P	60	7	
31. Dhanu- sha	Mithila Dairy, Janakpur	400	300	300,000	PM,Y,P	75	5	
<b>Total (81)</b>		<b>46,825</b>	<b>28,900</b>	<b>42,965,000</b>		<b>9,357</b>	<b>355</b>	<b>42</b>

B = *barfi* (sweet), C = *churpi* (whey candy), G = ghee, IC = ice cream, K = *khuwa* (sweet), L = *lassi* (milk shake), M = milk (raw), P = *paneer* (cottage cheese), PM = pasteurized milk, PP = project support under private-public partnership program, SM = skimmed milk, Y = yogurt.

Sources: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu. PCR Mission, December 2004.

## HOUSEHOLDS THAT BENEFITED FROM LIVESTOCK PRODUCTIVITY IMPROVEMENT

Table A5.1: District-Wise Group and Individual Beneficiary Families

Districts	Beneficiary Families From Group			Beneficiary Families Outside Group			Grand Total
	Male	Female	Total	Male	Female	Total	
Argakhanchi	285	273	558	174	98	272	830
Baglung	173	307	480	428	571	999	1,479
Banke	135	165	300	788	777	1,565	1,865
Bardiya	255	275	530	654	762	1,416	1,946
Dadeldhura	317	504	821	210	311	521	1,342
Doti	103	147	250	192	93	285	535
Gulmi	300	226	526	688	511	1,199	1,725
Kailali	317	464	781	1,017	902	1,919	2,700
Kapilvastu	554	684	1,238	1,244	1,117	2,361	3,599
Kanchanpur	308	250	558	988	788	1,776	2,334
Kaski	590	561	1,151	980	816	1,796	2,947
Lamgunj	562	575	1,137	1,210	988	2,198	3,335
Nawalparasi	614	724	1,338	2,088	1,906	3,994	5,332
Palpa	1,000	975	1,975	2,462	1,710	4,172	6,147
Parbat	686	618	1,304	1,921	1,731	3,652	4,956
Rupandehi	993	829	1,822	2,810	2,114	4,924	6,746
Surkhet	97	103	200	178	211	389	589
Syangja	672	818	1,490	1,523	1,470	2,993	4,483
Tanahun	618	445	1,063	1,614	888	2,502	3,565
<b>Total</b>	<b>8,579</b>	<b>8,943</b>	<b>17,522</b>	<b>21,169</b>	<b>17,764</b>	<b>38,933</b>	<b>56,455</b>

Sources: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu. PCR Mission, December 2004.

Table A5.2: Beneficiary Farmer Groups by Commodity

Commodity	Type of Group				Type of Members			Percentage	
	Male	Female	Mixed	Total	Male	Female	Total	Male	Female
Cattle	59	3	49	111	1,310	217	1,527	86	14
Buffalo	106	41	231	378	4,187	1,304	5,491	76	24
Goat	43	513	211	767	2,252	6,413	8,665	26	74
Pig	6	30	50	86	457	581	1,038	44	56
Poultry	1	19	13	33	165	322	487	34	66
Others	2	3	15	20	2,908	106	3,144	66	34
<b>Total</b>	<b>217</b>	<b>609</b>	<b>569</b>	<b>1,395</b>	<b>8,579</b>	<b>8,943</b>	<b>17,522</b>	<b>49</b>	<b>51</b>

Sources: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu. PCR Mission, December 2004.

## LIVESTOCK INDUSTRY RELATED ASSOCIATIONS

District	Sector	Type of LIRA	City	Year of Establishment
1. Syangja	Meat	Galyang Pig Breeders Cooperative	Galyang	2000
2. Rupandehi		Suryadaya Milk Producer Cooperative Society	Bhairahawa	2000
3. Rupandehi	Dairy	Shanti Milk Producer Cooperative	Bhairahawa	1999
4. Palpa	Dairy	District Milk Producer Cooperative Association	Tansen	1999
5. Kaski	Dairy	District Milk Producer Cooperative Association	Pokhara	2000
6. Kaski	Meat	Meat Commercial Association	Tansen	2003
7. Tanahu	Dairy	District Milk Producer Cooperative	Damauli	1996
8. Lamjung	Dairy	Deurali Cooperative Marsangdi Milk Producer Cooperative	Isaneswor	2001
9. Lamjung	Dairy	Cooperative	Besisahar	2002
10. Nawalparasi	Dairy	Milk Producer Cooperative	Kawasoti	2001
11. Kapilbastu	Dairy	Mahila Sewa Milk Producer Cooperative	Bodea Gaun	1999
12. Kapilbastu	Dairy	Boda Gaun Milk Producer Cooperative	Buddhi	2001
13. Parbat	Dairy	Milk Producers' Society	Patichaur	2003
14. Baglung	Dairy	District Milk Cooperative Union	Baglung	2003
15. Baglung	Dairy	Baglung Milk Producer Cooperative	Baglung	2001
16. Gulmi	Dairy	Maitri Multi-Purpose Cooperative	Tamghas	2002
17. Banke	Dairy	Sirjana Cooperatives Society	Kohalpur	2003
18. Dadeldhura	Dairy	Saileswori Milk Cooperatives Society	Dadeldhura	2002
19. Dhading	Dairy	Lagansil Milk Producer Society	Mahadev Bensi	2003
20. Dhading	Dairy	Indrayani Milk Cooperative Society	Adamghat	2002
21. Kabhre	Dairy	Kabhre Milk Producers Cooperative	Banepa	2001
22. Nuwakot	Dairy	Bhubaneswori Cooperative Society	Bidur	2000

LIRA = livestock industry related association, VDC = village development committee.

Source: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu. PCR Mission, December 2004.

## PARTNER NONGOVERNMENT ORGANIZATIONS

Serial No.	Name and Address	Work Site and District	Program	Implemented (year)	Source of Finance
1.	Environmental Preservation Services for Development, Nepal, Lunkhu Deurali, Parbat	Bhangara, Parbat	Income generation (goat)	2000	Grant TA
	Environmental Preservation Services for Development, Nepal, Lunkhu Deurali, Parbat	Falamkhani, Parbat	Income generation (goat)	2001	Project
	Environmental Preservation Services for Development, Nepal, Lunkhu Deurali, Parbat	Horsyangdi, Parbat	Income generation (goat)	2001	Project
	Environmental Preservation Services for Development, Nepal, Lunkhu Deurali, Parbat	Pakhopani, Parbat	Income generation (goat)	2001	Project
2.	Nava Chetana Yuva Club, Katuwa Chaupari, Parbat	Bajung, Parbat	Commercial buffalo farming	2000	Project
3.	Kaligandaki Bikas Prabadhan Kendra, Salija, Lekhphant, Parbat	Salija, Lekhphant, Parbat	Buffalo breeder group organization and mobilization	2001	Partner NGO
	Kaligandaki Bikas Prabadhan Kendra, Salija, Lekhphant, Parbat	Pipal Tari, Parbat	Commercial buffalo farming	2001	Project
4.	Rastriya Shaichhik Tatha Samajik Bikas Sangsthan, Parbat	Majhakot, Parbat	Poverty alleviation (goat)	2004	Project
5.	Nava Chetana Samudayik Bikas Kendra, Parbat	Pipaltari, Parbat	Poverty alleviation (goat)	2004	Project
6.	Rural Self-help Development Center Devchuli, Nawalparasi	Devchuli, Nawalparasi	Income generation (goat)	2000	Grant TA
7.	Vijaya Development Resource Center, Gaidakot, Nawalparasi	Daunne Devi, Dbyapuri, Jhanke, and Padampur, Nawalparasi	Income generation (goat)	2001 2004	Project
8.	Nava Yug Yuva Parichalan Utthan Club, Sunwal, Nawalparasi	Asnaiya, Nawalparasi	Income generation (goat)	2001	Project
9.	Dev Adarsha Yuva Club, Kawasoti, Nawalparasi	Dhoubadi, Nawalparasi	Income generation (goat)	2002	Project
10.	Indreni Yuva Club, Panchanagar, Nawalparasi	Somani, Nawalparasi	Commercial buffalo farming	2002	Project
11.	Nava Pratibha Community Development Center, Arungkhola, Nawalparasi	Narayani, Nawalparasi	Income generation (goat)	2003	Project
12.	Siddharth Samajik Bikash Kendra, Jitpur, Kapilvastu	Motipur and Dhairnidanda, Kapilvastu	Income generation (goat)	2000	Project

Serial No.	Name and Address	Work Site and District	Program	Implemented (year)	Source of Finance
13.	Mount Everest Yuva Club, Kopwa, Mangalapur, Kapilvastu	Kopwa, Kapilvastu	Income generation (goat)	2001	Project
14.	Jana Adarsa Yuva Club, Barkalpur, Kapilvastu	Buddhi, Kapilvastu	Income generation (goat)	2002	Project
15.	Sharada Samaj, Shiva Gadhi, Kapilbastu	Narayandihi and Shiva Gadi, Kapilvastu	Income generation (goat)	2003	Project
16.	Krishi Tatha Pashu Bikas Cooperative Organization, Dhankauli, Kapilavastu	Dhankauli and Birpur, Kapilbastu	Poverty alleviation (goat)	2004	Project
17.	Mahila Kalyan Sangh, Tansen, Palpa	Bhairavsthan, Palpa	Commercial buffalo farming	2000	Partner NGO
	Mahila Kalyan Sangh, Tansen, Palpa	Kaseni, Palpa	Income generation (goat)	2000	Partner NGO
	Mahila Kalyan Sangh, Tansen, Palpa	Pokhrathok, Palpa	Income generation (pig)	2000	Partner NGO
18.	Palpa Ghans Bikas Sangh, Chirtungdhara, Palpa	Khanichhap, Palpa	Commercial buffalo farming	2000	Partner NGO
	Palpa Ghans Bikas Sangh, Chirtungdhara, Palpa	Yamgha, Palpa	Commercial buffalo farming	2000	Partner NGO
	Palpa Ghans Bikas Sangh, Chirtungdhara, Palpa	Bandipokhra, Palpa	Commercial buffalo farming	2000	Partner NGO
19.	Indreni Samaj, Jhirubas, Palpa	Jhirubas, Palpa	Income generation (goat)	2000	Project
	Indreni Samaj, Jhirubas, Palpa	Mittyal, Palpa	Income generation (goat)	2002	Project and Helvetas
20.	Gramin Arthik Bikash Sangh, Tansen, Palpa	Palung Mainadevi, Palpa	Income generation (goat)	2000	Project and Helvetas
21.	Samudaik Bikash Sewa Sangh, Bhuvanpokhari, Palpa	Bhuvanpokhari, Palpa	Income generation (goat)	2001	Project
22.	Gramin Bikashkolagi Bahudeshya Karyakram, Thimure, Palpa	Thimure, Palpa	Income generation (goat)	2001	Project
	Yamgha Village Development Committee (VDC), Palpa	Yamgha, Palpa	Income generation (goat)	2001	Project
	Yamgha VDC, Palpa	Palung Mainadi and Mujhun, Palpa	Income generation (goat)	2002	Project and Heifer International
23.	Mahila Jagaran Sangh, Tansen, Palpa	Bandipokhara, Palpa	Income generation (goat)	2002	Project
24.	Utpidit Utthan Bikas Karyakram, Palpa	Khaseuli, Palpa	Income generation (goat)	2002	Project
	Utpidit Utthan Bikas Karyakram, Palpa	Baugha Pokharathok, Palpa	Poverty alleviation (goat)	2004	Project
25.	Community Income Generation Association, Gothadi, Palpa	Gothadi, Palpa	Income generation (goat)	2002	Project and Gothadi VDC
	Community Income Generation Association, Gothadi, Palpa	Rahabas, Palpa	Income generation (goat)	2002	Project and Gothadi VDC
	Community Income Generation Association, Gothadi, Palpa	Jhuthapauwa, Palpa	Income generation (goat)	2002	Project and Gothadi VDC

