

AFRICAN DEVELOPMENT FUND

THE GOVERNMENT OF THE STATE OF ERITREA

NATIONAL LIVESTOCK DEVELOPMENT PROJECT (NLDP)

PROJECT COMPLETION REPORT

**AGRICULTURE AND AGRO INDUSTRY
DEPARTMENT OSAN**

September 2007

TABLE OF CONTENTS

	<u>Page</u>
Equivalents, Abbreviations, List of Annexes, Project Matrix, Basic Project Data & Executive Summary	(i)-(xiii)
1. <u>INTRODUCTION</u>	1
2. <u>PROJECT OBJECTIVES AND FORMULATION</u>	2
2.1 Project Objectives	2
2.2 Project Formulation	2
2.3 Project Appraisal, Negotiations and Approval	2
2.4 Project Description	2
3. <u>PROJECT EXECUTION</u>	3
3.1 Effectiveness and Start-up	3
3.2 Modifications	3
3.3 Implementation Schedule	6
3.4 Reporting	7
3.5 Procurement	7
3.6 Financing Sources and Disbursements	9
4. <u>PROJECT PERFORMANCE AND RESULTS</u>	10
4.1 Overall Assessment	10
4.2 Operating Results	10
4.3 Institutional Performance	16
4.4 Management and Organisational Effectiveness	17
4.5 Staff Recruitment, Training and Development	17
4.6 Performance of Consultants, Contractors and Suppliers	18
4.7 Conditions/Covenants	18
4.8 Financial and Economic Performance	19
5. <u>SOCIAL AND ENVIRONMENTAL IMPACT</u>	20
5.1 Social Impact	20
5.2 Environmental Impact	21
6. <u>PROJECT SUSTAINABILITY</u>	21
7. <u>PERFORMANCE OF THE BORROWER AND THE BANK</u>	22
7.1 The Borrower	22
7.2 The Bank	23
8. <u>OVERALL PERFORMANCE AND RATING</u>	23
9. <u>CONCLUSIONS, LESSONS LEARNED AND RECOMMENDATIONS</u>	24
9.1 Conclusions	24
9.2 Lessons learned	25
9.3 Recommendations	26

EQUIVALENTS AND ABBREVIATIONS**Currency Equivalents**

			<u>PCR (8/2007)</u>	<u>Appraisal (3/1997)</u>
1 Nakfa	=	Birr	1.0000	-
1 UA	=	Birr	-	9.24161
1 UA	=	Nakfa	23.4343	-
1 UA	=	US\$	1.53122	1.38494
1 US\$	=	Birr	-	6.673
1 US\$	=	Nakfa	15.3035	-
1 US\$	=	UA		0.722053

WEIGHTS AND MEASURES

1 tonne (t)	=	2,205 lbs
1 kilogramme (kg)	=	2.205 lbs
1 quintal	=	100 kg
1 metric Tonne	=	1000 kg
1 metre (m)	=	3.281 ft
1 foot (ft)	=	0.305 m
1 kilometre (km)	=	0.621 mile
1 square kilometre (km ²)	=	0.386 square mile
1 square kilometre (km ²)	=	100 ha
1 square mile	=	259 ha
1 square mile	=	640 acres
1 hectare (ha) = 0.01 km ²	=	2.471 acres

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS

ADB	African Development Bank
ADF	African Development Fund
AHD	Animal Health Division
APDD	Agricultural Promotion and Development Department
ARD	Animal Resources Department
CBAHW	Community-Based Animal Healthcare Worker
CBPP	Contagious Bovine Pleuro-pneumonia
CHIHDP	Central Highlands Horticulture Development Project
CVL	Central Veterinary Laboratory
DC	Direct Contract
DP	Direct Purchase
EDIB	Eritrean Development and Investment Bank
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FAO	Food and Agriculture Organization
FMD	Foot and Mouth Disease
GSE	Government of the State of Eritrea
ICB	International Competitive Bidding
ILRI	International Livestock Research Institute
ILT	Infectious Larengo Trachits
ISH	International Shopping
M&E	Monitoring and Evaluation
MOA	Ministry of Agriculture
NARI	National Agricultural Research Institute
NCB	National Competitive Bidding
NLDP	National Livestock Development Project
OHS	Occupational and Health Safety
OIE	Office International Des Epizootics
PC	Project Coordinator
PMU	Project Management Unit
POU	Project Operation Unit
PPR	Peste Des Petits Ruminants
PSC	Project Steering Committee
RSD	Regulatory Services Department
SMC	Seed Multiplication Centres
TA	Technical Assistance
TCP	Technical Cooperation Program
UA	Unit of Account
UK	United Kingdom
UN	United Nations

LIST OF TABLES

<u>No.</u>	<u>Titles</u>	<u>Page</u>
Table 3.1	Implementation Schedule	6
Table 3.2	Project Applied Procurement Methods	8
Table 3.3	Project Sources of Finance	9
Table 4.1	Implementation Status of Forage Development Component	11
Table 4.2	Implementation Status of Pilot Range Management Component	12
Table 4.3	Implementation Status of Animal Health Services Component	14
Table 4.4	Implementation Status of Small-scale Commercial Livestock Production Component	14
Table 4.5	EDIB: Credit Disbursement Profile	15
Table 4.6	Implementation Status of Institutional Support Component	15

LIST OF ANNEXES

<u>Annex No.</u>	<u>Titles</u>	<u>No of Pages</u>
1.	Project Location Map	2
2.	Implementation Schedule	1
3.	Yearly Disbursement	1
4.	Organizational Chart During Appraisal and Project Implementation	2
5.	Calculation of Economic Internal Rate of Return	4
6.	Performance Rating Scale and Evaluation Criteria	2
7.	Recommendations and Follow-up Actions	1
8.	Project Infrastructure	2
9.	Details of Contracts Awarded	7
10.	Sources of Information	1
11.	Borrower's PCR	1
12.	Executing Agency's Comments to the Bank's PCR	1

This Report was prepared by Mr. Chi Lawrence, Senior Livestock Officer (Ext. 3368), and Consultants Messrs. A.O. Falusi, Agricultural Economist, A. Njoya, Livestock Expert and E. Yamoah, Infrastructure Expert, following the mission of the consultants to Eritrea in August 2007. Any inquiries relating to this report may be referred to either the Task Manager, Mr. Chi L. Tawah, Ext 3368, or to Mr. Chiji Ojukwu, Division Manager, OSAN.1, Ext. 2296 or Mr. Aly Abou Sabaa, Director, OSAN, Ext. 2037.

ERITREA
NATIONAL LIVESTOCK DEVELOPMENT PROJECT (NLDP)
PROJECT MATRIX

REVISION DATE: August/September, 2007
DESIGN TEAM: Chi L. Tawah/A.O. Falusi//A. Njoya/ E. Yamoah/

Narrative Summary (NS)	Verifiable Indicators (VI)			Means of Verification	Assumptions
	Appraisal	Midterm Review	PCR		
<u>Goal</u> 1. Improved national food security.	1. Reduction in imports of livestock products	1. Reduction in imports of livestock products		1. National Trade Statistics..	<u>(Goal to super goal):</u>
<u>Objective:</u> 1. Increased national production of livestock 2. Increased income among project farmers	1.1. Production of beef, sheep and goat meat, milk and eggs increased by about 3% per year, while poultry meat increased by about 2.7%. 2.1 Annual net incomes of project farmers increased from Nakfa 400 to Nakfa 3,500 starting from year 2 of the project.	1.1. Production of beef, sheep and goat meat, milk and eggs increased by about 3% per year, while poultry meat increased by about 2.7%. 2.1 Annual net incomes of project farmers increased from Nakfa 400 to Nakfa 3,500 starting from year 2 of the project.	1.1.1 Project has contributed 20% to increase beef, sheep and goat meat production 1.1.2 Milk production has increased by 169% 2.1.1 Average Annual net incomes from dairy production increased from Nakfa 2,346 (in 2003) to Nakfa 3,850 (in 2006), 2.1.2 Annual net income from cattle and sheep fattening averaged Nakfa 3,315 and Nakfa 354 per head of cattle and sheep, respectively.	1.1 Annual Reports of MOA and Animal Resources Department (ARD). 2.1 National and Ministry of Agriculture (MOA) statistical reports. 2.2 National Income Statistics.	<u>Purpose to Goal</u> 1. Project is effectively coordinated. 2. Export markets are kept open. 3. Internal markets are organized. 4. Favorable GOE policies are maintained.
<u>Outputs</u> 1. Improved forage developed adopted by farmers.	1.1 Improved forage seed distributed to at least 10% of rural households during the project period. 1.2 At least 52,000 farmers receive forage seed production contracts by year 5 of project	1.1.1 Provide suitable technical packages of forages for different ecological zones 1.1.2 Establish three forage development teams 1.1.3 Import 13 tons of exotic forage seeds and harvest 12 tons locally 1.1.4 Build two seed stores of 500 cubic meter each. 1.1.5 Procure a five-ton truck 1.1.6 Distribution of forage seeds to about 10% of rural households 1.2.1 Procure forage seeds from contract seed outgrowers for distribution to farmers 1.2.2 Engage about 500 farmers as contract seed outgrowers	1.1.1 Technical packages of forage species & feed blocks and extension manuals prepared and distributed to regions and sub-regions. (100% achieved) 1.1.2. Not achieved due to shortage of forage experts 1.1.3. Imported 4 tons of exotic forage seeds and harvested 10 tons locally (31% & 83% achieved respectively) 1.1.4. Two seed stores of 500 m ³ each constructed one in Asmara another in Tesseney (100% achieved) 1.1.5. A five-ton truck procured (100% achieved) 1.1.6 10,000 kg of forage seeds harvested & 4 tones imported seeds. Over 10,000ha over sown, 110,000ha livestock areas developed, 85,000 tree legumes planted. 1.2.1. Not achieved (due to draught and shortage of forage experts) 1.2.2. No achievement (see1.2.1)	1.1 Progress and annual reports from ARD and project management. 1.2 Progress and annual reports from Rangeland Development and Nutrition Division of ARD and project management.	<u>(Outputs to Purpose):</u> 1.1 Benefits are adequate to induce farmers to adopt new forage technologies. 2. No major effects of drought. 3. Inputs are available..

		<p>1.3.1 Organise training for staff and farmers (10,600 farmers, 100 extension workers, 12 staff study tours, 3 MSc)</p> <p>1.3.2 Provide technical assistance in forage(34p/ms) and seed (2p/ms) production</p> <p>1.3.3 Rehabilitate and maintain seed multiplication centres</p> <p>1.3.4 .Promote seed diffusion among farmers and farmers' extension visits</p> <p>1.3.5 Support Halhale Research Station to conduct research in forage and seed production</p>	<p>1.3.1. 8,322 farmers trained; 121 extension workers trained; 8 staff participated in study tour in Tunisian & 3 MSc not achieved. (79 %, 121% & 67% achieved respectively)</p> <p>1.3.2 Achieved 100%</p> <p>1.3.3. 7 seed multiplication canterers rehabilitated & maintained; (100% achieved) Over 8,000 kg of seeds produced.</p> <p>1.3.4 Farmers seed need was addressed to the Regions & forage seed was supplied to the farmers; farmer's extension visit was the core of the training session</p> <p>1.3.5 Collaboration with NARI was made on forage seed production and on trial of some forage. Links have been established with the International Livestock Research Institute (ILRI) to facilitate access to its gene bank accessions suitable for various agro-ecological zones in the project area.</p>		
<p>2. Two pilot reangeland management schemes established in the western and south-eastern Lowlands at Duluk and Gahro respectively.</p>	<p>2.1 1,333 TLU,s with access to 8,000 hectares of improved pilot rangeland with 8 protected wells and 36 km of fencing by year 3 at Duluk. Access to 540 hectares of improved range land with a carrying capacity of 11 goats-sheep /ha. 6 public water taps, 20 troughs and 20 km of fencing by year 3 at Garho.</p>	<p>2.1.1 Test range management technologies in Duluk and Gahro</p> <p>2.1.2 Organise participating communities into groups</p> <p>2.1.3 Establish two Rangeland Management Teams</p> <p>2.1.4 Fence about 8,000 ha in Duluk and 540 ha in Gahro</p> <p>2.1.5 Over sow the rangelands with herbaceous legumes</p> <p>2.1.6 Construct two hand-dug wells and one drill in Duluk</p> <p>2.1.7 Construct 5 km catchments protection in Duluk</p> <p>2.1.8 Construct weirs and channels in Gahro</p> <p>2.1.9 Supply water troughs in Duluk</p> <p>2.1.10 Carry out forage enrichment in the rangelands</p> <p>2.1.11 Training of farmers and support staff (study tours, short-term studies & postgraduate studies)</p> <p>2.1.12 Provide technical assistance in range management (18 p/ms) and irrigation (12p/ms)</p> <p>2.1.13 Partition Duluk pilot range scheme with a 20 km fence to allow for deferred grazing</p>	<p>2.1.1 Introduced over sowing of forage seeds and herbaceous planting . Fencing of Duluk controlled overgrazing . Constructed diversion canals and other structures in Gahro</p> <p>2.1.2 Organized participating communities into groups, but they don't organized as co-operatives</p> <p>2.1.3. Not achieved due to lack of experts on range mgmt (but the work was covered by existing experts)</p> <p>2.1.4. 20,000 ha fenced in Duluk</p> <p>2.1.5. 85,000 herbaceous legumes over sowed (planted)</p> <p>2.1.6. One well drill failed, other two wells proved successful</p> <p>2.1.7. Constructed 5km catchments protection (100% achieved)</p> <p>2.1.8. Earth embankment & gabions constructed.</p> <p>2.1.9. Water troughs constructed (100% achieved)</p> <p>2.1.10. Carried out forage enrichment in range lands (100 % achieved)</p> <p>2.1.11. 515 farmers and 26 extension staff trained on Rangeland management.</p> <p>2.1.12. Technical assistance provided in range management (18 p/ms) and irrigation (12p/ms), (100% achieved)</p> <p>2.1.13. Partition of 20 km of fence completed (100 % achievement)</p>	<p>1 Progress and annual reports from Rangeland Development and Nutrition Division of ARD and project management</p>	<p>1. Local communities and farmers are willing to accept controls on livestock movements and numbers.</p> <p>2. No major effects of drought.</p>
<p>3. Animal health services strengthened.</p>	<p>3.1 National Livestock vaccination coverage increased from 50-55% to 75%. Approximately 1.3 mil. cattle and 5 million sheep and goats have access to better health care.</p>	<p>3.1.1 Construct/rehabilitate laboratory facilities</p> <p>3.1.2 Provide laboratory equipment</p> <p>3.1.3 Train laboratory staff, selected local community members in basic animal health care delivery (CBAHW)</p> <p>3.1.4 Enhance disease prevention and control</p> <p>3.1.5 Upgrade veterinary public services (construct 4 quarantine stations & 9 checkpoints)</p> <p>3.2.1 Assist in restructuring & re-organizing</p>	<p>3.1.1 Constructed/rehabilitated lab. Facilities</p> <p>3.1.2. Lab. Equipment provided (100% achieved)</p> <p>3.1.3. 86 vet. technicians & vet. assistants including lab. Staff trained; and 60 CBAHW trained.</p> <p>3.1.4. Surveillance and reporting systems put in place, different Vaccines procured, CVL constructed and equipments installed</p> <p>3.1.5. Not achieved (due to shortage of budget and time)</p> <p>3.2.1. Covered by the re-structuring of the MOA</p>	<p>3.1 Progress and annual reports from Animal Health Division of ARD and project management.</p>	<p>1. Animal Health Division is adequately equipped and staffed with skilled personnel who can implement project requirements.</p>

	MSc., 15 at diploma, 17 at certificate level.	Management			
<u>Activities</u>	The following amount spent on related activities. (Costs in Millions) <u>Nakfa</u> <u>UA</u>		The following amount spent on related activities. (Costs in Millions) <u>Nakfa</u> <u>UA</u>	1.1 Progress and Annual Reports from MOA, ARD and Project Management -Accounts/Audit Reports -Procure/Disburse Reports -Supervision -Correspondence 2.1 See above 3.1 See above 4.1 See above 5.1 See above	(Activity to Output) 1. Government/MOA-ARD able to implement project. 2. Reasonable climatic conditions. 3. Project operates as scheduled.
1.Improved Forage	13.5 1.5				
2. Pilot Rangeland	23.3 2.3				
3. Animal Health	42.0 4.5				
4. Commerce/Smallholder	12.6 1.4				
5. Strengthen ARD	14.2 1.5				
<u>Total Project</u>	<u>105.6</u> <u>11.4</u>				

BASIC PROJECT DATA

1. Country : ERITREA
2. Project : National Livestock Development Project (P-ER-AAE-001)
3. Loan Number: ADF : 2100150000276
4. Borrower : Government of Eritrea (9900000358)
5. Beneficiary : Livestock Farmers
6. Executing Agency : Ministry of Agriculture, Animal Resource
Department, (ARD), now Agricultural, Promotion
and Development Department (APDD),
P.O. Box 1162, Asmara, Eritrea,
Tel: 120388; Fax: 291-1-127508

A. <u>Loan Details</u>	<u>Appraisal</u> (3/1997)	<u>Actual</u> (8/2007)
Amount in Million UA (ADF):	10.024	10.024
Interest Rate	:1%, 11-20 and 3%,21-40	1%, 11-20 and 3%,21-40
Service Charge	: 0.75%	0.75%
Commitment Charge	: 0.5%	0.5%
Repayment Period	: 50 Years	50 Years
Grace Period	: 10Years	10 Years
Loan Negotiation Date	:	13-15/10/1997
Approval Date	: Nov. 1997	19/11/1997
Signature Date	:	16/02/1998
Date of Entry into Force	: Feb. 1998	27/04/1998

B. Project Data1. Project Cost

Source of finance	In UA million	
	As per Appraisal Estimate	Actual
ADF	10.024	10.024
GOE	1.400	1.032
Total Cost	11.424	11.056

	<u>Appraisal</u>	<u>Actual</u>
3. Effective Date of First Disbursement: :	31 Mar. 1998	17/09/1998
4. Effective Date of Last Disbursement: :	30 Jun 2004	30/09/2006
5. Commencement of Project :	31 Mar. 1998	17/09/1998
6. Completion of Project :	31 Dec. 2003	30/09/2006

C. Performance Indicators

1. Cost Under-run	:	0 %
2. Time Overrun	:	33 months
* Slippage on Effectiveness (%)	:	0%
* Slippage on Completion Date (%)	:	55%
* Slippage on Last Disbursement (%)	:	41%
* Number of Extensions of Loan Validity Period	:	3
3. Project Implementation Status	:	Completed

4. List of Verifiable Indicators and Levels of Achievement :

Table C.4

Evaluation Criterion	Score	
	Maximum	Actual
1. Time Overruns	4	1
2. Cost Overruns	4	4
3. Adherence to Contractual Conditions	4	3
4. Adequacy of Supervision and Reports	4	3
5. Operational Performance	4	3
Total Score	20	14

5. Implementation Performance

* Institutional Performance	:	Satisfactory
* Suppliers' Performance	:	Satisfactory
* Consultants' Performance	:	Satisfactory
* Contractors' Performance	:	Satisfactory

6. Economic Internal Rate of Return (EIRR)

Appraisal	:	19.0%
Actual	:	17.5%

D. Missions

Table D.1

Project Cycle	Month/Year	Numbers of Persons	Composition ^a	Man Days
1. Identification	3-4/1995		FAO	
2. Preparation			FAO	
3. Appraisal	26/2-22/3/1997	3	FA,RE,LS	75
4. Launching*	21-27/02/1998	5	ML,FA,ETS,PO,DO	12
5. Launching*	2-7/3/1998	5	ML,FA,AE,PO,DO	10
6. Supervision	15/08-07/09/1999 [#]	4	ML,AE,LS,HA	48
Midterm Review	21/11-17/12/1999 ^b	2	FA,AE	18
	06-15/12/1999	3	FA,AE,LS	30
	20/05-3/06/2000	2	LS,FA	28
	4-17/12/2000	2	AE,Ag	28
	21/10-2/11/2001	3	LS,IE,AE	39
	19/10-2/11/2002	2	LS,MFE	28
	26/11-5/12/2003	2	LS,FA	22
	5-26/07/2004	3	2Ag,CE	42
	9-20/05/2005	5	LS,Ag,FA,IE,Env	12
21-30/06/2006	2	LS,IE	20	
7. Disbursement	02-11/07/2003	1	DO	10
8. Sector Portf.	07-21/05/2005	4	Ag, Env, PO,FA	60
9. PCR	20/08-01/09/2007	3	AE,LS,CE	33

^aRE: Resource Economist, ML: Division Chief & Mission Leader, AE: Agricultural Economist, PO: Procurement Officer, DO: Disbursement Officer, FA: Financial Analyst, Env.: Environmentalist, ETS: Environmental & Training Specialist, LS: Livestock Expert, Ag.: Agronomist, HA: Horticulturist/Agronomist, MFE: Microfinance Expert, CE.: Civil Engineer, IE. Irrigation Engineer, FAO: Food and Agricultural Organization

^bMission covered three projects including NLDP; [#] Mission covered two projects including NLDP

E. ADF LOAN-BANK Disbursements (UA million)

Table E.1

Years	As at Appraisal (ADB & GOE)		As at Appraisal (ADB)		Actual (ADB)	
	Amount	Cum.(%)	Amount	Cum.(%)	Amount	Cum.(%)
1998	6.041	5.29			0.136	1.36
1999	2.471	74.52			2.472	26.02
2000	1.788	90.18			0.282	28.83
2001	0.607	95.49			0.926	38.07
2002	0.515	100.00			0.870	46.75
2003					2.348	70.17
2004					0.843	78.58
2005					1.782	96.36
2006					0.365	100.00
Total	11.422	100.00	10.02	100.00	10.024	100.00
Undisbursed Balance					0.00	
Loan Saving					0.00	

F. CONTRACTORS

Different procurement methods had been applied : (i) National Competitive Bidding (NCB) was used 66 times, (ii) International Competitive Bidding (ICB) was used 6 times, (iii) International Shopping (IS) was used 35 times, (iv) Direct Contract (DC) was used 3 times and, (v) Direct Purchase (DP) was applied once. In all, 111 big and small procurement contracts had been signed and implemented

Contract awarded companies are as follows:

S.No.	Country	No. Companies	No. Contracts
1.	Eritrea	52	70
2.	Foreign	23	36
2.1.	Botswana	1	3
2.2.	Italy	2	2
2.3.	Denmark	4	4
2.4.	France	3	6
2.5.	Spain	1	4
2.6.	U.K	5	7
2.7.	Kenya	1	3
2.8.	Belgium	1	3
2.9.	Egypt	2	4
2.10	Germany	1	1

See attached List Annex 9

G. CONSULTANTS

The consulting firms involved on project implementation were the following : CIE JULES VAN LACKNER, CONTINENTAL CONSULTANTS, FINTECS CONSULTANCY, MASDAR U.K. LTD, PAN LIVESTOCK SERVICES LIMITED, SAMSAL CONSULTING, T.CONCONSULT PVT and RWA INTERNATIONAL LIMITED.

