ADB

Completion Report

Project Number: 40684-013
Loan Number: 2744
Grant Number: 0250
September 2021

People's Republic of China: Forestry and Ecological Restoration Project in Three Northwest Provinces

Asian Development Bank

CURRENCY EQUIVALENTS

Currency unit – yuan (CNY)

		At Appraisal (2 March 2011)	At Project Completion (30 September 2018)
CNY1.00	=	$0.152	$0.146
$1.00	=	CNY6.57	CNY6.87

ABBREVIATIONS

ADB	–	Asian Development Bank
CCDS	–	community consultation and disclosure strategy
CPMO	–	county project management office
DMF	–	design and monitoring framework
EIRR	–	economic internal rate of return
EMDP	–	ethnic minority development plan
EMP	–	environmental management plan
FIRR	–	financial internal rate of return
GEF	–	Global Environment Facility
ha	–	hectare
IEE	–	initial environmental examination
IEM	–	integrated ecosystem management
km^2	–	square kilometer
MOU	–	memorandum of understanding
NPMO	–	national project management office
PCR	–	project completion report
PMO	–	project management office
PPMO	–	provincial project management office
PRC	–	Peoples' Republic of China
SFF	–	state forest farms
SFGA	–	State Forestry and Grassland Administration
SPS	–	Safeguard Policy Statement
TA	–	technical assistance

NOTES

(i) The fiscal year (FY) of the Government of the People's Republic of China and its agencies ends on 31 December. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2018 ends on 31 December 2018.

(ii) In this report, "$" refers to United States dollars.

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CONTENTS

BASIC DATA

A. Loan Identification

1.	Country	People's Republic of China
2.	Loan/grant number and financing source	Loan 2744 – ordinary capital resources; Grant 0250 – Global Environment Facility
3.	Project title	Forestry and Ecological Restoration Project in Three Northwest Provinces
4.	Borrower	People's Republic of China
5.	Executing agency	State Forestry and Grassland Administration
6.	Amount of loan and grant	Loan: $100 million; grant: $5.1 million
7.	Financing modality	Project loan and grant

B. Loan and Grant Data

1.	Appraisal	
	– Date started	5 February 2010
	– Date completed	10 February 2010
2.	Loan negotiations	
	– Date started	28 February 2011
	– Date completed	1 March 2011
3.	Date of Board approval	29 March 2011
4.	Date of loan and grant agreement	3 June 2011
5.	Date of loan effectiveness	
	– In loan agreement	1 September 2011
	– Actual	29 September 2011
	– Number of extensions	1
	Date of grant effectiveness	22 September 2011
6.	Project completion date	
	– Appraisal	30 September 2016
	– Actual	30 September 2018
7.	Loan closing date	
	– In loan agreement	31 March 2017
	– Actual	29 May 2019
	– Number of extensions	1
	Grant closing date	
	– In grant agreement	30 September 2016
	– Actual	30 September 2018
	– Number of extensions	2
8.	Financial closing date	
	– Actual (loan)	29 May 2019
	– Actual (grant)	10 December 2019
9.	Terms of loan	
	– Interest rate	London interbank offered rate (LIBOR) plus 0.60 % less 0.30% credit
	– Maturity (number of years)	25
	– Grace period (number of years)	5
10.	Terms of relending (if any)	
	– Interest rate	LIBOR plus 0.60% less 0.30% credit
	– Maturity (number of years)	25

– Grace period (number of years) 5
– Second-step borrower Gansu Provincial Government
Shaanxi Provincial Government
Xinjiang Uygur Autonomous Region Government

11. Disbursements

a. Dates

Loan

Initial Disbursement	Final Disbursement	Time Interval
20 September 2012	17 August 2018	70 months
Effective Date	**Actual Closing Date**	**Time Interval**
29 September 2011	29 May 2019	92 months

Grant

Initial Disbursement	Final Disbursement	Time Interval
12 August 2013	19 February 2019	66 months
Effective Date	**Actual Closing Date**	**Time Interval**
22 September 2011	10 December 2019	98 months

b. Amount ($'000) - Loan

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2–3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4–5)
Works-crop inputs-tree crops-Gansu	24,840	3,640		28,480	27,268	1,212
Works-crop inputs-tree crops-Shaanxi	26,534	(1,694)	0	24,840	25,710	(870)
Works-crop inputs-tree crops-Xinjiang	14,176	(14,176)	0	0	0	0
Works-crop inputs-forestry-Gansu	3,452	0	0	3,452	3,566	(114)
Works-crop inputs-forestry-Xinjiang	444	(444)	0	0	0	0
Works-infrastructure-tree crops-Gansu	3,354	(1,946)	0	1,408	1,360	48
Works-infrastructure-tree crops-Xinjiang	17,416	2,084	0	19,500	14,069	5,431