Serial No.	Name and Address	Work Site and District	Program	Implemented (year)	Source of Finance
26.	Seto Laligurans Bal Bikas Kendra, Palpa	Koldanda, Palpa	Income generation (goat)	2003	Project and Gothadi VDC
27.	Samajk Shrot Bikas Kendra, Palpa	Gejha Kamabadi, Palpa	Poverty alleviation (goat)	2004	Project
28.	Mahila Tatha Balbikas Kendra, Palpa	Pokharathok, Plapa	Poverty alleviation (goat)	2004	Project
29.	Gramin Arthik Bikas Kendra, Palpa	Chirtung Dhara, Palpa	Poverty alleviation (goat)	2004	Project
30.	Grameen Arthik Bikas Sangha, Palpa	Phek, Palpa	Poverty alleviation (goat)	2004	Project
31.	Nepal Red Cross Society, Tansen, Palpa	Tanhun, Palpa	Poverty alleviation (goat)	2004	Project
32.	Indreni Rural Development Center, Butwal, Rupandehi	Dudraksha, Rupandehi	Income generation (goat)	2001	Project
33.	Lumbini Grameen Bikash Samaj, Bhairahawa, Rupandehi	Motipur, Rupandehi	Income generation (goat)	2001	Project
34.	Sana Kisan Bikas Ayojana, Manigram, Rupandehi	Manigram, Rupandehi	Income generation (goat)	2002	Project
35.	Amuwa VDC, Rupandehi	Amuwa, Rupandehi	Income generation (goat)	2002	Project
36.	Ananda Ban Sahakari Sanstha, Manigram, Rupandehi	Devdaha and Karahiya, Rupandehi	Poverty alleviation (goat)	2004	Project
37.	Swabalambi Samaj Sewa Kendra, Besisahar, Lamajung	Bhorle, Lamajung	Income generation (goat)	2001	Project
38.	Gramin Jagaran Manch, Painupata, Baglung	Amalachaur, Baglung	Income generation (goat)	2001	Project
39.	Gaja Yuva Club, Baglung	Malika and Lekhani, Baglung	Income generation (goat)	2002	Project
	Gaja Yuva Club, Baglung	Lekhani, Baglung	Income generation (goat)	2003	Project
40.	Gramin Jagaran Manch, Baglung	Sarkuwa, Sisneri, Mani, Biktol, and Tasariya, Baglung	Poverty alleviation (goat)	2004	Project
41.	Hoste Hainse Bal Bikash Kendra, Bandipur, Tanahun	Dharampani and Deurali, Tanahun	Commercial goat farming	2001	Project
42.	Jana Kalyan Samaj Samuha Damauli, Tanahun	Ranipokhari, Tanahun	Income generation (goat)	2001	Project
43.	Akikrit Samudayik Bikash Samaj, Damauli, Tanahun	Virkot and Baidi, Tanahun	Commercial goat farming	2002	Project
44.	Mishrit Bachat Tatha Rin Sahakari Sastha Ltd., Tanahu	Jamune and Dirgu, Tanahun	Poverty alleviation (goat)	2004	Project
45.	Khairanitar Mahila Bikas Bahuedeshiya Sahakari Sanstha Ltd., Tanahu	Khairanitar, Tanahun	Poverty alleviation (goat)	2004	Project

Serial No.	Name and Address	Work Site and District	Program	Implemented (year)	Source of Finance
46.	Nepal Grameen Bikash Karyakram, Belauri, Kanchanpur	Baisibichwa, Kanchanpur	Income generation (goat)	2001	Project
47.	Samudaik Vikas Tatha Batabaran Samrachhen Samaj, Kanchanpur	Krishnapur, Kanchanpur	Poverty alleviation (goat)	2004	Project
48.	BASE/DDC/Sustainable Facility, Dhangadi, Kailali	Sandepani, Kailali	Poverty alleviation (goat)	2001	Project
49.	Samaj Sewa Samiti, Kailali	Chaumala, Kailali	Poverty alleviation (goat)	2004	Project
50.	Andhikhola Sanrakshan Krisak Samuha, Bangsing, Syangja	Bangsing, Syangja	Income generation (goat)	2001	Project
51.	Samudaik Bikas Shrot Kendra, Syangja	Arukshark, Syangja	Poverty alleviation (goat)	2004	Project
52.	Society for Education and Development Activities, Pokhara, Pokhara, Kaski	Bharatpokhari, Kaski	Institutional development and mobilization for village animal health workers	2001	Project
53.	Nari Sewa Kendra, Pokhara, Kaski	Shiddha, Kaski	Income generation (goat)	2002	Project
54.	Sirjana Bikas Kendra, Pokhara, Kaski	Lahachok, Kaski	Income generation (goat)	2002	Project
55.	Shree Kisan Dekhi Kisan Samma Sangha, Kaski	Hansapur, Kaski	Poverty alleviation (goat)	2004	Project
56.	Grameen Utthan Sangh, Pallikot, Gulmi	Hunga, Gulmi	Income generation (goat)	2001	Project
57.	Samajik Jagaran Tatha Vikas Abhiyan, Gulmi	Paralmi, Gulmi	Poverty alleviation (goat)	2004	Project
58.	Samudayik Bikas Sangh, Gulmi	Dhurkot, Gulmi	Income generation (goat)	2002	Project
59.	Grameen Garibi Aya Arjan Kendra, Arghakhanchi	Thada, Arghakhanchi	Commercial goat farming	2002	Project
	Grameen Garibi Nibaran Ra Aya Arjan Kendra, Arghakhanchi	Khanchikot, Arghakhanchi	Poverty alleviation (goat)	2004	Project
60.	Samajik Sewa Kendra Nepal, Arghakhanchi	Argha, Arghakhanchi	Poverty Alleviation (goat)	2004	Project
61.	Grameen Garibi Nibaran Ra Aya Arjan Kendra, Arghakhanchi	Khanchikot, Arghakhanchi	Poverty alleviation (goat)	2004	Project
62.	Grameen Samaj Kendra, Arghakhanchi	Divarna, Arghakhanchi	Income generation (goat)	2002	Project
63.	Paryabaran Sanrakshan Tatha Samudayik Swasthya Vikash Kendra, Arghakhanchi	Dhikura, Arghakhanchi	Income generation (goat)	2002	Project
64.	Nepali Sanskriti Abam Batabaran Sangrakshan Samaj, Bagaha, Bardiya	Bagaha, Bardiya	Income generation (goat/pig)	2002	Project
65.	Manpur Yuba Samaj, Bardiya	Bhimapur, Bardiya	Poverty alleviation (goat)	2004	Project
66.	Sirjana Ama Samuha, Bardiya	Dhadhabar, Bardiya	Poverty alleviation (goat)	2004	Project

Serial No.	Name and Address	Work Site and District	Program	Implemented (year)	Source of Finance
67.	Batabaran Tatha Grameen Bikas Kendra, Kohalpur, Banke	Kohalpur, Banke	Income generation (goat/pig)	2002	Project
68.	Samaj Chetan Manch, Banke	Rajhena, Banke	Poverty alleviation (goat)	2004	Project
69.	Batabaran Tatha Arthik Bikas Kendra, Lamjung	Dhamilikuwa, Lamjung	Poverty alleviation (goat)	2004	Project
70.	Janachetana Abhibidri Ra Bkas Adhayan Samiti, Lamjung	Baglungpani, Lamjung	Poverty alleviation (goat)	2004	Project
71.	Kamana Nepal, Doti	Mudbhara, Doti	Poverty alleviation (goat)	2004	Project
72.	Grameen Sudhar Manch, Dadeldhura	Amargadhi NP 1,2	Poverty alleviation (goat)	2004	Project

TA = technical assistance.

Source: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu.

**ACTUAL PROJECT COSTS**  
(\$'000)

<b>Component</b>	<b>Foreign Currency</b>	<b>Local Currency</b>	<b>Total Cost</b>
<b>A. Livestock Productivity Improvement</b>			
1. Expansion of Forage and Seed Production	0.04	1.17	1.21
2. Pasture Seed Production	0.20	0.70	0.90
3. Expansion of Private Sector of Animal Health	0.70	2.40	3.10
4. Sustaining of Public Sector Animal Health	0.16	0.34	0.50
5. Increased Accessibility of Livestock Credit	1.15	1.80	2.95
<b>Subtotal</b>	<b>2.25</b>	<b>6.41</b>	<b>8.66</b>
<b>B. Expansion Agro-Processing and Marketing</b>	<b>1.16</b>	<b>6.34</b>	<b>7.50</b>
<b>C. Institutional Strengthening and Organizational Development</b>			
1. Capacity Building and Upgrading of Facilities	1.68	1.76	3.44
2. Farmer Group Development	0.00	0.31	0.31
3. Project Management	0.00	1.65	1.65
<b>Subtotal</b>	<b>1.68</b>	<b>3.72</b>	<b>5.40</b>
<b>D. Service Charge</b>	<b>0.33</b>		<b>0.33</b>
<b>Total</b>	<b>5.42</b>	<b>16.47</b>	<b>21.89</b>

Source: Loan Financial Information System, Asian Development Bank.

## ANNUAL AND QUARTERLY LOAN DISBURSEMENT

Table A9.1: Annual Loan Disbursement  
(\$)

Category	Description	1997	1998	1999	2000	2001	2002	2003	2004
01	Civil Works	128,546	282,016	321,076	396,840	513,293	620,820	799,534	811,955
02	Vehicles	0	105,778	343,472	499,812	546,331	579,418	608,015	608,015
03	Equipment and Furniture	22,164	163,113	244,688	467,004	551,523	640,866	674,208	674,208
04	Credit	0	0	367,588	930,049	1,276,085	1,684,780	2,230,544	2,297,107
05	Training and Fellowships	0	0	62,123	217,442	262,577	356,366	417,803	461,005
06	Consulting Services	34,349	157,110	614,253	1,009,367	1,288,465	1,466,650	1,692,348	1,744,928
07	Project Administration	314,941	438,042	641,646	1,084,854	1,904,069	2,868,875	3,447,992	4,615,389
08	Service Charge	2,040	9,051	27,454	59,186	105,637	174,249	271,644	328,097
	<b>Total</b>	<b>502,040</b>	<b>1,155,110</b>	<b>2,622,300</b>	<b>4,664,554</b>	<b>6,447,980</b>	<b>8,392,024</b>	<b>10,142,088</b>	<b>11,540,704</b>

Source: Loan Financial Information System, Asian Development Bank.

