Document of
The World Bank

Report No: ICR00001683

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD- Ln. 47180-CHA; TF52456-CHA)

ON A

LOAN

IN THE AMOUNT OF US$66.27 MILLION

AND A

GRANT FROM THE

GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF US$10.5 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

GANSU AND XINJIANG PASTORAL DEVELOPMENT PROJECT

June 24, 2011

Agriculture, Environment and Forestry Sector
China and Mongolia Sustainable Development Unit
East Asia and Pacific Region

CURRENCY EQUIVALENTS

Currency = Renminbi (RMB)
Currency Unit = Yuan (Y)

Appraisal	Completion
Effective January 2000	Effective July 2010
Y 1.00 = US$ 0.12	Y 1.00 = US$0.14
US$ 1.00 = Y8.28	US$ 1.00 = Y 6.70

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ABC	Agricultural Bank of China
AI	Artificial Insemination
ARS	Agricultural Research Services
BD	Bidding Documents
BPM	Beneficiaries Participation Manual
CAS	Country Assistance Strategy
CIDA	Canadian International Development Agency
CO	Country Office (of World Bank)
CPS	Country Partnership Strategy
DO	Development Objective
EIA	Environment Impact Assessment
EMER	Environmental Monitoring and Evaluation Report
EMP	Environmental Management Plan
EPB	Environmental Protection Bureau
FECC	Foreign Economic Cooperation Centre
FRR	Financial Rate of Return
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GEO	Global Environmental Objective
GHG	Greenhouse Gas Emissions
GOC	Government of China
ha	hectare
KPI	Key Performance Indicators
IBRD	International Bank for Reconstruction and Development
ICR	Implementation Completion and Results Report
IERR	Internal Economic Rate of Return
IP	Implementation Progress
ISR	Implementation Status Report
M&E	Monitoring and Evaluation
MEGDS	Multi Ethnic Groups Development Strategy
MIS	Management Information System
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MTR	Mid-Term Review
NDRC	National Development and Reform Commission
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PCN	Project Concept Note

PIM	Project Implementation Manual
PDO	Project Development Objective
PHRD	Policy and Human Resources Development
PMO	Project Management Office
PPMO	Provincial Project Management Office (Gansu)
QAG	Quality Assurance Group (of World Bank)
RPMO	Regional Project Management Office (Xinjiang)
SIL	Specific Investment Loan
TA	Technical Assistance
TOR	Terms of Reference
WB	World Bank
WTO	World Trade Organisation

Vice President:	James W. Adams
Country Director:	Klaus Rohland
Sector Manager:	Ede Jorge Ijjasz-Vasquez, Magda Lovei
Project Team Leader:	Wendao Cao
ICR Team Leader:	Wendao Cao

China
Gansu and Xinjiang Pastoral Development Project

CONTENTS

A. Basic Information			
Country:	China	Project Name:	Gansu and Xinjiang Pastoral Development Project
Project ID:	P065035 P077615	L/C/TF Number(s):	IBRD-47180; GEF TF-52456
ICR Date:	06/24/2011	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	People's Republic of China (PRC)
Original Total Commitment:	IBRD USD 66.3M, GEF USD 10.5M	Disbursed Amount:	IBRD USD 65.0M, GEF USD 10.5M
Environmental Category: B		**Focal Area**: M	
Implementing Agencies: Ministry of Agriculture Xinjiang Animal Husbandry Bureau Gansu Animal Husbandry Bureau			
Cofinanciers and Other External Partners:			

B. Key Dates

Gansu and Xinjiang Pastoral Development Project - P065035 (IBRD)				
Process	**Date**	**Process**	**Original Date**	**Revised /Actual Date(s)**
Concept Review:	07/05/2001	Effectiveness:	01/27/2004	01/27/2004
Appraisal:	12/20/2002	Restructuring(s):	N/A	N/A
Approval:	09/09/2003	Mid-term Review:	N/A[1].	N/A
		Closing:	06/30/2010	06/30/2010

Gansu and Xinjiang Pastoral Development Project - P077615 (GEF)				
Process	**Date**	**Process**	**Original Date**	**Revised / Actual Date(s)**
Concept Review:	07/05/2001	Effectiveness:	01/27/2004	01/27/2004
Appraisal:	12/20/2002	Restructuring(s):	N/A	N/A
Approval:	09/09/2003	Mid-term Review:	N/A	N/A
		Closing:	06/30/2010	06/30/2010

[1] Gansu presented MTR proposals in November 2006. There was no formal MTR mission

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes	Moderately Satisfactory
GEO Outcomes	Moderately Satisfactory
Risk to Development Outcome	Low
Risk to GEO Outcome	Low
Bank Performance	Moderately Satisfactory
Borrower Performance	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Bank	Ratings	Borrower	Ratings
Quality at Entry	Moderately Satisfactory	Government:	Satisfactory
Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance	Moderately Satisfactory	Overall Borrower Performance	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators

Gansu and Xinjiang Pastoral Development Project - P065035

Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	Yes	Quality at Entry (QEA)	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA)	None
DO rating before Closing/Inactive status	Moderately Satisfactory		

Gansu and Xinjiang Pastoral Development Project - P077615

Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	Yes	Quality at Entry (QEA)	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA)	None
GEO rating before Closing/Inactive Status	Moderately Satisfactory		

D. Sector and Theme Codes

Gansu and Xinjiang Pastoral Development Project - P065035		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Agricultural extension and research	25	20
Agricultural marketing and trade	25	20
Animal production	50	60
Theme Code (as % of total Bank financing)		
Land administration and management	34	30
Other environment and natural resources management	33	35
Rural markets	33	35

Gansu and Xinjiang Pastoral Development Project - P077615		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Agricultural extension and research	40	38
General agriculture, fishing and forestry sector	60	62
Theme Code (as % of total Bank financing)		
Biodiversity	22	22
Climate change	11	11
Land administration and management	22	22
Other environment and natural resources management	23	23
Other rural development	22	22

E. Bank Staff

Gansu and Xinjiang Pastoral Development Project - P065035		
Positions	**At ICR**	**At Approval**
Vice President:	James W. Adams	Jemal-ud-din Kassum
Country Director:	Klaus Rohland	Yukon Huang
Sector Manager:	Ede Jorge Ijjasz-Vasquez	Mark D. Wilson
Project Team Leader:	Wendao Cao	Sari K. Soderstrom
ICR Team Leader:	Wendao Cao	
ICR Primary Author:	Xueming Liu, Wendao Cao	

Gansu and Xinjiang Pastoral Development Project - P077615		
Positions	**At ICR**	**At Approval**
Vice President:	James W. Adams	Jemal-ud-din Kassum
Country Director:	Klaus Rohland	Yukon Huang
Sector Manager:	Ede Jorge Ijjasz-Vasquez	Mark D. Wilson
Project Team Leader:	Wendao Cao	Sari K. Soderstrom
ICR Team Leader:	Wendao Cao	
ICR Primary Author:	Xueming Liu, Wendao Cao	

F. Results Framework Analysis

Project Development Objectives
The original project development objective (PDO) was to promote sustainable natural resource management by establishing improved livestock production and marketing systems that would increase the income of herders and farmers in the project areas.

The project would empower farmer and herder households in project areas to better manage their grassland resources and improve the forage and feed production on arable lands. More efficient and quality focused livestock production would increase the farmers and herders incomes and generate marketable surplus to improve living standards. Developing efficient livestock marketing systems in the project counties would also increase the efficiency of the whole livestock production system and contribute raising the living standards of farmers and herders.

Revised Project Development Objectives
Not Revised.

Global Environment Objectives
The global environment objective of the project is to maintain and nurture natural grassland ecosystems to enhance global environment benefits. More specifically, the project aims to mitigate land degradation, conserve globally important biodiversity, and enhance carbon sequestration, through promotion of integrated ecosystem management in the grassland, desert, and forest ecosystems of the Qilian Shan, Tian Shan, and Altai Shan mountain ranges in Western China.

Revised Global Environment Objectives
Not Revised.

(a) Sector Indicators [2]

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	**Average net income of participating project townships compared with non-project township increased by end of project**			
Comments (incl. % achievement)	The PAD results framework did not have either a Baseline or Target Values for this indicator. However, the government ICR states that the average per capita income for participating households in Xinjiang increased from ¥ 2,807 to ¥ 7,328.4 from 2003 to 2009 (representing around 160 percent increase), and in Gansu, the net incremental farm income per household, which for cattle breeding was 1,870 ¥ and for cattle fattening was 28,000 ¥ (by June 30, 2010). The overall impact M&E data (Annex 2) also indicates that average net income of participating project township in Xinjiang increased from ¥8892 in 2004 to ¥23,208 in 2009 (representing around 161 percent increase) and in Gansu from ¥6785 in 2004 to ¥ 10,817 in 2010 (representing around 59 percent increase) . By contrast, the average net income for non-project townships in Xinjiang increased from ¥ 8,850 to ¥ 18,462 during the same period (representing 109 percent increase), and in Gansu from ¥ 7,410 to ¥11,084 (representing 50 percent increase). Although this data is not sufficient for a definite conclusion on the achievement of the indicator targets, the existing evidence tends to suggest there have been significant impacts on the level of farm income as a result of the project.			
Indicator 2 :	**Rate of grassland degradation in project townships halted or reduced**			
Comments (incl. % achievement)	Similar to Indicator No. 1, the PAD did not have either a Baseline or Target Values for the indicator. The achievements of Component 1 in terms of grassland management and forage improvement have certainly contributed to this objective (see ICR main text, section 3.2.3.), and the overall impact M&E data indicate there is a trend that degradation has been alleviated through the project interventions. The total area of degraded land in participating counties in Xinjiang decreased 333,600 ha from 2004 to 2009 and in Gansu reduced 134,054 ha from 2004 to 2010.			

(b) PDO Indicators

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	**Feed balance for livestock: quality, quantity and seasonal distribution of feed supply**.			
Comments (incl. %	The PAD did not include Baseline or Target Values for this indicator. However, the total development of incremental forage crops was more than 76,000 ha. Together			

[2] In the PAD, the Project Design Summary (Annex 1) listed the eight Key Performance Indicators, as well as 30 output indicators. However, the PAD did not have either a Baseline or Target Values for these indicators, and most of the indicators were not quantified. In addition, the implementation of M&E system was not very effective. As such, the evaluation of achievement of the PDO at ICR had to rely on a qualitative assessment and on identifying trends in performance based on the achievements of the output indicators (see ICR Annex 3) and the overall impact M&E data for the participating counties (Annex 2).

achievement)	with provision of forage processing equipment (mowers and straw choppers), construction of silage pits and feeding in pens had a very positive impact in reducing farmer/herder's reliance on natural pastures. The overall impact M&E data also indicate a positive thread of feed balance for livestock. In Gansu from 2004 to 2010, while the total amount of livestock (cattle and sheep) increased 6.7 percent, the total output of forage crops, crop straw and grass increased 68 percent, and in Xinjiang from 2004 to 2009, the total amount of livestock decreased 11 percent, while the total output of forage crops, crop straw and grass increased 1.6 percent. Based on the above, we could conclude that feed imbalance in project areas has been largely improved.
Indicator 2 :	**Productivity and quality of livestock products.**
Comments (incl. % achievement)	Similar to PDO Indicator No. 1, the PAD did not have either Baseline or Target Values for this indicator. However, the overall impact M&E data indicate that in Gansu from 2004 to 2010, the cattle mortality reduced from 4.0% to 3.2%; the sheep mortality reduced from 7.0% to 4.5%; cattle weight gain increased from 505g/head/day to 750g/head/day; sheep weight gain from 165g/head/day to 280g/head/day; cattle carcass weight increased 135kg/head to 273kg/head; sheep carcass weight increased from 12kg/head to 16.8kg/head; cattle live weight increased from 242kg/head to 470kg/head; sheep live weight increased from 26.67kg/head to 35kg/head; milk output increased from 5548kg/head to 6800kg/head; wool output increased 2.89kg/head to 3.5kg/head; while the reproductive rate for cattle increased from 85% to 91% ; and age of cattle at marketing decreased from 3 years old to 2 years old and for sheep decreased from 1 year old to 6 months. The M&E data for Xinjiang indicate the same trend for sheep; there is no cattle raising activity in the Xinjiang project area (see ICR main text, section 3.2.4.). The data tends to suggest substantial improvements in productivity and quality of livestock products.
Indicator 3	**Quality of livestock products (professionally sheared, graded and baled wool; and percentage of accepted milk)**
Comments (incl. % achievement)	Similarly to the previous indicators, the PAD did not have either a Baseline or Target Values for the indicator. However, according to the output indicators and overall M&E data, the project constructed 27 wool shearing stations and 15 milking stations and 3 milk collection stations. Together with domestic project activities, these facilities enabled 26% of wool professionally sheared, 33 % graded and 55% baled in Gansu; and 45% of wool professionally sheared, 16.7% graded and 45% baled in Xinjiang. In Gansu, 85% of farmer/herder's milk was accepted by traders. Therefore, it is possible to conclude that the quality of livestock products in the project areas has improved.
Indicator 4 :	**Ability and opportunities of farmer/herders to market their livestock and products**
Comments (incl. % achievement)	As in the previous indicators, there were no Baseline and Target Values for this indicator in the PAD. However, according to the output indicators and overall impact M&E data, the project constructed a total of 36 new or renovated livestock markets, and the price received by farmers/headers for beef, mutton, milk and wool significantly increased, largely due to improvements in product quality and market information dissemination (85% of farmers/headers are satisfied with the market information received). This tends to suggest that the ability of and opportunities for farmer/headers to market their livestock and products is improved.

(c) GEO Indicators

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	**Trends in condition of key threatened grassland ecosystems and habitats in project counties**			
Comments (incl. % achievement)	The indicator was neither quantified in the PAD nor monitored during project implementation (no baseline data reported). However, the grassland survey by the local grassland monitoring stations indicates that, in Xinjiang, grass production has been stabilized and quality feed increased; while similar survey in Gansu also shows that the grassland eco-environment has been recovered and improved to a certain extent.			
Indicator 2 :	**Trend of carbon sequestration in project areas**			
Comments (incl. % achievement)	As in the previous case, the indicator was neither quantified nor monitored and there was no baseline data. However, the GEF pilot survey in Gansu indicates that carbon sequestration capacity has increased by 12% for meadow (high cold, fenced), by 15% for warm pasture (perennial), by 29% for artificial pasture (4 year high cold pasture) and by 31% for desert land (artificial pasture). The survey done in Xinjiang also indicates that net carbon sink for fenced pasture is 16.21kgC/m^2·a, 7.08 kgC/m^2·a, 7.11 kgC/m^2·as for fenced, rotation and grazing pasture respectively. Therefore, the conclusion could be drawn that carbon sequestration capacity is recovered and improved through restoration of degraded grassland soils and vegetation cover and adoption of improved grazing practices in project areas.			

(d) Intermediate Outcome/Output Indicators[3]

Indicator	Baseline Value	Original Target Values (from approval documents)[4]	Formally Revised Target Values[5]	Actual Value Achieved at Completion or Target Years
Indicator 1 :	**Number of community based grassland management plans developed and under implemented**			
Value (quantitative or Qualitative)	Zero	22	Not revised	22
Date achieved	01/30/2004	01/30/2004		06/30/2010

[3] PAD included a Logframe, which was in use at that time, instead of the current results framework, and therefore did not define intermediate outcome indicators but formulated 30 output indicators (see section 2.3.1, ICR main text), among which most of those indicators were regularly monitored and updated in the semi-annual progress reports prepared by two provincial PMOs. The data quality is believed to good as they were produced in connection with financial statements for reimbursement and reviewed by the Task Team. Please see Annex 3 for the detailed information.

[4] These indicators were formulated in the PIP, instead of normally in the PAD.

[5] These indicators were revised by supervision missions at different stages of project implementation, instead of by MTR which is a normal practice.