The outputs from these consultancy services were the following:

- training of staff and farmers,
- prepared training manuals,
- prepared reports (Inception, Interim, quarterly and final reports),
- prepared technical specifications,
- prepared irrigation scheme studies and design reports,
- prepared construction drawings.

See attached List Annex 9

EXECUTIVE SUMMARY

1. **Project Sector Goal and Objectives:** The sector goal was to contribute to the national demand in livestock products and thus to enhanced national food security. The project objective was to increase livestock production and productivity and, therefore, contribute to increased incomes of livestock producers.

2. **Implementation:** The project was initially planned for five years from September 1998 to December 2003. However, because of start-up delays occasioned by border war with Ethiopia, recurrent drought, deteriorating macroeconomic environment, and delays in recruitment of technical assistance and the implementation of civil works, the last disbursement deadline of the project was extended three times, first to 31 December 2004, then to 31 December 2005 and finally to 30 September 2006. The delays in project implementation necessitated some modifications in the performance targets and some of its activities during the Mid-term Review (MTR) undertaken in 2001. Though the original design was un-changed, some activities were scaled down (number of forage seeds outgrowers) and new activities introduced (support for forage research, credit for dairy farmers, etc).

3. **Physical Achievements:** There has been the successful introduction of forage production into the livestock production system of Eritrean farmers. At closure, 10,000 hectares have been over sown with native and improved forages. 110,000 hectares of livestock exclusive areas developed and 10 tons of forage seeds harvested. 20,000 hectares of grazing land has been developed and fenced in Duluk and another 1,700 hectares developed in Gahro with watering points for humans and animals provided. Farmers have been trained in range management and forage production and utilization. Growing of herbaceous legumes and planting 85,000 trees have been introduced to protect the environment against erosion and to provide supplementary feeding to livestock during the dry season. Catchment protection, gabions and embankments have been constructed to reduce environmental degradation in the lowlands. The construction/rehabilitation and re-equipping of the Central Veterinary Laboratory (CVL) have been completed, thereby providing the capacity for improved disease diagnosis, quality control and vaccine production in the country. Capacities have been built and experimental vaccine production trials have begun. A veterinary drug revolving fund (DRF) has been established for the sustainable supply drugs and vaccines for animal health. A revolving fund for credit has been initiated through the Eritrea Development and Investment Bank (EDIB) for commercial livestock production enterprises. Human and social capital has been built through training of farmers and extension workers and through the organization of communities and farmers into associations. Farmers have been trained in forage and seed production, livestock production, animal health management, whilst capacities of staff were built in forage production, analysis and evaluation of feed resources and forage, for animal production project planning, implementation, management and monitoring.

4. **Impact:** The NLDP project has impacted positively on the environment, human welfare, and human and institutional capacity of the Ministry of Agriculture and the direct and indirect project beneficiaries. It has contributed to a reduction in environmental degradation in the project area and a reduction in the constraints affecting livestock production and productivity. It has made availability a revolving credit fund for production inputs and a special revolving fund for drugs and vaccines. It has contributed to the building of human capital through training of extension workers to improve their formulation and delivery of extension messages and upgrading skills and experiences of farmers in order to enable them to improve their production. The project has contributed to a reduction in long distance transhumance and the risks associated with livestock production by improving diagnosis and prevention of livestock diseases and providing opportunities for treatment of animals which fall sick. Through the forage, seed and range management activities, the project has contributed to all year-round feeding of livestock. All these efforts have impact on the production and productivity of livestock and on the quality of livestock products that are marketed as well as the wellbeing of the producers and consumers alike. Ultimately, the project has contributed to increased household incomes for traditional and commercial livestock producers and to generation of employment both in the rural and urban areas. In

short, the NLDP has contributed to poverty reduction and to sustainable livestock production, thereby conserving the natural resources and the environment.

5. **Loan Utilization:** Total loan disbursement at project closure on 30th September 2006 was UA10.024 million. The loan was fully utilized.

6. **Counterpart Funding:** At Appraisal, the Government was expected to contribute UA 1.4 million or 12.28% of total project costs. However, Government contribution, even though 15% higher than appraisal estimate in Nakfa terms, was about 9.33% less than the appraisal estimate in UA terms. This was principally as a result of exchange rate adjustments.

7. **Sustainability:** Seed multiplication centres have been established to supply farmers with seeds and extension officers have trained farmers in the appropriate application of these seeds for increased forage production. Rangeland development has enabled controlled grazing by rotational/deferred pasture management and the introduction of leguminous tree species such as Yemen trees and *Leucaena*. Both technologies provide the farmers with the opportunity for supplementary feeding of their livestock during the dry season, thereby permitting livestock production all year round. These technologies have also created opportunities for pastoralists to reduce long distance transhumance. The provision of credit to commercial livestock farmers to invest in beef and dairy cattle as well as goat and poultry production has created opportunities for increased offtake from the herds and flocks, thereby protecting the environment from further degradation. The repayment of these loans into a revolving fund maintained by EDIB has enabled more loans to be given to more farmers and to sustain the scheme. The project has established physical infrastructure to strengthen the surveillance, diagnostic and control activities of the veterinary public health services. Coupled with the opportunity for improved epidemio-surveillance is the establishment of the DRF for rapid intervention in order to control and prevention disease outbreaks in the country. This is a revolving fund as it is replenished through the sale of drugs and vaccines. In addition, the project has invested in human and social capital as well as institutional capacity building through technical assistance, training of staff and farmers, and study tours as well as organisation of the communities into farmers' cooperative associations. The GOE has also committed itself to sustaining the physical infrastructure by providing annual allocations in its budget for their operation and maintenance.

8. **Conclusions and Recommendations:** The project has made significant contribution to the reconstruction and rehabilitation of the livestock sub-sector and has, thus, enhanced its contribution to the national economy. In this regard, it has addressed the major constraints affecting the growth of the livestock industry by (i) providing inputs via credit and DRF, (ii) building both human and social capital through training and institutional strengthening and renovating or constructing diagnostic facilities, (iii) upgrading the skills and experiences of the farmers through training, study tours and farm visits, (iv) reducing the risks of livestock farming by tackling diseases and providing alternative sources of feed, thereby contributing to improved production and productivity, and (v) improving the quality of animal products, thereby contributing to the enhancement of their marketability. The health of the livestock is thus better protected as a result of the intervention of the project. Project coordination and management was effective, responsive and flexible. The GOE is committed to ensuring the operation and maintenance of the infrastructure and the expeditious completion of the damaged Gahro scheme. It is recommended that GOE initiate an agricultural insurance policy for all categories of livestock enterprises and complete construction of the remaining infrastructure, especially the quarantine stations and veterinary checkpoints, the livestock service centers and the zonal veterinary laboratories which are critical for promoting exports of livestock products and for sustaining a viable livestock industry.

1. INTRODUCTION

1.1 After three decades of War, Eritrea emerged as an Independent Nation on 24th May 1993 and was confronted with the immediate tasks of reconstruction and rehabilitation of its infrastructure and the promotion of both public and private investments in the strategic sectors of its economy. Given that about 80 percent of its population is rural and that the majority of those living in the rural areas depend on subsistence agriculture for their livelihood, agriculture was immediately identified as a top priority sector. Though the contribution of agriculture to the Gross Domestic Product (GDP) has declined from about 25% in 1993 to less than 12% in 2005¹, the sector remains the most important source of employment and raw materials for the industrial sector.

1.2 Eritrea relies primarily on smallholder agriculture for most of its livestock and crop production. In fact, its livestock population, which was estimated in 1997 to comprise approximately 1.9 million cattle, 2.1 million sheep, 4.6 million goats, 2,5 million birds (mainly poultry) and 0.1 million camels, suffered considerably as a consequence of the thirty-year war coupled with recurrent droughts and many years of neglect. Their numbers have, however, been increasing, although rather very slowly over time.

1.3 Therefore, faced with the above challenges, the Government of Eritrea (GOE) launched its agriculture sector policy in 1993 as an important document towards the achievement of the country's long-term development objectives, which included rapid, balanced and sustainable economic growth with social equity. The agriculture sector policy was geared towards using appropriate policy instruments (fiscal, monetary and trade) and strategies to achieve national food security, generate employment and increased incomes, contribute to national balance of payments and national industrial development through adequate supply of agricultural raw materials. The overarching goal of GOE was to create an enabling environment for private sector investment in direct production. In support of its sector policy, the GOE conducted an Agriculture Sector Review (ASR) with the assistance of the Food and Agricultural Organization (FAO) of the United Nations. The livestock sub-sector was prioritised for development assistance given its strategic importance in the food and agriculture economy of the country. As a result, the National Livestock Development Project (NLDP) was identified, prepared and appraised within the framework of the sector policy and the findings of the sector review.

1.4 Following the completion of the project in September 2006 and the submission of the GOE Project Completion Report (PCR), the Bank Group fielded a mission in August 2007 to prepare its own PCR, the purpose of which is to summarise the results obtained at the end of the implementation of the NLDP, including its impact on the primary beneficiary communities and the physical environment, and to draw lessons that may be useful for managing future interventions in the country and elsewhere as well as make recommendations for the effective and efficient implementation of on-going and future Bank operations. Among the sources of information used in preparing the PCR are: Appraisal Report, Midterm Review Report, Bank's PCR mission findings, Borrower's PCR, Consultants' Reports, Audit Reports, Bank's Mission Reports, Quarterly Progress Reports, Project files in the Bank, stakeholder meetings as well as interviews and site inspections conducted during the Bank's PCR mission to Eritrea in August 2007 (see Annex 9 for detailed sources of information).

¹The decline in its contribution to GDP is due to recurrent drought, erratic and uneven distribution of rainfall, and its recent conflict which led to the displacement of the agricultural population along the border with Ethiopia.

2. PROJECT OBJECTIVES AND FORMULATION

2.1 Project Objectives

The project's sector goal was to contribute to the national demand for livestock products and, thus, to enhanced national food security; thereby improving the contribution of the livestock sub-sector to the Agricultural Gross Domestic Product (GDP). The project's immediate objective was to increase livestock production and productivity and, therefore, contribute to increased incomes of livestock producers.

2.2 Project Formulation

The decades of war resulted in the destruction of most of the livestock infrastructure in Eritrea. So, the NLDP was formulated within the GOE's broader macroeconomic policy framework targeting equitable sustainable growth, food security, employment creation, agro-industry development and improvement in balance of trade through promotion of agricultural exports. Its formulation was also consistent with the Bank Group's assistance strategy for the Country (CSP) which aimed at poverty alleviation, increased food production, access of the poor to basic social facilities, the development of economic infrastructure supportive of growth and employment-generating private investments in micro-enterprises. The NLDP was based on the findings of the ASR and was identified and prepared by the FAO. The Identification and Preparation Reports constituted the basis for the appraisal of the project by the Bank Group in March 1997.

2.3 Project Appraisal, Negotiations and Approval

In March 1997, the Bank Group mounted a mission comprising a Livestock Specialist, a Financial Analyst and a Resource Economist to appraise the NLDP. After a successful appraisal mission, the loan conditions were negotiated in October 1997 and the NLDP was approved by the ADF Board of Directors on 19 November 1997. The loan agreement was signed on 16 February 1998 for an amount of UA 10.02 million.

2.4 Project Description

2.4.1 To achieve the objective in para 2.1, the project was designed with five components, namely, (i) *forage development* whose objective was to increase the quantity and quality of feed available for livestock production while at the same time ensuring a broad-based production and utilisation of forage seeds and building national and household capacity to produce and utilise high quality fodder; (ii) *pilot rangeland management* with the objective to improve sustainable grazing practices while encouraging settled and organised agro-pastoralism and, therefore, contributing to sustainable livestock production; (iii) *strengthening of animal health services* whose objective was to improve the capacity of the veterinary system to control and respond to disease outbreaks by strengthening its institutions, building its diagnostic and epidemiological surveillance capability, and improving on planning and management as well as its ability to deliver quality services; and (iv) *support to commercial livestock production* through the provision of credit for cattle and sheep fattening, dairy farming and poultry (layer and broiler) production enterprises and training and study tours for small-scale producers and extension workers.

2.4.2 The project also provided for (v) *institutional support and studies* with objective to re-structure Eritrea's Animal Resources Department (ARD) in order to facilitate the management of the livestock industry and harmonise its structures with its functions and to strengthen ARD's

capacity in planning, implementing, monitoring and reporting in order to foster accountability and transparency amongst the operating units. There was also provision for a *project management Unit* (PIU), which was to comprise a National Project Coordinator, Project Accountant, a Project Monitoring and Evaluation (M&E) Officer, and two secretaries, to ensure the smooth coordination and management of the implementation of the activities of the project. In addition, provision was made for the building of human and social capital by providing technical assistance (TA) in animal health (48 person/month), forage agronomy (34p/m), seed production (2p/m), range management (18p/m), irrigation (12p/m), nutrition (8p/m), meat production (8p/m), poultry production (8p/m), livestock marketing (12p/m), and institutional planning (16p/m), supporting the training of farmers and extension workers in different aspects of livestock husbandry, study tours and farm visits and promoting the formation of producers' associations to encourage operation and maintenance of infrastructure and marketing of produce. GOE was expected to assign counterparts for each TA.

3. PROJECT EXECUTION

3.1 Effectiveness and Start-Up

3.1.1 The loan was approved on 19 November 1997 and was signed within 6 months on 16 February 1998. Therefore, there was no slippage in the loan signature. The loan entered into force on 27 April 1998, only 2-1/2 months after it was signed. This was within the 180 days required by the General Conditions Applicable to Loan Agreement and Guarantee Agreement of the ADF and, hence, there was no slippage. The project commenced on 17 September 1998 with the first disbursement made into the Special Account. It took 143 days from effectiveness to first disbursement. It took 242 days from approval to first disbursement, which is within the allowable timeframe of 24 months.

3.1.2 Although the project was signed six months after approval on 16 February 1998, it suffered a setback with the outbreak of the border conflict between Ethiopia and Eritrea. This conflict resulted in able bodies being conscripted to join the army for the defense of the national territory, destruction of livestock infrastructure, displacement of livestock farmers along the Gash Barka and other districts neighboring the war zone, shortage in skilled manpower and labor force and hikes in the cost of doing business in the country. This coupled with the frequent droughts during the project implementation period affected both the cost and schedule of implementation of the project.

3.2 Modifications

Although the midterm review of November 2001 did not modify the original objective of or reformulate the project, it proposed major changes in the scope of the project. All these modifications were aimed to make project implementation more focused and effective. The changes in the activities of the project within the components are as explained hereunder:

3.2.1 Forage Development

- Source of Forage Seeds: The appraisal report provided for the importation of 25 metric tons of exotic forage seeds but at MTR, provision was made for expansion of domestic production facilities by rehabilitating 7 seed multiplication centers and reduction in the quantity of exotic seeds to be imported from 25 tons to 13 tons. The balance of 12 tons of forage seeds was to be harvested from local forages. The primary reason for this modification was the inability of the GOE to procure adequate exotic forage seeds from

member countries of the Bank Group. It turned out that most tropical forage seeds are produced and marketed by Australia and New Zealand, who are not members of the Bank Group. So, it was not possible to order seeds from there, even when the seeds were ordered by a third country as specified in the Bank's rules of procedures for procurement of goods.

- Target Forage Seed Outgrowers: The provision for 52,000 forage seed out-growers was found to be overly optimistic and so, was drastically reduced to 500. The border conflict resulted in shortage in manpower at the farm level and, therefore, the shifting in the priorities of most farmers to the production of food crops for home consumption. Besides, most farmers had not as of the time of the MTR been convinced of the profitability of fodder seed production.
- Forage Seed Multiplication and Research Promotion: The government's perception of the sustainability of the investment necessitated supporting the seed multiplication centers and the agricultural research station in Halhale. The centers were supported with additional equipment and funds for maintenance and expansion of field extension services as well as promotion of information and experience sharing amongst farmers through farmers' visits and workshops. In addition, additional funds were allocated for promoting research in forages and seed production at the Halhale Agricultural Research Station.

3.2.2 Pilot Range Management

- Scaling-up of the Surveyed Areas under the Pilot Range Schemes: An important modification in the pilot range management component was the considerable scaling up of the surveyed areas in Duluk and Gahro. While the Appraisal Report provided for the survey and development of 8,000 hectares in Duluk and 540 hectares in Gahro, the GOE allowed respectively 20,000 hectares and 1,700 hectares to be surveyed. Both corresponding modifications represent 150% and 215% over the appraisal target. And so instead of constructing a 36 km fence in Duluk an 80 km fence was set up. This represents roughly a 122% increase in the target. Both modifications did not receive the prior no objection of the Bank, so GOE had to reimburse the Bank for the additional expenses. Although the incremental cost was fully absorbed by the GOE, the scaling up undoubtedly affected the capacity of the GOE to test the efficiency of the range management technologies.
- Partitioning of Duluk Pilot Range Scheme: At MTR, additional funds were allocated for the partitioning of the Duluk pilot range scheme with 20km fence in order to allow for the testing of deferred grazing technologies within the grazing area of the scheme.
- Expansion of the Catchment Protection Area in Duluk: The successful construction of a 5-km catchment protection in the Duluk Pilot Scheme as at appraisal and its positive environmental outcome necessitated its expansion to cover about 2,000 ha of degraded land in the same area.
- Reduction in Number of Protected Wells: The project had planned to construct 8 protected wells in Duluk at appraisal. However, based on previous studies, it was agreed that constructing two hand-dug wells in Adi Kukui and Adi Mentay and one drilled well in Duluk village to complement the already existing three shallow wells in the vicinity would provide adequate water to cover both the human and animal needs in Duluk.