**TABLE A9.2: Quarterly Loan Disbursement**  
(\$ million)

Year	Quarter	Contract Awards		Disbursements	
		Projected	Actual	Projected	Actual
1997	I	0.00	0.00	0.00	0.00
	II	0.00	0.00	0.00	0.00
	III	0.00	0.00	0.00	0.50
	IV	0.00	0.00	0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.50</b>
1998	I	2.40	0.00	0.10	0.00
	II	0.40	2.03	0.40	0.07
	III	0.40	0.37	0.40	0.31
	IV	0.50	0.04	0.60	0.28
	<b>Subtotal</b>	<b>3.70</b>	<b>2.44</b>	<b>1.50</b>	<b>0.65</b>
1999	I	0.82	0.56	0.59	0.18
	II	0.06	0.24	0.36	0.46
	III	0.14	0.07	0.80	0.27
	IV	0.12	0.12	0.44	0.55
	<b>Subtotal</b>	<b>1.14</b>	<b>0.99</b>	<b>2.19</b>	<b>1.47</b>
2000	I	0.40	0.99	0.20	0.38
	II	0.30	0.00	0.60	0.32
	III	0.20	0.23	0.60	0.20
	IV	0.10	0.09	1.00	1.15
	<b>Subtotal</b>	<b>1.00</b>	<b>1.31</b>	<b>2.40</b>	<b>2.04</b>
2001	I	0.36	0.00	0.37	0.07
	II	0.62	1.01	0.50	0.49
	III	0.35	0.74	0.74	0.22
	IV	0.48	0.00	0.56	1.08
	<b>Subtotal</b>	<b>1.81</b>	<b>1.75</b>	<b>2.17</b>	<b>1.78</b>
2002	I	0.27	0.03	0.20	0.18
	II	0.61	1.40	0.42	0.26
	III	0.25	0.00	0.77	0.73
	IV	0.25	0.00	0.54	0.77
	<b>Subtotal</b>	<b>1.38</b>	<b>1.43</b>	<b>1.93</b>	<b>1.94</b>
2003	I	0.15	2.23	0.43	0.21
	II	0.33	0.00	0.21	0.71
	III	0.00	0.00	0.00	0.68
	IV	0.00	0.00	0.00	0.15
	<b>Subtotal</b>	<b>0.48</b>	<b>2.23</b>	<b>0.64</b>	<b>1.75</b>
2004	I	0.14	0.97	0.06	0.44
	II	0.68	0.07	0.66	0.18
	III	0.21	0.03	0.24	0.77
	IV	0.00	0.00	0.00	0.00
	<b>Subtotal</b>	<b>1.03</b>	<b>1.07</b>	<b>0.96</b>	<b>1.39</b>
<b>Total</b>		<b>10.54</b>	<b>11.21</b>	<b>11.78</b>	<b>11.54</b>

Source: Loan Financial Information System, Asian Development Bank.

## ORIGINAL AND ACTUAL IMPLEMENTATION SCHEDULE

Activity/Fiscal Year	1998	1999	2000	2001	2002	2003	2004
<b>Phase 1</b>							
Renovate fit out and equip central office							
Establish regional office							
Start training DLS Staff in system learning							
Construct 2nd floor to DLS premises in Lalitpur							
Arrange accommodation for veterinary clinic in Pokhara							
Establish forage production and seed unit							
Procure forage and seed material and equipment							
Train farmers in fodder and seed production							
Support for the concentrate feed industry							
Equip regional training center, Pokhara							
Select and appoint consultants							
Training coordinator							
Resource/business development/marketing							
Senior development facilitator							
Forage development specialist							
Seed production specialist							
Appoint project support staff							
Appoint coordination committee members							
Initiate intensive activities in Syangja and Rupandehi							
Identify organizations for credit disbursement							
Identify appropriate training institutions							
Establish procedures with private banks for credit delivery							
<b>Phase 2</b>							
Provide resident veterinarian services							
Equip vet facilities in Pokhara							
Establish and equip vehicles in intensive districts							
Select personnel for overseas study tours							
Develop mechanisms for service contracts							

Activity/Fiscal Year	1998	1999	2000	2001	2002	2003	2004
Initiate intensive activities in Western districts Tanahun, Palpa, and Kaski			■	■	■	■	■
Lamjung, Nawalparasi, Kapilbastu, and Parbat			■	■	■	■	■
Establish project office in Farwestern Region, Dhangadhi		■	■	■	■	■	■
Appoint project support staff				■	■	■	■
Issue service contracts				■	■	■	■
Equip regional training facility			■	■	■	■	■
Start agro-processing and marketing work in Central Region		■	■	■	■	■	■
<b>Phase 3</b>							
Begin intensive activities in Western districts Arghakhanchi, Gulmi				■	■	■	■
Baglung						■	■
Commence intensive activities in Midwestern districts Banke, Bardiya					■	■	■
Surkhet					■	■	■
Equip district offices (equipment and vehicles)				■	■	■	■
Issue service contracts				■	■	■	■
Begin intensive activities in Farwestern Region Kailali, Kanchanpur				■	■	■	■
Dadeldhura, Doti					■	■	■

Sources: ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Third Livestock Development Project*. Manila  
PCR Mission. December 2004.

■ Original Schedule  
■ Actual Implementation

## STATUS OF COMPLIANCE WITH LOAN COVENANTS

Serial No.	Covenants	Reference in Loan Agreement	Status of Compliance
1.	The Borrower shall make available, promptly as needed, the funds, facilities, services, land and other resources, which are required, in addition to the proceeds of the Loan, for the carrying out of the Project and for the operation and maintenance of the Project facilities.	Schedule 4, para. 2	Complied with.
2.	The Borrower shall deploy competent and qualified consultants and contractors, acceptable to the Borrower and Asian Development Bank (ADB), to be employed to an extent and upon terms and conditions satisfactory to the Borrower and ADB.	Schedule 4, para. 3 (a)	Complied with.
3.	The Borrower shall cause the Project to be carried out in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to the Borrower and ADB. The Department of Livestock Services (DLS) shall furnish, or cause to be furnished, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.	Schedule 4, para. 3 (b)	Complied with.
4.	The Borrower shall ensure that the activities of its departments and agencies, particularly the Project Executing Agencies (EAs) and implementing agencies, with respect to the carrying out of the Project and operation of the Project facilities, are conducted and coordinated in accordance with sound administrative policies and procedures.	Schedule 4, para. 4	Complied with.
5.	The Borrower shall make arrangements satisfactory to ADB for insurance of the Project facilities and the equipment financed out of the proceeds of the Loan to such extent and against such risks and in such amounts as shall be consistent with sound practice.	Schedule 4, para. 5 (a)	Complied with.
6.	The Borrower shall maintain or cause to be maintained, records, and accounts adequate to identify the goods and services and other items of expenditure financed out of the proceeds of the Loan, disclose the use thereof in the Project, record the progress of the Project and reflect, in accordance with consistently maintained sound accounting principles, the operations and financial condition of the Project EAs, Borrower's agencies responsible for carrying out the Project and operating the Project facilities, or any part thereof, and Participating Banks (PBs) and NGOs, to the extent relevant to the Project.	Schedule 4, para. 6 (a)	Complied with.
7.	The Borrower shall cause each of the Project EAs, PBs and NGOs to maintain, or cause to be maintained, separate accounts and furnish to ADB not later than 12 months after the end of each related fiscal year, certified copies of such audited accounts and financial statements to the auditors.	Schedule 4, para. 6 (b)	Complied with.

8.	The Borrower shall enable ADB to discuss their respective financial statements for the Project and their respective financial affairs related to the Project from time to time with their respective auditors, and shall authorize and require any representative of such auditors.	Schedule 4, para. 6 (c)	Complied with.
9.	The Borrower shall furnish to ADB every four months reports on the carrying out of the Project and on the operation and management of the Project facilities indicating the progress made and problems encountered during the four-month period under review, steps taken to remedy these problems, and proposed programme of activities and expected progress during the four-month period under review, steps taken to remedy these problems, and proposed program of activities and expected progress during the following four-month period.	Schedule 4, para. 7 (a)	Complied with.
10.	The Borrower shall enable ADB representatives to inspect the Project, or any component or part thereof, the goods financed out of the proceeds of the Loan, and any relevant records and documents, including those maintained by the PBs and NGOs.	Schedule 4, para. 8	Complied with.
11.	The Borrower shall cause each PB and NGO at all times to conduct its business in accordance with sound administrative, financial, environmental, livestock, veterinary and business practices, and under the supervision of competent and experienced management and personnel.	Schedule 4, para. 10 (b)	Complied with.
12.	The Borrower shall establish a Central Project Management Office (CPMO) in Kathmandu to undertake overall management and coordination of Project activities. The CPMO will be headed by a Project Manager and supported by an appropriate number of staff, as agreed between the Borrower and ADB.	Schedule 6, para. 2	Complied with.
13.	The Borrower shall establish a Regional Project Management Office (RPMO) in Pokhara to be responsible for the day-to-day coordination of the field-level project activities.	Schedule 6, para. 3	Complied with.
14.	Prior to the commencement of the third phase of Project implementation, a second RPMO will be established at Dhangadhi in the Far-Western Development Region of the Borrower to coordinate field-level Project-implementation activities in the Mid-Western and Far-Western Development Regions.	Schedule 6, para. 3	Complied with. The 1999 midterm review (MTR) decided not to establish a full-fledged RPMO in Dhangadhi, and added Midwestern and Farwestern Regional Directorates to manage and monitor regional project activities.

15.	The Borrower shall have established a Steering Committee to be chaired by the Director General of DLS. The Steering Committee shall meet at least biannually, and whenever else necessary, to resolve technical issues arising in the implementation of the Project. The members shall be the Division Chiefs of the concerned Ministries.	Schedule 6, para. 5	Partly complied with. The committee remained semi-dormant. The MTR established a project management and monitoring committee, which helped sorting out operational issues.
16.	The Borrower shall form Livestock Action Teams (LAT) led by the District Livestock Development Officer (DLSO). The DLSO shall be trained to facilitate the participatory process approach. The LAT members shall include subject matter specialists and other stakeholders as required in specific situations. DLS, in consultation with ADB shall reassign specific district level DLS duties and existing DLS staff to the LATs. The responsibilities of the selected staff shall be amended accordingly.	Schedule 6, para. 6	Complied with.
17.	The Borrower shall ensure that Project benefit monitoring and evaluation (PBME) are performed and carried out on livestock groups, DLSO and RPMO/CPMO and DLS levels.	Schedule 6, para. 16	Partly complied with. Although PBME was established, it was not well applied.
18.	The Borrower shall implement the Nepal Agricultural Perspective Plan and shall rationalize the use and distribution of land with the view to achieving more efficient agricultural and livestock production.	Schedule 6, para. 18	Complied with.
19.	The Borrower shall include the Project in the Borrower's annual list of priority and core projects with budgetary allocations sufficient to meet the Project requirements as they fall due in accordance with the agreed Project implementation schedule.	Schedule 6, para. 19	Complied with.
20.	The Borrower shall continue to decentralize its authority and responsibility at the district and village level institutions in order to empower the people.	Schedule 6, para. 21	Complied with.
21.	The Borrower shall, no later than 31 December 1997, reduce its ownership of the Dairy Development Corporation (DDC) by privatizing the Pokhara Milk Supply Scheme (PMSS). Thereafter, the Borrower shall progressively privatize the other components of the DDC.	Schedule 6, para. 23	Partly complied with. PMSS was privatized in December 2004. Privatization of DDC's other components has not started yet.
22.	The Borrower shall maintain a non-interventionist policy in the setting of prices of the DDC products.	Schedule 6, para. 24	Partly complied with.