Comments (incl. % achievement)	Targets were achieved. The planning process increased farmers/herders' awareness and knowledge of integrated grassland management.			
Indicator 2:	**Area of ha of integrated grassland management**			
Value (quantitative or Qualitative)	Baseline Data not available	95,162 ha	152,347 ha	198,719 ha
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	200% over target value, which positively contributed to alleviation of grassland degradation and ecosystem improvement.			
Indicator 3:	**Area in ha of grassland improved (seeded, fenced)**			
Value (quantitative or Qualitative)	Baseline Data not available	68,973 ha	85,486 ha	122,340 ha
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	The achieved target value was 177% more than the original targeted value and 143% more than the revised targeted value.			
Indicator 4:	**Area in ha of artificial pasture and forage crops established**			
Value (quantitative or Qualitative)	Baseline Data not available	16,386 ha	72,958 ha	76,397 ha
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	The achieved target value was 466% more than the original targeted value and 105% more than the revised targeted value.			
Indicator 5:	**Number of grassland monitoring stations equipped and in operation**			
Value (quantitative or Qualitative)	Baseline Data not available	60	Not revised	69
Date achieved	01/30/2004	01/30/2004		06/30/2010
Comments (incl. % achievement)	115% achievement			
Indicator 6:	**Number of improved nucleus breeding animals**			
Value (quantitative or Qualitative)	Baseline Data not available	16,984	29,000	32,979
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	194% achievement over original targeted value and 114% over revised targeted value, which greatly contribute to improved quality of livestock products.			
Indicator 7:	**Number of improved breeding animals**			
Value (quantitative or Qualitative)	Baseline Data not available	200,000	250,000	300,000
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010

Comments (incl. % achievement)	150% achievement of original targeted value and 120% of revised targeted value. It refers to the Gansu alpine fine-wool sheep. This excludes financing 9816 cattle breeding HHs, 2 sheep breeding farms, 279 small scale sheep breeding HHs and 6935 middle-scale sheep breeding HHs in Gansu. There is no such activity in Xinjiang.			
Indicator 8:	**Number of livestock sheds & silage pits built**			
Value (quantitative or Qualitative)	Baseline Data not available	Shed:1,753,183 m2; Pit:859,677 m3	Shed:2,712,883 m2; Pit:953,577m3	shed:2,751,181 m2; pit: 967,946 m3
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	157% achievement of livestock warm sheds built over planned and 101% over revised value; 113% achievement of silage pits built over planned and 102 % over revised value. Both contribute significantly to improvement of livestock productivity and feed balance.			
Indicator 9:	**Number of Artificial Insemination (AI), nucleus breeding and veterinary stations established**			
Value (quantitative or Qualitative)	Baseline Data not available	AI: 338 Vet. station: 73	AI:185 Vet. Station:76	AI: 193 Vet. stations:76
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	57% achievement of AI over planned and 104% achievement over the revised value. The revision was mainly due to the implementation of domestic AI program.			
Indicator 10 :	**Native species support breeding programs established (Han Tan sheep, White Yak)**			
Value (quantitative or Qualitative)	Baseline Data not available	No target	Not adjusted	Han Tan fine wool sheep species: 5 White yak species: 6
Date achieved	01/30/2004	01/30/2004		06/30/2010
Comments (incl. % achievement)	The programs improved the quality and production of fine wool and protected native species.			
Indicator 11 :	**Number of shearing stations, livestock markets and milking stations**			
Value (quantitative or Qualitative)	Baseline Data not available	Shearing station: 73 Livestock Market: 47 Milking station:13	Shearing station: 27 Livestock Market: 36 Milking station:13	shearing station: 27; livestock market: 36; milking station: 13
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	Please see the detailed comments on achievement of this indicator in Section 3.2.5 (a).			
Indicator 12:	**Number of livestock markets converting to auction sale**			
Comments (incl. % achievement)	The indicator was not closely monitored. The output table indicates that a total of 36 livestock markets have been converted to auction sale.			
Indicator 13:	**Number of appraised rural enterprise activities**			
Value	Baseline Data not	6	6	

(quantitative or Qualitative)	available			6
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	Not achieved. Please see comment below and section 3.2.5 (b).			
Indicator 14:	**Number of financed rural enterprise activities**			
Value (quantitative or Qualitative)	Baseline Data not available	3	3	3
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	100% achievement of original targeted value and 100% over revised targeted value. At appraisal, six enterprises ($7.0 million) were identified and an additional $2.5 million was reserved for support to enterprises to be identified during project implementation. The eventual investment actually made was merely $2.4 million or about 25% of the appraisal estimate. Only one enterprise completed its targeted investment; two enterprises completed partial investment; three enterprises withdrew their participation in the project, and no further enterprise was identified to participate during project implementation.			
Indicator 15:	**Market information system in place (including published set of product description and quality standards)**			
Comments (incl. % achievement)	There are no specific and quantifiable targets. However, market information system was in place; market information available from local livestock markets, MIS and website of Gansu Agricultural Information for fine wool, mutton, beef and dairy.			
Indicator 16:	**Proportion of sheep shorn by certified shearers**			
Value (quantitative or Qualitative)	Baseline Data not available	12%	Not revised	26% for Gansu; 45% for Xinjiang
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments				
Indicator 17:	**Number of proposals submitted, reviewed, and awarded**			
Value (quantitative or Qualitative)	Baseline Data not available	No targets	n/a	67 proposals submitted, reviewed and awarded in Gansu; 64 proposals submitted, reviewed and 40 awarded.
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments				
Indicator 18:	**Number of demonstrations for integrated grassland eco-system management and biodiversity conservation**			
Value (quantitative or Qualitative)	Baseline Data not available	55	55	53
Date achieved	01/30/2004	03/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	96% achievement			
Indicator 19:	**Number of logged technician visits to villages and households and their degree of**			

	satisfaction with the training			
Comments (incl. % achievement)	The indictor has neither baseline nor target value, and the indictor is not monitored. However, the output table indicates that there were 115 senior technicians, including 9 international, 20 national and 86 provincial level technicians in Gansu, and 31 senior technicians, including 1 international, 30 national and 90 provincial level technicians in Xinjiang visited to villages and households.			
Indicator 20:	**Household satisfaction with technician visits (w/extension services)**			
Comments	The degree of satisfaction is not systematically monitored, but random surveys done by PMOs indicate that more than 80% of the farmers/headers are satisfied with the technician visits and extension services.			
Indicator 21:	**Number of Extension bulletins**			
Comments	As above, the indicator has neither baseline, nor target value, nor was closely monitored. However, based on the provincial ICRs, there were 76 bulletins, 123 articles published, and 142 articles on newspapers. There were 52,000 copies of over 80 kinds of training materials in minority languages and 100,000 copies of propaganda materials.			
Indicator 22:	**Number of technicians (AI, shearing, etc.) trained and their degree of satisfaction with the training**			
Value (quantitative or Qualitative)	Baseline Data not available	34,733	Not revised	42,282
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	122% achievement and follow-up mentoring recorded more than 80% satisfaction with the training received.			
Indicator 23:	**Number of farmers/herders trained and their degree of satisfaction with the training**			
Value (quantitative or Qualitative)	Baseline Data not available	530,730	556,180	562,965
Date achieved	01/30/2004	01/30/2004	03/31/2007	06/30/2010
Comments (incl. % achievement)	106% achievement of original targeted value and 101% of revised targeted value. Over 560,000 participant trainings were given and follow-up monitoring recorded that the participants were satisfied with the training received.			
Indicator 24:	**Number of meetings of the Project Leading Group**			
Comments	Target was at least one meeting per year by each level of PLG. The recorded results indicate that totally 372 PLG meetings were held during the period of project implementation.			
Indicator 25:	**Number of meetings of Technical Assistant Group (TAG)**			
comments	Target was 2 TAG meeting per year. The recorded results indicate that a total of 24 TAG meetings were held during project implementation.			
Indicator 26:	**Number of PMO staff trained (project management, procurement, etc)**			
comments	No target for the indicator. The recorded results indicate that totally 1439 staff trainings were provided during project implementation.			
Indicator 27:	**Number of public information campaigns to educate farmers/herders (including in marketing developed and implemented)**			
comments	There was no target set up for the indicator, and it was not systematic monitored. However, the provincial ICRs indicate that some 156 extension bulletins and training			

	modules have been produced in one or more of the following languages: Han, Uyghur, Kazak and Mongolian. Some 52,000 copies of the training materials and 48,000 copies of the extension bulletins have been distributed in the two provinces and 142 extension articles published in rural newspapers.
Indicator 28:	**MIS system used as a management tool**
comments	A computerized project MIS system was set up in each province to monitor implementation progress and facilitate project management. However, the MIS was slow to get started and only became operational in 2007 and then only for project progress monitoring. It is of only limited utility for data transmission and compilation.
Indicator 29:	**Progress report/annual implementation plans prepared on schedule**
Comments	Most of the reports and plans were prepared on schedule. Some may be delayed by 1-3 months.
Indicator 30:	**Project progress on schedule**
Comments	The semi-annual progress reports indicate that the overall project progress was on schedule, with some activities, e.g. applied research, and enterprise activities were substantially delayed.

G. Ratings of Project Performance in ISRs

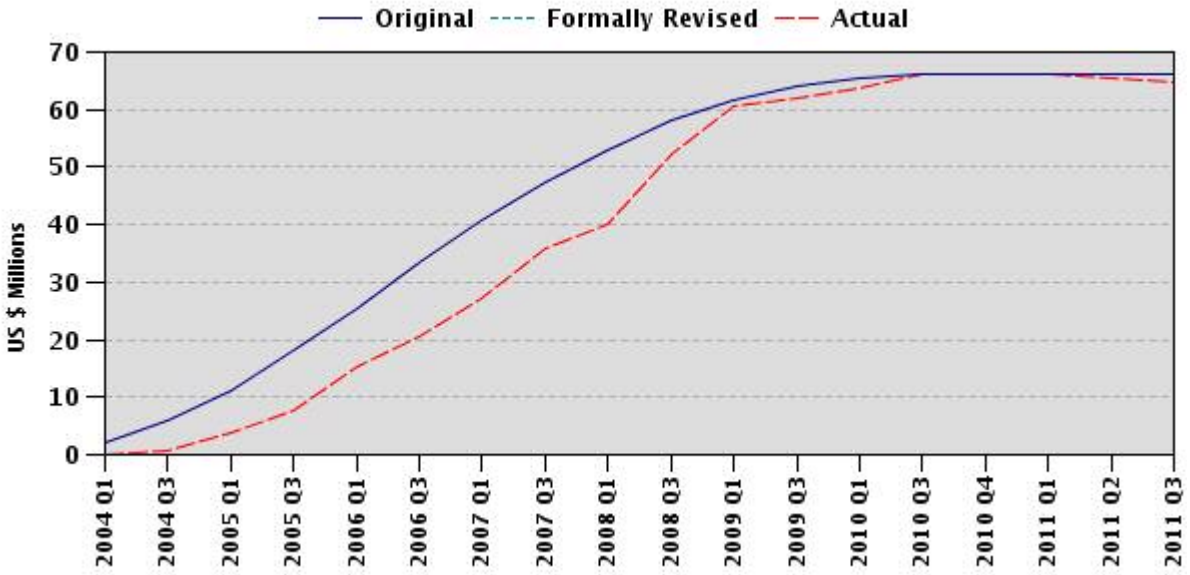
No.	Date ISR Archived	DO	GEO	IP	Actual Disbursements (USD millions)	
					Project 1	Project 2
1	12/18/2003	S	S	S	0.00	0.00
2	06/22/2004	S	S	S	0.66	0.00
3	12/20/2004	S	S	S	4.90	0.50
4	06/24/2005	MS	MS	MS	11.01	1.00
5	04/17/2006	MS	MS	MS	20.58	1.89
6	05/13/2007	MU	MS	MU	37.70	3.69
7	05/15/2008	MS	MS	MS	52.38	5.59
8	04/18/2009	MS	MS	MS	62.62	7.54
9	04/23/2010	MS	MS	MS	66.27	9.58

H. Restructuring (if any)

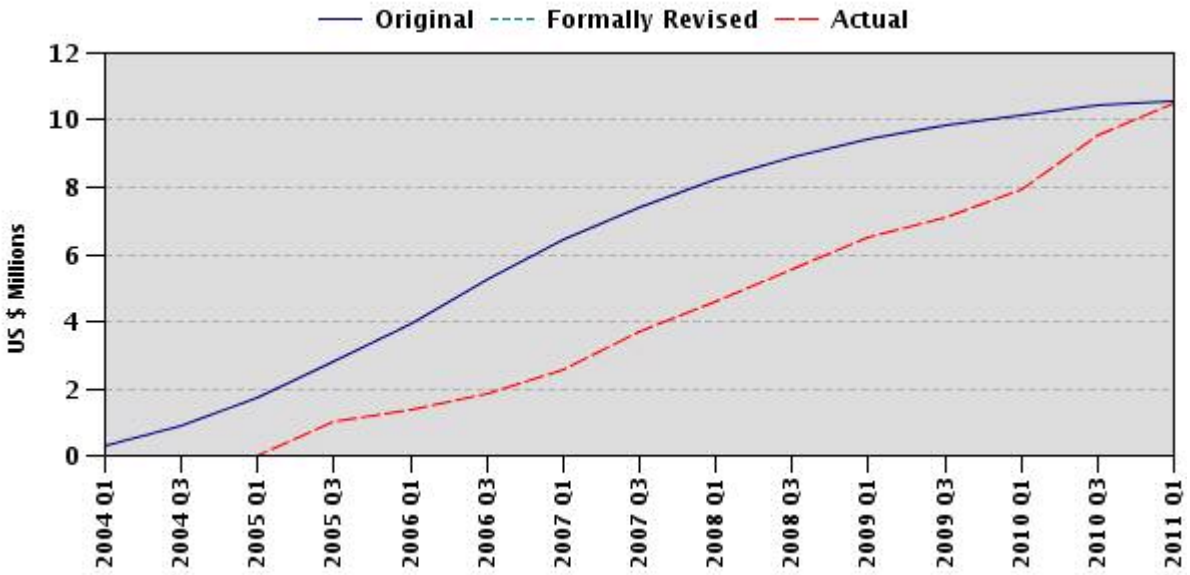
Not Applicable

I. Disbursement Profile

P065035



P077615



CHINA

IMPLEMENTATION COMPLETION AND RESULTS REPORT

1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

Country and Sector Background

1.1.1 Since the early 1980s, with the de-collectivization of the agricultural sector, China achieved remarkable agricultural and rural growth, greatly reduced poverty and addressed many environmental and natural resource degradation problems. Further productivity gains in the agricultural sector have to come from greater efficiencies of production, stimulated by market forces, and greater productivity of scarce natural resources through improved natural resource management and introduction of new technologies.

1.1.2 In China's northwestern pastoral areas, the challenges for rural development are daunting. Despite the political and strategic importance of the region, economic and rural growth has not been very significant. Grassland degradation is a serious problem with almost fifty percent of the proposed project areas classified as moderately to severely degraded. Over the period 1989 to 1998 the total area of degraded grassland almost doubled and about half of project areas are moderately to severely affected. Reasons for this degradation include increasing conversion of grassland to cultivation and high human and animal population pressure leading to overstocking, as well as high levels of poverty, poor management and inadequate support and natural factors such as rodent and insect infestation.

1.1.3 Xinjiang[6] and Gansu together make up almost 15 percent of China's total poor. Widespread poverty inhibits livestock development as well as the capacity of the region to seize new economic opportunities. Stimulating agricultural growth, reducing poverty and managing the environment are major development objectives in the proposed project areas. Government's emphasis on animal husbandry in the pastoral areas is necessary since this will remain the major source of livelihood and real economic growth in the foreseeable future. However, in order to be sustainable, livestock development will have to adopt an approach that views animal raising as just one important aspect of an overall natural resource management strategy for the pastoral areas.

Rationale for Bank Assistance

1.1.4 The project was designed to be a "second generation" rural development project – one aiming at more efficient use of resources. Bank support for the project was justified through its mandate to lend for development-oriented activities with a strong element of

[6] Xinjiang Autonomous Region, administratively, is equivalent to a province. The term Region is therefore inter-changeably used with province in the text.

public goods, such as environmental management, public information systems, training, extension and applied research - as opposed to simple revenue generating activities. The project was fully consistent with the CAS (2002), particularly with the CAS poverty alleviation objectives. GEF co-financing also helped align the project with the CAS priority for protecting the environment and with China's national "Biodiversity Conservation Action Plan" (1994). The overall objective of that Plan is to set in place as soon as possible measures for avoiding further environmental damage, and, over the long term, for mitigating or reversing the damage already done. The Plan identified the Tian Shan and Altai Shan regions in Xinjiang and the Qilian Shan in Gansu as priority ecosystems for conservation of biological diversity. The Bank brought in depth experience from other similar projects in China and Mongolia. This Bank experience had added value to the Borrower's effort to provide an enabling environment for future economic growth in Gansu and Xinjiang and accelerated transition of its livestock sector into the modern market economy.

1.1.5 GEF support was justified on the basis that four of the five project components were aimed at providing global environmental benefits in improved biodiversity conservation, increased carbon sequestration, improved watershed protection and reduced soil erosion.

1.2 Original Project Development Objectives and Key Indicators

1.2.1 The project development objective was to promote sustainable natural resource management by establishing improved livestock production and marketing systems that would increase the incomes of herders and farmers in the project areas. The project would empower farmer and herder households in project areas to better manage their grassland resources and improve the forage and feed production on arable land. More efficient and quality focused livestock production would increase the farmers and herders incomes and generate marketable surplus to improve living standards. Developing efficient marketing systems in the project counties would also increase the efficiency of the whole production system and contribute to raising the living standards of farmers and herders.