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2–3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4–5)
Works-Infrastructure-forestry-Shaanxi	7,560	0	0	7,560	7,290	270
Works-crop inputs-tree crops-Changi		2,080	0	2,080	1,639	441
Works-crop inputs-tree crops-Hami		7,576	0	7,576	3,343	4,233
Works-crop inputs-tree crops-Kuerle		1,092	0	1,092	1,090	2
1Works-crop inputs-tree crops-Hejing		626	0	626	351	275
Works-crop inputs-tree crops-Yanqi		1,556	0	1,556	679	877
Works-crop inputs-forestry-Changji		63	0	63	65	(2)
Works-crop inputs-forestry-Hami		219	0	219	0	219
Works-crop inputs-forestry-Kuerle		121	0	121	120	1
Works-crop inputs-forestry-Hejing		19	0	19	19	0
Works-crop inputs-forestry-Yanqi		46	0	46	45	1
Capacity building-Shaanxi	676	0	0	676	289	387
Capacity building-Xinjiang	1,112	(862)	0	250	59	191
Equipment-Shaanxi	254	0	0	254	205	49
Equipment-Xinjiang	182	0	0	182	0	182
Total	**100,000**	**0**	**0**	**100,000**	**87,167**	**12,833**

Note: Undisbursed balance was canceled on financial closing of the loan.

Amount ($'000) - Grant

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2–3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4–5)
Works-crop inputs-forestry-Gansu	992	0	0	992	990	2
Works-crop inputs-forestry-Xinjiang	1,370	(1,370)	0	0	0	0
Works-crop inputs-forestry-Changi	0	672	0	672	672	0
Works-crop inputs-forestry-Hami	0	698	0	698	0	698
Shaanxi carbon readiness education	700	0	0	700	682	18
Shaanxi Ecological Forestry Center	1,000	0	0	1,000	1,032	(32)
Equipment-Gansu	253	0	0	253	253	0
Equipment-Xinjiang	198	(50)	0	148	135	13
Training-Gansu	455	0	0	455	442	13
Training-Xinjiang	132	50	0	182	89	93
Total	**5,100** [a]	**0**	**0**	**5,100**	**4,295**	**805**

[a] There was a discrepancy for the grant amount. The initial RRP and PAM documents listed $5,100,000 but the actual amount approved by GEF and ADB was $5,119,546.

Note: Numbers may not sum precisely because of rounding. Undisbursed balance was canceled on financial closing of the grant.

C. Project Data

1. Project cost ($'000)

Cost	Appraisal Estimate	Actual
Base cost	156,170	136,011
Contingencies	9,650	2,152
Financing charges during implementation	14,890	7,496
Total	**180,710**	**145,659**

2. Financing plan ($'000)

Cost	Appraisal Estimate	Actual
Implementation cost		
Borrower financed	31,213	18,771

Cost	Appraisal Estimate	Actual
ADB financed	100,000	87,167
GEF financed	5,120	4,295
Enterprises	11,626	7,905
Households	17,860	20,025
Total	**165,818**	**138,163**
Financing charges during implementation		
Borrower financed	13,777	7,283
ADB financed	0	0
GEF financed	0	0
Enterprises	1,114	213
Households	0	0
Total	**14,891**	**7,496**

ADB = Asian Development Bank, GEF = Global Environment Facility.
Note: Numbers may not sum precisely because of rounding.

3. Cost breakdown by project component ($'000)

Component	Appraisal Estimate	Actual
Economic tree crop development	120,700	108,080
Ecological forestry development	18,360	20,962
Project management support	17,110	6,969
Contingencies	9,650	2,152
Financing charges during implementation	14,890	7,496
Total	**180,710**	**145,659**

Note: Numbers may not sum precisely because of rounding.