- Civil Works in Gahro: The design of the irrigation scheme in Gahro turned out to be too costly to implement, especially considering the remoteness of the place. Because of the latter, construction companies were not interested in participating in the tender for the construction of the irrigation facilities there. Therefore, the costs of construction became exorbitant forcing the GOE and the Bank to agree to a revision of the designs to affordable limits. Additional funds were also re-allocated to accommodate the additional cost. The GOE also provided additional funds for this construction. The revisions took some time and so the services of the Irrigation Engineer had to be extended for an additional 12 months with the approval of the Bank to supervise the civil works.

3.2.3 Strengthening of Animal Health Services

- Training of Additional Veterinary Technicians in Meat Inspection and Strengthening of the Veterinary Emergency Preparedness Programme: Funds were provided at MTR to support the training of three additional veterinary technicians in meat inspection and the strengthening of the veterinary emergency preparedness programme for trans-boundary animal diseases.
- Technical Assistance in Laboratory and Virology and Revision of Person-Months of Short-term Consultancies: Funds originally allocated for 33 person-months of short-term consultancies in animal health were split into 12 person-month services of a Laboratory Specialist for the supervision of the construction and equipping of the Central Veterinary Laboratory (CVL) in Asmara and 12 person-months additional animal health advisory services and 9 person-months budget equivalent for procurement of additional drugs and vaccines for the Special Revolving Fund (DRF). The latter decision was meant to supplement the funds in the DRF for drugs and vaccines in order to expand its national coverage.
- Civil Works - Construction/Rehabilitation of Veterinary Laboratories: The original design of the CVL in Asmara was reduced to the three facilities - veterinary laboratory (animal disease control, biologics production and quality control sections) and buildings for laboratory and breeding animals. However, some funds were reassigned from the livestock service centers and other activities for renovation and equipping of the virology, serology and bacteriology laboratories in Asmara. The shortage of funds was primarily due to price escalation at implementation coupled with the deteriorating macroeconomic environment and the revisions in the prototype designs on which the appraisal cost estimates were based.

3.2.4 Support for Commercial Livestock Production

- The following activities were added at MTR: (i) training of credit beneficiaries in basic animal husbandry, accounting and book-keeping and (ii) support of the monitoring of credit activities in the field. Funds originally earmarked for support to Eritrea Development and Investment Bank (EDIB) in terms of technical assistance, transport logistics, training and equipment were used to support an overseas study tour for EDIB staff. This was because EDIB had received technical assistance support from the Bank Group for its institutional strengthening. Moreover, the technical assistance for poultry production was cancelled and its resources re-allocated to support technical assistance in Monitoring and Evaluation (M&E) because the GOE had benefited from a technical assistance for poultry production from the Government of India under the South-South Cooperation. A balance of the funds for long-term overseas training was re-allocated for

training of 30 artificial insemination technicians and 25 meat and milk production technicians and for two study tours for commercial farmers.

3.2.5 Institutional Support and Studies

- Re-Organization of Animal Resources Department (ARD): At appraisal, funds were set aside for the re-organization of the ARD and the Animal Health Division. However, the re-structuring process was delayed due to shortage in skilled manpower. In the meantime, the entire MOA was re-organized with funding from elsewhere. As a result, the funds for this activity were re-assigned to the civil works in animal health with the approval of the Bank.
- Technical Assistance: The technical assistance in institutional planning (16p/ms) was cancelled as this activity was financed with separate funds by MOA. So, the budget for this activity was reassigned to civil works in animal health with the approval of the Bank.
- Procurement of Six Vehicles and Fifteen Bicycles: The GOE agreed at loan negotiations to provide 6 vehicles and 15 bicycles to complement the logistical support for the project. A total of 17 vehicles and 15 bicycles were to have been procured for the project but only 11 vehicles were supplied through the ADF financing.

3.3 Implementation Schedule

The project was designed for a duration of 5 years with a completion date of December 2003. However, the project was extended three times for a total of two years and nine months, i.e. first to 31 December 2004, then to 31 December 2005 and finally to 30 September 2006, to enable the attainment of its development objectives. This resulted in a slippage of 55% (33 months) on the original project completion date. However, the loan was fully disbursed, although the physical achievement of the project was less than 100% of its target at appraisal. Because of difficulties of procuring services and goods, the project suffered delays in the implementation of its activities, especially in the civil works, resulting in considerable variations in project cost and schedule. The slippage was also caused by the border conflict, which started soon after the project was declared effective, and to the recurrent droughts which occurred during the period of project implementation. The target dates for project implementation as per the appraisal report and the actual dates are presented in Table 3.1.

Table 3.1: Implementation Schedule: Appraisal Vs Actual

No.	Description	Planned at appraisal	Actual implementation date
1.	Board Approval	November 1997	19 November 1997
2.	Loan Negotiation	NA	13-15 October 1997
3.	Loan Signature	NA	16 February 1998
4.	Effectiveness of loan Agreement	February 1998	27 April 1998
5.	Launching Mission	February 1998	21-27 February 1997
6.	Commencement of Project	31 March 1998	17 September 1998
7.	Effective date of first disbursement	31 March 1998	17 September 1998
8.	Forage Development	August 1998	30 September 2006
9.	Pilot Range Management	August 1998	30 September 2006
10.	Strengthening Animal Health	August 1998	30 September 2006
11.	Smallholder Commercial Production	August 1998	30 September 2006
12.	Project Management	August 1998	30 September 2006
13.	Midterm Review Mission	NA	21 Oct./ 2 Nov. 2001
14.	Project Completion Report –Borrower	NA	December 2006
14.	Project Completion Report - Bank	NA	20-31 August 2007

3.4 Reporting

3.4.1 Quarterly Progress Reports: The GOE prepared and submitted 31 quarterly progress reports, 9 technical reports, 8 status reports, and 8 annual reports. The quarterly progress reports are mandatory and time bound as specified in the Loan Agreement. They were generally submitted on time and in the required format, although lacked in depth and critical analysis.

3.4.2 Audit Reports: The GOE also prepared and submitted 8 audit reports. The annual audit reports are mandatory and time bound as specified in the Loan Agreement. They were generally submitted on time and in the required format, with the exception of the audit reports for the first two years of project. KPMG served as Auditor to the project throughout its life. Recommendations arising from the audit reports were dealt with accordingly, except for the recommendation to establish an asset register for all assets of the project and to brand all assets acquired, which repeatedly featured in most of the audit reports. The recommendation was finally implemented.

3.4.3 Consultants' Reports: The consultants prepared altogether 67 documents, which comprised 12 training manuals, 14 extension manuals, 22 technical reports, 12 socio-economic studies, 6 consultant's reports and one study tour report. The technical reports, extension and training manuals, and socio-economic studies have provided valuable information on technical, health, regulatory, financial, marketing, socio-economic and institutional issues, as well as recommendations on the development of the livestock sub-sector in Eritrea.

3.4.4 Mid-Term Review Report (MTR): The project design suffered from over-optimism in the setting of targets, the assignment of the procurement of some vehicles using counterpart funds and the reduction in the number of technical assistance needed during the project negotiation. In addition, during the period of implementation of the project, the border conflict between Ethiopia and Eritrea broke out. The project therefore went through a slow pace of project implementation at the initial phase of the project life. This resulted in the cost and schedule variations. A MTR of the project activities was carried out in November 2001 following that of GOE, which resulted in some modifications in the scope and schedule of project activities. Some new activities were incorporated in the project design to address shortcomings related to the sustainability issues.

3.4.5 Project Completion Report (PCR): The GOE prepared and presented its PCR in December 2006 during a visit to the Bank by the staff of the project. After the presentation of the PCR to a cross-section of the Bank staff, the following issues were raised to help improve the report: (a) the need to provide a detailed analysis of the cost and financial management of the project funds with clear indication of the balance of the funds and what the Government plans to do with the remaining project funds in the Special Account; (b) the need to articulate more precisely the sustainability of the project investments; (c) the need to assess the project outcomes (short to medium term impact) as the long-term impact of the investments is somewhat difficult to assess at this time; (d) the need to provide detailed analysis of the performance of the credit and the pilot range management aspects of the project and draw lessons for the future; (e) the need to better formulate the lessons learnt; and, (f) the importance of highlighting the decision of Government on the uncompleted project activities.

3.5 Procurement

3.5.1 During the course of project implementation, a total of 73 companies participated in the supply of goods and services (see Annex 8). About 56 of these companies were African with

Eritrea alone supply 52 of them while the rest were non-African companies. As shown in Table 3.2, about 107 contracts were awarded, with 30 contracts awarded to non-African companies as compared to 87 contracts for the African companies. Therefore, there was sufficient competition in the provision of goods and services by African companies. The majority of the African companies were from Eritrea, which implies that the private sector was strongly implicated in the implementation of the project. The project, therefore, contributed to building local entrepreneurial capacity. Generally, the methods of procurement were applied in accordance with the provisions of the Bank's Rules of Procedures for the Procurement of Goods, Works and Services.

3.5.2 Despite the organized launching of the project by the Bank, its implementation still was not smooth due to a number of factors, including efficient procurement and disbursement. The procurement performance suffered from a number of bottlenecks, which included (i) the initial absence of a well planned and coordinated procurement schedule, (ii) ineffective communication between the PIU, the Procurement Office in the MOA and ADB with resultant delays in the exchange of correspondences between the Bank and the Executing Agency, and (iii) poor compliance with the Bank's Rules of Procedure and Guidelines. Following the Bank's recommendation, a Procurement Assistant was assigned to the Procurement Office of MOA to handle all procurement for all Bank-financed projects in Eritrea. This assignment, coupled with the organization of procurement training by the Bank and introduction of procurement planning, remarkably improved the procurement performance in the project.

Table 3.2: Project Applied Procurement Methods

Items procured	Method of procurement at appraisal	Actual procurement method applied	No. of contracts awarded
1. Civil Works			
Buildings	NCB	NCB	4
Seed Stores	NCB	NCB	2
Fence, Wells, etc.	NCB	NCB	1
Weirs	NCB	NCB	1
2. Goods			
Drugs and Vaccines	ISH	ISH	21
Equipment/reagents	ISH	ISH	6
Vehicles	ISH	ISH	3
Exotic forage seeds	ISH	ISH	1
Exotic forage seeds	ISH	ICB	1
Office equipment		NCB/NSH/SOE	36
Agric. Inputs		NSH/SOE	6
3. Consulting Services			
Technical Assistance	SHL	SHL	10
Consultants	SHL	SHL	1
Short-term consultants	SHL	DNP	3
Design consultants	SHL	NCB	3
4. Miscellaneous Items			
Operating Costs	SOE	SOE	5
Credit Funds	SOE	SOE	1
Training	DNP	DNP	
Contingencies	SOE	SOE	2

ICB: International Competitive Bidding; NCB: National Competitive Bidding; ISH: International shopping; *Others include: National Shopping (NSH), Direct Negotiation (DNP) and Statement of Expenditure (SOE)

3.6 Sources of Finance and Disbursement

3.6.1 Sources of Finance: Table 3.3 shows that the total project cost, including contingencies at the time of appraisal in March 1997 was UA 11.424 million (Nakfa 105.56 million) net of taxes and duties; with a foreign currency component of UA 7.13 million (Nakfa 65.87 million) and a local currency component of UA4.29 million (Nakfa 39.69 million). The project was co-financed by the ADF and the GOE at UA11.024 million and UA1.40 million, respectively. The ADF component was to finance the entire foreign exchange requirements of the project estimated at UA7.13 million and part of the UA4.29 million local cost amounting to UA2.89 million. The GOE was to finance the balance of the local cost amounting to UA1.40 million to cover the local cost of vehicle acquisition, training and the recurrent costs including staff salaries, part of operations and maintenance costs and other costs. At completion, the total project cost was UA 11.056 million. Of this amount, the ADF component was UA 10.024 million. The balance of UA 1.032 million constituted the local component contributed by Government.

Table 3.3: Project Sources of Finance

Source	Estimate at Appraisal (UA' million)	Percentage	Actual (UA' million)	Percentage
ADF	10.024	87.74	10.024	90.67
GOE	1.40	12.26	1.032	9.33
Total	11.424	100.00	11.056	100.00

3.6.2 It is worth noting that at project completion the total cost of the project was equivalent to UA 11.056 million of which the ADF contributed its full quota of UA 10.024 million, while the GOE contributed only UA 1.032 million. The latter is short of the estimated GOE contribution of UA1.40 million at appraisal by UA0.368 million. However, in terms of the local currency, the GOE contribution totaled Nakfa 14.868 million at project completion as compared to Birr 12.936 million (equivalent to Nakfa 12.936 million) at appraisal. Although the GOE contribution in local currency exceeded appraisal estimate by about 15%, it was short of the appraisal estimate by 26.3% in Units of Account (UA). This shortfall was due to the progressive weakening of the Nakfa during the project implementation period from 1UA=Nakfa 9.24161 at appraisal in March 1997 to 1UA=Nakfa 22.973 at completion in September 2006. This was perhaps related to the conflict between Ethiopia and Eritrea. There was, therefore, an apparent shift in the overall financing plan whereby the ADF contribution increased from 87.74% to 90.67%, while GOE contribution decreased from 12.26% to 9.33% in UA terms. At completion, the Bank contribution of UA10.024 million was fully disbursed. The local cost component suffered an under-run of 26.3% in UA terms, although in Nakfa terms there was an over-run of 15%.

3.6.3 Disbursement: The loan funds were disbursed by the direct payment and the replenishment (special account) methods to the contractors, consultants and suppliers as well as for training and workshops. The latter was through the Special Account. The appraisal and disbursement patterns are shown in Annex 3. The last disbursement of the loan was made by the Bank in September 2006 as compared to 2003 as planned at appraisal. Within seven years and nine months of disbursement (February 1998 to September 2006) of project proceeds, the Bank processed a total of 111 disbursement applications from the Executing Agency. The disbursement flow shows that the highest amount of UA 2,901,326.00 was disbursed in 1999 for payment of goods and services and for the credit scheme. The next highest disbursement of UA2,393,256 was in 2003 for the payment of consultancy and TA services and for the credit scheme. The cumulative disbursement in three years from 2000 to 2002 amounted to UA 2,077,999.00 and was mainly used for payment of construction, consultancy and TA services.

The total amount disbursed within the seven years and nine months was UA 10,024,000.00, which represents a 100 % of the net loan amount.

4. PROJECT PERFORMANCE AND RESULTS

4.1 Overall Assessment

4.1.1 An overall assessment of the project is satisfactory with project outcome rated at 2.75 on a scale of 4 as its development objectives as stated in para 2.1 were generally achieved. The operating covenants/conditions were appropriate and worthwhile as it took exactly 90 days from loan approval to loan signature and 161 days from approval to entry into force of the loan compared to the target of 180 days. From entry into force to first disbursement of the loan funds took about 143 days compared to the target of 720 days. However, the project implementation suffered from a high turnover in the staff of its PIU including difficulties in identifying the right personnel to occupy the managerial positions there, coupled with the lack of experience in the Bank's rules of procedure for procurement and disbursement. It took over two years to recruit technical assistance for the various technical assignments and design consultants to prepare the designs and bills of quantities for the civil works infrastructure.

4.1.2 At PCR, about 85% of the planned civil works had been completed with 100% of the funds disbursed with no cost over-run or under-run on loan funds. Most of the goods and services were fully procured and supplied, delays in supply notwithstanding. Despite the two-year delay in implementation of the credit scheme, the total amount was fully disbursed and on-lent to about 360 selected client farmers. Similarly, despite in the two-year delay in the recruitment of the TA, the services were fully utilized with considerable impact in terms of training and experience sharing. The civil works, which were equally delayed, were satisfactorily completed. The delay was due in part to (i) budget constraints; (ii) delays in the design of the works compounded by the shortage in design engineers in the local market and their refusal to work in remote areas; (iii) shortage of local contractors coupled with the extremely high contract prices offered by them partly because of the remote nature of the project sites, shortage in materials in the local market and the high transaction costs; and (iv) the border conflict between Eritrea and Ethiopia, which rendered the macroeconomic environment non-competitive. Much of the human resource development and institutional strengthening were realized in spite of the difficulties due in part to shortage in skilled manpower and the change in GOE overseas training policy. In deed, the products and services generated by the project contributed to reviving the livestock industry in Eritrea and improving the management of its natural resources.

4.2 OPERATING RESULTS

4.2.1 Forage Development: Its performance indicators as shown in Table 4.1 point a successful introduction of the practice of forage production into the livestock production systems in Eritrea. Suitable technical packages of forages for different agro-ecological zones were introduced. The Table 4.1 shows that only 4 tons out a planned 25 tons of exotic forage seeds were imported primarily because the major suppliers of exotic tropical forage seeds are not members of the Bank Group. They are Australia and New Zealand. Therefore, about 10 tons of indigenous forage seeds were harvested locally. Also, although the number of farmers to benefit from the outgrowers scheme was drastically slashed from 52,000 to 500, even the latter target was never achieved at completion. According to the Borrower, recurrent drought, farmers' reluctance to accept forage seed production and the acute shortage of forage experts and farm level manpower were the reasons adduced. It is also possible that the forage seed pricing structure practiced by the Government Seed Multiplication Centres was not sufficiently competitive to attractive private sector investors. The GOE sells forage

seeds at 75 Nakfa per kg as against 150 Nakfa per kg by private operators. This practice constitutes a disincentive for private investors in the sector. The project was unable to establish the three forage teams as set at appraisal because inadequate forage experts in the country. As shown in the Table 4.1, the training objective was not fully realized because of insufficient number of qualified staff in the country coupled with the change in GOE policy on overseas training during the course of implementing the project. The TA forage agronomy and seed production were fully realized with maximum satisfaction by the stakeholders. Extension manuals on forage production were prepared and distributed to farmers and extension workers.

Table 4.1: Implementation Status of Forage Development Component

Outputs	Appraisal Targets	Revised Targets	Achievements against revised targets	Performance (in %) against revised targets
1.1 Provide suitable technical packages of forages for different agro-ecological zones	NS	NS	YES	100
1.2 Establish three forage development teams	3	3	1	33.3
1.3 Import 25 tons (T) of exotic forage seeds	25	13	4	31
1.4 Build two seed stores of 500 cubic meters each	2	2	2	100
1.5 Procure a five-ton truck	1	1	1	100
1.6 Procure forage seeds from contract seed outgrowers for distribution to farmers	NS	NS	NO	0
	NS	NS	14 T	100
1.7 Distribute forage seeds to about 10% of rural households	52000	500	0	0
1.8 Engage about 52,000 farmers as contract seed outgrowers				
1.9 Organise training for staff and farmers:				
10,600 farmers	10600	10,600	8,322	79
100 extension workers	100	100	121	121
12 staff study tours	12	12	8	67
3 MSc	3	3	0	0
1.10 Provide technical assistance: in forage (34p/ms) and seed (2p/ms) production	34/2	34/2	34/2	100/100
1.11 Rehabilitate and maintain seed multiplication centres		NS	7	100
1.12 Promote seed diffusion among farmers and farmers' extension visits		NS	YES	100
1.13 Support Halhale Research Station to research on forage and seed production		NS	YES	100

NS = Not Specified; IN = Incomplete; T = Ton

4.2.2 Pilot Rangeland Management: The performance indicators of the pilot rangeland management component are shown in Table 4.2. As indicated in para 3.2 more land was surveyed and developed in Duluk and Gahro than envisaged at appraisal. The construction of 5-km catchment protection in Duluk and 12-km earth embankment and gabions in Gahro succeeded in conserving the environment in these low lying areas. However, the structures in Gahro were partially destroyed by floods in 2004. At the time of the PCR mission, the contractor had not yet carried out the repairs. The project provided water for human and livestock consumption in both schemes. However, at Duluk one of the three wells failed to provide water. It is important to note that forage enrichment in the rangelands was achieved thanks to the catchment protection and oversowing of the rangelands there. Over 10,000 ha of rangeland were over-sown with native and improved forages, while 110,000 ha of livestock exclusion areas were planted with 85,000 leguminous tree in Duluk and Gahro.