1.2.2 The global environmental objective was to maintain and nurture natural grassland ecosystems to enhance global environmental benefits. More specifically, the project intended to mitigate land degradation, conserve globally important biodiversity, and enhance carbon sequestration through promotion of integrated ecosystem management in the grassland, desert, and forest ecosystems of the Qilian Shan, Tian Shan, and Altai Shan mountain ranges in Western China. The global environmental objective would be achieved by implementing community based grassland management in selected project areas with high global biodiversity values; providing incremental investments for implementing grassland management plans; and carrying out monitoring of these grasslands' habitats.

1.2.3 Key performance indicators defined in the PAD to monitor achievement of the project and global objectives included: (a) average net income of participating project townships compared with non-project townships; (b) rate of grassland degradation in project townships; (c) trends in condition of key threatened grassland ecosystems and habitats in project areas (trends in biodiversity conservation, indigenous plants and animal species

inventories); (d) trend of carbon sequestration in project areas; (e) feed balance for livestock (quality, quantity and seasonal distribution of feed supply); (f) productivity of livestock and livestock products; (g) quality of livestock products; and (h) ability and opportunities of farmers/herders to market their livestock and products.

1.3 Revised PDO and Key Indicators

1.3.1 There was no revision of the PDO or the Key Performance Indicators during implementation. However, the approval documents did not include Baseline or Final Target values for these indicators and these were set up during implementation.

1.4 Main Beneficiaries

1.4.1 The primary beneficiaries were herders/farmers, entrepreneurs associated with livestock product processing industries and leading enterprises (provincial and prefectural farms and sheep breeding farms). The PAD estimated the number of main beneficiaries at some 35,000 families (24,500 in Gansu and 10,500 in Xinjiang) with a population of around 140,000 spread over 43 counties in the two provinces. A large proportion of the households are ethnic minorities, mainly Dongxiang, Hui, Kazakh, Mongol, Sala, Uygur and Yugu. Since women play a significant role in livestock production, they constituted a significant proportion of total beneficiaries.

1.5 Original Components

1.5.1 The project had five components: (1) Grassland Management and Forage Improvement; (2) Livestock Production Improvement; (3) Market Systems Development; (4) Applied Research, Training, and Extension; and (5) Project Management, Monitoring, and Evaluation. The project financed works, equipment, materials, Technical Assistance (TA) and training. Rural communities contributed their labour. The IBRD project constituted the Baseline Scenario, while the GEF Alternative built on the Baseline Scenario by conserving key montane grassland eco-systems and their biodiversity and carbon storage capacity in selected sites of global environmental significance. Four of the five project components had incremental GEF financed activities that would: (a) conserve global grassland values and native livestock agro-biodiversity; (b) support applied research, training and extension for multiplication of indigenous grassland species for rehabilitation of degraded grasslands and the protection of native sheep and yak; and (c) establish integrated grassland management monitoring processes at provincial, county and township levels.

1.5.2 **Component 1, Grassland Management and Forage Improvement (PAD estimated total cost, including contingencies, was US$13.98 million).** The component constituted a major part of project actions in pursuit of the project development objective (PDO) of promotion of sustainable resource management. Activities included: (i) forage and fodder production (annual forage and fodder development, perennial fodder development, monitoring and evaluation); and (ii) grassland management and improvement (village based grassland management plans, grassland management, pastoral risk management strategies). Applied research, training and extension supported all these activities which were to cover

100,000 ha of grassland. GEF activities would develop and establish sustainable grassland-based livestock production systems in the project areas. These would include: (a) inventory of grassland ecosystems in selected biodiversity-rich areas, and assessment of their biodiversity and its change as a response to improved management practices, (b) preparation and implementation of community and herders' group-based grassland resource management plans in selected project sites; (c) community based integrated grassland management and pastoral development; (d) strengthening existing grassland ecological monitoring systems, including monitoring of biodiversity values; and (e) capacity building, extension, training and technical assistance (TA).

1.5.3 **Component 2, Livestock Production Improvement (PAD total cost estimate US$67.75 million).** Based on the improved and sustainable resource management supported by Component 1, this component sought to increase farmer/herder incomes as set out in the PDO through adoption of improved technology, including breeding, feeding, health and housing improvements. Activities included: (i) fine wool and mutton nucleus breeding stations and multiplier stations, (ii) fine wool and mutton breeding households; (iii) fine wool and mutton fattening, (iv) beef cattle breeding households and fattening households; and (v) household dairy production. These activities would be supported by project investments in artificial insemination (AI) stations and veterinary stations and by applied research, training and extension. GEF activities related to the component would include: (a) TA for measures to conserve globally significant native livestock breeds; (b) inventory and assessment of native livestock; (c) training and institutional capacity building and public awareness for livestock agro-biodiversity; and (d) limited investments to select, breed and maintain small flocks/herds of native carpet-wool sheep, mutton sheep and yak breeds.

1.5.4 **Component 3, Market Systems Development (PAD total cost estimate US$10.20 million).** This component supported increased effectiveness and efficiency of marketing systems so as to provide better sale prices for farmer/herders and hence improved incomes in line with the PDO. The component included: (i) physical investments (new and renovated livestock markets, shearing stations, and milk delivery infrastructure), (ii) loans for rural enterprises or entrepreneurs, (iii) support (promotion, TA and training) to farmers'/herders' groups, and (iv) development and establishment of mechanisms for public goods provision (market information systems, market research, quality standards adoption and quality promotion).

1.5.5 **Component 4, Applied Research, Training and Extension (PAD total cost estimate US$13.25 million).** The component supported the first three components, in particular as a mechanism for the introduction and spread of new technologies likely to increase the efficiency of management of natural grasslands, artificial production of forage, breeding and raising of livestock and production of improved, high quality livestock products in line with the PDO. The component would finance: (i) applied research that identifies, develops and adapts low-cost technologies to solve specific problems that will facilitate implementation and enhance the benefits from the project's activities; (ii) training (i.e. training of trainers, training of farmers and herders, training of provincial, county and township project staff to ensure smooth project implementation and project sustainability);

and (iii) public extension services (i.e. participatory demonstrations, household visits, group discussions, technical training, company led training and extension). Related GEF activities would include: (a) multiplication of indigenous grassland species for rehabilitation of degraded grasslands; (b) grassland ecology and ecosystem management; (c) ecological surveys and environmental workshops to increase environmental awareness; and (d) applied research into conservation of wildlife habitat of global significance.

1.5.6 **Component 5. Project Management Monitoring and Evaluation (PAD total cost estimate US$5.75 million).** The component included overall project management and M&E. The latter was intended to provide information to management on project implementation progress as well as regular reporting on progress towards achievement of the PDO both in project outputs and outcome as shown by changes in average net income of participating project townships and the rate of grassland degradation in those townships. It would finance: (i) operational costs, (ii) strengthening of the provincial, city, county and township level PMOs (goods and training), (iii) establishment of a monitoring and evaluation system that includes: project progress monitoring, environmental monitoring, social monitoring, and impact monitoring (TA and training) and establishment of community advisory/participation groups (TA and training). GEF would finance: (a) development and implementation of monitoring processes for adaptive integrated ecosystem management at provincial, county and township levels, and (b) development and implementation of monitoring tools to measure changed carbon sequestration and biodiversity status in managed grasslands.

1.5.7 As discussed above, each of the components was designed for the achievement of the PDO. Under the Grassland and Forage component, forage and fodder production aimed at reducing grazing pressure on rangelands by providing a proportion of livestock feed needs on cultivable land below the range. Traditional grazings were to be better managed. Both of these were clearly directed at sustainable natural resource management. The Livestock Production Improvement component aimed at improving the efficiency and quality of livestock production, which was also directly in line with the PDO. The Market Systems Development component aimed at improving the markets available to farmers as well as facilities such as milk reception centres, also generally encouraging sales of higher value and higher quality products and thereby improving farmers' income. The aim was for farmers to have the same or even a lower level of production, but due to the quality of the end product and efficiency gains in production, to benefit from higher net incomes. This idea was also encapsulated in the PDO. Components 4 and 5 for Applied Research, Training and Extension and for Project Management, Monitoring and Evaluation were intended to support components 1 to 3.

1.6 Revised Components

1.6.1 The project components remained unchanged. However, some costs reallocations were made among components during project implementation (see para 1.7.1).

1.7 Other Significant Changes

1.7.1 There were no significant changes in project design, scope, scale or implementation arrangements during implementation, other than re-allocation of loan proceeds between components to cover actual costs. The re-allocation was as a result of routine supervision[7], in particular during 2006 and 2007 to reflect the changed circumstances since appraisal. In addition, an amount of US$0.85 million loan proceeds for Gansu Province was cancelled as ineligible expenditure (see Section 2.2.1)[8]. This sum had originally been planned for investment by a dairy company. During supervision, it was agreed that it would re-allocated to Tianshui City to establish two 100-cow farms, ten 10-cow farms, a milking station and 16 commercial mutton sheep fattening households[9]. Instead the funds were on-lent to another company in a different county, already running a 1,500 head dairy farm, without consulting the Bank, to procure 400 cows and establish a milking station. However, the reimbursement request incorrectly referred to three 100-cow farms, ten 10-cow farms and a milking station.

1.7.2 As a result of these changes, the Livestock Production Improvement component was increased to 74% of total project costs with a corresponding decrease of 59% in Market System Development (Component 3) and a 64% decline in Applied Research, Training and Extension (Component 4). The original and final allocations of loan proceeds/costs are shown in the following table:

Components	Appraisal Estimate* (US$ million)	Actual Cost (US$ million)	Actual/Appraisal Estimate (Percentage)
Grass Management and Forage Improvement	13.98	11.62	83%
Livestock Production Improvement	67.75	82.24	121%
Marketing System Development	10.20	4.34	43%
Applied Research, Training and Extension	13.25	4.99	38%
Project Management and M&E	5.75	6.26	109%
Cancelled:		1.47	1.33%
- Ineligible expenditures		0.85	
- Unutilized		0.62	
Total	110.93	110.91	100%

*Total Costs, including contingencies.

2. Key Factors Affecting Implementation and Outcomes

[7] There was no formal MTR mission. Gansu prepared MTR proposals dated March 26, 2007. There are no references to any similar revision by Xinjiang.

[8] Management letter of March 9,2009 from Mr. Ede Ijjasz, Sector Manager, China and Mongolia Sustainable Development Unit, East Asia and Pacific Region, WB addressed to Mr. Huang Quancheng, Deputy Director General, Gansu Animal Husbandry Bureau. This was followed by an official letter from CO to MOF, dated October 26, 2009, regarding the refund to the Bank of the ineligible expenditures in Gansu.

[9] This was endorsed by the November 2007 supervision mission to Gansu and reported in Annex3 of the aide memoire.

2.1 Project Preparation, Design and Quality at Entry

2.1.1 **Background Analysis.** The project was consistent with the Bank's overall Country Assistance Strategy (CAS, 2002) for the rural sector in China - to sustain rural income growth, while maintaining the natural resource base - which is included in the CAS as a key element of the business program. The CAS aimed to assist local governments to accelerate commercialization of agriculture, develop new income generating opportunities in interior provinces, develop new approaches to food security, promote better utilization of agricultural production, marketing and distribution resources, and support investment in non-state sector enterprises. CAS objectives emphasized support for the development of integrated marketing systems for agricultural commodities in order to establish linkages from rural production areas to urban markets. The project was also consistent with the CAS poverty alleviation objectives, supporting investments in environmentally sustainable agricultural and livestock development in the poorest regions of western China, where the incidence of poverty is highest. Furthermore, the project was consistent with the GEF Operational Strategy for biological diversity, climate change and land degradation focal areas, and OP1 (Arid and Semi-Arid Ecosystems), OP4 (Critical Montane Ecosystems), OP13 (Agro-Biodiversity), and OP12 (Integrated Ecosystem Management). With respect to OP12, the project promoted cross-sectoral policies and land use practices to ensure better grassland management, and to enhance protection of environmental services, including biodiversity conservation, carbon sequestration, and watershed protection in the headwaters of international waterways. The rationale for involvement of the Bank/GEF partnership was therefore highly appropriate and sound.

2.1.2 **Assessment of the Project Design.** The project design was holistic and based on an integrated approach. Preparation was supported by a US$500,000 PHRD grant which was used to finance numerous studies. Specifically, the project design had the following salient features:

(i) The project design was forward looking, championing environmentally sustainable growth and poverty reduction in an increasingly competitive internal and external environment;

(ii) The design recognized that the shift from subsistence-based pastoral production to commercial livestock production had to be based on an integrated approach which includes various aspects of grassland management and diversified livestock production, incorporating traditional practices and modern technology, an efficient market system, and increased local participation;

(iii) The project aimed to increase access by farmers and herders to improved livestock and animal husbandry technologies as private goods, but also provides public goods in the way of support to livestock breeding and to ensure extension of modern management technologies to rural households; and

(iv) The project design complied with environmental and social and other applicable Bank policies.

2.1.3 Risks identified at appraisal included lack of suitable land and water for fodder production; lack of farmer/herder participation due to adverse price or yield movements; lack of capacity in the Provincial Project Management Offices (PPMOs); inadequate support

by local governments for a decentralized approach; lack of community commitment to enforce natural resources use and provisions of the grassland law; difficulty in trading wool across provincial borders; low adoption rates by farmers/herders of new technical innovations; late approval or release of counterpart funds; and unsuitable staff appointed to implement project activities. The project design mitigation measures included training, awareness building, knowledge and information management for the relevant institutions and entities, establishing links with various centers of technical expertise at all levels, farmer training and extension to build confidence in production techniques and activities, and obtaining commitment from provincial and local government to provide sufficient counterpart resources. The PAD recognized that Bank-financed rural development projects in China commonly experience serious delays in the provision of counterpart funding which hinders timely project implementation. The PAD expected this to be controlled by three factors: (a) close monitoring by the Provincial Finance Bureau; (b) only about one-third of total project cost would need to come from overall counterpart funding; and (c) heavy reliance could be placed on counterpart contributions from central government programs in the context of the Western Development Strategy, which included generous funding for the project counties for grassland and livestock development. The overall risk analysis was adequate, but the mitigation measures proposed (particularly for local counter funding) was overly optimistic.

2.1.4 Project design also incorporated relevant experiences and lessons from a number of previous World Bank and other bilateral livestock related projects in China, in particular the Gansu and Inner Mongolia Poverty Reduction Project, the Shaanxi Agricultural Development Project, the Smallholder Cattle Development Project, Sheep Development in the Kyrgyz Republic, and the Sustainable Livelihoods Project in Mongolia. Key lessons from these included the need for full participation by beneficiaries and stakeholders, commitment from government and the drive of entrepreneurial individuals in implementation. During the extended project preparation and appraisal period, every opportunity was taken to involve the stakeholder institutions, government ministries and departments as well as the primary beneficiary farmers and herders. These opportunities included focus group discussions, village-wide meetings, household case studies and householder interviews. These interactions focused on discussing the outline of the project with potential stakeholders and gathering their suggestions for project design revision.

2.1.5 Despite these positive aspects of the overall project design, the holistic aspect and inclusion of the GEF components meant that there were some 26 subcomponents including around 45 activities. This degree of complexity was very challenging for the provincial teams. Both provinces were among the poorest provinces in China, and in both provinces poverty manifests itself not only in low per capita incomes but in inferior infrastructure and relative weakness of government services and management ability. Both provinces are geographically large with dispersed and remote populations. The project included 43 counties/cities of which 19 were in Gansu and 24 in Xinjiang. In Gansu the project counties stretched an area of about 1000km in length. In Xinjiang the distances from the capital Urumqi were even greater. In both provinces project locations were in many cases remote. The project was therefore challenging not only in its complexity but also in its geographical spread. Project financing was heavily weighted towards the Livestock Production

component which accounted for 61% of total project costs. One particular area of weakness was the inadequate design of the monitoring and evaluation system which did not identify easily measurable indicators and left too much responsibility for monitoring and evaluation with project management teams.

2.1.6 The government mobilized a team of competent professionals and government officials, at both Provincial level in Gansu and Regional level in Xinjiang, and at local levels in each province to collaborate with the Bank task team throughout the entire project preparation process. As recorded in the PAD, the Ministry of Agriculture and the National Development and Reform Commission (NDRC) had been very active in including the project in the World Bank project pipeline, and the local governments in Gansu and Xinjiang had both issued formal expressions of commitment to the project. Both central and local governments committed adequate counterpart funding during project preparation.

2.1.7 However, the project identification and preparation was a lengthy, complicated and costly process, which took about 30 months from PCN Review to loan and GEF grant effectiveness[10]. In the context of the fast economic development and quick evolution of the livestock sector in China, the early demand for commercial interventions such as livestock business/processing units, were either overtaken by the fast changing market conditions or had high risk of being crowded out by financing sources other than the Bank.