4. Project schedule

Item	Appraisal Estimate	Actual
Economic tree crop development	2011−2016	2011–2018
Ecological forestry development	2011−2016	2011–2018
Project management support	2011−2016	2011–2018

5. Project performance report ratings

	Single Project Rating
From 29 September 2011 to 30 June 2018	On track
From 1 July 2018 to 30 September 2018	Potential problem
From 1 October 2018 to 31 December 2019	On track

D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members
Consultation 1	23 October 2009	1	1	c
Loan fact-finding	4–16 June 2009	5	15	a, b, c, h, l
Appraisal	5–10 February 2010	4	24	a, b, c, j,
Consultation 2	11–18 March 2010	2	2	c, i
Inception	7–15 May 2012	2	18	g, k
Review 1	4–11 June 2013	3	19	g, k, l
Review 2	26 August–3 September 2014	3	20	g, k, l
Review (midterm) 3	12–19 June 2015	4	20	d, e, f, g
Review 4	29 August–5 September 2016	3	24	d, g, m
Review 5	25–28 August 2017	3	12	d, g, m
Review 6	15–17 August 2018	2	6	d, g

a = environment specialist, b = natural resources economist, c = principal economist, d = principal environment specialist, e = principal social development specialist, f = procurement specialist, g = project analyst, h = project officer, i = senior advisor, j = senior counsel, k = senior environment specialist, l = senior social development specialist, m = water resources specialist, n = young professional.

I. PROJECT DESCRIPTION

1. The Forestry and Ecological Restoration Project in Three Northwest Provinces covers about 165,000 square kilometers (km^2), incorporating 18 districts and 55 counties selected from some of the world's most degraded lands in Gansu, Shaanxi, and Xinjiang in the northwest of the People's Republic of China (PRC). The area includes three distinct ecological zones: the loess plateau, the central mountain region, and the oases in Xinjiang. The ancient Silk Road ran through this area, starting near Xi'an and running northwest through Gansu and Xinjiang. The project was designed to help national and provincial governments develop policies and plans and help the State Forestry and Grassland Administration (SFGA), the Gansu and Shaanxi provinces, and the Xinjiang Uygur Autonomous Region improve the forest productivity and demonstrate an integrated ecosystem management (IEM) approach to afforestation and income generation.[1]

2. Farming on degraded and barren land and on steeply sloping land with low-yielding and unsustainable grain crops was common in the region because of population pressure and poor regulation. By 2006, the economic cost of land degradation was estimated at about CNY3.1 billion per year in Gansu and CNY11.6 billion per year in Shaanxi. The key challenges in the project area were (i) low forest land productivity and sustainability; (ii) land degradation and diminishing returns from traditional management practices and inputs; (iii) vulnerability of households to price fluctuations in economic forestry products and natural disasters; and (iv) inadequate working capital and long-term financing for households, enterprises, and state forest farms (SFFs).

3. The expected impact of the project was improved income and sustainable livelihoods from the use of forest land in Gansu, Shaanxi, and Xinjiang. The outcome of the project was increased productivity of forest lands and reduced land degradation in Gansu, Shaanxi, and Xinjiang through appropriate and sustainable land use. The project outputs were: (i) mainstreamed IEM approaches applied to economic tree crop development; (ii) mainstreamed IEM approaches applied to ecological forestry development; and (iii) project management support to implement forest sector reforms in the provinces, counties, towns, and households.

4. The project was a follow up of continued commitment from the Asian Development Bank (ADB) to combat land degradation and restore ecosystem services in the western region of PRC. The PRC central government developed a land degradation partnership with the Global Environment Facility (GEF). ADB, together with other international development institutions, played leading role in fostering the collaboration and acted as an implementation agency for the GEF. The project was co-financed with a GEF grant, which enabled additional activities on ecological restoration and capacity building in the IEM approach and carbon trade and education.

II. DESIGN AND IMPLEMENTATION

A. Project Design and Formulation

5. The project design was consistent with ADB's country partnership strategy, 2008–2010 for the PRC, which continued support for poorer provinces for poverty alleviation and for integrated rural development.[2] The project design focused on strategic areas in land rehabilitation, forest management, income generation, and job creation. It was aligned with the country partnership strategy pillars on sustainable rural ecosystem management and environmental capacity building and reforms. It also contributed to ADB strategic priorities on

[1] The SFGA was known as the State Forestry Administration (SFA) at the time of project preparation.
[2] ADB. 2008. *Country Partnership Strategy: People's Republic of China, 2008–2010*. Manila.

global and regional public goods on environment protection and climate change mitigation and adaptation.