23.	The Borrower shall discontinue the operation of the Borrower's veterinary hospital in Pokhara upon the privatization, under the Project, of the model private veterinary clinic.	Schedule 6, para. 25	The MTR revised this provision. JTs/JTAs were trained and supported to establish private clinical services in 30 sites.
24.	The Borrower shall provide the necessary facilities and training for the implementation of its statutes and by-laws, which set standards for livestock production, animal feed, animal medicines and vaccines, and livestock-products quality control. The Borrower shall also finalize, no later than 31 December 1997, its review of the by-laws on animal quarantine and ensure that its regulatory institutions are adequately prepared and laws enforced.	Schedule 6, para. 26	Partly complied with. The by-laws were not implemented effectively due to absence of related institutions.
25.	The Borrower shall retain the same Project staff in the same positions for the duration of the Project, and shall not remove or transfer key Project staff under normal circumstances. If such removal or transfer is made, the ADB shall be informed accordingly.	Schedule 6, para. 28.	Complied with.
26.	The Borrower shall ensure that Project staff, who are undertaking part-time education in livestock extension, remain posted in their respective districts to complete their training.	Schedule 6, para. 29	Complied with.
27.	The Borrower shall ensure that the Project is implemented in accordance with applicable environmental laws and regulations and the ADB's Environmental Guidelines for selected Agricultural and Natural Resources Development Projects. Measures acceptable to the ADB shall be adopted by the Borrower, in consultation with the ADB, to minimize any negative impact the Project may have on the environment.	Schedule 6, para. 30	Complied with.

## CONSULTING SERVICES

Table A12.1: Consulting Services (Package A)

Position	International/ Domestic	Work Commenced	Total Person- Months	Remarks
Resource/Business/ Marketing Adviser	International	Jan 1998	29	TA team leader (1998–2003)
Senior Development Facilitator	Domestic	Jan 1998	70.5	Deputy team leader (1998–2003)

Source: Asian Development Bank.

Table A12.2: Domestic Consultant Input (Package B)

Position	Initial Plan for Input (person-months)	Actual Input (person-months)	Remarks
Abattoir design specialist	3	0	Eliminated
Administration support specialist	30	64	Increased
Administration support specialist	30	52	Increased
Administration support specialist	30	0	Eliminated
Credit specialist	0	12	Created
Development facilitator	48	37	Shortened
Dairy sector skills training	18	68	Increased
Forage management specialist	24	59	Increased
Live animal marketing specialist	7	2	
Legal specialist	2	0	Eliminated
Meat marketing specialist	7	65	Increased
Meat processing specialist	3	0	Eliminated
Resident veterinary practitioner I	56	41	Shortened
Resident veterinary practitioner II	44	0	Eliminated
Training coordinator	66	44	Shortened
Women development facilitator	48	41	Shortened
<b>Total Input</b> (person-months)	<b>416</b>	<b>488</b>	

Source: Asian Development Bank.

**Table A12.3: International Consultant Input (Package B)**

<b>Name</b>	<b>Original Contract (person-months)</b>	<b>Actual Input (person-months)</b>	<b>Saved (person-months)</b>	<b>Remarks</b>
Curricula development specialist	15	14	1	Shortened
Forage development and seed production specialist	23	25	2	Increased
Feed formulation specialist	2	0	2	Suspended
Resident veterinary practitioner	21	9	12	
Credit specialist	4	2	2	Shortened
Live animal market specialist	4	2	2	Shortened
Abattoir design and supervision advisor	6	6	0	
Dairy product specialist (replaced with milk marketing economist)	5	2	3	Shortened
<b>Total</b>	<b>80</b>	<b>60</b>	<b>20</b>	

Source: Asian Development Bank.

## VEHICLES, EQUIPMENT, AND CIVIL WORKS PROCURED

### Table A13.1: List of Vehicles Procured

Serial No.	Vehicle Type	Vehicle Brand	Purchase Year	Placement
1.	Liquid Nitrogen Tanker	Tata	1998	Artificial Insemination Center, Pokhara
2.	Minibus	Swaaraj	1999	Regional Livestock Training Center, Pokhara
3.	Minibus	Swaaraj	2002	Department of Livestock Services, Lalitpur
4.	Minibus	Swaaraj	2002	Department of Livestock Services, Lalitpur
5.	Pickup	Nissan	1998	Regional Project Management Office, Pokhara
6.	Pickup	Nissan	1998	Regional Project Management Office, Pokhara
7.	Pickup	Nissan	1998	Eastern Regional Directorate, Biratnagar
8.	Pickup	Mitsubishi	1998	Regional Project Management Office, Pokhara
9.	Pickup	Mitsubishi	1998	District Livestock Services Office, Shyanja
10.	Pickup	Mitsubishi	1998	District Livestock Services Office, Rupandehi
11.	Pickup	Toyota	1998	District Livestock Services Office, Kapilbastu
12.	Pickup	Toyota	1999	District Livestock Services Office, Nawalparasi
13.	Pickup	Toyota	1999	District Livestock Services Office, Tanahun
14.	Pickup	Toyota	1999	Central Project Management Office, Lalitpur
15.	Pickup	Toyota	1999	Regional Project Management Office, Pokhara
16.	Pickup	Toyota	1999	Regional Project Management Office, Pokhara
17.	Pickup	Toyota	1999	Regional Livestock Training Centre, Pokhara
18.	Pickup	Toyota	1999	District Livestock Services Office, Kaski
19.	Pickup	Toyota	1999	District Livestock Services Office, Palpa
20.	Pickup	Nissan	2000	Central Project Management Office, Lalitpur
21.	Pickup	Nissan	2000	District Livestock Services Office, Gulmi
22.	Pickup	Nissan	1999	District Livestock Services Office, Arghakhanchi
23.	Pickup	Nissan	1999	District Livestock Services Office, Lamjung
24.	Pickup	Nissan	1999	District Livestock Services Office, Parbat
25.	Pickup	Nissan	1999	District Livestock Services Office, Kailali
26.	Pickup	Nissan	1999	District Livestock Services Office, Kanchanpur
27.	Pickup	Nissan	1999	Central Regional Livestock Directorate, Lalitpur
28.	Pickup	Nissan	1999	District Livestock Services Office, Baglung

S.N.	Vehicle Type	Vehicle Brand	Purchase Year	Placement
29.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	Central Project Management Office, Lalitpur
30.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	Regional Project Management Office, Pokhara
31.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	Regional Livestock Training Centre, Pokhara
32.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	District Livestock Services Office, Lamjung
33.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	Nepal Rastra Bank, Kathmandu
34.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	Central Project Management Office, Lalitpur
35.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	Ministry of Agriculture and Cooperatives, Kathmandu
36.	Motorcycle	Kawasaki Bajaj (4S Champion)	2001	Ministry of Agriculture and Cooperatives, Kathmandu
37.	Motorcycle	Escorts -RX-100	2001	District Livestock Services Office, Kaski
38.	Motorcycle	Escorts -RX-100	2001	District Livestock Services Office, Nawalparasi
39.	Motorcycle	Escorts -RX-100	2001	Department of Livestock Services, Lalitpur
40.	Motorcycle	Escorts -RX-100	2001	District Livestock Services Office, Rupandehi
41.	Motorcycle	Escorts -RX-100	2001	Livestock Development Farm, Pokhara
42.	Motorcycle	Escorts -RX-100	2001	District Livestock Services Office, Tanahun
43.	Motorcycle	Escorts -RX-100	2001	District Livestock Services Office, Palpa
44.	Motorcycle	Escorts -RX-100	2001	Ministry of Agriculture and Cooperatives, Kathmandu
45.	Motorcycle	Escorts -RX-100	2001	Department of Livestock Services, Lalitpur
46.	Motorcycle	Escorts -RX-100	2001	Central Regional Livestock Directorate, Kathmandu
47.	Motorcycle	Escort-RX-100	2001	District Livestock Services Office, Kapilbastu
48.	Motorcycle	Escort-RX-100	20001	Animal Breeding and Artificial Insemination Center, Kathmandu
49.	Motorcycle	Escorts -RX-100	2001	Animal Production Division, Lalitpur
50.	Motorcycle	Escorts -RX-100	2001	Department of Livestock Services, Lalitpur
51.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Kailali
52.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Kanchanpur
53.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Dadedhura
54.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Kailali
55.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	Central Project Management Office, Lalitpur
56.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	Central Project Management Office, Lalitpur
57.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Bhaktapur
58.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Banke

S.N.	Vehicle Type	Vehicle Brand	Purchase Year	Placement
59.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Bardia
60.	Motorcycle	Kawasaki Bajaj (Caliber)	2001	District Livestock Services Office, Surkhet
61.	Motorcycle	Yamaha (YBX)	2002	Regional Project Management Office, Pokhara
62.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Kaski
63.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Baglung
64.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Gulmi
65.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Nawalparasi
66.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Banke
67.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Palpa
68.	Motorcycle	Yamaha (YBX)	2002	Livestock Farm, Gaughat
69.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Bardia
70.	Motorcycle	Yamaha (YBX)	2002	Central Project Management Office, Lalitpur
71.	Motorcycle	Yamaha (YBX)	2002	Directorate of Livestock Marketing, Lalitpur
72.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Tanahu
73.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Parbat
74.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Syangja
75.	Motorcycle	Yamaha (YBX)	2002	Forage and Pasture Section, Lalitpur
76.	Motorcycle	Yamaha (YBX)	2002	Sheep, Goat, Pig and Poultry Section, Lalitpur
77.	Motorcycle	Yamaha (YBX)	2002	Ministry of Agriculture and Cooperatives, Kathmandu
78.	Motorcycle	Yamaha (YBX)	2002	Directorate of Livestock Services, Lalitpur
79.	Motorcycle	Yamaha (YBX)	2002	Animal Breeding Section, Pokhara
80.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Gulmi
81.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Lalitpur
82.	Motorcycle	Yamaha (YBX)	2002	Animal Breeding Section, Pokhara
83.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Bardiya
84.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Surkhet
85.	Motorcycle	Yamaha (YBX)	2002	Regional Livestock Directorate, Surkhet
86.	Motorcycle	Yamaha (YBX)	2002	Breeder Farm, Nepalgunj
87.	Motorcycle	Yamaha (YBX)	2002	Regional Livestock Training Center, Nepalgunj
88.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Lalitpur
89.	Motorcycle	Yamaha (YBX)	2002	Regional Livestock Training Center, Dhangadi
90.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Kanchanpur
91.	Motorcycle	Yamaha (YBX)	2002	Goat Farm, Budhitola
92.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Dadeldhura
93.	Motorcycle	Yamaha (YBX)	2002	Regional Livestock Directorate, Dipayal
94.	Motorcycle	Yamaha (YBX)	2002	District Livestock Services Office, Doti

Source: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu.