2.1.8 In addition to the project's complexity and geographical spread, the project design had some serious technical weaknesses including: (i) the smallholder production models prescribed in the PAD were not in line with the rapidly changing market conditions; (ii) the project Log-frame in the PAD was not operationally feasible, and the outsourced baseline study failed to deliver useful results; (iii) over-ambitious in scale and over-demanding in design, the M&E lacked not only comparative baseline data, but also any quantified target expectations. As a result the system was inoperative (see Section 2.3).

2.1.9 No QAG "Quality at Entry" rating was done for this project. Due to the project's complexity, over-ambitious geographical coverage and the technical weaknesses in project design mentioned above, the quality at entry is rated Moderately Satisfactory.

2.2 Implementation

2.2.1 During early stages of project implementation, problems related to procurement emerged in: (i) inconsistency of actions taken with Bank procurement guidelines, and failure to follow the procurement management manual; and (ii) difficulties of the project implementing agencies in following the shopping procedures for purchasing live animals and carrying out small works contracts (animal sheds, feedlots etc.). These issues were identified and addressed by; (i) organizing workshops and training on procurement; (ii) formulating detailed procurement planning; and (iii) adopting simplified procurement procedures for live animals and small works. Only one isolated case in Gansu resulted in the cancellation of US$ 0.85 million due to a claim for ineligible expenditure (see para. 1.7.1).

[10] From sanctioning by the NDRC to loan effectiveness the period was around 4 years.

2.2.2 The provision of counterpart funds was identified as a substantial risk at appraisal, and this risk materialized. In some counties, counterpart funds were neither adequate in amount nor provided on a timely basis. Also, project cost reimbursements were slow during the early years of project implementation. These issues were addressed in the Aide Memoires of supervision missions and partially resolved through recourse to the state debt fund. However, continued scarcity meant that counterpart funds were only applied to those components accorded higher priority by project management, such as directly productive investments where funds invested by the project would be repaid[11]. Funding of important aspects such as training, adaptive research and extension was thereby relatively neglected.

2.2.3. The sharp decline of wool sale prices due to the opening to imports following China's accession to the WTO and lack of adequate wool grading rendered fine wool production unprofitable relative to other livestock options, except in those counties where flock owners had become more specialized and entered into annual contracts for wool sales or through the Nanjing Wool Auction. As a result, during project implementation, the PIUs and farmers lost interest in supporting the number of shearing stations originally envisioned.

2.2.4 Government commitment was generally adequate but the relative weakness of the whole government service meant that there were occasions when response was slow. Project complexity lent itself to project management selecting and giving priority to those activities increasing production *per se* and increasing family incomes and living standards, whereas Bank supervision emphasised sustainability, training, applied research and environmental aspects. As discussed in Section 1.6, increased funding was given to the Livestock Production Component at the expense of other less directly productive components. The impact of the re-allocation of funds between components is discussed in Section 3.2.

2.3 Monitoring and Evaluation Design, Implementation and Utilization

2.3.1 **M&E design** included (a) project progress, (b) environmental, (c) social and (d) impact monitoring. The M&E indicators were generally over demanding in scale, over designed and too complex. In the PAD, the Project Design Summary (Annex 1) listed the same eight Key Performance Indicators as the main text, as well as 30 output indicators. These were then further detailed and expanded in Annex 16: Project Monitoring and Evaluation, which presented some 31 outcome indicators and 61 output indicators, of which 21 for GEF and 40 for the five project components. Further, no quantified targets were set for key outcome indicators such as farmers' income increases, livestock performance and pastureland improvement. Impact monitoring was correctly expected to be independently undertaken through a contract to a competent agency at the beginning, in the middle and at the end of project implementation. A baseline survey was to be prepared. Responsibility for this rested with the PPMO/RPMO. The PAD suggested that this would be achieved by assembling information already available from Grassland Station records, Animal Husbandry Bureau and County records and national statistics, together with the data already

[11] The main reasons for this appear to be (a) that project management in many cases gives higher priority to asset creation and economic activities than to "soft" activities such as training, research and extension; and (b) institutions involved in the latter activities are generally not in a position to repay the funds invested by the project.

collected during preparation for the purposes of financial and economic analysis of the project. In addition, individual household data and stakeholder perceptions before participation in the project were to be collected as well as grassland productivity, species composition, livestock numbers by species and class, livestock production by species and class, herder livelihoods and income levels and needs for applied research, training and extension. As a consequence, the M&E design made its implementation extremely challenging for (a) the large number of aspects expected to be covered (as reflected in the large number of indicators); and (b) the range of sources to be tapped for the data, as well as the heterogeneous mix of information to be collected from statistical, social and perceptional sources. Based on above assessment, M&E design is rated moderately unsatisfactory.

2.3.2 **M&E implementation**: The M&E system was under the overall responsibility of the PPMO in Gansu and the RPMO in Xinjiang. PMOs at all levels in both provinces carried out **routine project progress monitoring** as part of their normal work. Results were presented in county PMO's progress reports and consolidated in the PPMO's semi-annual progress reports. In addition, a computerized project MIS system was set up in each province to monitor implementation progress and facilitate project management. However, the MIS was slow to get started and only became operational in 2007, and then only for project progress monitoring. It was of only limited utility for data transmission and compilation[12].

2.3.3 **Environmental monitoring** was guided by the Environmental Management and Monitoring Plan, prepared by each PPMO, reviewed by the Bank and carried out primarily by the PMOs at all levels. An environmental coordinator in each PMO at provincial and county levels in Gansu coordinated and organized environmental monitoring activities. Each sub-project of Market Systems Development was environmentally screened. In November 2009 Gansu provincial Agricultural Ecological and Environmental Protection Management Station prepared an Environmental Monitoring and Evaluation Report (EMER) based on field surveys of representative project sites.

2.3.4 **Social monitoring** was carried out by PMOs at all levels through periodic surveys. PMOs followed monitoring indicators identified at appraisal. The Multi Ethnic Groups Development Strategy (MEGDS), prepared by each PPMO and reviewed by the Bank was followed by all PMOs as a guide for national minority related monitoring. The Project Agreement stipulates that both Gansu and Xinjiang should carry out (i) an annual project impact by the PPMO; and (ii) a project impact assessment in the first, third and sixth years of implementation of the Project by an independent institute or organization.

2.3.5 For out-sourced independent **impact monitoring**, there was little buy-in from both PPMOs in the first place. One of the problems was the lack of adequate baseline data. This was confined to the social surveys undertaken in the summer 2001 as a part of preparation and information collected in 2000/2001 from counties for the purpose of the project's financial and economic analysis. The latter appeared to be in some instances based on extension recommendations rather than farmer experience and was therefore of doubtful

[12] Aide Memoire Gansu June 2007

value. The awarding of the contract to an international consulting firm was late and the actual monitoring work only took place in May 2008 – practically two-thirds of the way through implementation. Furthermore, both Gansu PPMO and Xinjiang RPMO lacked capacity and experience in project evaluation. The methodologies adopted for impact monitoring were not sound, rendering the surveys done of little use. In this respect both Gansu and Xinjiang were not fully in compliance with the Project Agreement. The long delay in carrying out the baseline survey and the very lukewarm interest of project management in M&E compounded the problems of the design. Consequently data collection was well below PAD expectations. M&E implementation is therefore rated as moderately unsatisfactory.

2.3.6 **M&E utilization**: Gansu province takes the EMER as a good sample and planned to engage the same management station to play a similar role in its future projects. However, the results of M&E reports prepared by the contracted international firm have been generally little utilized as stated in the section above.

2.3.7 **Methodological "soundness", data quality, and M&E sustainability.** The absence of a baseline study, the delay in starting systematic data collection and the limited data collected mean that information on the project impact or outcome is well below appraisal expectations. In the absence of reliable outcome indicators the best measure of project performance are the overall impact M&E data, which were collected by Provincial PMOs by assembling information already available from Grassland Station records, Animal Husbandry Bureau and County records and national statistics in project counties, presented in Annex 2, and the output indicators presented in Annex 3, which were collected as a part of project progress monitoring. M&E design and implementation could have been improved by the following: (a) signing a contract with an independent firm (not necessary an international firm) for project monitoring at the beginning of the project to cover the entire period; (b) the TOR should have covered environmental monitoring, social monitoring and impact monitoring based on indicators identified in the PAD; and (c) an M&E coordinator should have been designated in each PMO. Long-term M&E sustainability is a challenge since the M&E system was established and run by PMOs, most of which are likely to be disbanded soon after project completion.

2.4 Safeguard and Fiduciary Compliance

2.4.1 **Safeguard Compliance**. The project triggered the Bank's safeguard policies on Environment Assessment, Indigenous Peoples and Safety of Dams[13]. Project implementation in both provinces is in compliance with Bank's applicable safeguard policies and the provisions specified in the Project Agreement.

(a) Environment Assessment. The main environmental issues that the Bank focused on were: (i) feed imbalance and grassland degradation; (ii) livestock waste treatment; (iii) environmental screening of rural enterprises; and (iv) environmental reporting. Feed imbalance and grassland degradation issues were the core of project

[13] On Safeguard Policies the PAD indicates that Involuntary Resettlement (OP/BP4.12) was triggered, but also states: "No resettlement or land acquisition is anticipated in the context of project activities".

implementation with much attention paid by PMOs and the Bank team. Livestock waste in general was handled appropriately following the EMP. Environmental screening of rural enterprises became a government requirement which requires an EIA report prepared by a qualified agency and review and approval by a local Environmental Protection Bureau (EPB). While the environmental impacts of the project were mainly positive as concluded in project Environmental Impact Assessment reports at appraisal, there were difficulties in obtaining regular reports on the subject from either province. In late 2009, a survey was carried out on the environmental monitoring and evaluation in Gansu which provided a comprehensive assessment of the project impact on the environment. The report confirmed the appraisal conclusion about environmental impact and made practical suggestions for improvement.

(b) Indigenous Peoples. According to the PPMOs, 39% of the project beneficiaries (18% and 85% respectively in Gansu and Xinjiang) are national minorities. The Multi Ethnic Groups Development Strategies (MEGDSs), prepared by Gansu and Xinjiang and reviewed by the Bank, were closely followed by both provinces during project implementation to ensure acceptability of national minorities benefits from project activities both socially and culturally and to avoid or mitigate any potentially adverse effects caused by the project. National minorities were consulted and actively participated in design and implementation of project activities. Training and awareness raising campaigns were organized in the languages of participating national minorities.

(c) Safety of Dams. It was anticipated at appraisal that dams in both provinces would need safety review. The two provinces prepared Dam Safety Review Guidelines giving detailed procedures and responsibilities of dam safety review. The Bank was assured by both Gansu and Xinjiang during supervision missions and in correspondence that (i) these Guidelines have been closely followed and (ii) no dam water was used for livestock production - water use was from streams, rivers, lakes and wells.

2.4.2 **Fiduciary Compliance**. The Bank's fiduciary (procurement management and financial management) requirements have been generally followed during project implementation.

(a) Procurement Management. Each province prepared a Procurement Management Manual which was reviewed by the Bank during project preparation. Most of the project counties had no prior experience of Bank procedures and as reported in Section 2.2.1 there were some initial procurement problems. These included failure to follow the procedures set out in the procurement manual and difficulties over standardizing specifications in procuring animals. These issues were satisfactorily resolved by the supervision missions. Overall, the Bank's Procurement Guidelines were followed and procurement was in compliance with the Project Agreement.

(b) Financial Management. Each province prepared a Financial Management Manual which was reviewed by the Bank during project preparation. Overall, the Bank's financial management requirements were followed by both provinces and the financial management practices in both provinces were in compliance with the financial covenants specified in the Loan Agreement, despite slow reimbursements and one isolated case of ineligible expenditure (see Section 2.2.1). The period from farmers/herders pre-financing investments to receiving reimbursement was typically 12 months.

2.5 Post-completion Operation and Next Phase

2.5.1 The household livestock production financed by the project has been under regular operation for 2-5 years depending on the time of individual households' participation. The household livestock operations have proven to be sustainable as they are (i) financially attractive to beneficiaries and economically to society as whole; (ii) environmentally sound; and (iii) socially and politically accepted by key stakeholders.

2.5.2 For the veterinary and artificial insemination and breeding improvement services, both the central and local governments have committed substantial public resources to ensure their efficient operations and good maintenance.

2.5.3 Furthermore, the Governments at various levels continue to support and promote the good practices of livestock production developed under the project. Both Gansu Province and Xinjiang Autonomous Region are currently formulating various domestic projects to upscale the good practices.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

3.1.1 The macro-economic, sector issues and related policy and strategic priorities that formed the basis of the original PDOs and the project design remain as highly relevant at completion as they did at the time of appraisal. The project was consistent with the Bank's Country Partnership Strategy (2006-2010) for China, which aims to manage resource scarcity and environmental challenges by contributing to improved land management and protection of global environmental goods, and the project contributed to the development of social infrastructure and enhancement of rural livelihoods - in line with the objectives in the Government's 11th Five-Year Plan, which called for increasing farmers' incomes through sustainable agricultural development while mitigating environmental degradation.

3.2 Achievement of PDO

3.2.1 **Overall Assessment.** The various project components were closely linked in order to ensure optimum use and impact of the project interventions. These have improved productivity per animal through production efficiencies gained by genetic improvement and adopting new husbandry practices, feeding regimes and livestock health programs that reduce livestock mortality and grassland degradation, leading to increased incomes for the

project beneficiaries[14]. These benefits have accrued from improvement to livestock breeding and management under the Livestock Production Improvement Component, and the provision of high quality forages and improved grassland management delivered as part of the Grassland Management and Forage Improvement Component to enable livestock to produce to their genetic potential. Livestock activities have been further supported through the Market Systems Development Component that empowered household producers to utilize market information to make informed decisions on enterprise selection and production focus.

3.2.2 The project has benefited about 31,700 households or 120,000 direct beneficiaries, and some 120,000 households or 600,000 secondary beneficiaries benefiting from improved public sector services (improved breeding stock, AI, veterinary and extension services). Financial results (Annex 4) are broadly in line with those calculated at appraisal with rates of return from the various models in the range 16-33% except for the fine wool production model with a financial rate of return of only 9% due to sharply lower wool prices. The project has been successful in halting and reversing degradation of pastures and in improving the productivity and quality of livestock in the areas covered. Additional funding by GEF has enabled conservation of particular priority areas and has provided a sound basis for future, expanded environmental management. However, due to the weakness of M&E (see Section 2.3), the key outcome indicators were neither quantified nor property monitored. Consequently the evaluation of achievement of the PDO at ICR had to rely on an incomplete impact M&E data and qualitative assessment, identifying trends in performance based on the causal linkages between achievement of the output indicators and their contributions to the project impact. The sections below briefly assess project performance by substantive component.

3.2.3 **Grassland Management and Forage Improvement[15]**: This component directly contributed to the achievement of the PDO of promoting sustainable resource management. The project activities under this component aimed to better manage grassland resources and improve forage and feed production on arable land so as to improve the feed balance for livestock in terms of quality, quantity and seasonal distribution through the following sub-components:

(a) Improved grassland management. A total of 22 community based management plans were developed and implemented. Almost 200,000ha of grassland has been brought under integrated grassland management (double the PAD target), 83% of which is in Xinjiang. Of this total area more than half, 120,000 ha of grassland was fenced, some of which was also reseeded. Demonstration sites supported by the GEF component in Gansu included 20 ha of banned grazing, 5,577 ha of deferred or rest grazing and 6,760ha of rotational grazing. In Xinjiang grazing bans covered 5,333ha in 21 sites and 4,000ha in 12 rotational systems. Results from the demonstrations showed that deferred rotational grazing systems could

[14] *The client's ICR indicates that by the end of implementation at June 30, 2010 in Xinjiang, the per capita income of the project households was 7328 Yuan, a 160% higher than baseline per capita income. In Gansu, the average net income increase for the cattle breeding households was up to 1,870 Yuan. The total income for cattle fattening households in Gansu was reported as 28,000 Yuan per household, but no information is given as to the number of members per household..*

[15] See Working Paper on Project Technical Interventions (on file).

increase ground cover by about 5% and biomass by 10%[1]. Collection of seed of indigenous species and subsequent reseeding of pastures has had variable results, particularly due to the short, 4 month growing season. Small nurseries/demonstrations for propagation of local pasture species have been established in both Xinjiang and Gansu. Indigenous plant identification manuals have been produced to assist county level technicians in their task. In Xinjiang, a survey covering 10 counties resulted in a database for grassland management. In Gansu 8 counties were surveyed using LANDSAT and ground truthing to produce survey reports and grassland resource and productivity maps in 1:250,000 scale. The component also developed 69 grassland monitoring stations, 10 of which in Xinjiang are equipped with automatic weather stations. Measures financed by the project have had a beneficial impact on biodiversity, protection of endangered species and threatened ecosystems, examples of which are presented in a Working Paper on file.