6. The project was aligned with the PRC's Eleventh Five-Year Plan on building a harmonious and moderately prosperous (*xiao kang*) society, which promoted environmentally friendly development.[3] The project contributed to the agriculture and natural resources sector with an objective of modernizing agriculture, building rural infrastructure, improving rural social services, strengthening natural resource management, raising average rural incomes by 5%, and maintaining the productivity of at least 120 million hectares (ha) of farmland. The project helped promoting forestry sector reforms and diversifying revenue for SFFs. The project was also designed to support the PRC in protecting regional and global public goods through afforestation and reduction in land degradation, which was in line with the GEF strategic objectives and priorities on global environmental benefits of land degradation and biodiversity conservation.

7. The project's strategy was to help implement collective forest tenure reforms and help convert land and labor resources into higher value and more sustainable tree crop production systems using IEM approaches developed by the PRC–GEF Partnership on Land Degradation in Dryland Ecosystems.[4] Building on experience, the project design included planting economic tree crops (primarily fruits and nuts) and ecological restoration of degraded lands in Shaanxi, Xinjiang, and Gansu. The planting of economic tree crops was complemented with investments in cold storage facilities. The ecological restoration of degraded lands was complemented with capacity development activities in carbon forestry and knowledge transfer to farmers and communities. Ecological restoration activities were supported, in part, by a grant from the GEF. The project loan modality was appropriate because the executing agency and implementing agencies had good experience in managing afforestation projects through engagement with many participants. However, the project design was overly ambitious in the number of enterprises to be involved. The design was also overly optimistic with carbon market development. The project had difficulty in achieving related targets because of the withdrawal of many enterprises and loss of interest in carbon readiness activities because of low carbon prices. A flexible arrangement for enterprise participation and consultative approach would have improved the uptake of related activities.

8. Three minor changes were made during project implementation. The first change was approved in September 2013 for a correction to discrepancies or inconsistencies in ADB financing percentages in project documents, including the legal documents. During this process, the project management office (PMO) had to wait for the change to be made and take effect, which caused delays in project start-up. The second change updated the project scope and loan and grant allocations because (i) Gansu canceled the construction of five of nine planned fruit cold storage facilities under the loan and reduced the cold storage capacity from 16,000 tons to 8,250 tons because some of the planned storage was constructed by the enterprises using other financial resources, and funds were reallocated to an additional 1,500 ha of economic tree plantations; and (ii) Shaanxi changed beneficiary counties and forest parks.[5] The third change was for the GEF

[3] Government of the People's Republic of China, National Development and Reform Commission. 2006. *The Outline of the Eleventh Five-Year Plan*. Beijing.

[4] The IEM approach is a planning and implementation approach for natural resources in the dryland areas of northern, central, and western PRC. The approach brings together the legal, policy, design, institutional, technical, economic, environmental, and social systems to support the sustainable use and management of natural resources. The IEM approach emphasizes links between natural ecosystem capacities and socioeconomic activities (including those of poor rural inhabitants) and seeks to holistically rehabilitate damaged ecosystem services and functions by addressing the major root causes of destructive practices.

[5] ADB (East Asia Department). 2015. *Project Midterm Review Mission to PRC: Forestry and Ecological Restoration Project in Three Northwest Provinces*. Memorandum of Understanding. 3 July (internal). A change memo was approved on 9 March 2016.

grant funding.[6] Because of lower than expected carbon prices and stagnant market development, Shaanxi canceled the planned ecological forestry center and carbon readiness education and reallocated the funds to establish two exhibition and three forest and health experience centers.

B. Project Outputs

9. Generally, the project outputs were successfully achieved. Out of 13 output indicators, 10 were achieved, one was substantially achieved, and two were partially achieved. Appendix 1 presents the details of achievements against indicator targets at appraisal.

10. **Output 1: Economic tree crop development.** The project planned to have 13 varieties of fruit, nut, timber, and shelterbelt trees planted in the three provinces. The planted area totaled 38,000 ha and required about 12,800 full time permanent jobs per year by the 6th year to tend the crops and maintain equipment and infrastructure. The number further increased to an estimated 48,500 full time permanent job equivalents from year 10 onward when harvest reached stable yields. About 207,000 households and workers expected to benefit from the tree crops development. In addition, the project was to finance the expansion of nine profitable enterprises in Gansu with about 16,000 tons of cold storage facilities and engage 17 other small enterprises (14 private farms and three public–private shareholding companies) in Xinjiang on tree planting activities. The seedling use, area, survival rate, preservation rate, growth, and fruiting rate of the economic trees were used as the main factor to determine the success of the planting and basis of payments.