**Table A13.2: Equipment and Related Items Procured**  
(Number of items)

Serial No.	Offices	Procurement Description											
		Computer	Printer	Fax Machine	Video Camera	Television	VCD	Photocopy Machine	OHP	Slide Projector	Still Camera	Scanner	Multimedia
1.	MOAC	3	2	0	0	0	0	2	0	0	0	0	0
2.	DLS	3	4	0	0	0	0	1	0	0	0	0	0
3.	CPMO	15	20	1	1	0	0	3	1	1	4	2	1
4.	RPMO, Pokhara	9	6	1	0	0	0	1	1	1	1	1	0
5.	RLD Dipayal	1	0	0	0	0	0	1	1	0	1	0	0
6.	RLD, Surkhet	1	0	0	0	0	0	1	1	0	0	0	0
7.	RLD, Kathmandu	0	0	0	0	0	0	1	0	0	0	0	0
8.	Trai, Directorate	1	0	0	0	0	0	0	0	0	0	0	1
9.	RLTC, Pokhara	1	1	1	1	1	1	1	1	1	1	0	0
10.	RLTC, Dhangadi	1	1	1	1	1	1	1	1	1	1	0	0
11.	RLTC, Nepalgunj	0	0	1	1	1	1	1	1	1	0	0	0
12.	AIC, Banke	1	0	0	0	0	0	0	0	0	0	0	0
13.	Liv. Farm, Pokhara	1	2	1	0	0	0	0	1	0	1	0	0
14.	Liv. Farm, Gaughat	1	0	1	0	0	0	0	0	0	1	0	0
15.	Liv. Farm, Budhitola	0	0	1	0	0	0	0	1	0	1	0	0
16.	AIC, Khumaltar	0	0	1	0	0	0	0	0	0	0	0	0
17.	DLSO, Syangja	1	1	1	0	0	0	0	1	0	0	0	0
18.	DLSO, Rupandehi	1	1	1	0	0	0	0	0	0	1	0	0
19.	DLSO, Tanahu	1	2	1	0	0	0	0	1	0	0	0	0
20.	DLSO, Kaski	1	1	1	0	0	0	0	0	0	0	0	0
21.	DLSO, Palpa	1	1	1	0	0	0	0	1	1	1	0	0
22.	DLSO, Lamjung	1	1	1	0	0	0	0	0	0	0	0	0
23.	DLSO, Parbar	1	1	1	0	0	0	0	0	0	0	0	0
24.	DLSO, Nawalparasi	1	1	1	0	0	0	0	1	0	0	0	0
25.	DLSO, Kapilbastu	1	1	1	0	0	0	0	1	0	0	0	0
26.	DLSO, Gulmi	1	1	1	0	0	0	0	1	0	0	0	0
27.	DLSO, Argakhanchi	1	1	1	0	0	0	0	1	0	0	0	0
28.	DLSO, Baglung	1	1	1	0	0	0	0	1	0	0	0	0
29.	DLSO, Kailali	1	1	1	0	0	0	0	0	0	0	0	0
30.	DLSO, Kanchanpur	1	1	1	0	0	0	0	0	0	0	0	0
31.	DLSO, Banke	1	1	1	0	0	0	0	1	0	1	0	0

Serial No.	Offices	Procurement Description											
		Computer	Printer	Fax Machine	Video Camera	Television	VCD	Photocopy Machine	OHP	Slide Projector	Still Camera	Scanner	Multimedia
32.	DLSO, Bardiya	1	1	1	0	0	0	0	0	0	0	0	0
33.	DLSO, Surkhet	1	1	1	0	0	0	0	0	1	1	0	0
34.	DLSO, Doti	1	1	1	0	0	0	0	0	0	0	0	0
35.	DLSO, Dadeldhura	1	1	1	0	0	0	0	0	0	0	0	0
36.	DLSO, Lalitpur	1	1	0	0	0	0	0	0	0	0	0	0
37.	DLSO, Bhaktapur	1	1	0	0	0	0	0	0	0	0	0	0

AIC = artificial insemination center, DLSO = district livestock services office, Liv. = livestock, MOAC = ministry of agriculture and cooperatives, RLTC = regional livestock training center, RLD = regional livestock directorate, RMPO = regional project management office, Trai. = training.

Source: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu.

PCR Mission, December 2004.

**Table A13.3: Civil Works Constructed under the Project**

Serial No.	Civil Work/Contract Packages	Contractor	Year of Construction	Total Cost (NRs '000)
1.	Farm shed for AI center, Pokhara	Rabina Construction	1998	5,824
2.	Regional Livestock Training Center, Pokhara	Rama and Radhika Construction	1998	3,803
3.	Renovation of the Project and DLS buildings in Lalitpur	Gauri-Parbati Construction	1998	2,516
4.	Threshing floor, Janakpur	Ratna Construction	1999	149
5.	Staff quarters, threshing floor and irrigation canal for AI center, Pokhara	Three Diamond Construction	1999	4,245
6.	Training halls for Livestock Training Center, Pokhara and Dhangadhi	Rama and Radhika Construction	2000	7,693
7.	Regional Livestock Training Center, Nepalgunj	Rama and Radhika Construction	2001	5,051
8.	Regional Livestock Training Center, Pokhara	Koshi and Neupane Construction	2001	3,722
9.	Regional Livestock Training Center, Dhangadhi	Koshi and Neupane Construction	2001	3,421
10.	Regional Training Center, Dhangadi, a garage and drinking water system	Adharsha Construction	2002	501
11.	Garage for Regional Training Center, Nepalgunj	Adharsha Construction	2002	1,904
12.	Threshing floor for Gaughat Livestock Farm	R.S. Construction	2002	549
13.	Approach road for Regional Training Center, Nepalgunj	R.S. Construction	2002	249
14.	Garage, Harihar Bhawan, AI Complex and DLSO Nawalaparasi	Koshi and Neupane Construction	2003	4,144
15.	Deep boring and three-phase electricity connection in AI Center, Pokhara, and compound wall for DLSO, Palpa	Gauri-Parbati Construction	2003	4,770
16.	Regional Livestock Training Centre, Banke, and Farm Shed, Gaughat	Rama and Radhika Construction	2003	4,988
17.	Construction of DLSO Kaski, Bardiya and Kailali, and cafeteria for Regional Livestock Training Center, Pokhara	Shiv Shakthi Company	2003	4,150
18.	Construction of first floor of DLSO, Kaski	Saraswoti Nirman Sewa	2003	1,080

AI = artificial insemination, DLS = department of livestock services.

Sources: DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu. PCR Mission, December 2004.

## FINANCIAL AND ECONOMIC ANALYSIS

### A. Impact on Beneficiary Communities

1. The Project has directly benefited 56,455 farm families through the livestock productivity improvement program, against the appraisal target of 55,000 farm families. Of this, 31% (17,522) of farm families benefited from commodity production group activities and 69% (38,933) were outside the group but took part in commodity production activities. With some overlaps, 34,533 farm families have benefited from agro-processing and marketing programs—dairy processing and marketing (30%), slaughterhouse establishment and meat marketing (50%), and radiation effect on both (20%). The Project also contributed to the environmental protection program through its forage and fodder growing activities in the project area and benefited 1,566 farm families.

### B. Main Assumptions of the Financial and Economic Analysis

2. As far as practicable, all quantifiable benefits are included in the financial and economic analysis. The economic reevaluation presented in this report was carried out using the same methodology as applied in the project formulation.

#### 1. General Methodology

3. The economic analysis was undertaken in accordance with the Asian Development Bank's *Guidelines for the Economic Analysis of Projects*. Different farm models were prepared and analyzed during the PCR Mission's field visit, applying actual costs and benefits in the field. These costs and benefits were expressed in 2004 constant prices. Both analytical procedures were subsequently weighted in accordance with the project period. The cost and benefit values are expressed in US dollars, where required, using the official exchange rate of \$1.00 = NRs74.00.

#### 2. Economic Life of the Project

4. The assumed economic life of the Project was based on an expected life of 20 years from implementation starts in 1997 including the 7-year project implementation period until 2004. Thus, the net economic life of the Project is considered to be 13 years (2004–2016).

#### 3. Project Cost

5. Costs of civil works, vehicle supplies, equipment and furniture, credit, training and fellowships, consulting services, project management, and service charge were taken as costs for the financial and economic analysis. The annual breakdown of government contribution as counterpart funds (excluding beneficiaries' contribution) was taken from various sources, so the figure may vary slightly. The mismatch of ADB's and the Government's accounting years also limited accuracy. Nevertheless, due care was taken to be as accurate as possible. ADB's costs (including NRB and FI credit) were considered as project investment, whereas government's costs were assumed as recurrent costs. The actual project cost began from 1997 and ended in 2004<sup>13</sup> and thereafter assumed a constant annual recurrent cost at 5% of the sum total expenditure of the project implementation period.

<sup>13</sup> Sum total of expenditure of the project implementation period (1997–2004) multiplied by 0.05. This amount is assumed constant for each year until 2016.

#### **4. Economic Prices and Costs**

6. The economic prices of some traded commodities, such as skim milk powder and butter oil (constituent of pasteurized liquid milk), were adjusted to prices in Indian border to Nepal. Major cost items considered were local transport and handling costs to milk processing plant in the project area. Similarly, prices for commonly traded dairy products (yogurt and cheese) were adjusted with border prices. Actual prices were used up to the project implementation period (1997–2004) and projected prices were used until the end of the expected economic life of the Project (2016).

7. The economic prices of non-traded goods, labor, and other costs were based on financial prices and adjusted by the standard conversion factor of 0.9. The local expenditure portion of the loan proceeds and other investment costs incurred in the local currency were also adjusted by the standard conversion factor of 0.9 to estimate real economic values.

8. The analysis estimated economic opportunity cost of capital (11%), and applied as discount rate to arrive at the economic net present value of the Project's cash flow (7.88%).

#### **5. Project Benefits**

##### **a. Quantified Benefits**

9. During project preparation, major anticipated benefits included in the analysis were those derived from incremental livestock productivity. At project completion, economic benefits included in the analysis were essentially derived from incremental net benefits from two major livestock subsectors—milk (cow and buffalo) and meat (buffalo, goat, and pig). The Project envisaged the likely benefits of poultry meat and egg production, but they are not considered in the analysis because of their poor/less significant contribution to total farm benefits.

10. The financial budget for each of the major project activities was estimated based on the available data and other relevant information. In addition, comprehensive triangulation was made during the field investigation by the PCR Mission.

11. Compared with appraisal estimates, the number of milking cow per family increased by 31.7% (2.2 against targeted 1.67) and milking buffalo per family increased by 25.7% (2.1 against 1.67 target). The annual growth rate of cow milk was 3.07% against the appraisal target of 3.00–13.50%. Incremental annual milk production per cow was 354 liters against the target of 420 liters. The annual growth rate of buffalo milk production was 9% against the target of 1.46–4.2%, and incremental annual milk production per buffalo was nearly three times higher than the targeted production volume (495 liters against 170 liters). Per family buffalo milk production increased by 82% against the target of 23% and cow milk rose by 24% against the appraisal target of 70%. This increment was made possible solely through increased animal productivity, without increase in their stock.

12. Overall, per farm family herd size for meat production increased by 15%, and the number of animal increased to 4.5 for buffalo, 6.4 for goat, and 3.5 for pig. The Project contributed to increase the weight of 1.5 year old buffalo to 123 kilograms (kg) against 113–150 kg appraised. Likewise, a 2-year old goat reached 17 kg against the appraisal target of 12–16 kg, and a 1-year old piglet reached 98 kg against the appraisal target of 55–70 kg. Meat production per farm family increased by 35% instead of the 20% target (buffalo), 40% against 15% (goat), and 25% compared with 30% (pig).