Table 4.2: Implementation Status of Pilot Range Management Component

Outputs	Appraisal Targets	Revised Targets	Achievements against revised targets	Performance (in %) against revised targets
1.1 Test range management technologies in Duluk and Gahro	NS	NS	YES	40
1.2 Organise participating communities into groups	NS	NS	YES	40
1.3 Establish two Rangeland Management Teams	2	2	0	0
1.4 Fence about 8,000 ha in Duluk and 540 ha in Gahro	8000	8,000	20,000	150
	540	540	1,700	215
1.5 Over sow the rangelands with herbaceous legumes (ha)	NS	NS	85,000	100
1.6 Construct 8 protected wells in Duluk	8	3	2	66
1.7 Construct 5 km of catchments protection in Duluk + 2000 ha additional protection	5	5	5	100
1.8 Construct weirs and channels in Gahro	NS	NS	12.5 km	100
1.9 Supply water troughs in Duluk	NS	NS	YES	100
1.10 Carry out forage enrichment in the rangelands	NS	NS	YES	100
1.11 Training of farmers and support staff (study tours) and short-term studies and MSc	NS	NS	515	100
	3	3	26	100
	3	3	0	0
1.12 Provide technical assistance in range management (18 p/ms) and irrigation (12 p/ms)	18	18	18	100
	12	24	24	100
1.13 Provide a four-wheel drive pick-up and 10 bicycles for Duluk and five for Gahro	1	1	1	100
	15	15	15	100
1.14 Partition Duluk pilot range with a 20 km fence to allow for deferred grazing		20	20	100

4.2.3 The interventions in the pilot rangelands of Duluk and Gahro were able to repopulate the vegetation there and so provide grazing for livestock and protection of the environment. The introduction of improved technologies like the planting of improved fodder and leguminous trees like *Leucaena* enhanced nutritional status of livestock by supplying quality dietary proteins as well as soil quality by fixing soil nitrogen and improving soil fertility. In addition, introduction of leguminous tree species was able to provide supplementary feeding for livestock during the dry season. The fencing of both Duluk and Gahro was able to protect the rangelands from intruders and so reduce conflicts. The partitioning of rangelands into farmland and grazing land also helped to reduce farmer-grazier conflicts. The paddocking of the grazing land and the introduction of rotational/deferred grazing enabled the graziers to appropriately manage the rangelands and so ensure all year round grazing and reduced long distance transhumance.

4.2.4 The project built social capital through organization of the communities in the two schemes into associations to be able to operate and manage the rangelands. Staff and farmers were trained in range management techniques. Staff and the producers benefited immensely from the expertise of range management and irrigation experts. Although the communities were organized, they were not sufficiently sensitized on importance of cost sharing in the operation and maintenance of the investments. As a result, the communities are not currently contributing to the operation and maintenance of these facilities. The lack of maintenance is likely to lead to the rundown of the infrastructures in Duluk and Gahro, unless corrective measures are introduced. There is evidence that the communities may be willing to share in the operation and maintenance of these facilities. This was particularly evident in Gahro, where the community leaders stated that they would be willing to pay part of the cost of fuel for pumping water and repair of damaged pipelines after discussions and negotiations with government. It is, therefore, recommended that GOE engage in an open and frank discussion with community leaders in the two schemes as to the rationale and benefits of community involvement in their operation and maintenance. Overall, the interventions in the pilot schemes have contributed to improving the wellbeing of the inhabitants and their livestock. Because of the absence of an M&E system, it is difficult to quantify the impact of the interventions on the communities and their productive assets. However, there is no doubt that they have contributed to a more sustainable natural management in Duluk and Gahro and should, therefore, be replicated in similar environments.

The GOE should also ensure that the repairs in the Gahro embarkement and gabions are carried out and that the two boosters pumps are supplied by the contractor.

4.2.5 Strengthening of Animal Health Services: The performance indicators of the Animal Health Services Component are shown in Table 4.3. The rehabilitation and construction of new facilities and re-equipping of the Central Veterinary Laboratory (CVL) were a major achievement of the project. The new CVL has three units, namely, (i) the veterinary laboratory unit consisting of disease diagnosis section, the biologics production section and the quality control section; (ii) animal laboratory unit (testing animals section), and (iii) the breeding animals unit. The civil works were 96 percent completed. In addition, the virology, serology and bacteriology laboratories were renovated. All these laboratories were fully equipped and experimental vaccine production trials successfully carried out. All loan funds for drugs and vaccines valued at UA 1,163,168.00 (Nakfa 10,750,000) were fully utilized and so far, over Nakfa 24,089,422.14 (UA 1,274,572.60) worth of drugs and vaccines have been purchased and the proceeds from sales deposited into the DRF. The latter has a positive balance of Nakfa 40,565,648.00 (UA 1,731,037.30) as at 31 August 2007. It is important to note that both the GOE and other development partners contributed to the total amount in the DRF, which is quite a positive strategy. However, in order to ensure its sustainability and enable the continuous supply of drugs and vaccines, it is recommended that its financial statements should be audited and measures taken to institutionalize its existence and operations. Over 80% of all animals in the country have been vaccinated to prevent disease outbreaks and reduce livestock mortalities.

4.2.6 As shown in Table 4.3, the training programme was also not fully realized because of shortage in skilled manpower. Its remaining budget was re-allocated to the civil works in CVL and the Gahro irrigation scheme with the approval of the Bank. The 60 trained CBAHWs were also equipped with veterinary kits, while an additional 110 CBAHWs were trained by other projects. Thirty-six animal health technicians received courses on disease control, while six staff members received certificate training in laboratory techniques and eleven others received diploma training in meat inspection in Botswana. Eight veterinary assistants were trained for two years. The project also benefited from the transfer of knowledge and experience using technical assistance in animal health. Although its translation and promulgation into law have been delayed, a draft legislation for animal movement, health and quarantine regulations, meat inspection, processing of animal products and dairy was prepared and reviewed by the legal authorities. An emergency preparedness programme was established to control the spread of such transboundary animal diseases as Rinderpest, Foot and Mouth Disease and Lumpy Skin Disease. With the support of the project, Eritrea was declared Rinderpest free by OIE. It is, therefore, recommended that GOE ensure the completion of the zonal laboratories, the quarantine stations, veterinary checkpoints and livestock service centres in order to guarantee complete protection against future outbreaks of livestock diseases.

Table 4.3. Implementation Status of Animal Health Services Component

Outputs	Appraisal Targets	Revised Targets	Achievements against revised targets	Performance (in %) against revised targets
1.1 Construct /rehabilitate laboratory facilities	NS	NS	YES	96
1.2 Provide laboratory equipment	NS	NS	YES	100
1.3 Training 8 veterinarians, 160 selected local community members in basic animal health care delivery (CBAHW)	8	8	2	25
	160	160	60	27
Other staff	NS	NS	61	100
1.4 Enhance disease prevention and control	NS	NS	YES	100
1.5 Upgrade veterinary public services (construct 4 quarantine stations & 9 checkpoints)	4	4	0	0
	9	9	0	0
1.6 Assist in restructuring & re-organizing AHD	NS	NS	NO	0
1.7 Provide technical assistance in animal health (12p/ms) and short-term consultancies (36 p/ms)	12	24	24	100
	36	3	3	100
1.8 Ensure a continuous supply of drugs and vaccines (revolving fund)	1.2 UA	1.2 UA	1.7 UA	141
1.9 Establish Zoonoses Control Coordination	NS	NS	YES	100
1.10 Provide 3 four-wheel drive pick-ups and 30 motorbikes	3	3	3	100
	30	30	30	100
1.11 Training three (3) additional veterinary technicians in meat inspection		3	3	100
1.12 Support veterinary emergency preparedness programme		NS	YES	100
1.13 Expand vaccination coverage	75%	75%	80%	100

4.2.7 **Support To Commercial Livestock Production:** Its performance indicators as presented in Table 4.4 show that the credit amount of UA 975,100 (Nakfa 9,011,493.91) was fully disbursed to 360 credit clients, comprising 261 male and 99 female farmers. The credit management agreement was signed on time and the first tranche of credit funds were disbursed into the credit account in EDIB but it took much longer to prepare the modalities to guide the administration and delivery of credit to clients. This was compounded by the limited capacity within EDIB and MOA. Table 4.5 shows that Maekel zoba and cattle fattening accounted for about two thirds of the loans disbursed. Loan recovery (capital plus interest) was, however, poor, with about Nakfa 7.081 million collected and Nakfa 8.799 million still outstanding as of 31 December 2006. According to the EDIB, MOA and the Regional Administration (RA) have not been as active in monitoring loan repayments as they were with loan approvals because of the lack of an incentive package for such activities. Interestingly, a recent initiative between EDIB, MOA and RA to pay 10% of interest income collected to concerned RA staff has yielded some improvement in loan repayments. The repayment rate progressed from 42% at end of year 2006 to about 55% (about Nakfa 9.34 million) by August 2007. It is apparent that most of the defaulters lost livestock and other assets as a result of the border conflict. There was also the outbreak of infectious larengo trachitis amongst poultry in 2000/2001 which resulted in the death of many birds. Birds were subsequently vaccinated against the disease. Such default loans due to *force majeure* should have been cancelled but apparently GOE opted to pursue the defaulters.

Table 4.4: Implementation Status of Small-scale Commercial Livestock Production Component

Outputs	Appraisal Targets	Revised Targets	Achievements against revised targets	Performance (in %) against revised targets
1.1 Provide extension services to milk, meat and poultry farmers	NS	NS	YES	100
1.2 Organise farmers into associations	NS	NS	NO	0
1.3 Provide technical assistance, training, and equipment & transport to EDIB to strengthen Credit management	NS	NS	IN	50
1.4 Support 200 dairy farmers, 200 cattle and sheep feedlot owners and 100 egg producers (50 women) with credit	500	500	360	72.00
	50	50	80	160.0
1.5 Train project staff (short-term and postgraduate studies)	NS	NS	82	100
1.6 Provide technical assistance in poultry (8 p/ms) and meat (8 p/ms) production and animal nutrition (8 p/ms)	NS	NS	0	0
	24	24	16	66.66
1.8 Provide training to credit clients in basic animal husbandry, accounting and book-keeping		NS	YES	100
1.9 Provide support to monitoring of the credit activities in the field		NS	YES	100

4.2.8 About Nakfa 7.2 million balance of the funds have been reallocated with the approval of Bank to augment the credit scheme to support peri-urban commercial dairy farmers; about 26 such farmers have already benefited from the credit. Some of the funds were used to procure artificial insemination (AI) equipment and train AI technicians and farmers. The project also benefited from knowledge and experience transfer through two technical assistance in meat production and animal nutrition. Six project staff members participated in overseas study tours to Kenya (2), Dubai (1) and South Africa (3).

Table 4.5 EDIB: Credit Disbursement Profile by Enterprise and by Region.

Zoba	Cattle Fattening		Sheep Fattening		Poultry		Total	
	No	Amount (Nakfa)	No	Amount (Nakfa)	No	Amount (Nakfa)	No	Amount (Nakfa)
Maekel	107	8,240,694	10	332,702	71	2,131,652	188	10,705,048
Anseba	13	663,200	13	685,000	12	172,906	38	1,521,106
Dehub	48	4,082,323	1	39,720	8	628,358	57	4,750,401
Gash Barka	19	1,217,500	36	2,197,640	9	352,339	64	3,767,479
Northern Red Sea	6	407,589	2	135,000	5	296,082	13	838,651
Total	193	14,611,306	62	3,390,062	105	3,581,337	360	21,582,685

Source: EDIB Asmara, Eritrea.

4.2.9 Institutional Support and Studies: Its performance indicators as indicated in Table 4.6 show that the project contributed to the strengthening of the capacity of MOA in planning, implementing, monitoring and reporting through training of staff and provision of technical assistance. However, because the GOE undertook the reorganization and restructuring of its MOA with financial assistance from elsewhere, the resources allocated for this purpose, including those for the recruitment of an Institutions Specialist were re-assigned with the approval of the Bank to augment the funds for the civil works. The livestock census was never carried out because of the border conflict and shortage of skilled manpower. The MOA benefited from the technical services of Livestock Marketing (12 p/ms) and Monitoring and Evaluation (M&E, 8p/ms) Specialists. The services of ARD were also strengthened with the supply of office equipment and transport logistics both at the national and regional levels. About 219 (81 females and 138 males) staff members received training in various disciplines.

Table 4.6: Implementation Status of Institutional Support Component

Outputs	Appraisal Targets	Revised Targets	Achievements against appraisal	Performance (in %) against revised targets
1.1 Assist in restructuring and reorganizing ARD	NS	YES	NO	0
1.2 Establish 40 Livestock Service Centres in the regions	40	40	0	0
1.3 Establish a clear method of planning, implementation, monitoring and reporting in ARD	NS	NS	YES	100
1.4 Provide training in short-term and postgraduate studies in Animal Production and Management	NS	NS	YES	100
1.5 Provide technical assistance in institutional planning (16 p/ms), livestock marketing (12 p/ms), training specialist (12 p/ms) and M&E (8p/ms from poultry production)	16	0	0	0
	12	12	12	100
	8	8	8	100
1.6 Retain Project Planning Specialist with institutional support to ARD (16p/ms)		NS	NO	0

NS = Not specified

4.2.10 Project Management Unit: Although the establishment of the PIU was timely, it suffered some setbacks in the course of project implementation because of difficulties in retaining competent staff. The first appointed National Project Coordinator (NPC) was at the same time Division Head. Because of his inability to execute both functions satisfactorily, he was replaced in mid-1999. The project lost two competent Accountants because of limited job satisfaction. As a result, the Bank granted its no objection to the request of the Government to recruit an Accountant on the account of the project. A Statistician was recruited to prepare the

questionnaires and design the livestock census but because the project was unable to fill the position of M&E, he was requested to serve as an interim M&E Officer. Unfortunately, he resigned one year after for the same reason. Consequently, the PIU was managed without an M&E Officer until after April 2003 and so no baseline data were collected for the project. In 2003, a young economics graduate was assigned to the M&E function while on his compulsory military service in the project. He was sufficiently guided by the technical assistance (TA) M&E Specialist and subsequently retained by the project. The project can, thus, be proud of some documented information. Although the Project Steering Committee (PSC) was constituted in 1999 as per the loan conditions, it only functioned effectively at the commencement of the project. It succeeded in organizing only three meetings throughout the life of the project, despite the frequent reminders by the Bank's supervision missions. This notwithstanding, the Minister of Agriculture, who was the Chair of the PSC, personally monitored the progress of the project from start to close. Moreover, under the new arrangement which came into force in 2005, the overall responsibility for the implementation of the project came under the new Department of Agricultural Promotion and Development (APDD).

4.3 Institutional Performance

4.3.1 It is important to note that Eritrea emerged from a long drawn-out conflict with most of its human and social capital destroyed. Therefore, in order to guarantee the successful implementation of the NLDP and to contribute to the rebuilding of its human and institutional capacity, the Government requested the formulation team of the project to include TA in various fields. However, during the negotiation of the loan the GOE agreed to finance 96 person-months of the TA, but during the project implementation, they were unable fulfil this commitment. Based on their request, the Bank granted its no objection to support the additional 96 p/ms through budget reallocation.

4.3.2 The diagnosis of the institutional problems at preparation and appraisal appears in retrospect to have been correct and the proposed solutions appropriate. This is based on the fact that the proposed TA and consultancies were fully utilized. However, the institutional building objective was not fully realized because of the shortage in competent professionals. The situation was compounded by the border conflict that started soon after commencement of project implementation and rendered the macro-economic environment unattractive for business. The limited satisfaction of the job market made staff retention difficult and resulted in the loss of many staff, including six staff, who went abroad for postgraduate studies and never returned and the three PIU staff who resigned. GOE was obliged to revise its overseas training policy to focus on training at home. Moreover, the GOE was unable to fulfill its own commitment to contribute financially to the training programme.

4.3.3 The TA output included (i) the establishment of methodology for planning, implementation, monitoring and reporting; (ii) preparation of training manuals; and (iii) training of MOA staff and farmers. National counterparts were attached to the TA's to ensure knowledge transfer and sustainability of operations. The 16p/ms assistance in institutional planning was not implemented by the project as set at appraisal because the restructuring process and functional analysis of MOA was already covered by another funding program. The latter resulted in the re-organization of the entire MOA and the ARD was replaced by APPD and the Department of Regulatory Services (DRS) responsible for quality assurance. The project also succeeded in providing the MOA with office equipment such as computers and accessories, printers, laptops, LCD projector, digital camera, fax machines, photocopiers, scanners, television, shelves, computer tables, file cabinets and chairs. The training was designed to improve the planning,

implementation, monitoring and reporting capacity of MOA, while the provision of office equipment and other logistics was to improve its effectiveness and efficiency in service delivery.

4.4 **Management and Organizational Effectiveness**

4.4.1 The project effectively mobilized resources to achieve the efficient and effective implementation of its activities. The products and services generated by the project included laboratories for diagnosis and quality control, two seed stores, office buildings, wells for providing water, water troughs for supplying water for livestock, gabions and embankments for protecting the environment, weirs for water diversion for irrigation purposes, catchment protection, etc. In addition, the project successfully piloted two range management schemes – Duluk and Gahro - and rehabilitated seven seed multiplication centers. Through the provision of technical assistance in forage agronomy, rangeland management, animal health, irrigation engineering, livestock marketing, animal nutrition, laboratory technology, virology and M&E, and training of both staff and farmers in various aspects of animal husbandry, the project impacted on the capacity of staff and farmers to efficiently manage their resources and to effectively organize themselves.

4.4.2 In addition, the project guaranteed the regular and timely supply of veterinary drugs and vaccines and other production inputs through the establishment of the revolving fund for drugs and vaccines and credit scheme, respectively. The vehicles (4WD pick-ups, 5-ton-truck and motor cycles), computers and accessories, office equipment and furniture (projection systems, fax machines, scanners, photo copiers, shelves, tables, chairs), water pumps, air compressor and generator as well as laboratory equipment and consumables contributed to institutional strengthening. After training was organized and carried out by the Bank, procurement and disbursement of funds improved. With the resources provided by the project and in accordance with the general conditions of the loan, the Borrower prepared and submitted thirty-one (31) quarterly progress reports and eight (8) status reports and eight (8) annual audit reports. However, the organisational setup of the MOA was such that the National Project Coordinator experienced some difficulties at the beginning organising the PIU and getting collaboration because some members of the technical team were also Division Heads in the Department of Animal Resources. This difficulty affected the effective delivery of planned project activities. This issue was addressed during the MTR and subsequently by the re-organisation of the MOA.

4.5 **Staff Recruitment, Training and Development**

4.5.1 As stated in para. 4.2.10 above, the project experienced a high turnover in the staff of the PIU with coordinators (2) and accountants (3). It took several attempts to hire an M&E Officer. In April 2003, an M&E Officer was appointed from among the graduates from the University. The major obstacles in recruiting and retaining high caliber staff for the PIU stemmed from lack of competitive salaries and fringe benefits, lack of qualified and experienced professionals, conscription of competent individuals into the army for the defense of the national territory, deteriorating macro-economic environment, among others. The recruitment of TAs in forage agronomy, seed production, animal health and range management was delayed for over two years because of limited experience with the application of Bank's rules of procedure for procurement of services. The provision of a TA in 8p/ms M&E during the implementation phase of the project helped to strengthened the work of the M&E Unit.

4.5.2 The project placed emphasis on training for all categories of technical and managerial staff as well as project beneficiaries (women and men farmers). As already indicated in para 4.2 above, the project supported the development of human capital through promotion of study tours and postgraduate studies abroad. The budget allocated for training was not fully utilized because

of the change in GOE policy in overseas training during the life of the project. The policy change came as a result of staff not returning home after completing their studies abroad. For the benefit of the PIU, the National Project Coordinator received a short-term training on project management in Canada, which contributed to an improvement in his management and coordination of the project activities. Extension workers were also trained in various aspects aimed at strengthening and improving the extension system. Extension manuals were prepared to ensure continuous learning and training of trainers. Overall, one hundred thirty three (133) extension staff members participated in in-service training courses associated with various aspects of livestock production. Twenty-five workers (2 from National Agricultural Research Institute) participated in a three-week forage extension staff induction workshop. Forty-nine extension workers participated in a training of trainers' course.

4.5.3 As for farmers, about 8,322 of them were trained in different aspects of animal husbandry including animal nutrition and forage development, range management, meat production, and feed formulation. The training enabled the farmers to update their knowledge and modernize their practices. The training was combined with field days, on-farm demonstrations and the production and distribution of extension manuals in local languages.