11. At completion, the project established 39,130 ha of economic tree crops with 12 varieties, including apple, walnut, prickly ash, and Chinese dates, across three provinces, with 19,601 ha in Gansu, 14,163 ha in Shaanxi, and 5,366 ha in Xinjiang. The new forest land increased carbon sequestration of about 607,700 tons by 2018.[7] A total of 112,213 farmers participated in project activities, including construction, planting, and maintenance of the trees. Rural employment increased by 99,800 jobs (53,800 in Gansu, 24,000 in Shaanxi, and 22,000 in Xinjiang), about 40.8% of which were for women, 11.8% for ethnic minority, and 27.3% for the poor. About 215,250 rural households and workers—of whom about 50.2% were women, 21.6% ethnic minorities, and 26.2% poor—benefited from production and processing of economic tree crops.

12. The original targets to involve 26 public and private enterprises in Gansu and Xinjiang were only partially achieved. The project financed expansion of four private enterprises with cold storage capacity of 8,250 tons, against a revised target of 21 enterprises and 8,700 tons of cold storage capacity. Five out of nine enterprises in Gansu and all 17 small enterprises in Xinjiang withdrew from the project because of the delayed project start-up and changing market conditions. Integrated rural infrastructure in Xinjiang was successfully completed, including power supply facilities, water conservation and irrigation facilities, roads, and pasture fences.

13. **Output 2: Ecological forestry development.** Output 2, planned ecological forestry development, comprised (i) reforestation of about 3,000 ha of hilly and degraded land in Gansu with shiny yellow horn trees; (ii) restoration of degraded land in Hami and Changji counties of Xinjiang with sand fixing and replanting technologies on about 435 ha from GEF funds and about 630 ha using loan funds; (iii) facility and capacity improvements on seven SFFs in Shaanxi with

[6] ADB (East Asia Department). 2016. Project Review Mission to PRC: Forestry and Ecological Restoration Project in Three Northwest Provinces. Memorandum of Understanding. 19 September (internal).

[7] The original design and monitoring framework (DMF) had errors in carbon related indicators: the carbon stocks and sequestration were not correctly calculated, leading to wrong indicators for baseline conditions and targets at completion.

a managed area of about 126,000 ha involving public–private partnerships with private ecotourism enterprises; and (iv) carbon market readiness and education with ecological forestry and climate change capacity development for 12 SFFs in Shaanxi and Gansu.

14. At completion, a total 4,800 ha of ecological forest were restored including: (i) 1,106 ha in Xinjiang (630 ha financed by ADB loan and 435 ha by GEF grant); (ii) 3,679 ha in Gansu, (2,984 ha by ADB loan and 695 ha by GEF grant); and (iii) 15 ha in Shaanxi. Facility improvements through infrastructure construction were undertaken for seven forest parks in Shaanxi under SFF jurisdiction. The planned ecological forestry center and associated carbon market readiness and education with ecological forestry and climate change capacity development in seven SFFs in Shaanxi and five SFFs in Gansu were not undertaken because of slower than anticipated carbon market development in the PRC and low carbon prices. However, the increase in the domestic ecotourism market promoted the need to adapt to the growing demand in forestry tourism. The funds were reallocated to establish three exhibition and forest health experience centers with carbon sequestration education functions in Shaanxi (Houzhenzi and Matoutan, Xinjiashan).

15. **Output 3: Project management support.** The planned project management support included (i) improvement in project implementation and management in provincial, municipal, and county implementing agencies; and (ii) technical support to participating households and farmers. Local governments were to establish and provide adequate project management support, complete with logistical facilities and technical staff for effective project implementation at provincial and county levels. Extensive training was planned with the aim to train about 200,000 participants in IEM.