## **b. Unquantified Benefits**

13. In addition to quantified benefits, some secondary and tertiary benefits were identified for farm families and others. The project strengthened 81 small-scale dairies through specialized training on milk processing, business management, and product diversification. Each dairy provides a market outlet for 600 liters of raw milk per day and has the capacity to process 300–1,000 liters/day for liquid milk and other dairy products. The Project established two slaughterhouses, upgraded 43 retail meat shops, and improved 102 meat shops in the project area. This directly benefited 9,000 consumers via hygienic and quality produce, and employed 500 people in meat shops.

14. The radiation effect of better quality agro-processing and marketing has a significant impact on health, nutrition, and poverty reduction. Human resource development, through institutional strengthening and organizational development, has an enduring effect on economic development. A total of 207 officers, 905 junior technicians (JTs)/junior technical assistants (JTAs) and 1,114 entrepreneurs were given short-term in-country technical training. A total of 1,395 groups were formed from 348 program pockets covering 17,522 farm families. Of this, 51% of group members are women—many at decision-making level—thus broadening the scope of women's empowerment. As a result, women's participation in project activities has increased from 15% (1997) to 47% (2004). The Project has paid attention to environmental issues, and has contributed to environmental protection through forage and fodder production in the project area.

## **C. Financial Analysis**

15. Financial analysis was undertaken for each major production component/sector of the Project. The major cost items considered for financial analysis in the Project were construction works, supplies, equipment, and furniture, institutional credit, training, consulting services, and project management costs. The analysis used actual cost till project implementation period (1997–2004) and thereafter assumed a constant annual recurrent cost at 5% of the sum total expenditure of the project implementation period.

16. Benefits from different production sectors—milk (cow and buffalo) and meat (buffalo, goat, and pig)—were estimated based on the assumption of a constant animal population and increase in productivity. Benefits were estimated based only on the incremental production of milk and meat sectors. Benefits from value-added production of processed dairy and meat products were not included in the rate of return analysis. While estimating benefits, the number of farm beneficiaries and productivity levels were assumed to increase till the tenth year (2007) and remain constant from the eleventh year (2008) onward.

17. The financial internal rate of return (FIRR) for the overall project was estimated at 24.6% (Table A14.13). The financial net present value (FNPV), with a 7.88% discount rate, was \$15.2 million and the financial cost benefit ratio (FCBR) with same discount rate was 2.2. The sensitivity analysis shows that the FIRR would have been 27% if benefits increased by 10% or costs decreased by 10% (Table A14.14). The FIRR fell sharply (19.4%) if benefits were deferred by 1 year.

## **D. Economic Analysis**

18. The economic benefits and costs for on-farm development activities, along with the value of output forgone, were derived from the descriptive farm models. These models were critically analyzed from the input-output structure of different farms. Real costs and benefits values were

further adjusted to calculate economic values using methods mentioned in Section 4: Economic Prices and Costs (para. 6).

19. The economic internal rate of return (EIRR) was estimated at 23.4% (Table A14.15). The economic net present value (ENPV), with a 7.88% discount rate, was \$13.2 million and the economic cost benefit ratio (ECBR), with the same discount rate, was 2.1. The EIRR would have been 26% if benefits increased by 10% or costs decreased by 10% (Table A14.16).

### **E. Sensitivity Analysis**

20. The ENPV, ECBR, and EIRR were calculated to test whether the estimates were sensitive to assumed productivity growth in different project sectors. Sensitivity analysis was conducted under five scenarios (i) benefits increased by 10%, (ii) benefits decreased by 10%, (iii) costs increased by 10%, (iv) costs decreased by 10%, and (iv) benefits deferred by 1 year. The result of the sensitivity analysis showed that the analysis was robust because the net benefits from the Project remained unchanged. With a 10% increase in project costs, the EIRR is estimated to decline to 21.1%, while it is 26.2% with a 10% cost decrease. Under the influence of a 10% decrease in benefits, the model is still sensitive, with the EIRR being reduced to 20.8%, while it is 26.0% with a 10% benefit increase. If benefits are delayed by 1 year, the EIRR sharply declines to an estimated 18.5%.

21. It should also be noted that the economic benefits have been estimated conservatively. Other likely benefits of the Project—such as the multiplier effect of institutional development, expansion of agro-processing and marketing activities, sale of forage seeds, capacity building, women's empowerment, and environmental protection—were not included in the analysis. If these benefits were properly quantified and monetized, the EIRR would increase significantly. The increase in number of beneficiaries and livestock population/herd size could increase the economic benefits of the Project.

**Table A14.1: Indices of Productivity at Project Appraisal and PCR**  
(Base Year 1995 = 100)

<b>Commodities</b>	<b>PA Target</b>	<b>PCR Survey</b>	<b>Country Average</b>
<b>Milk</b>			
Cow milk	170	124	110
Buffalo milk	123	182	104
<b>Meat and Egg</b>			
Buffalo meat	120	124	107
Goat meat	115	154	106
Pig meat	130	132	95
Chicken meat	130	NS	99
Eggs	120	NS	98

NS = not significant, PA = project appraisal, PCR = project completion review.

Sources: ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Third Livestock Development Project*. Manila.

DLS. 2004. *Borrower's Project Completion Report for the Third Livestock Development Project*. Kathmandu.

PCR Mission, December 2004.

**Table A14.2: Input and Output Structure in Buffalo Farm Model**

Input	Unit	Quantity	Rate (NRs/unit)	Total Value (NRs)	Age (years)	Farm Cost (NRs/year)	Milk Cost (NRs/year)
A	b	c	D	e=(c*d)	F	g=(e/f)	h
<b>A. Capital Items</b>							
Shed	no.	1.27	28,833.10	36,618.00	15.39	2,379.00	1,570.00
Utensils	no.	2.00	1,481.00	2,962.00	2.57	1,151.00	825.00
Water Supply	no.	1.00	5,582.00	5,582.00	8.17	683.00	429.00
<b>Subtotal (A)</b>				<b>45,162.00</b>		<b>4,213.00</b>	<b>2,824.00</b>
<b>B. Expendables</b>							
Forage (Seed)	kg	1.80	173.30	312.00		312.00	271.00
Forage (Own)	kg	2,500.00	1.02	2,545.00		2,545.00	1,358.00
Straw	kg	4,181.90	1.07	4,491.00		4,491.00	3,024.00
(Purchased)							
Straw (Own)	kg	12,581.80	1.02	12,866.00		12,866.00	8,494.00
Husk	kg	90.90	1.00	91.00		91.00	61.00
Bran	kg	1,907.30	8.08	15,409.00		15,409.00	11,569.00
(Purchased)							
Bran (Own)	kg	2,027.80	2.76	5,600.00		5,600.00	4,941.00
Other Feeds	NRs	109.20	11.99	1,309.00		1,309.00	1,178.00
Medicine	NRs	0.70	1,688.60	1,182.00		1,182.00	845.00
Others	NRs	9.30	70.40	655.00		655.00	473.00
<b>Subtotal (B)</b>				<b>44,460.00</b>		<b>44,460.00</b>	<b>32,214.00</b>
<b>C. Labor</b>							
Own labor	PD	431.00	67.70	29,159.00		29,159.00	20,291.00
Hired labor	PD	78.00	84.40	6,581.00		6,581.00	6,086.00
<b>Subtotal (C)</b>		<b>509.00</b>		<b>35,740.00</b>		<b>35,740.00</b>	<b>26,377.00</b>
<b>Total Cost</b>				<b>125,362.00</b>		<b>84,413.00</b>	<b>61,415.00</b>
<b>D. By-Products</b>							
<b>Income</b>							
Calves	no.	2.00	3,109.00	6,218.00			6,218.00
Manure	kg	8,918.00	1.40	12,310.00			12,310.00
<b>Subtotal (D)</b>				<b>18,528.00</b>			<b>18,528.00</b>
<b>Net Expenses</b>				<b>106,834.00</b>			<b>42,887.00</b>
<hr/>							
<b>Production and Return</b>		<b>Milk Yield</b> (liters/day)	<b>Milking Animal</b> (No.)	<b>Milking Days</b>		<b>Milk Yield</b> (liters/year)	
Buffalo		5	2.5	261		3,298	
Cattle		1	0.2	210		38	
<b>Total</b>		<b>6</b>	<b>2.7</b>	<b>471</b>		<b>3,336</b>	
<b>Item</b>			<b>NRs/liter</b>				<b>NRs/year</b>
Revenue			18.74				62,513.00
Cost			12.86				42,887.00
Margin			5.88				19,626.00

kg = kilogram, no. = number, NRs = Nepalese rupee, PD = person-day.  
Source: PCR Mission, December 2004.

Table A14.3: Input and Output Structure in Cow Farm Model

Input	Units	Quantity	Rate (NRs/Unit)	Total Values (NRs)	Age (years)	Farm Cost (NRs/year)	Milk Cost (NRs/year)
A	B	C	D	e=(c*d)	F	g=(e/f)	H
<b>Capital Items</b>							
Shed	no.	1.13	56,969.00	64,375.00	17.70	3,633.00	2,973.00
Utensils	no.	1.25	4,340.00	5,425.00	3.00	1,825.00	1,508.00
Water supply	no.	1.00	2,513.00	2,513.00	3.90	645.00	525.00
<b>Subtotal</b>				<b>72,313.00</b>		<b>6,103.00</b>	<b>5,006.00</b>
<b>Expendables</b>							
Forage (Purchased)	kg	750.00	1.00	750.00		750.00	728.00
Forage (Own)	kg	2,400.00	0.99	2,373.00		2,373.00	2,065.00
Straw (Purchased)	kg	4,666.80	1.27	5,938.00		5,938.00	5,250.00
Straw (Own)	kg	6,250.00	1.12	7,000.00		7,000.00	5,061.00
Bran (Purchased)	kg	3,925.00	7.81	30,663.00		30,663.00	24,822.00
Bran (Own)	kg	246.30	7.85	1,934.00		1,934.00	1,572.00
Other feeds	NRs	625.00	1.00	625.00		625.00	313.00
Medicine	NRs	1.00	5,025.00	5,025.00		5,025.00	3,764.00
<b>Subtotal</b>				<b>54,308.00</b>		<b>54,308.00</b>	<b>43,575.00</b>
<b>Labor</b>							
Own labor	PD	646.30	69.20	44,724.00		44,724.00	36,670.00
Hired labor	PD	35.00	85.60	3,000.00		3,000.00	2,730.00
<b>Subtotal</b>		<b>681.00</b>		<b>47,724.00</b>		<b>39,400.00</b>	<b>39,400.00</b>
<b>Total Cost</b>				<b>174,345.00</b>		<b>99,811.00</b>	<b>87,981.00</b>
<b>By-products</b>							
Calves	no.	2.00	3,888.00	7,775.00			7,775.00
Manure	kg	3,376.00	2.24	7,574.00			7,574.00
<b>Subtotal</b>				<b>15,349.00</b>			<b>15,349.00</b>
<b>Net expenses</b>				<b>158,996.00</b>			<b>72,632.00</b>
<b>Production and Return</b>							
		<b>Milk yield</b> (liters/day)	<b>Milking Animal</b> (No.)	<b>Milking Days</b>		<b>Milk yield</b> (liters/year)	
Cattle		9.7	2.5	270		6,548	
Buffalo		5.6	0.6	243		818	
<b>Total</b>	liters/year	<b>15.3</b>	<b>3.1</b>			<b>7,366</b>	
<b>Item</b>							
Revenue			<b>NRs/liter</b>				<b>NRs/year</b>
Revenue			15.35				113,060.00
Cost			9.86				72,632.00
Margin			5.49				40,428.00

kg = kilogram, no. = number, NRs = Nepalese rupee, PD = person-day.