4.6 Performance of Consultants, Contractors and Suppliers

4.6.1 Performance of Consultants: The consultancy services covered the following areas: Forage Agronomy, Seed Production, Rangeland Management, Animal Health, Animal Nutrition, Virology, Laboratory Specialist, Irrigation Engineering, Livestock Marketing, Monitoring and Evaluation. A total of 150 person- months of consultancy services was used during the project life. This amount of technical assistance was due to the post-conflict nature of the country. Generally, the relationship between the consultants and the Borrower was good, except for the Forage Agronomy where the first two technical Experts resigned for personal reasons. The overall quality of the outputs (surveys and design works, extension manuals, training manuals, consultants' reports, technical specifications and technical reports) of these consultancy services was satisfactory. The consultants participated in the training of both staff and farmers in their areas of competence.

4.6.2 Performance of Contractors and Suppliers: Both small and large African and foreign companies were contracted for the civil works and the supply of goods and services. The quality of work performed by the contractors was generally satisfactory. The quality of goods supplied was also satisfactory. However, most of the goods and works were not delivered within schedule for various reasons including the high costs of doing business and shortage in manpower, coupled with the lack of supervision of the contracts by the Borrower. There is, therefore, a need for GOE to monitor the implementation of contractual agreements in order to ensure that both parties are respecting their terms and conditions.

4.7 Conditions/Covenants

4.7.1 The conditions precedent to entry into force of the Loan Agreement were all fulfilled within the allowable 180 days, while those precedent to first disbursement were fulfilled within the allowable 720 days. These conditions included (a) evidence of establishment of the PIU within ARD of the MOA and appointment of a qualified full-time Project Coordinator and a qualified Project Accountant and (b) evidence of setting up of a Project Steering Committee (PSC) comprising of Ministries of Agriculture, Finance, Local Government and any other technical agencies whose contribution was essential to the successful implementation of the project. Although the first Project Coordinator was recruited in 1998. He was not full time as per

the condition. He was also a Division Head. He was, therefore, replaced in April 1999 by the present full time Coordinator. The Project Accountant, the first project accountant was recruited in mid-July 1999 and worked up-to 30/06/2002. She was replaced by another accountant who also left the project on 01/12/2003 for better pay. The third Accountant was recruited in 23 December 2003 and stayed in place till the project completion in September 2006. In between the recruitment of accountants, the project had to borrow accountants from the MOA Headquarters. The PSC was established in 1999 and comprised the Ministries of Agriculture and Finance; Local Government and the Eritrean Development and Investment Bank (EDIB). The PSC in addition to approving work plans and budgets, addressed policy issues that arose during project implementation.

4.7.2. The other conditions included (i) recruitment of TAs in Forage Agronomy, Range Management, Animal Health Advisor, and Livestock Marketing; (ii) appointment of Eritreans as local counterparts to the specialists; (iii) signing of management agreement with EDIB; and (iv) opening of special revolving fund account for drugs and vaccines. The fulfillment of the first two other conditions was delayed for at least two years because of lack of experience with the Bank's Procurement Rules of Procedures and the difficulties of appointing local counterparts due to problems of skilled manpower availability in Government. Nevertheless, Eritrean counterparts were ultimately appointed to each of these TA positions. The credit management agreement between the MOA and EDIB was signed in 1999, the terms and conditions of which were satisfactory to the Bank. A special account, the revolving fund account into which credit funds was deposited, was opened by EDIB in the Commercial Bank of Eritrea. The special revolving fund account was opened for the veterinary drugs and vaccines in each region of the country. The Drug Revolving Fund (DRF) is managed by MOA.

4.8 Financial and Economic Performance

4.8.1 Financial Analysis: The data provided from the baseline surveys carried out by the M&E Unit in 2003 established benchmark enterprise budgets for the different crop and livestock enterprises across the different agro-ecological zones. The five modules used in establishing financial returns to project beneficiaries were: cattle fattening, sheep and goat fattening, poultry production, dairy production and fodder production. Average profit per dairy cow increased from Nakfa 2,346 (under traditional management) to Nakfa 3,850 (under improved management) due to higher milk yield and an extended lactation period. The financial rate of return to a small-scale (18 cows) dairy farm under traditional management was calculated at 17.5%. With improved management (adequate green fodder and improved animal health), the financial rate of return increased to 23.5%. In large ruminant feeding farms, average profit was Nakfa 3,315 per head, and in small ruminant fattening farms, average profit was Nakfa 354 per head.

4.8.2 The financial rate of return of 11.5% was much lower than for the dairy enterprise. Feed cost (fodder and supplementary feed concentrates) was the most important determinant of profitability. In assessing the profitability of small-scale (less than 300 layers) poultry, average profit per layer and per egg were Nakfa 150 and Nakfa 0.4, respectively. The financial rate of return was 10.5%. Feedstuff cost and mortality rate were crucial determinants of profitability. The average gross margin from seed and green fodder of Alfalfa was Nakfa 110,503 per hectare. This was much higher than comparable figures for some of the arable crops (sorghum, millet and teff).

4.8.3 Economic Analysis: The Economic Rate of Return (ERR) calculations were carried out on each of the three main productive components (forage development, small-scale commercial production and animal health) based on actual outputs at project closure and projected outputs over a

period of 15 years. The results of the three components were aggregated to obtain the overall ERR (see Annex 10 for the assumptions). The recalculated Economic Rate of Return was 17.5%.

5. SOCIAL AND ENVIRONMENTAL SUSTAINABILITY

5.1 Social Impact

5.1.1 The social impact of the NLDP was assessed in terms of its gender responsiveness, its contribution to household food security and nutrition, poverty reduction impact and social infrastructural development.

5.1.2 Gender Responsive: Right from project design, the NLDP has been gender sensitive and gender responsive. As mentioned earlier, women farmers participated in all spheres of project activities. Women farmers were trained on modern livestock management practices. Women farmers had access to production credit to boost their incomes. The ranges that were developed were available for large ruminants and small ruminants. Considering that women tend to own small ruminants, equal access to fodder was created for their animals.

5.1.3 Food Security and Nutrition: The NLDP had a major objective of increasing the production of animal products as a means of enhancing national food security. Though quantitative estimates of impact were not available, it is believed that the NLDP contributed to improved household food security in project communities. The improvement of animal health and feeding impacted on the fertility of the herd and on the productivity of the animals, including egg, meat and dairy production. There is evidence of better and balanced feeding and increased rural prosperity in the project communities.

5.1.4 Impact on Rural Poverty Reduction: Despite the inability of the M&E Unit of the NLDP to provide quantitative estimates, informed opinion showed that the NLDP made some impact on poverty reduction and employment generation in the project communities. The boost in livestock productivity and production, improved market information services and the availability of an ever-expanding domestic market increased household incomes and provided access for producers to purchase food as well as non-food items. This also generated increased on-farm employment, particularly in poultry and dairy enterprises.

5.1.5 Social Infrastructure Development: The following activities implemented by the project have contributed to consolidating the social structure in the project area: (i) organisation of the communities in Duluk and Gahro for community management of the rangelands, (ii) provision of clean water for the humans and their animals, (iii) establishment of separate grazing and farming lands in the rangeland thereby helping to reduce farmer-grazier conflicts, (iv) enrichment of the rangelands through over-sowing and planting of grasses and legumes in excluded areas resulting in improved quality of animal feed and protection of the soil from further degradation, and (v) the protection of the soils by establishing catchment protection thereby contributing to soil conservation. Some of these activities have brought about changes in the behaviour of the communities. For example, there is a gradual but consistent shift from long and recurrent transhumance to settled grazing. There is undoubtedly a reduction in the animal mortalities, improvement in the health of the communities and enhancement communication between the villages in the project area.

5.2 Environmental Impact

5.2.1 The Bank recognized the potential adverse environmental effects associated with the project. Hence, it was classified as Category II in the 1997 Lending program. The major adverse environmental effects for which mitigating measures were proposed included: (i) land and soil degradation resulting from over cultivation and overgrazing; (ii) ground water pollution from effluent from the use of chemical fertilizers and from veterinary laboratories; (iii) livestock diseases; and the effects of increased population of people and livestock returning to the villages after the war. The inclusion of Gahro elevated the status of the project to category I and, hence, an Environmental Impact Assessment (EIA) was conducted. The mitigating measures that were included in the design of the project in order to alleviate the negative effects included: cultivation of leguminous fodder to improve soil fertility; increased forage production; improvement of rangeland management; the treatment of effluent emanating from veterinary laboratories; and wide coverage of vaccination programs as well as the involvement of trained private individuals in the treatment of animals in the villages.

5.2.2 At project completion, there was no evidence of adverse environmental effects. The forage programme included the incorporation of leguminous forage and the planting of trees to enrich soil fertility, the construction of embankments to prevent flooding of farms, design and construction of weir structures to allow the passage of light silt particles, while restraining larger particles and so mitigating the reduction in soil quality in the farmlands. Similarly, the construction of catchment protection in the lowlands contribution to soil conservation and improved retention of water and improved yields in the rangelands. The GOE has also put the relevant environmental authorities on notice to inspect and certify that the new central veterinary laboratory site and its facilities – waste management infrastructure (liquid effluent collection and treatment, solid waste collection and disposal, and incinerator and water supply - meet the minimum environmental standards. The GOE has encouraged the widespread dispersion of the returning refugees and their livestock through the efforts of the Eritrean Relief and Refugee Commission, thereby avoiding the upsurge of human and livestock populations in one location. The communities have been sufficiently sensitized as the dangers of handling and applying veterinary drugs and vaccines without the assistance of trained personnel. They have also been trained to be able to identify disease symptoms and to report cases of animals falling sick to the trained CBAHWs. The latter group is closely supervised by qualified Veterinarians.

6. PROJECT SUSTAINABILITY

6.1 The introduction and adoption of certain practices like cost recovery, the privation of some public services like drug supply and distribution, training of farmers, the strengthening of delivery efficiency training and equipping of staff, etc. are pertinent issues to ensure project sustainability. The project also implemented sustainable and cost effective animal health management systems, regular operation and maintenance of renovated/new infrastructural facilities, the building and continuous upgrading of the capacity of livestock producers to adopt modern management practices, the staffing and upgrading of the knowledge base of all categories of staff in the sub-sector, etc. The re-organization of MOA with provision of a quality control unit, marketing unit and appropriate level of funding for livestock activities at the different tiers of government would further guarantee the investments.

6.2 With regard to animal health, the project has established a physical infrastructure to strengthen the surveillance, diagnostic and investigative capacity of the GOE. The CVL is sufficiently well-equipped to enhance disease control and prevention. The laboratory is capable

of producing and testing vaccines before they are used in the country and for testing for efficacy of vaccines once they have been used. The project was also able to up-grade the veterinary public health services and the emergency preparedness programme of the country for strategic TADs and other emerging diseases. In addition, institutional capacity has been built through technical assistance, training of staff and study tours. This will enable the continued operation of the laboratory and formulation of policies and legal frameworks to ensure the continued viability of the investment. Furthermore, with the establishment of the revolving fund for drugs and vaccines, the sustained supply of drugs and vaccines is assured by the introduction and adoption of cost recovery system and the participation of the community in its management, while the laboratory will be assured of an independent source of funds for continued operations. The GOE has also promised to set aside funds from the MOA budget for the operation and maintenance of the laboratory. The training of selected CBAHWs and equipping them with veterinary kits has contributed to the strengthening of efficient delivery of veterinary services to the communities.

6.3 With regard to forage production, the seed multiplication centres have been established to supply farmers with seeds and extension officers have trained farmers in the appropriate application of these seeds for increased forage production. Commercial farmers in cattle, dairy and poultry have been offered loans to enable them increase production and improve productivity. The repayment of these loans into a revolving fund maintained by EDIB would enable more loans to be given in future to new and increased number of farmers. Range development has allowed for controlled grazing by rotation/deferred pasture management. The enrichment of the rangelands with improved legumes and forages as well as the introduction of leguminous tree species, such as Yemen trees, and *Leucaena*, has provided opportunity for production of supplementary feeds for livestock during the dry season. The communities in the rangelands have been organised and provided with clean sources of drinking water. The fencing of the rangelands and their partitioning into farm and grazing lands would help to reduce conflicts between communities. All these practices would ensure the sustainability of the developments in the rangelands and the social structure of the communities there.

6.4 The personnel emolument and recurrent costs of operating and maintaining the facilities provided have been built into GOE regular budget. However, since the communities in Duluk and Gahro have not been participating in the operation and maintenance of the developments in the pilot rangelands schemes, there is no visible ownership on their part. It will, therefore, be necessary to involve the communities, in a sharing arrangement, in the management, operation and repair of such facilities.

7. **PERFORMANCE OF THE BORROWER AND BANK**

7.1 **Performance of Borrower**

7.1.1 The Borrower provided strong political and financial support to the project. Though the Project Steering Committee (PSC) did not meet as regularly as scheduled, the Honourable Minister of Agriculture provided effective oversight function to the project. Counterpart funds were paid as and when due and project management was effective and responsive. All progress and audit reports were rendered regularly and on time to the Bank. However, there an apparent lack of commitment on the part of the GOE to ensure and monitor the implementation of the environmental mitigation measures in the EIA.

7.1.2 Once the Bank provided training on procurement and disbursement procedures, procurement improved. Procurement and disbursement procedures and guidelines were generally respected. Records of all transactions and correspondences were filed and readily made available

for inspection. At closure, staff of the project were integrated into the MOA. The Borrower's performance is rated as satisfactory.

7.2 Performance of the Bank

7.2.1 The Bank appraised the project taking into consideration the country's macroeconomic framework and in consonance with the Bank's Country Strategic Framework (as reflected in the CSPs) and the Bank Group's Agriculture and Rural Development Policy. The Environmental Policy of the Bank Group was also respected as the project, which was first categorised as I, was revised to II when the Gahro pilot scheme was included. As a result an Environmental Impact Assessment was done. However, the first categorisation of the project did not consider the environmental impact of the central and zonal veterinary laboratories that were planned to be constructed and/or rehabilitated. Hence, there was no environmental plan for management the effluents and solid wastes emanating from the use of these laboratories and risks posed by the operation of these laboratories on its workers.

7.2.2 Though some of the assumptions and targets were overly optimistic, the project design benefited from the experiences and lessons learnt from similar projects in neighbouring Ethiopia (Ethiopia Third Livestock development project TLDP, and the Southern Rangelands development sub-component). The project was formulated within a post conflict environment, which was still quite fragile. Although the design of the project included a lot of technical assistance and consultancies to address the problem of shortage in competent and experienced manpower in the sub-sector, it did not adequately assessed the risks of war resuming and of shortage in labour and skilled manpower throughout the country. Cross cutting issues of gender and the environment were taken into consideration in project design and implementation.

7.2.3 The Bank mounted ten (10) supervision missions during the life of the project. The skills mix was appropriate and implementation issues were quickly resolved. The modification of the scope and targets of the project during MTR is a clear testimony of the flexible approach of the Bank. The relocation of Bank Group to Tunis in 2002 created some temporary logistic and communication problems but this has since been resolved. The Bank's performance is rated as satisfactory.

8. OVERALL PERFORMANCE RATING

8.1. The overall performance rating of the project is satisfactory. The loan funds were fully disbursed and about 85% of the planned activities were fully implemented. The project has succeeded in laying down the infrastructure for the effective and efficient delivery of services to the livestock sub-sector in Eritrea. The project successfully mobilized the necessary products and services for the smooth operation of the livestock industry in Eritrea. The project impacted on the environmental protection in the project area and human and social capital in the country.

8.2 The establishment of the revolving credit scheme (despite the low repayment rate) has provided productive assets to client farmers and, thereby, contributed to improving their incomes and their wellbeing. Similarly, the establishment of the revolving veterinary drug and vaccine fund in all of the regions of the country has provided the necessary fillip for continuous availability of drugs and vaccines for the control and prevention of infectious diseases in the country and, thus, contributed to improved livestock production and productivity. The expected outcomes were realized to a large extent.

9. CONCLUSIONS, LESSONS LEARNT AND RECOMMENDATIONS

9.1 Conclusions

9.1.1 The NLDP was able to fully disburse the loan funds and to achieve about 86% of its planned activities. The Eritrean Government counterpart contribution exceeded appraisal estimates in local currency terms. This is quite commendable and shows strong Government commitment to the project. The project has made meaningful contribution to the development of the livestock sub-sector in Eritrea and has, thus, improved its contribution to the national economy. It is important to note that the livestock project was formulated to address the livestock industry that had been destroyed by the war of independence. The investments in the animal health sector are expected to contribute to the better protection of the people of Eritrea in terms of improved human and animal health through the consumption of safe and healthy animal products and improved incomes from the sale of better and high quality animals and animal products. The construction and operation of the CVL will ensure the rapid detection of infectious agents of diseases, while the revolving fund for drugs and vaccines will enable the rapid intervention to prevent the outbreak and spread of animal diseases.

9.1.2 The project has succeeded in strengthening the veterinary system in Eritrea by strengthening its epidemio-surveillance, diagnostic and investigative capacity and providing the means to control and prevent as well as respond rapidly to disease outbreaks. The project has succeeded in enhancing livestock production and productivity by providing high quality feed through improved forage production and improved range management as well as quality drinking water for the wells and pipelines with water troughs and better health care through the CBAHWs and the revolving fund for drugs and vaccines. The project was able to address the entire production chain from production to marketing, although processing was not adequately addressed. The human capacity of all stakeholders has been built and infrastructure rehabilitated and new ones built.

9.1.3 The management of the project was effective, responsive and flexible despite its staffing difficulties at the early years of project implementation. Although the project was extended three times to enable it to achieve its development goals, the fulfilment of the covenants/conditions for entry into force of the loan and for declaration of disbursement effectiveness was within the minimum time frame set by the Bank. The extensions were prompted by the poor macro-economic and labour environment created by the border conflict with Ethiopia which erupted soon after the project was launched.

9.1.4 The DRF has enabled the farmers to have drugs and vaccines available as and when needed. However, the continuous supply of drugs and vaccines has run into problems with the closure of the project because of lack of foreign exchange to import more drugs and vaccines to replenish the fund. The establishment of an account in foreign currency would give more flexibility for efficient interventions of the DRF in acquiring drugs and vaccines as and when needed to control and prevent infectious diseases in the country. The DRF is managed by the Director of Technical Services (Chief Veterinary Officer of Eritrea) under the supervision of the Director General of Agricultural Promotion and Development Department. However, the coordination of the 67 drugs and vaccines distribution centres in the six regions of the country needs an appropriate organizational structure that allows for efficient and effective delivery of quality service and for accountability and transparency in the management of the resources. A small management unit devoted entirely to DRF is an option to consider in the future within a legal framework adopted by the Government.

9.2 Lessons Learnt

9.2.1 The following lessons can be drawn from the implementation of the Project:

- 1) The launching exercise of the project may not be enough for a smooth project implementation. Allowing the project coordinator to participate in short-term training in project management can improve project management and coordination (para. 4.5.2).
- 2) Quality at entry is important to ensure smooth take-off and hitch free project implementation. In this regard, it is important to avoid the overly optimistic assumptions as to project outputs at appraisal, underestimating of staffing and infrastructural constraints that project management might face at the start-up and for a considerable part of project life. Even after restructuring during the MTR exercise, some set targets were still not met at project completion (para. 3.2).
- 3) The strong commitment of the Government is necessary for a successful project implementation. The GOE demonstrated a strong support for the project throughout the entire project life. Project management had unimpeded access to the top echelon of the MOA. Counterpart fund was paid fully as at when due. The Government provided additional funding in excess of commitment at appraisal (para. 4.2.10).
- 4) Flexibility in project design allows modification in project objectives as well as the level and scope of activities. Project management with the approval of the Bank, was able to redesign the project at mid-term and re-allocate resources to existing activities as well as new initiatives, such as, the credit to commercial dairy farmers (para. 3.2).
- 5) A strong Monitoring and Evaluation (M&E) system is imperative for better monitoring of project implementation, better performance evaluation and impact assessment. Though the M&E was installed much later during project life, nonetheless it provided an empirical insight on the profitability of livestock enterprises and maintained project records (para. 4.2.10).
- 6) Sustainability and institutional development depend on building the capacity of all stakeholders. The NLDP provided opportunity for skills acquisition and training for all the stakeholders (technical staff of MOA, NARI, Regional MOA, EDIB, farmers, contractors and suppliers) involved in the project (para. 4.5).
- 7) An effective research – extension – farmer linkage system is of crucial importance for sustainable livestock development. The involvement of the Research Institute in forage and seed research has been of benefit to forage production development in Eritrea and has saved the country foreign exchange that could have been used to import forage seeds (para. 3.2.1).
- 8) Promotion of rational range management systems for livestock production is essential for sustainable utilization of range resources. The pilot range schemes in Duluk and Gahro proved successful and should therefore be replicated in similar environments. However, the communities should be fully involved in the management of the rangelands (para. 4.2.2).
- 9) Projects that are formulated within the post conflict environments should always consider

the risk of deterioration in the macro-economic environment and mitigate for any eventualities such as high transaction costs and problems of labour and construction materials (para. 3.2).