(b) Improved forage production. Total area established of forage crops such as alfalfa, sanfoin, forage maize, and Chinese milk vetch was more than 76,000ha. This together with provision of forage processing equipment (mowers and straw choppers), construction of silage pits and feeding in pens had a big impact in reducing farmer/herder's reliance on natural pastures. Applied research funded by the GEF grant in Gansu also showed that the new system allowed households to maintain their incomes with fewer animals than with conventional natural grazing[16]. Where land was available for planted forage there was generally a significant reduction in stocking of natural pastures.

3.2.4 **Livestock Production Improvement:** This component aimed to increase farmer/herder incomes, which is a key element of the PDO, through adoption of improved technology, including breeding, feeding, and health and housing improvements. The performance of the three sub-components was as set out below.

(a) Improved livestock productivity. Improved nutrition from the planted forage and better pasture resulted in higher reproductive rates. In Sunan, Gansu, the project supported the herders to introduce wild bull yak with 1/2 consanguinity to improve their yaks. The average birth weight of improved offspring was 2.1 kg heavier than the ordinary yak calf. The body weight at six months and one year old were respectively 8.45 kg and 13.89 kg heavier than the ordinary yak calf. The total yak number was reduced by 72 herds in the villages as a result of moving to high quality improved breeds with a consequent saving in labour for grazing. In another project area, Ganzhou, the project beneficiaries introduced Erdos goats for crossing with local goat breeds with a consequent increase in cashmere yield. Gansu also undertook major investments in dairy development. This included setting up 13 dairy farms each with 100 cows, 195 with 10 cows each, 142 with 5 cows and 1768 farms with two cows. The total rehabilitation or new construction of 2.75 million m^2 warm (or solar) sheds financed by the project, which was 157% of original expectations, also had a big impact on breeding performance and reduced mortality. Silage pit excavation also far exceeded the original target. Once feed availability and good housing were secured further gains were made through introduction of improved breeding stock and early weaning of lambs. As a result, the cattle mortality in the project area in Gansu reduced from 4.0% to 3.2%; the sheep mortality reduced from 7.0% to 4.5%; cattle weight gain increased from

[16] Hua *et al.* 2008 International Rangeland Congress, Hohhot

505g/head/day to 750g/head/day; sheep weight gain from 165g/head/day to 280g/head/day; cattle carcass weight increased 135kg/head to 273kg/head; sheep carcass weight increased from 12kg/head to 16.8kg/head; cattle live weight increased from 242kg/head to 470kg/head; sheep live weight increased from 26.67kg/head to 35kg/head; milk output increased from 5548kg/head to 6800kg/head; wool output increased 2.89kg/head to 3.5kg/head; while reproductive rate for cattle increased from 85% to 91% ; and age of cattle at marketing decreased from 3 year old to 2 year old and for sheep decreased from 1 year old to 6 months. The overall impact M&E data suggests the same trend in Xinjiang (see Annex 2). Household based livestock production activities under this sub-component were profitable and financially attractive to the farmers, as reflected in the financial analysis models for various livestock production patterns and pastoral systems typical of the project areas (see Section 3.3.2).

(b) Improved livestock quality. Investment in 193 artificial insemination (AI) stations, 76 veterinary stations and 95 dipping tanks aimed at genetic and health improvement. For sheep procurement of over 21,000 head provided the basis for upgrading for mutton used crossing with Dorset, Suffolk and Texel; and Merino for wool quality improvement. The project supported three nucleus breeding farms for mutton and a further three for wool improvement. Overall the genetic improvement program has been successful. Imported breeding stock has acclimatized well and usage of the AI stations is satisfactory. Use of the dipping tanks is also satisfactory and financially viable.

(c) Support to native breeds. GEF financed conservation programs for the Tianzhu White Yak, for Tan, Altay and Baiyinbuluk sheep and for Xinjiang brown cattle. This included formation of nucleus flocks or herds, establishment of databases and breed standards and collection and freezing of semen.

3.2.5 **Market Systems Development**: The Market Systems Development component aimed at increasing efficiency of livestock production and thus raising farmer/herder's living standards. Following the project revision in early 2007 the total cost of the component was reduced by 59%. It comprises sub-components for: (i) physical investment; (ii) support to enterprises and enterprise like activities[17]; (iii) support to local marketing initiatives; (iv) establishment of mechanisms for public goods provision; and (v) applied research, training and extension. Despite changes in some sub-components, implementation generally improved farmers/herders access to market which increased their income and thus contributed to achievement of the PDO.

(a) Physical investment enabled construction of 27 wool shearing stations (3 in Gansu and 24 in Xinjiang) including eight new wool shearing stations in Baicheng county of Xinjiang. This significantly improved wool production efficiency and played a critical role in upgrading wool packaging, baling and grading system in the county. The number of shearing stations is much smaller than the appraisal target due mainly to: (i) herders' lack of interest because wool sale prices are still not based on grade in

[17] As set out below in para 3.2.5 (b) in the event only about 25% of the original expected investment was eventually realized.

China; (ii) generally low wool sales prices because of poor wool quality and market competition (from New Zealand and Australian in particular); and (iii) construction of fewer, larger stations. A total of 36 new or renovated livestock markets (3 in Gansu and 33 in Xinjiang) were constructed. These markets played an important role in increasing farmer/herder incomes and orderly development of the livestock sector through improved access to markets for farmer/herders; provision of market information; and improved market efficiency. In counties where pre-project there was no such livestock market, the intervention was highly appreciated by farmers/herders and livestock traders alike. The total number of constructed livestock markets has been reduced in both Gansu and Xinjiang. This is a result of (i) livestock markets developed with support from other sources; (ii) alternative marketing choices available locally; and (iii) construction of larger markets. A total of 15 milking stations and 3 milk collection stations were constructed in Gansu. Market information about livestock products was provided through local livestock markets, MIS, and local media (TV, radio and government-run website for agricultural products) which are well accepted by an increasing number of farmers/herders as reliable.

(b) Development of national quality standards for wool did not make significant progress due mainly to (a) withdrawal of the Sapale wool brokerage (lead agency in developing national quality standards for wool) from the project and (b) local government showed diminished interest in developing such national standards at a time when domestic wool prices were in constant decline. Large farmer marketing groups did not develop as anticipated. Support to rural livestock enterprises was not a success. At appraisal, six enterprises ($7.0 million) were identified and an additional $2.5 million was reserved for support to enterprises to be identified during project implementation. The eventual investment actually made was merely $2.4 million or about 25% of the appraisal estimate. The major reason for missing the overall target is the long time elapsed between expressions of interest and eventual fund availability and the procedures required for IBRD funding, particularly for procurement, as well as the stringent credit worthiness and guarantee requirements of the Finance Bureau and the need for the borrowing entrepreneur to pre-finance the investment.

3.2.6 **Applied Research, Training, and Extension:** This component supported the introduction and spread of new technologies to increase the efficiency of management of natural grasslands, artificial production of forage, breeding and raising of livestock and production of improved, high quality livestock products in line with the PDO. Some 46 applied research projects were completed, all but 6 financed by GEF. At the revision of the project in early 2007 the component cost was reduced by 64%. The main themes were: (a) surveying the current status of grassland and indigenous animal resources; (b) monitoring changes in these resources under traditional and new management systems; (c) establishing local breed conservation programs; (d) assessing the benefits of new grassland and livestock management systems; and (e) evaluating the global impacts of changes in management on carbon management and environmental values. The program has had a capacity building benefit for the 54 Masters and 12 PhD candidates involved in the studies, which are to be

published as "Towards Sustainable Use of Rangelands in North-West China"[18]. The research was also very valuable in providing the basis for new technology, as for example early weaning for lambs which can significantly improve family incomes. As part of the applied research program 50 case studies were completed covering a range of aspects including the way stocking rate can be reduced by improving the condition of natural grassland, changes in household income as a result of changed management practices, including planting of forage crops, and methods of pest control. Training was provided through a collaborative program with the Canadian International Development Agency (CIDA). Despite problems caused by language barriers and a slow start delivery was in line with appraisal expectations. In Gansu over 500,000 participant trainings were given and over 60,000 in Xinjiang. Follow-up monitoring recorded that the participants were satisfied with the training received with many applying what they had learned. In addition the project also financed a number of public information campaigns in schools and through the agricultural press. Extension services, often delivered as a part of training, were well received by farmers/herders. Some 156 extension bulletins and training modules have been produced in one or more of the languages including: Han, Uyghur, Kazak and Mongolian. Some 52,000 copies of the training materials and 48,000 copies of the extension bulletins have been distributed in the two provinces and 142 extension articles published in rural newspapers.

3.2.8 Despite this overall reasonably satisfactory result, the component delivery of training, adaptive research and extension, in terms of funding allocation, was well below expectations at appraisal. A major element in this result was the reluctance of project management to use project funds and particularly the scarce counterpart contributions on these "soft" and not immediately productive activities. Much greater emphasis was given to investment in directly productive assets and funding individuals or entities that were in a position to repay any financing they received.

3.3 Efficiency

3.3.1 **Economic Analysis:** The major quantifiable benefits of the project are derived from the incremental value of livestock production of project households. Other significant but not quantifiable benefits come from (i) improved breeds and better veterinary and Al services; (ii) improved commercial production facilities; and (iii) benefits from reduced land degradation and global environmental benefits from carbon sequestration from improved pasture management. The economic analysis has been carried out for each province and for the project as a whole. The ERR calculation has taken into account all the incremental benefits and costs (including investment costs for project management and infrastructure improvements) in an aggregated economic cash flow, built up in line with physical achievements in the province. The whole project ERR in turn is calculated on the total project net cash flow by aggregating the net cash flows of 2 provinces. The ERRs for each province (Gansu 26% and Xinjiang 22 %) and the project as a whole (at 24%) are viable and robust.

[18] Edited by Victor Squires, published by Springer Netherlands, October 2010, ISBN-10:9048196213; ISBN-13:9789048196210

3.3.2 **Financial analysis:** Financial analysis was conducted for household based livestock production models, representing different livestock production patterns and pastoral systems typical of the project areas. The FIRRs for representative herder/farmer household models (20 models excluding the fine wool production model) range from 16 to 33%, indicating that they would be financially attractive to small holders. The fine wool production model only achieved an FIRR of 9% due to a sharp price decrease brought about from the opening to fine wool imports. Due to its low profitability, by the later years of project implementation most of the households had converted to other production models. The fiscal impact of the project for government budget is reflected in the public expenditures for the operation and maintenance (O&M) costs of livestock technical support service institutions (mainly veterinary and AI stations), which have been jointly covered by both central and local government budget allocations

3.4 Justification of the Overall Outcome Rating

Rating: Moderately Satisfactory

3.4.1. The PDO was consistent with the Bank's CPS and highly relevant to the government's rural development priorities at time of the ICR. In addition, the project economic rate of return estimated for this ICR, as well as the financial profitability were both very robust, which would justify a satisfactory outcome for the project. However, the assessment of the final achievement of the intended PDOs was done against overall impact data and output indicators and the performance trends as presented by limited data available from monitoring reports, instead of a series of pre-defined quantified outcome indicators consistent with the PAD. On balance, the ICR's conclusion is that overall outcome rating was Moderately Satisfactory.

3.5 Over-arching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects and Social Development

3.5.1 The project beneficiaries were herders/farmers whose average annual income was substantially below the country's average per capita income, and special efforts were made to include poorer households, that might not be able to afford loans, in non-lending activities (e.g. training).

3.5.2 In the livestock sector, traditionally women play a significant role in production activities. Therefore women naturally constituted the majority of beneficiaries of the project. Women's participation in the implementation of activities was encouraged by PMOs and Women's Federations and specific training and capacity building activities targeting women were organized by the project.

3.5.3 It was recorded by PMOs that 39% of the project beneficiaries (18% and 85% respectively in Gansu and Xinjiang) are ethnic minorities. The Multi Ethnic Groups Development Strategy (MEGDS), prepared by each PPMO and reviewed by the Bank was followed by both provinces during project implementation to ensure project activities

socially and culturally acceptable to them, and various trainings and awareness raising campaigns were organized in the languages of participating minorities.

(b) Institutional Change and Strengthening

3.5.4 The project strengthened the continuation of China's reform process towards a liberalized rural economy with strong, supportive market institutions. The project also helped policy and institutional reform in sustainable natural resource management through research and policy studies. These analyzed the incentives and disincentives that influence how farmers/herders make management decisions regarding grassland use. The project piloted new, participatory approaches that seek to manage livestock in a manner that conserves biodiversity in the production landscape. Policy and institutional reform implementation support at county and township levels enabled biodiversity conservation by encouraging collaborative approaches between bureaus. This led to development of an integrated approach to grassland management by local institutions.

(c) Unintended Outcomes and Impacts

3.5.5 None.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

3.6.1 Neither a project beneficiary survey nor stakeholder workshop was organized for this core ICR.

4. Assessment of Risk to Development Outcome

Rating: Low

4.1 The household livestock operation financed by the project has proven responsive and resilient to market price fluctuations by shifting production patterns and scale of production (such as converting fine wool to mutton production during the project implementation). In fact, the productive assets (like warm sheds) could be utilized for a variety of animal production in line with market demand and price changes. Strengthened technical services will help herders/farmers with more productive breeds and disease control to mitigate future operational risks.

4.2 The government has fully recognised the value of the "Public goods" institutions of the veterinary, AI and breeding improvement services and will provide adequate budget allocations to cover their O&M costs. Thus future operational risks to those institutions are minimal.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Ensuring Quality at Entry

Rating: **Moderately Satisfactory**

5.1.1 The project development objectives was highly consistent with the Government's and the Bank's strategies (Section 2.1.1). The project was sufficiently prepared and appraised in the following aspects: (1) evolving livestock sector policy and development trends; (2) complementary component mix and technical interventions, integrating key processes of breeding, production, processing and marketing; and (3) risk analysis and safeguards.

5.1.2 The Bank's inputs in terms of staffing/consultants and skill-mix were adequate and collaboration with the counterparts was close and constructive. However, the long gestation period from initial identification of the project to effective implementation ran the risk that project activities would be overtaken by rapid development of the livestock sector in China. The major shortcomings in the project design were (i) extreme complexity and overly ambitious geographical coverage (see Section 2.1.5); (ii) M&E design characterized by absence of quantified baseline data and target values, un-quantified outcome indicators, complex output indicators and inadequate arrangements for M&E (see Section 2.3.1); and (iii) technical design shortcomings in the smallholder production models in the PAD, which were not in line with the rapidly changing market conditions (See Section 2.1.8).

(b) Quality of Supervision

Rating: Moderately Satisfactory

5.1.3 The supervision missions were composed of an adequate mix of international and local professionals, with requisite technical expertise and knowledge of the livestock sector in China. Supervision missions generally maintained a close working relationship with the Borrower and the implementing agencies, and they were proactive in resolving emerging issues during implementation. In the early stages of project implementation, the key issues in procurement management were (i) inconsistency with Bank procurement guidelines and failure to follow the procurement management manual; and (ii) difficulties of the project implementing agencies in following the shopping procedures for purchasing live animals and carrying out widely scattered small works contracts (animal sheds, feedlots etc.). These issues were timely addressed by the supervision missions by providing training in procurement for project staff and by facilitating the procurement process of small works through shopping procedures. The supervision missions also helped build institutional capacity of PMOs at different levels. Early in project implementation, the household production models contained in the PAD were adjusted by the supervision mission to reflect the changes in the farmers' demand. However, there were serious lapses in the supervision, including (a) the inaction to initiate an early thorough baseline study; (b) the absence in the ISRs of the updated outcome/intermediate outcome indicators by supervision missions; and (c) the failure to carry out a formal Mid Term Review (MTR) of the project, which could have revised and quantified the key performance indicators and established a viable M&E system to enable evaluation of the project impact.

(c) Justification of Rating for Overall Bank Performance

Rating: Moderately Satisfactory

5.1.4 Based on the above assessment of ensuring quality at entry and supervision, overall Bank performance is rated moderately satisfactory.

5.2 Borrower

(a) Government Performance

Rating: Satisfactory

5.2.1 The government performance is rated satisfactory. The government has provided an enabling macro-economic environment and stimulus for achieving project development objectives and a number of financial incentives have been instituted for household livestock operations, including abolishing agricultural taxes and providing better access to credit and technical services. Government at both central and local levels committed adequate financial and human resources to project preparation; with a national preparation team under the umbrella of the Foreign Economic Cooperation Centre (FECC) of the central Ministry of Agriculture (MOA). The national team worked closely with the Bank counterparts in conceptualizing and formulating the project. The high level of government commitment throughout implementation was also reflected in selection and retention of high quality project staff. The central government, on an exceptional basis, provided part of counterpart funding to this project. While the availability of counterpart funds remained an issue during most of implementation, local governments, under tight financial constraints, generally managed to comply with their funding commitments despite some delays and inadequate provisions in a few counties. Furthermore, both the central and local governments have committed substantial public resources to ensure efficient operation and good maintenance of veterinary, artificial insemination and breeding improvement services.