Source: PCR Mission, December 2004.

**Table A14.4: Input and Output Structure in Goat Farm Model**

<b>Input</b>	<b>Units</b>	<b>Quantity</b>	<b>Rate</b>	<b>Total Value</b>	<b>Age</b>	<b>Farm Cost</b>
			(NRs/unit)	(NRs)	(years)	(NRs/year)
<b>A</b>	<b>B</b>	<b>c</b>	<b>D</b>	<b>e=(c*d)</b>	<b>f</b>	<b>g=(e/f)</b>
<b>Capital Items</b>						
Shed	no.	1.00	5,300.00	5,300.00	6.70	789.00
Utensils	no.	1.00	900.00	900.00	3.30	275.00
Water supply	no.	1.00	559.00	559.00	3.00	189.00
Others		0.45	376.00	169.00	2.20	78.00
<b>Subtotal</b>				<b>6,928.00</b>		<b>1,331.00</b>
<b>Expendables</b>						
Forage (Purchased)	Kg	273.50	2.00	541.00		541.00
Forage (Own)	Kg	1,650.00	1.30	2,172.00		2,172.00
Straw (Purchased)	Kg	90.90	1.00	90.90		90.90
Straw (Own)	Kg	109.10	1.00	109.10		109.10
Bran (Purchased)	Kg	176.70	7.70	1,368.00		1,368.00
Bran (Own)	Kg	242.90	7.70	1,865.00		1,865.00
Other feeds	NRs	18.20	6.00	109.00		109.00
Medicine	NRs	0.10	272.70	27.30		27.30
Others	NRs	0.20	1,636.40	327.00		327.00
<b>Subtotal</b>				<b>6,609.00</b>		<b>6,609.00</b>
<b>Labor</b>						
Own labor	PD	180.01	64.90	11,688.00		11,688.00
<b>Total Cost</b>				<b>25,225.00</b>		<b>19,628.00</b>
<b>By Products</b>						
Kids (Patha/Pathi)	no.	10.00	646.40	6,464.00		6,464.00
Manure	Kg	533.00	4.00	2,151.00		2,151.00
<b>Subtotal</b>				<b>8,615.00</b>		<b>8,615.00</b>
<b>Net Expenses</b>				<b>16,610.00</b>		<b>11,013.00</b>
<b>Production and Return</b>						
		<b>Weight</b>	<b>Herd Size</b>	<b>Period</b>		<b>Total Qty</b>
		(kg)	(no.)	(year)		(kg/year)
Meat production (live)		13.31	6.4	1		85.18
<b>Total</b>						<b>85.18</b>
<b>Item</b>						
			<b>NRs/kg</b>			<b>NRs/year</b>
Revenue			201.62			17,175.00
Cost			129.29			11,013.00
Margin (Revenue-Cost)			72.33			6,162.00

kg = kilogram, no. = number, NRs = Nepalese rupee, PD = person-day.

Source: PCR Mission, December 2004.

Table A14.5: Input and Output Structure in Pig Farm Model

Input	Units	Quantity	Rate (NRs/unit)	Total Value (NRs)	Age (years)	Farm/ Prod. Cost (NRs/year)
a	B	C	D	E=c*d	f	g=e/f
<b>Capital Items</b>						
Shed	no.	1.00	39,500.00	39,500.00	14.60	2700.00
Utensils	no.	1.50	954.00	1,431.00	3.00	477.00
Water supply	no.	1.00	1,575.00	1,575.00	4.10	381.00
<b>Subtotal</b>				<b>42,506.00</b>		<b>3,558.00</b>
<b>Expendables</b>						
Forage (Own)	Kg	160.00	1.60	253.00		253.00
Bran (Purchased)	Kg	3,328.00	5.50	18,223.00		18,223.00
Bran (own)	Kg	238.00	3.40	806.00		806.00
Other feeds	NRs	1.00	300.00	300.00		300.00
Medicine	NRs	1.00	1,975.00	1,975.00		1,975.00
<b>Subtotal</b>				<b>21,557.00</b>		<b>21,557.00</b>
<b>Labor</b>						
Own labor	PD	125.00	64.80	8,098.00		8,098.00
Hired labor	PD	50.00	60.00	3,000.00		3,000.00
<b>Subtotal</b>				<b>11,098.00</b>		<b>11,098.00</b>
<b>Total Cost</b>				<b>75,161.00</b>		<b>36,213.00</b>
<b>By Products</b>						
Piglets	no.	11.30	179.20	2,025.00		2,025.00
Manure	Kg	1,004.00	1.20	1,209.00		1,209.00
<b>Subtotal</b>				<b>3,234.00</b>		<b>3,234.00</b>
<b>Net Expenses</b>				<b>71,927.00</b>		<b>32,979.00</b>
<b>Production and Return</b>		<b>Weight (kg)</b>	<b>Herd Size (no.)</b>	<b>Period (year)</b>	<b>Total Qty (kg/year)</b>	
Meat Production Live		108.8	3.5	1	380.80	
<b>Total</b>					<b>380.80</b>	
<b>Item</b>	<b>NRs/kg</b>			<b>NRs/year</b>		
Revenue	95.10			36,213.00		
Cost	86.60			32,979.00		
Margin (Revenue-Cost)	8.49			3,234.00		

kg = kilogram, no. = number, NRs = Nepalese rupee, PD = person-day, Prod. = production.

Source: PCR Mission, December 2004.

**Table A14.6: Buffalo Farm Herd Structure (Cattle Mixed)**

<b>Herd Composition</b>	<b>Avg. (no.)</b>	<b>Rate (NRs)</b>	<b>Herd Value (NRs)</b>
Milking Buffalo	2.5	17,807.0	45,327.0
Dry Buffalo	0.1	7,000.0	636.0
Pregnant Buffalo	0.6	16,571.0	10,545.0
Buffalo Calf	1.2	2,915.0	3,445.0
<i>Ranga</i> ( Male Buffalo)	0.8	2,444.0	2,000.0
<b>Buffalo Pooled</b>	<b>5.2</b>		<b>61,953.0</b>
Milking Cow	0.2	990.0	180.0
Cattle Calf	0.4	5,750.0	2,091.0
Oxen	0.3	3,000.0	818.0
<b>Mixed Cattle Pooled</b>	<b>0.9</b>		<b>3,089.0</b>
<b>Pooled (Cattle Mixed)</b>	<b>6.1</b>		<b>65,044.0</b>
a. Total Adult Equivalent	4.9		
b. Total Milking	3.3		
c. <b>Proportion (b/a)</b>	<b>0.67</b>		

Avg. = average, no. = number, NRs = Nepalese rupee.

Source: PCR Mission, December 2004.

**Table A14.7: Cow Farm Herd Structure (Buffalo Mixed)**

<b>Herd Composition</b>	<b>Avg. (no.)</b>	<b>Rate (NRs)</b>	<b>Herd Value (NRs)</b>
Milking Cow	2.5	20,950.0	52,375.0
Pregnant Cow	0.5	17,500.0	8,750.0
Cattle Calf	1.9	2,627.0	4,925.0
Oxen	0.4	833.0	313.0
<b>Cattle Pooled</b>	<b>5.3</b>		<b>66,363.0</b>
Milking Buffalo	0.6	16,600.0	10,375.0
Buffalo Calf	0.5	1,125.0	563.0
Pregnant Buffalo	0.1	20,000.0	2,500.0
<b>Mixed Buffalo Pooled</b>	<b>1.2</b>		<b>13,438.0</b>
<b>Pooled (Buffalo Mixed)</b>	<b>6.5</b>		<b>79,801.0</b>
a. Total Adult Equivalent	3.8		
b. Total Milking	3.2		
c. <b>Proportion (b/a)</b>	<b>0.84</b>		

Avg = average, no. = number, NRs = Nepalese rupee.

Source: PCR Mission, December 2004.

**Table A14.8: Goat Farm Herd Structure**

<b>Herd Composition</b>	<b>Avg.</b> (no.)	<b>Rate</b> (NRs)	<b>Herd Value</b> (NRs)
She Goat	3.40	2,159.00	7,264.00
He Goat	3.00	2,091.00	6,273.00
<b>Goat Pooled</b>	<b>6.40</b>		<b>13,537.00</b>

Avg. = average, no. = number, NRs = Nepalese rupee.

Source: PCR Mission, December 2004.

**Table A14.9: Pig Farm Herd Structure**

<b>Herd Composition</b>	<b>Avg.</b> (no.)	<b>Rate</b> (NRs)	<b>Herd Value</b> (NRs)
Pig	1.75	9,571.00	16,750.00
Piglets	1.75	2,286.00	4,000.00
<b>Pig Pooled</b>	<b>3.50</b>		<b>20,750.00</b>
Buffalo	0.25		
Buffalo Calf	0.25		
Goat	1.50		
<b>Other Pooled</b>	<b>2.00</b>		
<b>Pooled Mixed</b>	<b>5.50</b>		

Avg = average, no. = number, NRs = Nepalese rupee.

Source: PCR Mission, December 2004.

**Table A14.10: Farm Model- Per Holding Investment**

<b>Type</b>	<b>Herd</b>	<b>Herd Size (no.)</b>			<b>Herd Value (NRs)</b>			<b>Capital Investment<sup>a</sup></b> (Mixed, NRs)	<b>Total Value</b> (Herd and Capital, NRs)
		<b>Pure</b>	<b>Mixed</b>	<b>Pooled</b>	<b>Pure</b>	<b>Mixed</b>	<b>Pooled</b>		
Buffalo (Cow Mixed)		5.2	0.9	6.1	61,953.0	3,089.0	65,042.0	45,162.0	110,204.0
Cow (Buffalo Mixed)		5.3	1.2	6.5	66,363.0	13,438.0	79,801.0	72,313.0	152,114.0
Goat		6.4	0.0	6.4	13,537.0	0.0	13,537.0	6,928.0	20,465.0
Pig		3.5	2.0	5.5	20,750.0	n.a.	20,750.0	42,506.0	63,256.0

<sup>a</sup> Investment cost on farm shed structures, utensils, and water supply.

no. = number, NRs = Nepalese rupee.

Source: PCR Mission, December 2004.

**Table A14.11: Farm Model- Production, Cost, and Margin**

<b>Herd Type</b>	<b>Unit</b>	<b>Quantity</b>	<b>Revenue</b> (NRs/year)	<b>Cost</b> (NRs/year)	<b>Net Margin</b> (NRs/year)
Buffalo (Cow Mixed)	Lt/yr	3,336	63,113	42,887	20,226
Cow (Buffalo Mixed)	Lt/yr	7,366	113,060	72,632	40,428
Goat	kg/yr	85	17,175	11,013	6,162
Pig	kg/yr	381	36,213	32,979	3,234

lt = liter, NRs = Nepalese rupee, yr = year.  
Source: PCR Mission, December 2004.