- 10) Loan conditions should be simple and realistic and should be thoroughly discussed and agreed with the Borrower during the project cycle and confirmed during the loan negotiations so as to avoid implementation delays (para. 4.7).

9.3 Recommendations

For the Bank

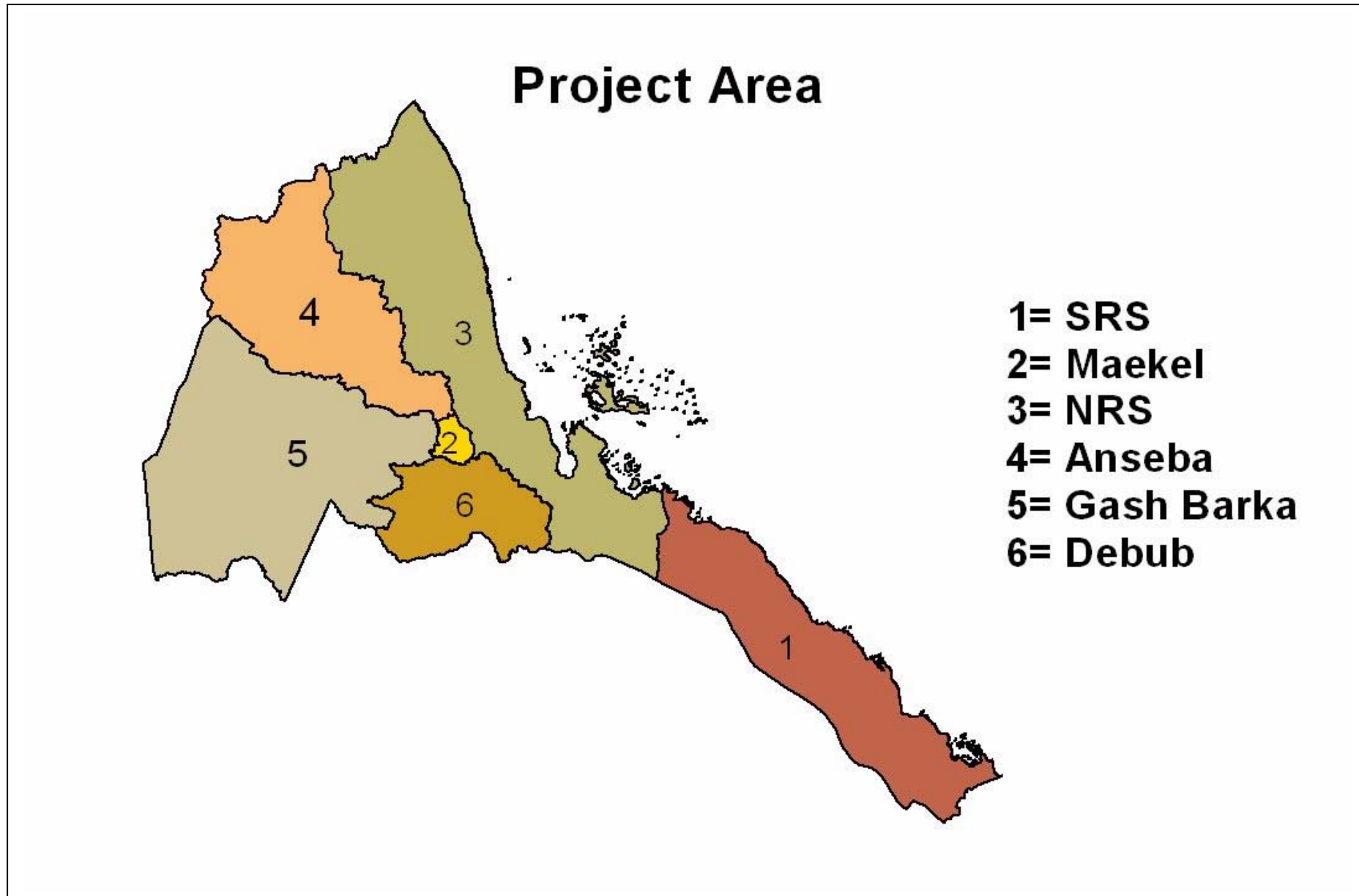
1. Smoothen the take-off of projects: In addition to the Appraisal Document, a Project Implementation Manual (PIM) should be prepared jointly with the Borrower. Training should be organized within the first two months of project life to familiarize project staff with operating procedures including Bank's procurement and disbursement procedures. The Bank should field at least two supervision missions per year during the first two years of the project start-up in order to help address the problems of procurement and disbursement as well as those of coherent comprehension of the appraisal report (para.3.6.2).
2. Operation of Projects in Post Conflict Countries: In designing projects for post conflict countries adequate measures should be taken to provide for the possibility of a return to conflict and to a deteriorating macro-economic environment (para. 4.1.2)

For the Borrower

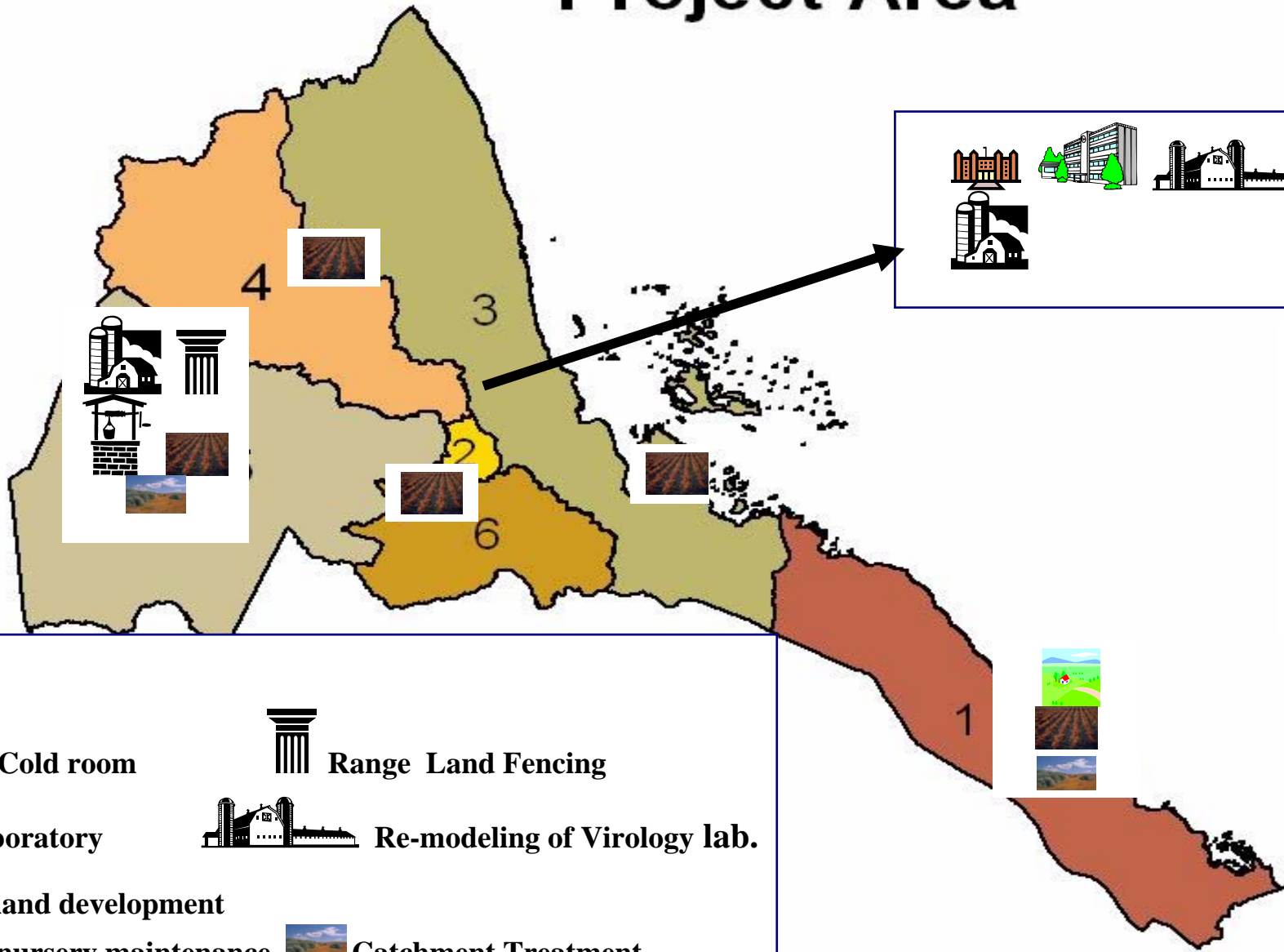
1. Conduct of Baseline Studies: Baseline studies should be carried out in project areas prior to the commencement but not later than the end of year 1 of project life. This would allow the establishment of benchmarks against which subsequent changes in targeted performance indicators could be measured and evaluated (para. 4.5.2).
2. Institution of Agricultural Insurance: The GOE through the MOA should facilitate insurance cover for small-scale livestock production enterprises. In this case, the farmers should be sensitized on the importance of insurance coverage for their investments (para. 4.2.7).
3. Provision of Environmental Protection and Water Supply: The GOE should as a matter of urgency repair the damage to the embankments and gabions in Gahro in order to prevent flooding of farmers' fields. In addition, the GOE should ensure that the Contractor supplies the two booster pumps for the Forash in order to guarantee the regular supply of water for the communities in Gahro. The communities in Duluk and Gahro should be sensitized to share in the operation and maintenance of the infrastructure in the rangelands (para. 4.2.4).
4. Establishment of Quarantine facilities and check points: The intense trans-border movements of livestock with Djibouti, Ethiopia and Sudan are a threat to the health status of the Eritrean livestock population, especially as the country is free of Rinderpest and Rift Valley Fever. In order to secure the animal health status and assure the quality of exports to the Middle East countries, quarantine facilities and check points in the major

livestock converging areas in the country are extremely important and need to be considered in future projects (para. 4.2.6).

5. Sustainability of the Drugs and Vaccines Revolving Fund (DRF): GOE should ensure that the accounts of the DRF are audited and that measures are instituted to guarantee its sustainability as well as ensure that there is available foreign exchange to enable the sustained importation of drugs and vaccines (para. 4.2.5).
6. Monitor Implementation of Contractual Agreements: GOE should make policy of assigning a legal officer to monitor compliance with contractual terms and conditions by all parties in the contract (para. 4.6.2).



Project Area



Offices



Seed store/Cold room



Range Land Fencing



Central laboratory



Re-modeling of Virology lab.



Gahro range land development



Forage seed nursery maintenance



Catchment Treatment



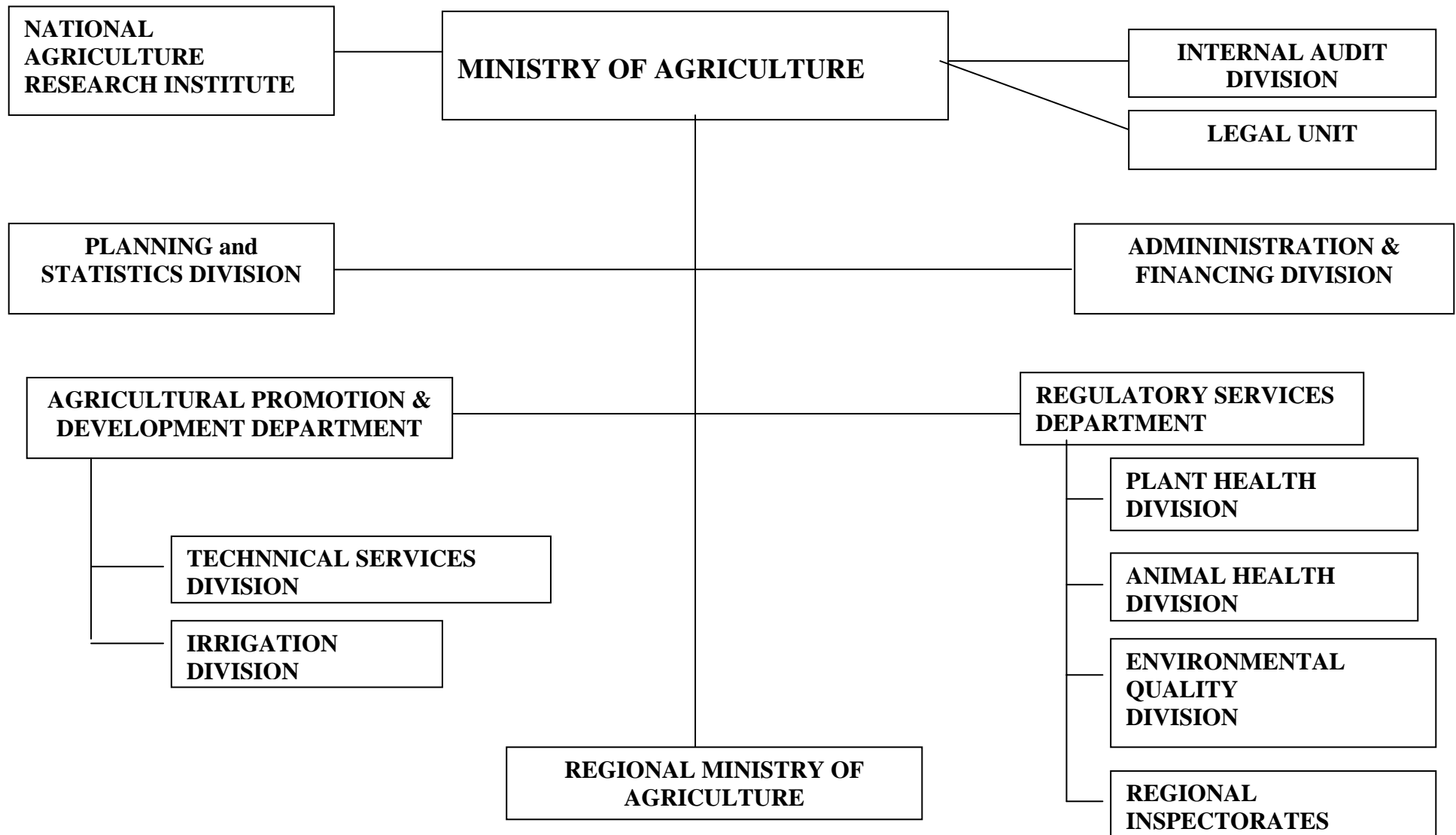
Well construction

ERITREA
NATIONAL LIVESTOCK DEVELOPMENT PROJECT
PROJECT COMPLETION REPORT
YEARLY DISBURSEMENT BY SOURCE OF FUNDS

Year	ADF				GOE				TOTAL			
	As at Appraisal (ADF&GOE)		Actual (ADF)		As at Appraisal		Actual		As at Appraisal		Actual	
	Amount	Cum. (%)	Amount	Cum. (%)	Amount	Cum. (%)	Amount	Cum. (%)	Amount	Cum. (%)	Amount	Cum. (%)
1998	6.041	5.29	0.136	1.36					6.041	5.29		
1999	2.471	74.52	2.472	26.02					2.471	74.52		
2000	1.788	90.18	0.282	28.83					1.788	90.18		
2001	0.607	95.49	0.926	38.07					0.607	95.49		
2002	0.515	100.00	0.870	46.75					0.515	100.00		
2003			2.348	70.17								
2004			0.843	78.58								
2005			1.782	96.36								
2006			0.365	100.00								
Total	11.422	100.00	10.024	100.00	1.40	100.00	1.032	100	11.422	100.00	11.056	100
Undisb. Bal. Loan Saving			0.00 0.00								0.00 0.00	

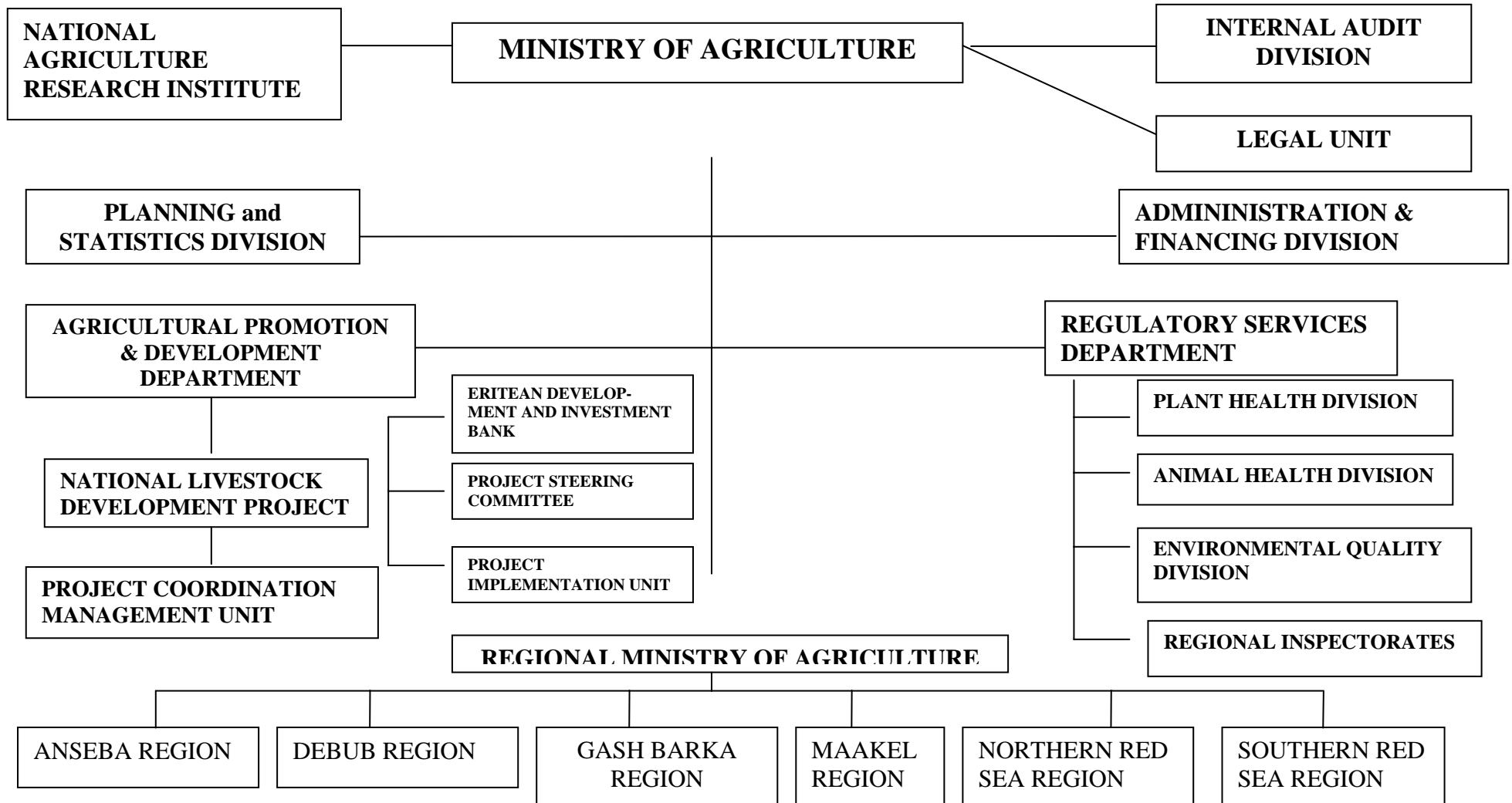
Source : ADF & GOE

ORGANIZATIONAL STRUCTURE OF THE MOA



**NLDP IN THE ORGANISATIONAL STRUCTURE
OF THE MINISTRY OF AGRICULTURE**

DURING PROJECT IMPLEMENTATION



ERITREA NATIONAL LIVESTOCK DEVELOPMENT PROJECT

FINANCIAL AND ECONOMIC ANALYSIS

Introduction:

The Borrower did not recalculate the FIRR and the ERR at project completion. Reasons adduced included (i) the absence of adequate baseline data from which to monitor and assess project performance; (ii) the modification of targets after the MTR; and (iii) the inflationary price spiral which had seriously affected cost estimates.