(b) Implementing Agency (or Agencies) Performance

Rating: Satisfactory.

5.2.2 The institutional structure provided a solid foundation for project management. The project management offices (PMOs) in both Gansu and Xinjiang in most cases were staffed with dedicated multi-disciplinary professionals and administrative personnel throughout project implementation. The PMOs were strongly supported by a similarly competent team at national level (the Central PMO in the FECC), responsible for effective overall project coordination. Training in support of project management procedures, procurement, and accounting and financial management significantly improved the project implementation capacity of PMOs. Project implementation was further assisted by well prepared PIMs, various manuals, guidelines, plans and close cooperation between the Bank team and the two provinces. The provincial PMOs moreover engaged actively with relevant Government departments including oversight agencies (Finance and Planning) and other line departments (Agriculture, Women's Affairs, Environmental Protection and Audit), to enhance project coordination and implementation and resolve potential problems. Collectively this management structure provided continuity and consistency in the engagement and communication with the Bank. The project management entities identified and addressed

implementation problems, such as the change of household production models and procurement of small works for household livestock operations. The PMOs were candid and open to working with the Bank task team to ensure compliance with covenants and safeguards contained in the PAD and loan agreement.

5.2.3. A few areas of implementing agencies performance that could have been enhanced were (a) the utilization and implementation of M&E (see Section 2.3) but the complexity of project design and lack of clarity in indicators and targets are attenuating reasons, (b) one incident of non-compliance of the fiduciary policies (Section 2.2.1), and (c) relatively less attention to "soft" investments in training, adaptive research and extension.

(c) Justification of Rating for Overall Borrower Performance

Rating: Satisfactory

5.2.4 Based on the assessment of the Sections 5.2.1-5.2.3, overall borrower's performance is rated satisfactory.

6. Lessons Learned

6.1 The project experience provides useful lessons for future livestock projects in China:

6.1.1 In the under-developed regions in China, counterpart funding for a Bank project could be provided through financial transfer from central government, and/or by domestic projects designed as a parallel financing mechanism. Linkage with a national or another donor's program could also complement and upscale the project achievements;

6.1.2 An integrated approach, covering the various aspects of diversified livestock production and grassland management, incorporating traditional practices and modern technology, improving the market system, and increasing local participation, has proven effective and successful for livestock sector development;

6.1.3 Flexibility in project design is needed to accommodate changes in market conditions during implementation. For demand driven and commercially-based activities to be implemented by the private sector or individual farmers/herders, only broadly based selection criteria in line with market and local conditions are necessary. Specific *ex-ante* models and prescriptions are prone to the risk of being overtaken by fast changes in market demand or being crowded out by alternative financing;

6.1.4 Community participation in procurement of live animals and small works is an appropriate and practical methodology for this type of project, which involves a large number of individual beneficiaries at household level;

6.1.5 Investments in "public goods" nature institutions for livestock breeding improvement, veterinary and AI services have proved a most effective way to enhance productivity and benefit a large number of farmers/herders;

6.16 To make M&E a useful tool to assess project effectiveness during implementation, the indicators should be well designed in the first place, and responsibility for collection of indicator data and analysis of results should be clearly defined at project appraisal; and

6.17 To increase their chances of being successful, projects can either be complex with a rather narrow geographical focus or have a wide geographical spread and a simple project design. Trying to have a wide coverage and a complex design presents a heavy burden for project management and supervision and runs the risk that some sub-components will be selected for implementation and others largely neglected.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in US$ million equivalent)

Components	Appraisal Estimate* (US$ million)	Actual Cost (US$ million)	Actual/Appraisal Estimate (Percentage)
Grass Management and Forage Improvement	13.98	11.62	83%
Livestock Production Improvement	67.75	82.24	121%
Marketing System Development	10.20	4.34	43%
Applied Research, Training and Extension	13.25	4.99	38%
Project Management and M&E	5.75	6.26	109%
Cancelled:		1.47	1.33%
- Ineligible expenditures		0.85	
- Unutilized		0.62	
Total	110.93	110.91	100%

(b) Financing

Source of Funds	Appraisal Estimate (US$ million)	Actual (US$ million)	Percentage of Appraisal
Government/Beneficiaries	34.82	35.66	102%
IBRD	66.27	65.41	99%
GEF	10.5	10.50	100%
Total Funds	111.59	111.57	100%

Annex 2 Project Outcome and Impact Monitoring Data[19]

(1) Gansu

Monitoring Indicators				Unit	2004	2005	2006	2007	2008	2009	2010
Sector related CAS Goal	Average net household income in project townships	Net household income		yuan/door	6785	7362	7820	8605	9315	10038	10817
	Average net household income in non-project townships	Net household income		yuan/door	7410	7912	8182	8902	9465	10088	11084
	Grassland degradation	Grassland degradation		ha	864014	837964	740626	735126	735000	732480	729960
		of which:	Seriously degraded land area	Ha	351872	341203	331857	330126	330000	329500	329500
			Mildly degraded land area	Ha	305152	296021	208789	205000	205000	204200	203403
			Lightly degraded land area	Ha	206990	200740	199980	200000	200000	198780	197567
PDO indicators	Improved feed balance for livestock: nutritional quality and seasonal distribution of feed supply	Total area of grassland		Ha	1374229	1374229	1374229	1374229	1374229	1374229	1374229
		Total area of utilizable grassland		Ha	827857	827857	827857	827857	827857	827857	827857
		Forage crops, crop straw and grass output		Ton	10685687	11872974	13187179	14347651	15167070	16469732	17453048
		of which:	Forage crops, crop straw and grass output	Ton	3263009	3625761	4028840	4383378	4769359	5119661	5495691
			Forage crops production	Ton	3879513	4310566	4785513	5206638	5375763	5729239	6105958

[19] The data was collected and updated annually by Provincial PMOs by assembling information already available from local Grassland Station records, Animal Husbandry Bureau and County records and statistics bureau x of the project areas, following the order of the indicators as defined in the PAD. The data quality is believed to be reasonably good, even though some figures were missing, and can present a more complete view of the project results in project areas.

			Crop straw output	Ton	3543166	3936647	4372826	4757635	5021948	5420832	5851399
		Amount of livestock		thousand head	4687	4805	4821	4835	4978	4983	5002
		of which:	Cattle	thousand head	1662	1670	1677	1680	1690	1688	1692
			Sheep	thousand head	3025	3135	3144	3155	3288	3295	3310
	Productivity of livestock and livestock products	Lambing rates	Cattle	%	85.0%	86.0%	86.2%	89.0%	90.0%	91.0%	91.0%
			Sheep	%	95.0%	93.5%	90.0%	95.0%	94.0%	95.0%	95.0%
		Livestock mortality rates	Cattle	%	4.0%	3.7%	3.7%	3.5%	3.4%	3.1%	3.2%
			Sheep	%	7.0%	8.0%	7.3%	6.5%	5.0%	4.8%	4.5%
		Animal weight gain rates	Cattle	kg/head/day	0.505	0.510	0.520	0.66	0.66	0.67	0.75
			Sheep	kg/head/day	0.165	0.175	0.170	0.2	0.2	0.26	0.28
		Livestock productivity by product	Cattle live weight	kg/head	242	280	350	380	400	450	470
			Cattle carcass weight	kg/head	135	157	196	213	232	261	273
			Sheep live weight	kg/head	26.67	28.00	30	30	32	34	35
			Sheep carcass weight	kg/head	12.00	12.60	13.50	13.50	15.36	16.32	16.80
			Milk	kg/head	5547.60	5638.00	5730	6235	6400	6520	6800
			Wool	kg/head	2.89	2.93	2.93	3.2	3.3	3.4	3.5
		Reproductive rates	Cattle	%	85.0%	86.0%	86.2%	89.0%	90.0%	91.0%	91.0%

			Sheep	%	95.0%	93.5%	90.0%	95.0%	94.0%	95.0%	95.0%
		Age of animals at marketing	Cattle	years	3	3	2.5	2	2	2	2
			Sheep	years	1.00	1.00	1	0.8	0.8	0.6	0.6
	Improved quality of livestock products	Percentage of wool professionally sheared		%	15	15	20	23	25	25	26
		Percentage of wool professionally graded		%	15	15	20	20	30	30	33
		Percentage of wool professionally baled		%	25	25	28	30	50	50	55
		Number of farmer/herders using shearing stations		number	9	9	9	9	12	12	14
		Price received by farmers/herders (wool) inside the project		yuan	13.78	12.80	11.6	14	14	14	16
		Price received by farmers/herders (wool) outside project		yuan	11	10	10	11	11	11	12
		Percentage of accepted milk		%	75	72	75	82	82	84	85
	Ability and opportunities of farmer/herders to market their livestock and products	Number of markets where farmer sell their product		number							
		Satisfaction of farmers with the quantity of market information received		%	65%	70%	70%	75%	80%	80%	85%
		Price received by farmers	Beef	yuan/kg	11.93	11.90	12.6	20	20	24	28
			Mutton	yuan/kg	10.47	10.90	12	20	20	23	30
			Milk eligible for processing	yuan/kg	1.65	1.75	1.75	2.5	2.5	2.8	3.4
			Wool	yuan/kg	13.78	12.80	11.6	14	13	14	18
		Percentage of milk collected		%	7.5	11.93	11.90	12.6	20	20	24

(2) Xinjiang

Monitoring Indicators				Unit	2004	2005	2006	2007	2008	2009
Sector related CAS Goal	Average net household income in project townships	Net household income		yuan/door	8892	10792	13582	16350	19785	23208
	Average net household income in non-project townships	Net household income		yuan/door	8850	10467	12150	14127	15863	18462
	Grassland degradation	Grassland degradation		□	8407833	8341110	8276110	8216100	8156121	8074233
		of which:	Seriously degraded land area	□	2438271	2417271	2396271	2375271	2354271	2338271
			Mildly degraded land area	□	2858663	2833663	2808663	2783663	2768663	2728663
			Lightly degraded land area	□	3110899	3090176	3071176	3057166	3033187	3007299
PDO indicators	Improved feed balance for livestock: nutritional quality and seasonal distribution of feed supply	Total area of grassland		□	16014920	16014920	16014920	16014920	16014920	16014920
		Total area of utilizable grassland		□	12011190	12011190	12011190	12011190	12011190	12011190
		Forage crops, crop straw and grass output		Ton	35360357	34922715	35508723	35604462	35762104	35927363
		of which:	grass output	ton	19448197	19051641	19543876	19493244	19476290	19339678
			Forage crops production	ton	10608107	10572334	10653891	10795442	10976527	11275820
			Crop straw output	ton	5304053	5298740	5310956	5315776	5309287	5311865
		Amount of livestock		thousand head	15980.6	15654.7	15277.3	14910.2	14596.1	14225.3
		of which:	Cattle	thousand head						
			Sheep	thousand head	10919.7	10445.2	9963.5	9515.4	9175.3	8882.1
	Productivity of livestock and livestock products	Lambing rates	Cattle	%						
			Sheep	%	97.7	99.1	99.3	100.6	103.3	104.2
		Livestock mortality rates	Cattle	%						
			Sheep	%	2.5	2.2	2.1	2.3	1.5	1.5

		Animal weight gain rates	Cattle	kg/head/day						
			Sheep	kg/head/day	0.19	0.18	0.20	0.20	0.21	0.20
		Livestock productivity by product	Cattle live weight	kg/head						
			Cattle carcass weight	kg/head						
			Sheep live weight	kg/head	35	37	38.5	41	40.6	41.2
			Sheep carcass weight	kg/head	17.8	18.5	19.2	20.5	20.3	20.6
			Milk	kg/head						
			Wool	kg/head	2.9	3.2	3.4	3.3	3.5	3.5
		Reproductive rates	Cattle	%						
			Sheep	%	97.7	99.1	99.3	100.6	103.3	104.2
			Sheep	%						
		Age of animals at marketing	Cattle	Years						
			Sheep	years	1	1	1	0.8	0.8	0.8
	Improved quality of livestock products	Percentage of wool professionally sheared		%	20	22	31	37	45	45
		Percentage of wool professionally graded		%	15	16.5	16.4	15.3	16.2	16.7
		Percentage of wool professionally baled		%	40	43	45	45	45	45
		Number of farmer/herders using shearing stations		Number	9	11	23	35	35	35
		Price received by farmers/herders (wool) inside the project		yuan	16	14	22	18	16	18

		Price received by farmers/herders (wool) outside project	yuan	16	14	20	16	15	18
		Percentage of accepted milk	%						
	Ability and opportunities of farmer/herders to market their livestock and products	Number of markets where farmer sell their product	Number	33	32	37	43	41	47
		Satisfaction of farmers with the quantity of market information received	%	52	57	65	69	76	81
		Price received by farmers — Beef	yuan/kg						
		Price received by farmers — Mutton	yuan/kg	14	15	12	17	25	31
		Price received by farmers — Milk eligible for processing	yuan/kg						
		Price received by farmers — Wool	yuan/kg	17	11	13	17	20	18
		Percentage of milk collected	%						

Annex 3 Output by Component[20]

Output from each Component	Output Indicators	Gansu planned	Gansu adjusted	Gansu completed	Xinjiang planned	Xinjiang adjusted	Xinjiang completed	Total Planned	Total Adjusted	Total completed	% of completed vs planned	% of completed vs adjusted
1. Grassland Management and Forage Development Establish a sustainable grassland system for livestock, biodiversity and global environmental values	Number of community based grassland management plans developed and under implementation	12	12	12	10	10	10	22	22	22	100%	100%
	Area in ha of integrated grassland management	22,324	22,937	31,914	72,838	129,410	166,805	95,162	152,347	198,719	209%	130%
	Area in ha of grassland improved (seeded, fenced)	3,963	20,476	21,476	65,010	65,010	100,864	68,973	85,486	122,340	177%	143%
	Area in ha of artificial pasture & forage crops established	8,558	8,558	10,438	7,828	64,400	65,941	16,386	72,958	76,397	466%	105%
	Number of grassland monitoring stations equipped and in operation	20	20	20	40	40	49	60	60	69	115%	115%
2. Livestock Production Improvement Establish a sustainable livestock production system developed through improvement in animal genetics and management using environmentally sound technology	Number of improved nucleus breeding animals	9,000	9,000	11,795	7,984	20,000	21,184	16,984	29,000	32,979	194%	114%
	Number of improved breeding animals (Gansu alpine fine-wool sheep)	200,000	250,000	300,000	No such an activity in Xinjiang	-	-	200,000	250,000	300,000	150%	120%
	Number of livestock warm sheds built (m^2)	1,262,883	1,262,883	1,293,604	490,300	1,450,000	1,457,577	1,753,183	2,712,883	2,751,181	157%	101%
	Number of livestock silage pits built ($m^{3)}$	833,577	833,577	847,305	26,100	120,000	120,641	859,677	953,577	967,946	113%	102%
	Number of AI established	170	98	106	168	87	87	338	185	193	57%	104%
	Number of Vet. Stations established	14	12	12	59	64	64	73	76	76	104%	100%
	Native species support breeding programs established (Gan, Tan sheep, White Yak)	No target	-	Han Tan fine wool sheep species: 5 White yak species: 6	No such an activity in Xinjiang	-	-	-	-	-	-	-

[20] The PAD had 30 output indicators (see section 2.3.1, ICR main text) with neither baseline nor target values. However, values of output indicators in this Annex were provided by PPMOs in their provincial ICR Annexes. The target values were drawn from PIP while the adjusted values were agreed by supervision missions. The data quality is believed to be reasonably good as they were produced in connection with financial statements for reimbursement and reviewed by the Task Team.