**Table A14.12: Annual Per Capita Farm Income by Sector and Product (\$)**

<b>Enterprise</b>	<b>Main Product</b>	<b>Byproducts</b>	<b>Employment</b>	<b>Total</b>
Buffalo	154	46	65	265
Cow	278	38	97	413
Goat	42	21	29	92
Pig	59	53	27	139
<b>Average</b>	<b>133</b>	<b>39</b>	<b>54</b>	<b>226</b>

Source: PCR Mission, December 2004.

Table A14.13: Financial Costs, Benefits, and Cash Flow

Year	Costs (\$'000)			Benefits (\$'000)					Net Cash Flow	
	ADB Invest- ment	Govt. Recur- rent	Total Invest- ment	Cow Milk	Buffalo Milk	Goat Meat	Buff Meat	Pig Meat		Total Benefit
1997	502.0	0.4	<b>502.0</b>	0.6	15.0	0.4	0.0	0.2	<b>16.8</b>	(486.0)
1998	653.0	93.0	<b>746.0</b>	2.0	80.0	2.0	0.2	1.0	<b>86.0</b>	(660.0)
1999	1,467.0	174.0	<b>1,641.0</b>	7.0	282.0	13.0	0.8	6.0	<b>309.0</b>	(1,333.0)
2000	2,042.0	305.0	<b>2,347.0</b>	16.0	736.0	42.0	2.1	18.0	<b>814.0</b>	(1,533.0)
2001	1,783.0	555.0	<b>2,338.0</b>	28.0	1,406.0	86.0	3.9	35.0	<b>1,559.0</b>	(779.0)
2002	1,944.0	881.0	<b>2,825.0</b>	34.0	1,732.0	104.0	4.7	42.0	<b>1,917.0</b>	(908.0)
2003	1,750.0	821.0	<b>2,571.0</b>	40.0	2,074.0	124.0	5.5	50.0	<b>2,294.0</b>	(277.0)
2004	1,399.0	47.0	<b>1,446.0</b>	46.0	2,386.0	144.0	6.4	58.0	<b>2,641.0</b>	1,195.0
2005		721.0	<b>721.0</b>	52.0	2,757.0	164.0	7.3	67.0	<b>3,047.0</b>	2,326.0
2006		721.0	<b>721.0</b>	58.0	3,147.0	184.0	8.1	75.0	<b>3,472.0</b>	2,751.0
2007		721.0	<b>721.0</b>	64.0	3,556.0	205.0	9.0	84.0	<b>3,918.0</b>	3,197.0
2008		721.0	<b>721.0</b>	70.0	3,986.0	227.0	9.9	93.0	<b>4,385.0</b>	3,665.0
2009		721.0	<b>721.0</b>	76.0	4,438.0	249.0	10.9	102.0	<b>4,876.0</b>	4,155.0
2010		721.0	<b>721.0</b>	82.0	4,913.0	272.0	11.8	112.0	<b>5,390.0</b>	4,669.0
2011		721.0	<b>721.0</b>	88.0	5,412.0	295.0	12.7	121.0	<b>5,929.0</b>	5,208.0
2012		721.0	<b>721.0</b>	94.0	5,937.0	319.0	13.7	132.0	<b>6,495.0</b>	5,774.0
2013		721.0	<b>721.0</b>	100.0	6,488.0	343.0	14.7	142.0	<b>7,088.0</b>	6,367.0
2014		721.0	<b>721.0</b>	106.0	7,067.0	369.0	15.7	153.0	<b>7,710.0</b>	6,989.0
2015		721.0	<b>721.0</b>	112.0	7,676.0	394.0	16.7	164.0	<b>8,363.0</b>	7,642.0
2016		721.0	<b>721.0</b>	119.0	8,316.0	421.0	17.8	175.0	<b>9,048.0</b>	8,327.0
<b>Total</b>	<b>11,541.0</b>	<b>11,526.0</b>	<b>23,067.0</b>	<b>1,194.0</b>	<b>72,403.0</b>	<b>3,958.0</b>	<b>172.0</b>	<b>1,630.0</b>	<b>79,357.0</b>	<b>56,290.0</b>
PV at 7.88%			<b>12,819.0</b>						<b>28,037.0</b>	
FNPV at 7.88%									<b>15,218.0</b>	
FCBR at 7.88%									<b>2.2</b>	
FIRR (Base case)										<b>24.6%</b>

ADB = Asian Development Bank, Govt. = government, PV = present value, FNPV = financial net present value, FCBR = financial cost-benefit ratio, FIRR = financial internal rate of return.

Source: PCR Mission, December 2004.

Table A14.14: FIRR Sensitivity Analysis

Sensitivity	FNPV (\$'000) at 7.88%	FCBR at 7.88%	FIRR (%)
Base case	15,218	2.2	24.6
Benefits increased by 10%	18,022	2.4	27.2
Benefits decreased by 10%	12,415	2.0	21.9
Cost increased by 10%	13,937	2.0	22.1
Cost decreased by 10%	16,500	2.4	27.5
Benefits deferred by 1 year	11,331	1.9	19.4

FCBR = financial cost-benefit ratio, FIRR = financial internal rate of return, FNPV = financial net present value.

Source: PCR Mission, December 2004.

**Table A14.15: Economic Costs, Benefits, and Cash Flow**

Year	Cost (\$'000)			Benefits (\$'000)					Net Cash Flow	
	ADB Invest- ment	Govt. Recu- rrent	Total Invest- ment	Cow Milk	Buffalo Milk	Goat Meat	Buff Meat	Pig Meat		Total Benefit
1997	477.0	0.3	<b>477.0</b>	1.0	14.0	0.0	0.0	0.0	<b>15.0</b>	(462.0)
1998	620.0	84.0	<b>704.0</b>	2.0	72.0	2.0	0.2	1.0	<b>78.0</b>	(627.0)
1999	1,394.0	157.0	<b>1,551.0</b>	6.0	254.0	12.0	1.0	5.0	<b>278.0</b>	(1,273.0)
2000	1,940.0	274.0	<b>2,214.0</b>	15.0	662.0	38.0	2.0	16.0	<b>733.0</b>	(1,482.0)
2001	1,694.0	499.0	<b>2,193.0</b>	26.0	1,265.0	77.0	4.0	31.0	<b>1,403.0</b>	(790.0)
2002	1,847.0	793.0	<b>2,640.0</b>	31.0	1,558.0	94.0	4.0	38.0	<b>1,725.0</b>	(914.0)
2003	1,663.0	739.0	<b>2,401.0</b>	36.0	1,866.0	112.0	5.0	45.0	<b>2,064.0</b>	(337.0)
2004	1,329.0	43.0	<b>1,371.0</b>	41.0	2,148.0	129.0	6.0	52.0	<b>2,377.0</b>	1,006.0
2005		678.0	<b>678.0</b>	47.0	2,481.0	147.0	7.0	60.0	<b>2,742.0</b>	2,064.0
2006		678.0	<b>678.0</b>	52.0	2,832.0	166.0	7.0	68.0	<b>3,125.0</b>	2,447.0
2007		678.0	<b>678.0</b>	57.0	3,200.0	185.0	8.0	75.0	<b>3,526.0</b>	2,848.0
2008		678.0	<b>678.0</b>	63.0	3,587.0	204.0	9.0	84.0	<b>3,947.0</b>	3,269.0
2009		678.0	<b>678.0</b>	68.0	3,994.0	224.0	10.0	92.0	<b>4,388.0</b>	3,711.0
2010		678.0	<b>678.0</b>	74.0	4,422.0	245.0	11.0	100.0	<b>4,851.0</b>	4,173.0
2011		678.0	<b>678.0</b>	79.0	4,871.0	266.0	11.0	109.0	<b>5,336.0</b>	4,659.0
2012		678.0	<b>678.0</b>	84.0	5,343.0	287.0	12.0	118.0	<b>5,845.0</b>	5,168.0
2013		678.0	<b>678.0</b>	90.0	5,839.0	309.0	13.0	128.0	<b>6,379.0</b>	5,702.0
2014		678.0	<b>678.0</b>	96.0	6,361.0	332.0	14.0	137.0	<b>6,939.0</b>	6,262.0
2015		678.0	<b>678.0</b>	101.0	6,909.0	355.0	15.0	147.0	<b>7,527.0</b>	6,849.0
2016		678.0	<b>678.0</b>	107.0	7,484.0	378.0	16.0	157.0	<b>8,143.0</b>	7,465.0
<b>Total</b>	<b>10,964.0</b>	<b>10,720.0</b>	<b>21,683.0</b>	<b>1,074.0</b>	<b>65,163.0</b>	<b>3,563.0</b>	<b>155.0</b>	<b>1,467.0</b>	<b>71,421.0</b>	<b>49,738.0</b>
PV at 7.88%			<b>12,054.0</b>						<b>25,234.0</b>	
ENPV at 7.88%									<b>13,180.0</b>	
EBCR at 7.88%									<b>2.1</b>	
EIRR (Base case)										<b>23.4%</b>

ECBR = economic cost-benefit ratio, EIRR = economic internal rate of return, ENPV = economic net present value, Govt. = government.

Source: PCR Mission, December 2004.

**Table A14.16: EIRR Sensitivity Analysis**

Sensitivity	ENPV	ECBR	EIRR
	(\$'000)	at 7.88%	(%)
	<b>at 7.88%</b>		
Base case	13,180	2.1	23.4
Benefits increased by 10%	15,703	2.3	26.0
Benefits decreased by 10%	10,657	1.9	20.8
Cost increased by 10%	11,975	1.9	21.1
Cost decreased by 10%	14,385	2.3	26.2
Benefits deferred by 1 year	9,681	1.8	18.5

ECBR = economic cost-benefit ratio, EIRR = economic internal rate of return, ENPV = economic net present value.

Source: PCR Mission, December 2004.

## OVERALL ASSESSMENT

Criteria used in determining the overall assessment are relevance, efficacy, efficiency, sustainability, institutional development, and other impacts.

Criterion	Assessments	Rating (0–3)	Weight (%)	Weighted Rating
<b>A. Outcome Assessment</b>				
1. Relevance	Relevant	2	20	0.4
2. Efficacy	Efficacious	2	25	0.5
3. Efficiency	Efficient	2	20	0.4
<b>B. Sustainability</b>	Likely	2	20	0.4
<b>C. Institutional Development and Other Impacts</b>	High	2	15	0.3
<b>D. Overall Assessment</b>	Successful		100	2.0

Note: To be classified as highly successful, the overall weighted average (OWA) must be more than 2.5 and none of the five criteria can have a score of less than 2; otherwise, the rating would be downgraded by one level. To be classified as successful, the OWA must be 1.6–2.5 and no criterion can have a score of less than 1; otherwise, the rating would be downgraded by one level. To be classified as partly successful, the OWA must be 0.6–1.6 and the number of criteria receiving ratings of less than 1 should not exceed two; otherwise, the lowest rating would be given. To be classified as unsuccessful, the OWA must be less than 0.6.

Source: PCR Mission, December 2004.