The Bank's PCR Mission noted the delayed start of M&E activities (PY3) in the NLDP as a result of the late recruitment of the M&E Expert and his National counterpart. Though baseline survey was not carried out before or at project start up, the M&E had been able to establish benchmark enterprise budgets for different crop and livestock enterprises across the different agro-ecological zones. These crop and livestock enterprises budgets were used in establishing cost and returns and financial returns estimates for the poultry, cattle, sheep/goat fattening schemes, dairy production and fodder production. The production coefficients were the best estimates the PCR Mission could use based on discussions with various stakeholders and previous works, including researchers, technical staff of MOA, NGOs and Development Partners (FAO and IFAD). To account for inflationary price spiral (particularly since the Eritrean-Ethiopian border conflict) constant 2003 prices were used in the analyses.

Financial Analysis

The data provided from the base-line surveys carried out by the M&E Unit in 2003 established benchmark enterprise budgets for the different crop and livestock enterprises across the different agro-ecological zones. The five modules used in establishing financial returns to project beneficiaries were: cattle fattening, sheep and goat fattening, poultry production, dairy production and fodder production. Average profit per dairy cow increased from Nakfa 2346 (under traditional management) to Nakfa 3850 (under improved management) due to higher milk yield and higher milk production from increase in lactation period. The financial rate of return to a small-scale (18 cows) dairy farm under traditional management was calculated at 17.5%. With improved management (adequate green fodder and improved animal health), the financial rate of return would increase to 23.5%. In cattle and sheep/goat fattening farms, average profit was Nakfa 3,315 per head, and in small ruminant fattening farms, average profit was Nakfa 354 per head. The financial rate of return at 11.5% was much lower than for the dairy enterprise. Feed cost (fodder and supplementary feed concentrates) was the most important determinant of profitability. In assessing the profitability of small-scale poultry farms (less than 300 layers), average profits per layer and per egg were 150 and 0.4 Nakfas respectively. The internal rate of return was 10.5%. Feedstuff cost and mortality rate were crucial determinants of profitability. The average Gross Margin from seed and green fodder of Alfalfa was Nakfa 110503 per hectare. This was much higher than comparable figures for some of the arable crops (sorghum, millet and teff).

Economic Analysis:

The incremental benefits arising from project intervention were justified from the animal health and commercial livestock production components.

For the animal health component, the productivity growth would arise from vaccination and improved animal health management. Livestock population data and growth rates between 1999 and 2006 were obtained from MOA. Based on field visits and discussions with officials of the Animal health division of MOA, 20% of the incremental livestock production as expressed in tropical livestock units (TLUs)² was attributed to the project. The average selling price per head of cattle as well as on-farm operational costs were obtained from the base line survey carried out by the M&E Unit of the project in 2003. Table 5.1 contains the technical and economic parameters.

The project's contribution on the small-scale commercial livestock component was estimated on the basis of 200 fattening cattle and sheep and goat fattening farmers with an average herd size of 20 TLUs of livestock. Similarly 200 Dairy farms with as average herd size of 25 dairy cattle were used in estimating the benefits from commercial dairy farming. The technical and economic parameters are also shown in table 3.

The total investment and recurrent costs of the project were included with the on-farm costs to obtain the total incremental costs. Funds allocated to credit and the revolving drug fund were not included in the cost calculations because they are regarded as transfer payments.

The costs and benefits streams were projected over a period of 15 years (after the MTR). Benefits were lagged two years to take account of delays in project start up as well as delays in completion of infrastructure. The recalculated economic rate of return (ERR) is 17.5%. Though less than the appraisal estimate of 19%, it is still regarded as attractive compared to the cost of capital which was put at 12% at appraisal. (see Tables 1,2 & 3).

² The Eritrean large and small ruminants livestock were converted to TLU using the following conversion factor Camel=1.2, Cattle =1, sheep = 0.1 and goat = 0.1

Table 1. ERITREA NLDP: Economic Rate of Return for Small- Scale Commercial Production.

Year	TLU	Incremental Weight gain 250kg/head	Incremental Benefit Nakfa Million	Incremental On-farm Costs Million Nakfa	Dairy Cows	Incremental Milk Output Million Litres	Incremental Benefit 5.41Nakfa/ litre	Incremental Operating Costs Million Nakfa	Investment/Total Recurrent Costs Million Nakfa	Incremental Costs Million Nakfa	Total Incremental Benefits Million Nakfa	Incremental Net Benefit Stream Million Nakfa
1998												
1999												
2000												
2001				0	0		0	0	19.6	19.6	0	-19.6
2002		0	0	0	0	0	0	0	16.4	16.4	0	-16.4
2003	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	16.5	124.4085	118.13195	-6.27655
2004	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2005	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2006	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2007	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2008	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2009	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2010	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2011	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2012	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2013	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2014	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2015	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345
2016	4000	1332	55.944	49.284	5000	11.495	62.18795	58.6245	1.7	109.6085	118.13195	8.52345

ERR 13.8%

Table 3. ERITREA NATIONAL LIVESTOCK DEVELOPMENT PROJECT: ECONOMIC RATE OF RETURN

Year	Incremental net benefits Animal Health Component Million Nakfa	Incremental net Benefits Commercial Production Million Nakfa	Additional Investment & Recurrent Costs Million Nakfa	Total Incremental Net Benefits Million Nakfa
1999	0			
2000	0	0	2.5	-2.5
2001	-1.16	-18.6	1.0	-20.76
2002	-14.604	-16.4	0.7	-31.704
2003	-4.248	-7.989	0.7	-12.937
2004	6.88	8.473	0.7	14.653
2005	9.104	8.473	0.7	16.877
2006	10.216	8.473	0.7	17.989
2007	8.548	8.473	0.7	16.321
2008	6.602	8.473	0.7	14.375
2009	11.606	8.473	0.7	19.379
2010	7.436	8.473	0.7	15.209
2011	9.493	8.473	0.7	17.266
2012	9.7156	8.473	0.7	17.4886
2013	10.772	8.473	0.7	18.545
2014	8.548	8.473	0.7	16.321
2015	9.104	8.473	0.7	16.877
2016	7.992	8.473	0.7	15.765
		8.473		
IRR	33%	14%		17.5%

ERITREA
NATIONAL LIVESTOCK DEVELOPMENT PROJECT

PROJECT COMPLETION REPORT

Performance Rating Scale and Evaluation Criteria

1. Rating Scale

$X \geq 3$	<i>Highly satisfactory</i>
$2 \leq X < 3$	<i>Satisfactory</i>
$1 \leq X < 2$	<i>Unsatisfactory</i>
$X < 1$	<i>Highly unsatisfactory</i>

Where X is the value assigned to a performance variable.

Classification: Implementation performance is considered satisfactory if the average value of $X \geq 2$.

2. Evaluation Results

FORM IP1
IMPLEMENTATION PERFORMANCE

Component Indicators	Score (1-4)	Remarks
1. Adherence to time schedule	1	Delay - 33 months.
2. Adherence to cost schedule	4	Full loan utilized. No cost over-run.
3. Compliance with covenants	3	Delays in recruitment of staff especially of M&E Specialist.
4. Adequacy of monitoring & evaluation and reporting	3	31 QPR's, Borrower PCR & Final Audit. Reports Quality improved.
5. Satisfactory Operations (if applicable)	3	Few civil works remain but budgeted for. Loan repayment by commercial farmers at only 55%.
TOTAL	14	
<u>Overall Assessment of Implementation Performance</u>	2.8	Satisfactory

FORM BP1
BANK PERFORMANCE

Component Indicators	Score (1-4)	Remarks
1. At Identification	3	Followed satisfactory ASR done with FAO assistance
2. At Preparation of Project	-	By FAO Mission in Nov. 1995
3. At Appraisal	3	Risk of imminent border conflict unforeseen.
4. At Supervision	3	Nine supervisions. Improvement after Mid-Term Review
Overall Assessment of Bank Performance	3	Satisfactory

ERITREA

NATIONAL LIVESTOCK DEVELOPMENT PROJECT

PROJECT COMPLETION REPORT
FORM PO 1

PROJECT OUTCOME

No	Component Indicators	Score (1-4)	Remarks
1	<u>Relevance and Achievement of Objectives</u>		
i)	Macro-Economic Policy	3	
ii)	Sector Policy	3	
iii)	Physical (incl. Production)	3	
iv)	Financial	2	
v)	Poverty Alleviation & Social & Gender	3	
vi)	Environment	3	
vii)	Private sector development	3	
viii)	Other (Specify)	-	
2.	<u>Institutional Development (ID)</u>	-	
i)	Institutional Framework incl. Restructuring	3	
ii)	Financial and management Information Systems including Audit Systems	2	
iii)	Transfer of Technology	3	Pilot Rangelands and CVLab.
iv)	Staffing by qualified personnel (incl. Turnover, training & Counterpart Staff)	2	
3.	<u>Sustainability</u>		
i)	Continued Borrower Commitment	3	
ii)	Environmental Policy	3	
iii)	Institutional Framework	3	
iv)	Technical Viability and Staffing	3	
v)	Financial Viability including cost recovery systems	2	
vi)	Economic Viability	3	
vii)	Environmental Viability	3	
viii)	O&M facilitation (availability of recurrent funding, foreign exchange, spare parts, workshop facilities etc.)	2	
4.	<u>Economic Internal Rate of Return</u>	3	
	TOTAL	2.75	Satisfactory

ANNEX 7

Recommendations and Follow-up Actions

Main Findings and Conclusions	Lessons Learned/Recommendations	Follow-up Action	Responsibility
<p><u>Quality at Entry</u> Assumptions as to project output at Appraisal were overly optimistic and therefore underestimated the staffing and infrastructural constraints that project management faced at the start-up and for a considerable part of project life.</p>	Necessary to improve Quality at Entry to ensure quick take-off and hitch-free implementation.	Assess Assumptions and Risks critically in future Appraisal Documents.	ADB
<p><u>Late start-up</u> Due to the late start-up of implementation, project completion was delayed..</p>	In addition to the Appraisal document, a Project Implementation Manual (PIM) should be prepared.	For future projects the Bank should consider the preparation of a Project Implementation Manual either as an Appendix to the Appraisal Report or be prepared as a separate document.	ADB. and GOE
<p><u>Baseline Studies</u> Baseline studies were not carried out prior to commencement of the project to serve as bench marks.</p>	Baseline studies would allow the establishment of benchmarks against which subsequent changes in specified indicators could be measured and evaluated.	Arrange for Baseline studies in Appraisal documents for projects where this does not already exist.	ADB and GOE
<p><u>Agricultural Insurance</u> Lack of insurance cover for small scale livestock enterprises made them vulnerable to unforeseen shocks and they were unable to repay their Bank loans as a result.</p>	Even small scale farmers should endeavour to seek some insurance cover for any Bank loans.	The GOE through the MOA should facilitate insurance cover for small scale livestock production enterprises.	GOE
<p><u>Environmental Protection</u> Damage to the establishment in Gahro not repaired.</p>	Delay in repairs would make the Gahro Rangeland more susceptible to future flood damage.	Urgent repairs to the Gahro Rangeland embankment in required.	GOE
<p><u>Forage Development</u> A good start has been made by farmers during the last five years.</p>	Farmers now realize the advantages of forage production which they did not appreciate before. But this must be pushed forward by the regional offices .of the MOA..	Forage seeds must be made available and training given to farmers in order to maintain the sustainability of forage development.	MOA of GOE
<p><u>Pilot Range Management</u> The two pilot range management schemes (Duluk and Gahro) weren't satisfactorily implemented</p>	The MOA of the regions must implement the unfinished activities of the two pilot areas:(a) In Duluk installation of water pump on the borehole and water pump house construction must be completed. (b) in Gahro the damaged earth embankment and gabion works must be maintained; the right size booster pump & a reserve must be put in place; and a frequent break down of pipeline and water hydrants must be repaired.	The pilot range lands have to be regularly monitored and evaluated for their effective and efficient utilization.	MOA of GOE
<p><u>Animal Health Services</u> 1. Supplementary laboratory works for the CVL have not been completed. 2. Quarantine Station, Satellite Veterinary Lab. & Livestock Service Centers:-Due to limited time and budgetary constraints all these were not constructed. Site selection, survey and design of the quarantine station in Semeianawi Keyhe Bahri Region at Gahtealaly had however already been done but suspended.</p>	1.The following outstanding activities have to be completed for the CVL achieve its purpose: (a) civil works including reservoir and it's system; (b) air conditioning, fire alarm system and wires, diesel generator, fire hydrant angle iron LTZ, cold storage and freezer; (c) emergency water supply. 2. Effort to be made to complete the quarantine stations.	The budget for the above activities had been temporarily deposited at the bank of Eritrea, account number GOV 120.101.0001. The MOA has to follow the implementation and approved payments will be made from the above stated account number. (2) MoA has to source funds to integrate these activities in another project or program	GOE
<p><u>Small-Scale Commercial Livestock Production Credit to Farmers Revolving Fund:</u> Farmers have not paid back into the Revolving Fund. A total of 10.1 million Nafks in arrears to be paid to EDIB.</p>	Convince clients the need to repay their loans.	Need to intensify follow-up actions.	EDIB, MOA of GOE.
<p><u>Institutional Support:</u> 67 different documents were produced by the above stated TAs.</p>	Need to sustain and to utilize the multiple effect of the gained knowledge from the 150p/m of TA's and Eritrean counterparts utilized on the project.	The documents must be distributed to the Regional offices of MOA.	MOA of GOE

Project Infrastructure

1 It is important to note that the implementation of civil works activity in the project delayed due to (i) budgetary constraints, (ii) delays in the design of the civil works because of shortage of design engineers in the local market and sometimes disinterest of the few engineers in the design of facilities whose sites were remote, (iii) delays in the recruitment of qualified contractors because of shortage of experienced contractors in the local market combined with exorbitant contract price offers; (iv) delays in the supply of construction materials because of non availability in the local market combined with the high costs of importation of such materials and the time it took to acquire them; and (iv) the border conflict between Eritrea and Ethiopia. The latter created a difficult macro-economic environment for the project to be effectively and efficiently implemented. However, most of civil works were completed satisfactorily.

2 With regards to Forage development, two seed stores each 500m² in Asmara and Tesseney (Gash Barka) have been designed and constructed, giving an achievement of 100% as compared to what was planned. In respect of the Pilot Range Management, the infrastructural activities were undertaken in Duluk and Gahro. In Duluk, the survey and design of 20,000 ha of grazing land and construction of 3km x 1km fence including the partitioning of the paddocks with a 20-km fence was successfully completed, while two hand-dug wells in Adi Kukui and Adi Mentay and one drilled well in Duluk village were implemented. The drilled well, however, failed to provide water. In addition, a water reservoir and troughs were constructed, while the construction of at least 250 m³ small check dams (stones), 127 ha of furrowing and 310 ha of terracing on the plains and the planting of shrubs in the valley to reduce erosion were successfully done. The furrowing and terracing were shown to improve the biomass and nutritive value of the grasses in the range.

3 In Gahro, the survey and design of 1,700 ha of grazing land and construction of Gahro irrigation scheme was completed. The water diversion works, including soil trenches, diversion canals, riverbed alterations, etc have been constructed. The following activities have been completed under the water diversion works: (a) construction of the earth embankment on the eastern and western side of the project site covering a total length of 12,139 m, and an average height of 2.5 m. with an inward slope (river side) of 2H:1V and an outward slope (bank side) of H:1V; (b) the supply and placement of rock-filled gabions has been completed. The gabions have been placed in critical areas of the earth embankment with a total length of 921 m, and a height of 3m; (c) construction of the ground level reservoir and the pump house at Forash pump site with the supply and installation of two booster pumps (duty and standby), with a capacity of delivering 5.5 litre/sec.(19.8m³/hr) against a pressure head of at least 45 m at 70% efficiency; (d) construction of elevated reservoir at Buri village and PVC pipeline to connect the ground level reservoir at Forash with the elevated reservoir at Buri village and another pipeline from elevated reservoir to Gahro village; (e) construction of water hydrants on selected locations along length of pipeline and three water fountains (one in Buri and two in Gahro village) for domestic water supply; and (f) construction of a staff house in Gahro. The only booster pump installed was not of the right size and the contractor has been requested replace it with the correct size and to supply the remaining standby booster pump. In addition, the floods of the 2004-2005 destroyed parts of the embankments and the gabions on the western side and the contractor agreed to repair the damages but has not yet done so. The GOE has been requested to ensure that the two booster pumps are supplied and the damages on the embankment and the gabions repaired by the contractor. It is also important to note that there has been a frequent breakdown of the pipeline and in the supply of the water to the villages. It is recommended that the community share in the

operation and maintenance of the investments in order to minimize the frequent breakdowns and guarantee their sustainability.

4 The construction of the CVL and the renovation of the virology, serology and bacteriology laboratories were the main infrastructure activities in the Animal Health Services Component. About 96% of the civil works were completed with several minor but important works still outstanding. These include completion of the transformer house to enable installation of the transformer already supplied; supply of an 80 Kwh emergency generator; and completion of 3-Decontamination tanks that will ensure that leakage effluents from the laboratory are treated before discharge into the public sewage line. This is very important as an environmental mitigation measure to prevent any undesirable outbreak resulting from the use of the CVL. Other minor outstanding works include construction of incinerator for solid waste disposal; air conditioners to be supplied and installed; cold room to be installed; walkways between buildings for push carts; samples reception room at the gate; changing room for staff at the main entrance to the building; signs on the buildings and other ancillary works such as fencing, fire fighting system partially installed, asphalt paving for vehicle parking, and emergency standby water reservoir. The total works can be completed in 2 months at a total cost of about Nakfa 6,711,580.83, which has already been set aside.

5 In addition, the cold store with a capacity of 500 m² and an office building in Asmara have been completed. The cold store is equipped with Bitzer air cooled condenser unit with two 0.2 KW fans and 4.77 KW defrost heater. The project was unable to implement the construction of the two zonal laboratories, the four quarantine stations, forty livestock service centers, and the nine veterinary checkpoints because of budgetary constraints. The latter was due to the price escalation especially on civil works. For example, the original budget allocated for four quarantine stations of Nakfa 5.1 million was later revised to Nakfa 7.6 million but the lowest bid offer for the construction of one quarantine station was Nakfa 25.0 million.