3. Market Systems Development Promote the development of a functioning market system through improved market infrastructure	Number of shearing stations	3	3	3	70	24	24	73	27	27	37%	100%
	Number of livestock markets	3	3	3	44	33	33	47	36	36	77%	100%
	Number of milking stations	13	13	15	No such activity in Xinjiang	-	-	13	13	15	115%	115%
	Number of livestock markets converting to auction sale	No target	-	3	44	33	33	-	-	-	-	-
	Number of appraised rural enterprise activities	5	5	5	1	1	1	6	6	6	100%	100%
	Number of financed rural enterprise activities	3	3	3	0	0	0	3	3	3	100%	100%
	Market information system in place (including published set of product description and quality standards)	No specific and quantified targets. However, market information system in place; market information available from local livestock markets, MIS and website of Gansu Agricultural Information for fine wool, mutton, beef, dairy.										
	Proportion of sheep shorn by certified shearers	12%	-	26%	12%	-	45%	-	-	-	-	-
4. Applied Research, Training and Extension Establish improved integrated management systems that enable household livestock producers to simultaneously raise the quality of fiber, meat and milk products derived from grazing livestock and decrease the number of	Number of proposals submitted, reviewed, and awarded	22	67	67	Proposed: 40	-	Proposed: 64 Awarded: 40	-	-	-	-	-
	Number of demonstrations for integrated grassland eco-system management and biodiversity conservation	10	10	10	45	45	43	55	55	53	96%	96%
	Number of logged technician visits to villages and households	No targets	No targets	115 including 9 international, 20 national, and 86 provincial technicians	10 international and 32 national technicians	30 national technicians and 1 GEF international expert	31 including 1 international (GEF) and 30 national technicians;	-	-	-	-	-
	Household satisfaction with technician visits (w/extension services)	No targets. But 80% of households satisfied with their better understanding of grassland and livestock management; improved livestock production skills and awareness of grassland protection; and accelerated transition in livestock production from quantity based approach to quality and efficiency based approach.										
	Number of extension bulletins	No baseline and no targets. As the result, there were 76 bulletins, 123 articles published, and 142 articles on newspapers. There were 52,000 copies of over 80 kinds of training materials in minority languages and 100,000 copies of propaganda materials.										

grazing livestock resulting in improved grassland conditions without economic loss	Number of technicians trained, (AI, shearing, etc.) and their degree of satisfaction with the training	31,489 person. times	31,489 person. times	38,927 person. times degree of satisfaction:> 80%	3244 person. times	3244 person. times	3,355 person. times; degree of satisfaction: > 80%	34,733	34,733	42,282	122%	122%
	Number of farmers/herders trained and their degree of satisfaction with the training (person.time)	496,180	496,180	501,761 degree of satisfaction: > 80%	34,550; degree of satisfaction: >80%	60,000	61,204; degree of satisfaction: >80%	530,730	556,180	562,965	106%	101%
	Number of public information campaigns to educate farmers/herders (including in marketing) developed and implemented	No targets	-	142 pieces of information on Farmer Daily	3500	-	3,456	-	-	-	-	-
5. Project Management, Monitoring and Evaluation Develop and strengthen overall project implementation capacity of project management offices and participating communities	Number of meetings of the PLG	At least one meeting by each level PLG	-	132	At least one meeting by each level PLG	-	240	-	-	-	-	-
	Number of meetings of the TAG	12 (2/year)	12 (2/year)	12 (2/year)	12 (2/year)	12 (2/year)	12 (2/year)	-	-	-	-	-
	Number of PMO staff trained (project management, procurement, etc.)	No targets	-	657 person.time	No targets		782 person.time	-	-	-	-	-
	MIS system used as a management tool	A computerized project MIS system was set up in each province to monitor implementation progress and facilitate project management. However, the MIS was slow to get started and only became operational in 2007 and then only for project progress monitoring. It is of only limited utility for data transmission and compilation.										
	Progress reports/annual implementation plans prepared on schedule	Most of the reports and plans were prepared on schedule. Some may be delayed for 1-3 months.										
	Project progress on schedule	The semi-annual progress reports indicate that the overall project progress was on schedule, with some activities, e.g. applied research, and enterprise activities were substantially delayed.										

Annex 4. Financial and Economic Analysis

A. Introduction

The analysis presented in this annex reassesses the economic rate of return (ERR) calculated in the PAD using updated prices, actual project costs, and latest information on the operations of livestock production. The methodology of the analysis by and large follows that of PAD with increased level of details, as more data are available compared with at PAD. The project costs and physical achievements were drawn from project records while the future production projections are based on actual performance of current operations and data from project entities.

B. Project Benefits

The major quantifiable benefits of the project are derived from the incremental value of livestock production of project households. Other significant but not quantifiable benefits come from (i) improved breeds and better veterinary and Al services; (ii) improved commercial production facilities; and (iii) benefits from reduced land degradation and global environmental benefits (such as carbon sequestration) from improved pasture management.

C. Financial Analysis

Livestock production models for each province were developed, based on prevailing practices during the project implementation. The models adopted 15 years for analysis as so to cover at least 2 production cycles for breeding cows. Household production models designed at PAD were adjusted in terms of scale to reflect the individual farmers' demand and changing situation in livestock production in the project provinces. Investment costs include the initial purchase of livestock, small production tools; cattle sheds, silage pits for the ammoniation of straw or the ensilaging of crop residues; training in production technology; and the purchase of urea and plastic sheet for the first production cycle of ammoniated straw. Production costs include replacement animals, feed and forage production supplies, minerals, medicine, breeding fees, marketing fees, utilities, maintenance and repairs. Constant 2010 prices were used for the analysis.

Twenty one (21) household models of different size and scale were formulated, covering the following aspects of livestock operations: (1) beef cattle fattening; (2) beef cattle breeding/calf-raising models; (3) fine wool production; (4) dairy production; and (5) mutton production.

Based on the approaches and assumptions outlined above, the FIRRs for representative herder/farmer household models (all models except fine wool production) are between 16-33%, indicating they are financially attractive to herders/farmers. The fine wool production model only achieved FIRR of 9% due to sharp price decrease brought about from the opening of fine wool imports, and most of the households had converted, during the later years of project implementation, to other production models due to its low profitability.

The detailed calculations for FIRRs for all the household models are available in project file.

D. Economic Analysis

Economic analysis was carried out separately for each province, combining not only the investment costs for household production, but also the investment costs for project management and infrastructure improvements (breeding centres, veterinary and Al stations). The project costs used in the analysis were based on actual costs incurred.

At PAD, World Bank parity prices were used to estimate farm-gate economic prices for traded inputs and outputs. Economic prices for non-traded goods were estimated by using conversion factors. However, the Chinese economy during the project implementation period, particularly since its accession to WTO in 2001, has been increasingly integrated into world economy and it is generally acknowledged that Chinese economy has achieved "market status". Therefore, the current market prices of both inputs and outputs basically reflect the actual export and import parity prices for the products of identical varieties and quality if they are tradable. Furthermore the project provinces are huge in size, the inter-provincial trade is far more important than international trade. As such, the financial prices are used as "proxies" for economic prices. Similarly no further adjustments are made to the prices of non-tradable farm inputs and outputs, as Chinese currency has been under pressure for appreciation. The foreign exchange premium is therefore not relevant in China now.

Based on the above, no further adjustments are made to the cash flow of livestock production models as farmers enjoy tax breaks. The economic analysis has been carried out for each province and for the project as a whole. The ERR calculation of the each province has taken into account all the incremental benefits and costs (including investment costs for project management and infrastructure improvements) in an aggregated economic cash flow, built up in line with physical achievements in the province. The whole project ERR in turn is calculated on the total project net cash flow by aggregating the net cash flows of the two provinces.

The ERRs for Gansu and Xinjiang are 26% and 22% respectively, and for the project as whole at 24%, indicating that the project by province and as a whole are economically viable and robust. Detailed calculations contained in the project file.

The notably higher ERRs achieved at ICR in comparison with PAD estimates (Gansu, 15%; Xinjiang 19%; and whole project 17%) are due to (1) conservative assumptions at PAD about the technical parameters of productivity (such as daily weight gains); and (2) upward price trend for livestock products, particularly the prices for beef and mutton.

Attached Tables (on file):

I. FIRR/ERR Calculation Worksheet by Province

II. Project ERR Calculation Worksheet

Annex 5. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit
Sari K. Soderstrom	Lead Natural Resources Management Specialist	EASRE
Weiguo Zhou	Rural Dev. Specialist	EASRE
Abraham C. Brandenburg	Consultant	EASRE
Anis Wan	Program Assistant	EACCF
R. Cynthia Dharmajaya	Program Assistant	EASRE
Jin Liu	Sr. Rural Dev. Specialist	EASRE
Robin Mearns	Lead Social Dev. Specialist	SDV
Zhengxuan Zhu	Sr. Rural Dev. Specialist	EACCF
Ronald D. Zweig	Consultant	EASRE
Cornelis de Haan	Consultant	EASRE
Achim Fock	Sr. Economist	EASRE
Zong-Cheng Lin	Sr. Social Dev. Specialist	EACCF
Yu Zhuo	Disbursement Analyst	EACCF
Matrice Mangum	Consultant	EASRE
Nathan M. Belete	Sr. Rural Dev. Specialist	EASRE
Yukon Huang	China Country Director	EACCF
Rabih H. Karaky	Sr. Economist	EASRE
Kathleen S. Mackinnon	Consultant	EASRE
Kasper Sylvester Svarrer	Consultant	EASRE
Xiaoping Li	Consultant	EACCF
Huifang Lin	Consultant	EACCF
Yuanming Liu	Consultant	
Jinping Lu	Consultant	EASRE
Kazhak Mohammed	Consultant	EASRE
Dennis P Sheehy	Sr. Rural	EASRE
Shi Jinan	Procurement Specialist	EACCF
Chunli Wang	Consultant	EACCF
Wenbin Wang	Consultant	EACCF
Linghui Zhang	Consultant	EASRE
Jun Zhao	Consultant	EASRE
Yihai Zhao	Consultant	EASRE
Daming Zhou	Consultant	EASRE
Paavo Eliste	Economist	EASTS
Farzad Dadgari	Consultant	EASRE
Zhong Tong	Economist	EASRE
Yasin Ashuri	Consultant	EASTE
Tony John Banks	Consultant	EASRE
Naran Bilik	Consultant	EASRE
Janxin Chen	Consultant	EACCF
Yuqiong Chen	Consultant	EACCF

Yuzhi Chen	Consultant	EACCF
Serek Doman	Consultant	EASRE
Yimin Feng	Consultant	EASRE
Tang Ge	Consultant	EACRE
Gregory Eliyu Guldin	Consultant	EASRE
Yerjep Gulnur	Consultant	EASRE
Yi He	Consultant	EACCF
Hongbo Ji	Consultant	EASRE
Hanming Jia	Consultant	EASRE
Martti J. Lariola	Consultant	EASRE
Qingfeng Li	Consultant	EASRE
Xuesen Li	Consultant	EASRE
Yonggong Liu	Consultant	EASRE
Karlis Smits	Consultant	EASRE
Yao Tian	Consultant	EASRE
Libin Wang	Consultant	EASRE
Wanlong Lin	Consultant	EASRE
Robert Watson	Consultant	EASRE
Jianping Wu	Consultant	EASRE
Sizheng Xiong	Consultant	EASRE
Qunxiang Zhang	Consultant	EASRE
Bo Zheng	Consultant	EASRE
Wenguang Ding	Consultant	EASRE
Yun Sui		
Haiyan Wang	Disbursement Specialist	LOAN
Hong Wang	Consultant	EASRE
Najing Chen	Consultant	EASRE
Sari K. Soderstrom (Until April 11 2010)	Lead Natural Resources Management Specialist	EASCS
Wendao Cao (effective from April 11010)	Rural Development Specialist	EASCS
Weiguo Zhou	Consultant	EASER
Chunli Wang	Consultant	EASCS
David I	Sr Financial Management Specialist	EAPFM
Gayane Minasyan	Environmental Econ.	EASER
Jianping Wu	Consultant	EASCS
Jinan Shi	Senior Procurement Specialist	EAPPR
Wendao Cao	Rural Development Specialist	EASCS
Yi Dong	Sr. Financial Management Specia	EAPFM
Zong-Cheng Lin	Sr. Social Dev. Specialist	EASCS
Iain G. Shuker	Sector Leader	EASER
Jean-Philippe Tre	Sr. Agriculture Specialist	AFTAR
Chunxiang Zhang	Sr. Program Assistant	EACCF
Abdurehim, Sajeda	Consultant	EASCS

Janxin Chen	Consultant	EASCS
Serek Doman	Consultant	EASER
Ziqiu Guo	Consultant	EASCS
Hanming Jia	Consultant	EASCS
Martti J. Lariola	Consultant	EASER
Richard Leonard	Consultant	EASER
Wujun Liu	Consultant	EASCS
Yuanming Liu)	Consultant	EASCS
Xin Qin	Consultant	EASCS
Junru Sheng	Consultant	EASCS
Ruojun Wang	Consultant	EASCS
Lin Wanlong	Consultant	EASCS
Jianping Wu	Consultant	EASCS
Xianchun Xu	Consultant	EASCS
Sui Yun	Consultant	EASCS
Yanling Zang	Consultant	EASCS
Weiming Zhang	Consultant	EASCS
Jun Zhao	Consultant	EASCS
Bo Zheng	Consultant	EASCS
Michael Brown	Consultant	EASCS
Libin Wang	Consultant	EASCS

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending	114.71	879,824.96
Total:	114.71	879,824.96
Supervision/ICR	37.62	343,047.91
Total:	37.62	343,047.91

Annex 6. Beneficiary Survey Results

None

Annex7. Stakeholder Workshop Report and Results

None

Annex 8. Summary of Borrower's ICR

Project Preparation, Design and Quality at Entry

At entry of project preparation, design and establishment, the animal husbandry in China was moving to industrialization from the starting stage to developing stage. However, some problems were existing in many sectors of livestock production, including livestock breeds improvement, forage processing and utilization, animal disease control, farmer organization, services system and environment, etc. The problems must be urgently solved for adapting the development needs of modern animal husbandry and meeting the growing material needs of people. The project was prepared and designed aim at the problem, in particular for meeting the development of sheep and cattle industry, which was in line with the policy and planning of grass-feeding livestock production development issued by the central and provincial governments, and the sustainable development needs of society, economy and environment.

The project development objectives were definite. The five components were well identified, and had sufficient in-built flexibility. The government met the commitments on the project organization and financial counterpart funding according with the actual situation, which provided the strong guarantee for the project implementation. The project risks appraisal fully considered the policy of national industry and the changes of economic environment at home and abroad, which laid the foundation of the successful project implementation.

However, due to the project preparation was too long and China economy was rapidly developing at that time, the designed models for farmers in project preparation and assessment didn't fit with the needs of farmers during project implementation. As a result, the models had to be changed at the early stage of project implementation, especially in Xinjiang.

Significant changes and outcome during the project implementation

Gansu: Due to the changes of development, policy and market of the animal husbandry in Gansu, three project units, Hovill Dairy Company, Jiu Quan HaoNiu Dairy Company and Hui Ning County quit the project. On the contrary, Lintao County, Anding District, Linxia County, Qingshui County, and Tianshui City increased the loan amount. More detailed changes see the Aide-Memoire of the Bank's mission in November. 2007.

Xinjiang: Due to the long project preparation, quickly economy growing and rapidly changes of market, the original planned model for farmers were forced to change at the early implementation because the model didn't meet the actual situation and the farmers' needs at that time. The redesigned models included three models, fine wool model, mutton model, and mutton fattening model. According to the feeding livestock numbers of each project model, there were three sub-models of each model, see below.

	Fine wool model			Mutton model			Fattening Model		
Size(Herd)	50	100	200	50	100	300	150	500	1500
Amount(Householders)	925	1843	920	1014	2023	1011	488	969	484

After six years of implementation, the project activities revised by PAD have been completed and achieved the planned objectives.

The accumulative investment of capital asserts was 1856.219 million RMB Yuan, which account for 95 per cent of the appraised target, of which the IBRD loan was 66.27 million US dollars (405.63 million RMB Yuan) accounting for 98 percent of the appraised target, the counterpart funding was 917.236 million RMB Yuan accounting for 103.2 percent. Among the counterpart funding, the national debt was 100 million RMB Yuan, the counterpart funding from provincial, prefecture, and county governments were 227.54 million RMB. The self-financing of farmers(or project units) were 589.7 million RMB. More detailed contents see the ICR of Gansu and Xinjiang.

Key factors affecting implementation beyond implementing agencies' control

Market and Prices: Fine wool sheep: At the beginning of the project implementation in 2004, the price of fine wool was 20-25 Yuan/kg. However, the price was up to 35-40 Yuan/kg at the project middle implementation from 2006 to 2007. At the end of 2009, the price was down to 15 Yuan/kg. The main reasons have two points. Firstly, the excessive feeding amount of fine wool sheep in Xinjiang and other places in China with a result that oversupply caused prices to fall. Secondly, China government opened the door for Australia fine wool imports that hit the domestic wool market, which also caused the price of fine wool to fall.

Mutton and Beef: During the project implementation, the market of mutton and beef was steady. However, the price was rocketing from the second half year of 2007, each fattening cattle made a profit of 2000 Yuan at the peak. But, in April 2008, the benefit was falling due to the global finance crisis, which caused the costs of production increasing, such as building materials, forage and fodders, as well as calves.