ANNEX 9

DETAILS OF THE CONTRACTS AWARDED

S. No	Contract for	Date of tender	Date of contract awarded	Contract amount	ADB's Share (%)	Name of Company	Nationality	Head Quarters	Mode of Procurement	
									Approved	Actual
1	40 Motor cycles	7/12/98	18/03/99	JPY9,850,200.00	100	KJAER AND KJAER WORLDWIDE LTD	DENMARK	SVERDBORG	ISH	ISH
2	11 Vehicles 4WD pickup	07/12/98	18/03/99	JPY30,543,150.00	100	ANBERBEB SHARE COMPANY (ASCO)	ERITREA	ASMARA	ISH	ISH
3	Iveco Truck	07/12/98	18/03/99	ITL 93,220,000.00	100	INTRACO SPA	ITALY	MILANO	ISH	ISH
4	Consulting service for Animal Health	-	01/04/99	UDS28,125.00	100	DR. TEKLEMARIAM ZEGGU	ERITREA	ASMARA	DNP	DNP
5	Survey & design of the Gahro Range Land development	09/11/98	25/02/99	ERN467,700.00	100	SAMSAL CONSULTANTS	ERITREA	ASMARA	SHL	NCB
6	Vet. Drugs & Vaccines	29/03/99	09/05/99	USD34,350.00	100	SANOFI SANTA ANIMALE	FRANCE	CEDEX	ISH	ISH
7	Vet. Vaccines	29/03/99	09/06/99	USD79,150.00	100	BOSTWANA VACCINE INSTITUTE (PT)	BOSTWANA	GABORONE	ISH	ISH
8	Laboratory materials	19/04/99	17/06/99	EUR219,086.00	100	ERO-SUPPLY	DENMARK	COPENHAGEN	ISH	ISH
9	Vet. Drugs	29/03/99	07/07/99	USD84,200.70	100	HIPRA S.A	SPAIN	G/ROMA	ISH	ISH
10	Clinical equipment	19/04/99	18/07/99	ITL89,878,591.00	100	FUTURA S.P.A.	ITALY	ROMA	ISH	ISH
11	Clinical equipment	19/04/99	17/08/99	DKK376,143.00	100	JORGEN KRUISE A/S	DENMARK	MARSLEV	ISH	ISH
12	Duluk fence work	26/07/99	04/08/99	USD252,463.50	100	HABTE YEBIO BUILDING CONTRACT	ERITREA	ASMARA	NCB	NCB
13	Vet. Vaccines	-	03/12/99	USD22,533.00	100	VET AGRO	KENYA	NAIROBI	ISH	ISH
14	Vet. Vaccines	29/03/99	20/03/00	USD13,470.00	100	BOSTWANA VACCINE INSTITUTE (PT)	BOSTWANA	GABORONE	ISH	ISH
15	Vet. drugs	29/03/99	09/03/99	USD160,600.00	100	MERIAL	FRANCE	LYON	ISH	ISH
16	Vet. drugs	29/03/99	26/03/00	USD86,700.00	100	MERIAL	FRANCE	LYON	ISH	ISH
17	Vet. drugs	17/01/00	07/04/00	USD199,436.95	100	HIPRA S.A	SPAIN	G/ROMA	ISH	ISH
18	Vet. Vaccine	29/03/99	29/03/00	USD7,700.00	100	VETAGRO EAST AFRICA	KENYA	NAIROBI	ISH	ISH

S. No	Contract for	Date of tender	Date of contract awarded	Contract amount	ADB's Share (%)	Name of Company	Nationality	Head Quarters	Mode of Procurement	
									Approved	Actual
19	Consultancy service for range land management	27/12/99	05/07/00	USD170,373.20	100	CIE JULES LANCKER	BELGIUM	BRUXELLES	SHL	SHL
20	Consultancy service for Animal Health	22/12/99	05/07/00	USD147,109.20	100	CIE JULES VAN LANCKER	BELGIUM	BRUXELLES	SHL	SHL
21	Consultancy service for Seed Specialist	27/12/99	05/07/00	USD58,810.20	100	JULES VAN LANCKER	BELGIUM	BRUXELLES	SHL	SHL
22	Forage seed	08/01/01	25/02/01	USD70,754.14	100	ERIFIN PLC IMPORT EXPORT	ERITREA	ASMARA	NCB	ICB
23	Consultancy service for the design of laboratory buildings	25/10/99	20/03/01	ERN132,000.00	100	CONTINENTAL CONSULTANT	ERITREA	ASMARA	SHL	NCB
24	Office Stationary	20/04/01	27/04/01	ERN2,507.00	100	WEDEB , RED SEA & GRAPHIC STATIONARY	ERITREA	ASMARA	NCB	NCB
25	Construction of cold room, grain store and offices	27/11/00	05/06/01	ERN871,819.00	100	SENAY CONSTRUCTION PLC	ERITREA	ASMARA	NCB	NCB
26	Consultancy service for animal nutrition	05/02/01	09/07/01	USD108,910.00	100	RWA INTERNATIONAL LIMITED	ENGLAND	NORTH YORKSHIRE	SHL	SHL
27	Consultancy service for irrigation engineer	05/02/01	09/07/01	USD178,690.00	100	MASDAR U.K. LTD	ENGLAND	LONDON	ICB	ICB
28	Vet. Drugs	22/10/01	20/12/01	USD151,042.00	100	MERIAL	FRANCE	LYON	ISH	ISH
29	Vet. Vaccines	22/10/01	20/12/01	USD28,001	100	BOTSWANA VACCINE INSTITUTE	BOTSWANA	GABORONE	ISH	ISH
30	Vet. Drugs	22/10/01	20/12/01	USD120,575	100	BREMER PHARMA GMBH	GERMANY	BREMER HOUSEN	ISH	ISH
31	Vet. Drugs	22/10/01	20/12/01	USD45,055	100	AFRICAN MARKET INTERNILE	EGYPT	CAIRO	ISH	ISH
32	Vet. Drugs	22/10/01	20/12/01	USD23,025	100	VET AGRO EAST AFRICA	KENYA	NAIROBI	ISH	ISH
33	Vet. Drugs	22/10/01	20/12/01	USD78,860	100	HIPRA	SPAIN	G/ROMA	ISH	ISH
34	Office Equipment	13/10/03	09/03/02	ERN154,200	100	ETSS	ERITREA	ASMARA	NCB	NCB
35	Consulting service for Meat Production	05/12/00	16/04/02	USD89,675	100	RWA INTERNATIONAL LIMITED	ENGLAND	NORTH YORKSHIRE	SHL	SHL
36	Consulting service for Livestock Marketing	05/02/01	02/05/02	USD146,590	100	FINTECS CONSULTANTS	EGYPT	CAIRO	SHL	SHL

S. No	Contract for	Date of tender	Date of contract awarded	Contract amount	ADB's Share (%)	Name of Company	Nationality	Head Quarters	Mode of Procurement	
									Approved	Actual
37	Laboratory reagent	20/05/02	11/06/02	USD6,965.00	100	BIOLOGICAL DIAGNOSTIC SUPPLIES	UK	SCOTLAND	ISH	ISH
38	Construction of forage seeds store at Teseney	29/04/02	03/07/02	ERN637,712.87	100	KIFLAY WELDU BUILDING CONTRACTOR	ERITREA	ASMARA	NCB	NCB
39	Laboratory Reagents	15/02/02	-	USD6,965.00	100	BDSL	SCOTLAND	DREGHORN	ISH	ISH
40	Consulting service for Monitoring & Evaluation	11/02/02	02/08/02	UDS96,310.00	100	FINTECS CONSULTANTS	EGYPT	CAIRO	SHL	SHL
41	Consulting service for Animal Health Advisor	29/04/02	02/09/02	USD117,424.00	100	PAN LIVESTOCK	UK	GWH	SHL	SHL
42	Air Compressors	05/09/02	17/12/02	DKK274,200	100	KEN FRIG APS	DENMARK	COPENHAGEN	ISH	ISH
43	Construction of Gahro range land irrigation scheme	-	06/02/03	USD1,715,598.79	100	GHEDEM CONSTRUCTION COMPANY	ERITREA	ASMARA	NCB	NCB
44	Consultancy service, irrigation Engineer	05/02/00	09/07/01	USD145,839.00	100	MASDAR U.K. LTD	ENGLAND	LONDON	SHL	SHL
45	Vet. Drugs & Vaccines	26/05/03	08/08/03	EUR41,010.00	100	COOPHAVET	FRANCE	CEDEA	ISH	ISH
46	Vet. Drugs & Vaccines	26/05/03	08/08/03	USD68,897.00	100	MERIAL	FRANCE	LYON	ISH	ISH
47	Vet. Drugs & Vaccines	26/05/03	08/08/03	USD122,820.00	100	AFRICAN MARKET INTERNILE	EGYPT	CAIRO	ISH	ISH
48	Vet. Drugs & Vaccines	26/05/03	08/08/03	EUR104,450.00	100	BREMER	GERMANY	BREMER HOUSEN	ISH	ISH
49	Vet. Drugs & Vaccines	26/05/03	08/08/03	USD165,590.00	100	HIPRA	SPAIN	G/ROMA	ISH	ISH
50	Vet. drugs	20/05/03	08/08/03	EUR104,450.00	100	BREMER PHARMA GMBH	GERMANY	BREMER HOUSEN	ISH	ISH
51	Purchase of Leather Bag	26/06/03	19/08/03	ERN1,064.00	100	ASMARA LEATHER FACTORY	ERITREA	ASMARA	NSH	NSH

S. No	Contract for	Date of tender	Date of contract awarded	Contract amount	ADB's Share (%)	Name of Company	Nationality	Head Quarters	Mode of Procurement	
									Approved	Actual
52	Purchase of Anti Rabies	10/08/03	22/08/03	ERN 8,208.90	100	PHARMACOR ERITREA	ERITREA	ASMARA	NCB	NCB
53	Vehicle Tires	26/06/03	19/08/03	ERN37,200.00	100	RED SEA TRADING CORPORATION	ERITREA	ASMARA	SOE	SOE
54	Vehicle Tires	26/06/03	19/08/03	ERN78,300.00	100	ALEM W/MARIAM IMP-EXP.	ERITREA	ASMARA	SOE	SOE
55	Office Equipment	26/06/03	20/08/03	ERN16,086.10	100	EWAN, & BERHANE STATIONARY	ERITREA	ASMARA	NCB	NCB
56	Vehicle Spare Parts	04/07/03	20/08/03	ERN3,406.28	100	DEJ. A.H. & HAMDAN SPARE P.	ERITREA	ASMARA	SOE	SOE
57	Rain Gun Sprinkler	16/08/03	21/08/03	ERN4,136.00	100	BISELEX ERITREA Ltd.	ERITREA	ASMARA	SOE	SOE
58	Vehicle Battery	13/10/03	31/10/03	ERN1,480.00	100	SEM HAR Int.	ERITREA	ASMARA	SOE	SOE
59	Office Stationary	13/10/03	31/10/03	ERN754.00	100	MAEL, BERHEN & SUNSHINE STATIONARIES	ERITREA	ASMARA	SOE	SOE
60	Purchase of Fax Machine	13/10/03	31/10/03	ERN6,825.00	100	APOLLO ELECTRONICS	ERITREA	ASMARA	SOE	SOE
61	Purchase of Shelf	13/10/03	19/11/03	ERN4,950.00	100	RUSSOM BERAKI	ERITREA	ASMARA	SOE	SOE
62	Purchase of Scanner & Diskette holder	13/10/03	07/11/03	ERN5,660.00	100	MENASSIE COMPUTER CENTER	ERITREA	ASMARA	SOE	SOE
63	Purchase of CD & CD holder	13/10/03	07/11/03	ERN510.00	100	COMPUTER GATE	ERITREA	ASMARA	SOE	SOE
64	Purchase of Projection System VPL Sony	-	09/12/03	ERN56,685.00	100	SBM COMPUTER SERVICE	ERITREA	ASMARA	NSH	NSH
65	Animal Feed Purchase			ERF2,177.00	100	Eritrean Grain Board	ERITREA	ASMARA	SOE	SOE
66	Consultants service for 1/quarantine stations, 1/ service center, trade route check points	08/12/03	06/02/04	ERN643,000.00	100	CONTINENTAL CONSULATANTS	ERITREA	ASMARA	NCB	NCB
67	Woldegebriel Tareke	29/12/03	04/03/04	ERN51,895.25	100	Submission of final reports credit guide dev't consultancy	ERITREA	ASMARA	DNP	DNP

S. No	Contract for	Date of tender	Date of contract awarded	Contract amount	ADB's Share (%)	Name of Company	Nationality	Head Quarters	Mode of Procurement	
									Approved	Actual
68	Cost of Animal Feed	02/04/04	07/04/04	ERN2,539.80	100	localn Grain Board	ERITREA	ASMARA	SOE	SOE
69	Photocopying transparent paper	28/04/04	28/04/04	ERN17,428.00	100	Hasen Yahia	ERITREA	ASMARA	SOE	SOE
70	Office Stationary	23/02/04	14/04/04	ERN1,802.00	100	ASMARA ELECTRIC Pvt. Ltd.Co.	ERITREA	ASMARA	SOE	SOE
71	Office Stationary	23/02/04	05/04/04	ERN2,680.00	100	ETSS	ERITREA	ASMARA	SOE	SOE
72	Purchase of Water Pump & Accessories	29/04/04	17/05/04	ERN35,248.20	100	BESELEX ERITREA Ltd.	ERITREA	ASMARA	NSH	NSH
73	Grain Sacks	29/04/04	26/05/04	ERN3,605.90	100	LALEMBA SACK FACTORY	ERITREA	ASMARA	SOE	SOE
74	Dexion Shelf	29/04/04	17/05/04	ERN7,328.00	100	MOONLIGHT ELECTRICAL SHOP	ERITREA	ASMARA	SOE	SOE
75	Purchase of Laser jet ink	21/06/04	08/07/04	ERN4,700.00	100	Asmeret Electronics	ERITREA	ASMARA	SOE	SOE
76	Office equipment	26/07/04	19/08/04	ERN39,890.00	100	ERITREA FURNITURE CENTER Ltd.	ERITREA	ASMARA	SOE	SOE
77	Office materials	26/07/04	08/09/04	ERN15,200.00	100	TECHNO CITY COMPUTER SERVICE	ERITREA	ASMARA	SOE	SOE
78	Office equipment	26/07/04	08/09/04	ERN71,000.00	100	Ibrahim fiele Metal & Wood products	ERITREA	ASMARA	SOE	SOE
79	Office materials	26/07/04	08/09/04	ERN12,010.00	100	TEKSEB GENERAL TRADING	ERITREA	ASMARA	SOE	SOE
80	Purchase of office desk	09/08/04	08/09/04	ERN5,936.00	100	Bizen Furniture Plc.	ERITREA	ASMARA	SOE	SOE
81	Purchase of chair	09/08/04	07/09/04	ERN2,100.00	100	Furniture center Plc.	ERITREA	ASMARA	SOE	SOE
82	Purchase of high back chair	26/07/04	24/09/04	ERN6,550.00	100	Akno Plc.	ERITREA	ASMARA	SOE	SOE
83	Purchase of Lap top	02/08/04	08/10/04	ERN91,200.00	100	GRNIUN CENTER	ERITREA	ASMARA	NSH	NSH
84	For Purchasing smart UPS & ink for photocopier canon 6317	11/10/04	22/10/04	ERN33,600.00	100	Electronics technology sales & services	ERITREA	ASMARA	NSH	NSH
85	For Purchasing Printers UPS	02/08/04	14/10/04	ERN36,070.00	100	SBM Computer Center	ERITREA	ASMARA	NSH	NSH

S. No	Contract for	Date of tender	Date of contract awarded	Contract amount	ADB's Share (%)	Name of Company	Nationality	Head Quarters	Mode of Procurement	
									Approved	Actual
86	For Purchasing Printers UPS	02/08/04	14/10/04	ERN36,070.00	100	SBM Computer Center	ERITREA	ASMARA	NSH	NSH
87	Ups APC 1000 V	11/10/04	22/10/04	ERN9,750.00	100	SBM Computer Center	ERITREA	ASMARA	SOE	SOE
88	Printer HP Disc jet 1220D	11/10/04	22/10/04	ERN9,945.00	100	VIVI IMPORT EXPORT	ERITREA	ASMARA	SOE	SOE
89	For purchase of HP laser jet 2003 D printer	11/10/04	22/10/04	ERN23,800.00	100	Minasie Computer Centre	ERITREA	ASMARA	NSH	NSH
90	For Purchase of computer table & low back movable chair	01/11/04	04/11/04	ERN14,550.00	100	Akno Plc.	ERITREA	ASMARA	SOE	SOE
91	For purchase of Hankook tires with tube	01/11/04	15/11/04	ERN73,600.00	100	IRGA Plc	ERITREA	ASMARA	SOE	SOE
92	Purchase of vehicle tyres with tube	01/11/04	15/11/04	ERN48,000.00	100	Alem W/mariam	ERITREA	ASMARA	SOE	SOE
93	Purchase of Computer	02/08/04	04/11/04	ERN60,000.00	100	SBM COMPUTER SERVICE	ERITREA	ASMARA	SOE	SOE
94	Office materials	11/10/04	01/12/04	ERN4,140.00	100	MINASSIE COMPUTER CENTRE	ERITREA	ASMARA	SOE	SOE
95	Scanner, LCD projector, Digital Camera	29/11/04	23/12/04	ERN83,693	100	SBM Computer Service	ERITREA	ASMARA	NSH	NSH
96	Purchase of Computers, Scanner ,UPS, Lap top, printers	03/01/05	26/01/05	ERN518,316	100	SBM Computer service	ERITREA	ASMARA	NCB	NCB
97	Air Compressor Installation	17/01/05	28/01/05	ERN96,601	100	LUCHIA MENGISTU EMI	ERITREA	ASMARA	NSH	NSH
98	Purchase of Shelves	28/02/05	10/03/05	ERN53,760	100	Africa Wood & Metal Factory	ERITREA	ASMARA	SOE	SOE
99	Office tables, chairs, bench	28/02/05	10/03/05	ERN20,700.32	100	Gurae Households & Furniture factory	ERITREA	ASMARA	SOE	SOE
100	Purchase of Short Shelves	28/02/05	10/03/05	ERN29,500.00	100	MAI-CHOT METAL & WOOD WORK	ERITREA	ASMARA	SOE	SOE
101	Purchase of forage seed	25/02/05	17/03/05	ERN198,612.28 (EU10,487.50)	100	ITALDIS srl	ERITREA	ASMARA	ISH	ISH

S. No	Contract for	Date of tender	Date of contract awarded	Contract amount	ADB's Share (%)	Name of Company	Nationality	Head Quarters	Mode of Procurement	
									Approved	Actual
102	Consulting service of laboratory specialist	20/12/04	29/03/05	USD111,760.00	100	T. CONSULT	ERITREA	ASMARA	SHL	SHL
103	Rehabilitation of Virology Laboratory	20/12/04	15/04/05	USD42,816.00 & ERN656,640.00	100	ERITREA FURNITURE CENTRE LIMITED	ERITREA	ASMARA	NCB	NCB
104	Purchase of TV	18/04/05	25/04/05	ERN6,500.00	100	AMTES INTERNATIONAL PLC	ERITREA	ASMARA	SOE	SOE
105	Purchase of Vehicle battery	18/04/05	25/04/05	ERN2,100.00	100	ALEM W/MARIAM	ERITREA	ASMARA	SOE	SOE
106	Printing of Extension Manuals	11/04/05	20/04/05	ERN142,905.20	100	MBY PUBLISHING & PRINTING	ERITREA	ASMARA	SOE	SOE
107	Purchase of Animal Feed(Sorghum)	13/06/05	30/06/05	ERN11,160.00	100	KESHI FITWI KELATI	ERITREA	ASMARA	SOE	SOE
108	Purchase of Vehicle tires	04/07/05	06/07/05	ERN108,800	100	ERGA Plc	ERITREA	ASMARA	SOE	SOE
109	Construction of shed for Air Compressor	08/08/05	16/08/05	ERN62,794.50	100	MIKIAL GHEBREZGI METAL & WOOD WORK	ERITREA	ASMARA	SOE	SOE
110	Construction of CVL	16-02-04	10-08-04	ER13,933,891.31	100	WK & SONS CONTRACTORS	ERITREA	ASMARA	NCB	NCB
111	CVL Supplementary works	13-03-06	22-05-06	ERN 12,507,896.80	100	WK & SONS CONTRACTORS	ERITREA	ASMARA	NCB	NCB

NCB = National Competitive Bidding; SHL = Shortlist; ISH = International Shopping; NSH = National Shopping; SOE = Statement of Expenditure; DNP = Direct Contracting

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23. Draft Final report, National Livestock Development Project (NLDP) /African Development Bank, 2003
24. Mid Term Review of the Keren Integrated Rural Development, Self Help Development International Project in Eritrea, September 2005
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26. Final Evaluation of the Keren Integrated Rural Development, Self Help Development International Project in Eritrea, September 2005

BORROWER'S PCR

The Borrower's PCR is on file with OSAN.1.

ANNEX 12:

EXECUTING AGENCY'S COMMENTS TO THE BANK'S PCR

The PCR Report was sent to the Government of Eritrea on 9th November 2007 and the following comments were received on 7th December 2007:

1. Page 22, para 7.1.1: It has been misunderstood or misphrased of this paragraph. Environmental impact assessment has been done by GOE but implementation of mitigation measures cannot be done as the laboratory construction has not been totally completed to start its planned activities.
2. Annex 4: page 1 of 2 and 2 of 2: The Laboratory subcomponent of NLDP was one of the major activities of the project. However, the CVL has not been seen in the structural organization of MOA.