The exchange rate of RMB against USD fluctuates sharply from year to year. The interest of the World Bank loan adopted the London Interbank Offered Rate (LIBOR) as a rate of reference, which was affected greatly by the international finance market. At the project early stage, the interest was 1.12 per cent in Jun.2003. However, the interest shifted to 5.4 percent from Apr. 2006 to Jul.2007 during the project middle stage. At the project ending stage, the interest back to the interest in 2003. From the changes of the interest rate during the project implementation, the

superiority of the World Bank loan is obvious because the loan interest didn't exceed the interest rate of commercial bank in same period. However, due to the RMB exchange rate continued appreciation, the exchange rate of USD against RMB is changing from 1:8.3 in 2003 to 1:6.8 in early 2010 with the appreciation of 18 per cent, which result in the credit loan was reduced sharply. In order to complete the project activities, the government at all levels had to increase the counterpart funding, which also affected the project implementation.

Controlled factors by governments

Macro-economic Policy. Firstly, the national macro-economic policy highly focus on the "three-dimensional rural issues" (concerning agriculture, countryside and farmers), which not only advocate the harmonious development of the rural society, reduce the farmers burden by exempting from agricultural tax, but also make a series of policy and measures to support the agriculture development for improving economical profit and promoting the sustainable agriculture development with supporting the production of high quality agricultural products and high efficiency eco-agriculture development. Secondly, the regional pastoral development policy in Xinjiang and Gansu, the Committee of Communist Party of China (CCPC) and Government of Xinjiang Autonomous Region promulgated the document of "Opinion on accelerating the development of modern animal husbandry" [No.9, 2008, Xinjiang CCPC] on 30, Jul, 2008, which obviously pointed out to implement the strategy of further adjusting and optimizing the structure of livestock production for modern animal husbandry development. The document defined the direction of animal husbandry development in the long term and also promoted the project smooth implementation and management. Same as Xinjiang, Gansu CCPC and Government issued the document of "Opinion on increasing the famers' income with six actions" [No.32, 2008, Gansu CCPC] in 2008. The Animal Husbandry Bureau, Finance Bureau, Science and Technology Bureau and Poverty Alleviation Office had together made the document of "the action plan for the development of grass feeding animal husbandry in Gansu", which further promoted the development of animal husbandry and provided the safeguard for the project implementation and sustainable development.

The policy of government departments. The government departments at all levels provided strong support and policy guarantee for the project operation. NDRC and financial departments provided the essential counterpart funding and animal husbandry bureaus provide the services of management and technology for the project.

Counterpart funding. The central government paid 100 million RMB for the project after the Premier Wen Jiabao's approval, which greatly lighten the farmers' burden. However, due to the limited financial resource of Gansu and Xinjiang, it was hard to put into effect that the local government gave the commitment for providing the enough counterparts funding for the project at the early stage of the project implementation. However, under the endeavor of governments and project management offices, the enough counterparts funding has been in place at the ending stage.

Coordination. The project involved the government departments related to administration, planning, finance, and audit, etc, which caused the inadequate coordination sometimes because each department has own management rule and different realization to the project. However, under the united leadership of governments, the difficulty didn't affect the project implementation.

Monitoring and Evaluation (M&E) Design, Implementation, and Application

The M&E for the project has three components. Firstly, AGRITEAM Company was employed for M&E, which was the partial activity of the project. However, due to the time of M&E was too late in 2008 and most of the project activities have been completed, the M&E only carried out evaluation without monitoring, which didn't affect the project implementation. The result of evaluation showed that the project activities achieved the expected purpose (more detailed content see the report of M&E). Secondly, the coordinator was hired for the project M&E. The M&E was completed by the experts of Xinjiang PMO, which means the experts checked and supervised the project progress more than twice every year. The M&E results from experts provided the support for the project. Thirdly, it was self-M&E by the PMOs. Aim at the project objective, the PMOs timely supervised the project components with participatory approach in order to find the problem and shortage, and then improved and solved the issues for the project smooth implementation.

Based on the M&E for the key indicators, the project progress, deviation and project benefit could be timely knew well and then made some changes consist with the project plan. The accumulation of M&E data provided the basis for the project design, outcome analysis, as well as experience and lesson, which not only benefit for the project implementation, but also for later efficient operation after the project completion.

Achievement of Project Development Objectives

Economical Benefits

The total outcome, production value and net income. The annual newly increased fine wool sheep was 0.47 million herds, fine wool was 1704.8 ton, mutton sheep was 0.68 million herds, fattened sheep was 1.46 million herds, dairy cattle was 6874 herd, milk production was 41244 ton, sold beef was 51075 herds. Based on the rough estimate, the newly increased production value is 2229.76 million RMB Yuan with the profit of 304.74 million RMB Yuan.

The annual net income of the project beneficiaries. (a) **Xinjiang.** According to the statistical data based on the project sampling investigation, the annual net income of beneficiaries was increased from 2806.7 Yuan/person in 2003 to 7328.4 Yuan/person in 2009. Compared with before project implementation, the annual net income has increased 1.6 times with increment of 4521.7 Yuan per person. Compare with the net income of 5727.3 Yuan/person of non-beneficiaries, the annual net income of beneficiaries has increased 1601.1 Yuan, which increased 28 percent; (b) **Gansu.** The surveyed 135 householders for beef reproduction produced 210 calves every year. After feeding, each calf average increased 1250 Yuan for income of farmers. The

increased income of 135 householders was 25.2 hundred of thousands with average net income of 1870 Yuan per householders. For the 175 householders for beef fattening, annual number of turn off was 7000 herds, which increased 700 Yuan per herd after fattening. The annual total income of these householders was 4.9 million Yuan, which means net income of each householder was 2.8 hundreds of thousands Yuan.

Social Benefits

Improved the infrastructure of animal husbandry development. The project has built the infrastructure facilities of livestock production, such as warm pen, veterinary station, dipping vat, AI station, shearing station, market, etc., which set up a foundation for the sustainable, health and stabled development of animal husbandry. Before the project implementation, the pen was made of stone with the poor condition, which was hard for livestock surviving in cold winter. Other infrastructures were poor and didn't meet the demand of the modern pastoral development. After the project implementation, newly built or fixed warm pen improved the survival rate of lambing and shortened fattening period, which reduced the grazing pressure on the pasture. The funded silage pool and sowing pasture increased the storage of forage for farmers and reduced the grazing pressure in spring, which benefit the grass regeneration. The built veterinary station and dipping vat ensured the animal epidemic prevention and controlled the animal disease spread, which reduced poor nutrition livestock dead by some disease. Market provided the marketing formation for farmers, which increased the income and improved the life of farmers, and built up the capacity of resisting nature disaster and risk. New built AI station and introduced high quality livestock extended the AI technique and improved the sheep breeds and performance.

The output of public facility in Xinjiang

Project activities/Years	2004	2005	2006	2007	2008	2009	Total
Dipping vat（Qty）	1573028	4401216	5103858	4436305	4067247	3264316	22845970
Veterinary station（Qty）	341526	17675310	22517864	27461556	31902873	24326692	124225821
AI station（Qty）	144892	794213	1157745	1735621	1319536	1436649	6588656
Market（Qty）	117523	896927	1033076	1183477	1364453	1219734	5815190
Shearing wool（ton）	123595	739115	916735	867203	761402	521498	3929548

Improved the quality of livestock product and increased the income of farmers. In Gansu project area, the quality of livestock product has been improved by breeds' introduction, feeding improvement, perfect technical service, and special service for meats and milks as well, which guaranteed the food safety and improve the competition of livestock product in market. The milk produced in the project area has been purchased by milk enterprises. The mutton and beef with different grade has been sold to middle or high domestic market, part of the meats has been sold to the high-class hotel in Beijing, Shenzhen, Hong Kong, and Guangzhou. The quality of fine wool continuously improved, as well as the price. The high quality fine wool produced in Huang Cheng Fine Wool Sheep Farm had a niche in the Nan Jing Wool Auction Market.

The project in Xinjiang introduced high quality ram to crossbreed local sheep and improved the feeding management with scientific feed formulation, forage processing, laming in warm pen, etc. As a result, the famers achieved better economical benefit. Comparison between the beneficiaries and non-beneficiaries, the meat production of hybrid lamb in beneficiaries was increased by 7 kg and the production value was increased by 15 RMB Yuan per herd due to improvement of reproduction and surviving rate, decline of mortality, and reduction of the production cost. Finally, the income of beneficiaries was increased from 5000 Yuan to 20000 Yuan.

Optimized the industrial structure and facilitated farmers seeking job. The project has optimized the industrial structure in the project area and facilitated the surplus labor force transfer, which accelerating development of rural harmonious society. According to statistic, the project supported 31749 householders for the pastoral development, which provided 60 thousands surplus farmers for employment. The project by the extension of livestock feeding subdistrict and aligned householders feeding has help to the production development, increasing the income and better life of farmers, meanwhile, it also made the cleaner environment and polite phenomenon in countryside, which benefit for the new socialist countryside construction. The project paid more attention to the capacity building for women for creating employment opportunities and increasing their income, which led to the improvement of their status in the society and promoting all-round development of the society.

Meanwhile, the economy in the project area was quickly developed and more and more farmers went in for feeding, transportation and marketing of animal husbandry, which changed the situation of surplus labor force only relying on the livestock production. The changes increased the income of farmers by labor transfer, and made the contribution for the poverty alleviation and social stability in rural area.

Extension of advanced technology and improved farmers quality. The project has extended high quality livestock breeds of beef, dairy cattle, mutton sheep and fine wool sheep to farmers, as well as warm pen and fattening technology, which improved the livestock production in the project area. At present, the beef and sheep production are well developing and the feeding way was shifted from inside yards to specialty feeding subdistrict that realized the intensive livestock production. The production performance of livestock has been improved by the extension of new breeds and technology. The investigated data of Gansu PMO showed that the body weight of beef was increased from 250 kg before the project implementation to above 300 kg after the project implementation. The turn off rate and the beef quality were also improved. The milk production of the project householders achieved 5 ton/herd, which higher than 3.3 ton of the average milk production in whole province. The performances of mutton and fine sheep have been also improved obviously.

The project also provided many training opportunities for farmers, including nature grassland management, establishment of grazing system, “Grassland Law”, forage sowing and processing, livestock feeding and fattening, animal disease control, as well as animal breeds’ introduction. All of training programs made farmers better and deeper understanding of the grassland management and more focused on the quality-benefit type of livestock production instead of quantity type.

Improvement of the management capacity of animal husbandry departments. The management capacity, office automation, working condition, and staff quality have been improved since the project implementation. Meanwhile, the project has also trained qualified trainers with well theory and application ability, which reserving trainers resource for further guiding farmers to develop modern animal husbandry and managing the similar project in the future.

Ecological Benefits

The grassland ecological environment has been improved by the nature pasture management and forage improvement, which increasing the forage production, reducing the grazing pressure, mitigating the problem of imbalance between animal and grass, and promoting the transformation of animal husbandry growth pattern. During the project implementation in five years, the stocking capacity of grasslands has been reduced and sustainable grazing system has been set up for grassland rehabilitation.

The demonstration area of rest grazing, rotation grazing and ban grazing have been used for leading and exemplifying more farmers to manage their pasture, which can strengthen the consciousness on grassland protection convenient for the national project implementation.

By the means of making silage with straw for realizing straw returning land, which saving the grain fodder and benefit soil fertility. Silage making also benefit the reduction of grazing pressure and control the environment pollution of firing straw, which has significant importance for promoting the positive cycle of agriculture and animal husbandry.

The small householder who raising livestock have recycled animal manure for returning cropland, produced biogas and making organic fertilizer, etc. Most of householders built biogas pool funded by the National Biogas Project and made biogas residues into organic fertilizer with practical technology, which improving the soil structure, increasing the ability of preserve moisture and fertility in soil, reducing the cost for chemical fertilizer, promoting the stable and high agricultural yield. Biogas pool building is the simple, convenient and low cost environment-friendly approach for animal manure treatment in small householders.

The project in Gansu built the feeding subdistrict of beef and dairy cattle for farmers. As a result, it reduced the mixture of human and animal and improved the environment of living, which can control zoonosis spread. By livestock were fed inside pen cooperated with ban grazing on the nature pasture, the newly increased sowing forage extend the greenery coverage that had a positive effect on agricultural eco-system.

Some problems need to be improved

It’s the key for the project smooth implementation that adjustment of the project in time. However, the approval by World Bank over periods as short as six months and as long as one year, which reduced the efficiency of loan and delayed the project implementation.

From the project preparation, implementation and completion, World Bank carried out the management model in whole process with a result that achieved the good effect. However, twice supervision mission every year by World Bank and frequently supervisions by domestic related departments increased the burden and management cost for project implementation units.

In general, the project managers, officials and consultants of World Bank with principle of preciseness, careful work style and flexibility that left deep impression on us. The performance of World Bank was satisfactory.

Lessons learned

Thanks to the high recognition from the government and closely cooperation from the related departments, as the demonstration project and enriching project, the IBRD project closely focused on animal husbandry development in Gansu and Xinjiang and achieved the objective of increasing income of farmers, developing rural economy, promoting sustainable pastoral development in Gansu and Xinjiang region. According with the long-term development planning, the project gained the strongly support and high attention from the governments, which PLG and PMO was established for strong management, well communication and coordination, and advantage policy. Based on the close coordination and cooperation from financial departments, planning departments and audit departments, the good surrounding was created for the project implementation at various periods.

Seeking truth from the facts and conducting the project with flexibility. The IBRD project was the first foreign investment project with large scale in Gansu and Xinjiang without ripe experience. At the project preparation, the guiding principle and operation procedure over relied on the consultants employed by World Bank with a result that the project management and implementation hit the barrier. For the successful project implementation, the reform has been conducted based on the negotiation with World Bank and actual situation in the project area. Firstly, the project activities and the beneficiaries' model have been changed according with the facts that changed society and marketing environment. Secondly, in the mid-stage adjustment of the project, the investment models with marked economical profit were increased, which benefited to change livestock production pattern and combine the new countryside construction. Moreover, the PMO required World Bank to grant more rights for changing the project activities with long period and easily affected by market for achieving success of the project. Thirdly, the procurement procedure has been revised, which changed farmers' works and goods from "Shopping" to "Shopping with householder participatory approach". The change reduced the cost of procurement and accelerated the project progress.

Integrated funding of various departments and seeking the mechanism for finance resource integration of international and national project. The governments at all levels took the World Bank project as a platform and integrated the loan of WB, grant of GEF and special funding of governments (including counterpart funding and national debt) to be used for the project. The special funding of governments and WB loan has been used for forage production and grassland improvement, livestock development and market service. The grant of GEF has been used for the public

services, including applied research, training and study tour, M&E, grassland management, ban grazing and rest grazing, which improved the using efficiency of public finance resource.

Establishment of good project supervision system and management information network. For the regulation of project operation, Gansu and Xinjiang PMOs have made the several rules, including "Administrative Rules on the project implementation", "Administrative Rules on the project procurement", and "Administrative Rules on the project finance", etc. which established the a series of management system for supervision, reimbursement, and procurement. The project used the grant of GEF and special fund of government to have set up the GIS, which form the good project management network as basis of the successful project.

Comments on issues raised by user

In general, the GXPDP is successful project that promoted the sustainable pastoral development in Gansu and Xinjiang. However, some issues were existed in the project as follow.

Project preparation: (a) Due to the long term for project identification, preparation, assessment, implementation, and changed market as well, the farmers models designed at the project preparation did not fit the greatly changed situation of society and economy and had to overall change at the beginning of project implementation; and (b) The project preparation couldn't forecast the change of international macroeconomic environment and the trend of economy development in Gansu and Xinjiang. In addition, the market forecast was disparity because of the market impact from international superior agricultural product, especially on fine wool and milk. The economical benefit of householders for feeding fine sheep and dairy cattle didn't gain the expected goal.

Project management: (a) At the early stage of project implementation, some project management offices were lack of experience result in increasing the difficulty and cost; and (b) Due to the impact of restructuring of government departments and self-reform of the project departments, and too long project preparation, some staff members of project management offices moved out result in lacking of continuity working.

Conclusion

The World Bank financed Gansu/Xinjiang pastoral development project has completed after six years based on the scientific identification, preparation and design. Accord with the national strategy of agriculture development and the policy of animal husbandry development in Gansu and Xinjiang, the IBRD project was prospective and practical. Under the significant importance of governments and positive involvement of farmers, the project has achieved the objective with remarkable benefit of society, economy and ecology. The project has also laid a solid foundation for developing animal husbandry in project area and around area.

Annex 9: Comments of Cofinanciers and Other Partners/Stakeholders

None

Annex 10. List of Supporting Documents

1. Aide Memoires and related Annexes prepared by the supervision missions
2. Aide Memoire and related Annexes of the ICR mission
3. Consolidated ICR and its Annexes prepared by the CPMO
4. ICR and its Annexes prepared by the PMO of Gansu
5. ICR and its Annexes prepared by the PMO of Xinjiang
6. Annual Monitoring & Evaluation Reports consolidated by CPMO
7. Working Paper on Project Technical Interventions(Based on David'ICR Contribution)
8. Models for financial and economic analysis (spreadsheets)