16. By completion, project financing was used to provide (i) training in project management, including financial management, procurement, disbursement, and management information; (ii) ecological and environmental training, including pest identification, use of pesticides, integrated pest management, integrated crop management, and good agricultural practices; and (iii) social support, including gender awareness, creating opportunities for women, and consultation approaches. The project conducted the full extent of the training activities on promoting IEM and on general project management training aspects related to financial management and procurement. The project undertook 35 provincial level training courses with 3,914 participants and delivered 718 county and township level training courses to 150,981 participants, of which 46.5% were women, 24.3% ethnic minorities, and 28.3% poor. The training did not fully achieve the ambitious target of 200,000 participants, partly because of underuse of the training budget, especially in Xinjiang, partly resulting from some local project implementation units' inability to submit expense claims with supporting documents, including the number of trainees. During project preparation and implementation, two scientific publications were prepared and published.[8]

C. Project Costs and Financing

17. The estimated project cost was $180.71 million. At completion, the actual project cost was about $145.66 million (CNY945.3 million equivalent, taking the average exchange rate of CNY6.48 during implementation). At the loan and grant closing, the loan cancellation was $12,833,206 and the grant cancellation was $804,939. Compared with the original cost estimate, the actual project cost is lower by about 19.39%. The reduced project cost resulted mainly from

[8] F. Radstake et al. 2010. *Dryland Ecosystems: Introducing an Integrated Management Approach in the People's Republic of China*. Manila: ADB; and A. Tengberg et al. 2014. Scaling Up of Sustainable Land Management in The Western People's Republic of China: Evaluation of A 10-year Partnership. *Land Degradation & Development*. 27 (2). pp. 134–144.

(i) low contract prices from competitive bidding, (ii) appreciation of the Chinese yuan during project implementation, and (iii) contract cancellations.

18. The financing plan at appraisal was $180.71 million including a $100.0 million loan from ADB (about 55.3% of the project cost), a $5.12 million grant funded by the GEF (2.8%), $44.99 million from government counterparts (24.9%), $12.74 million from enterprises (7.1%), and $17.86 million from households (9.9%). At the loan and grant closing, ADB had disbursed $87.17 million, or 87.2%, of the loan, representing 59.8% of the actual project cost, and the GEF had disbursed $4.30 million, or 84.2% of the grant (2.9% of the actual project cost). The balance ($54.20 million) was covered by government counterparts, enterprises, and households. The detailed project costs and financing plan at appraisal and actual are in Appendixes 2 and 3.

19. Both loan and grant cancellations were mainly from Xinjiang. The harsh weather conditions in Xinjiang made the survival of the new plantations more challenging, affecting the ability of some project implementation units to claim the expenses. A fraudulent contract with contract value of 4.9 million was discovered and canceled.[9] Together, these resulted in a loan saving of $14.2 million in Xinjiang. For the grant in Xinjiang, the participating enterprises withdrew from the project, forcing the project to reallocate some of the grant to capacity building activities, which was however not fully implemented and resulted in another saving of $1.4 million.

20. The counterpart financing from the county governments remained low throughout the project implementation, partly because of inadequate provision by the government, partly resulting from inadequate capacity of local project implementation units in following procurement procedures and preparing documentation for reimbursement. The contributions from households, however, increased from 9.9% at appraisal to 13.7% at completion. The economic tree crops were profitable, and the households increased their contribution.

D. Disbursements

21. Under the ADB loan, disbursements totaled $87.167 million or 87.17% of the loan amount. At financial closing on 29 May 2019, $12.833 million remained undisbursed and was canceled. The first disbursement was value dated 20 September 2012 and the final disbursement was value dated 17 August 2018. Under the grant, disbursements totaled $4.295 million or 84.22% of the grant amount. At grant closing on 10 December 2019, a $0.805 million training budget in Xinjiang remained undisbursed and was canceled. The first disbursement was to the advance account of Shaanxi with a value date of 12 August 2013, and the final disbursement to the advance account of Gansu with a value date of 19 February 2019.

22. Disbursements were made using the advance fund procedure. Separate advance accounts were established for the loan and grant and for each province, hence a total of six advance accounts were established for the project. The statement of expenditures procedure was also utilized under the project. Use of both advance fund and statement of expenditures procedures was useful and facilitated loan and grant disbursements.

23. A breakdown of projected and actual annual cumulative disbursements under the loan and grant is in Appendix 4. The actual loan disbursement was faster than projected until 2015 because of effective and efficient large-scale planting activities organized in Shaanxi and Xinjiang.

[9] The fraudulent contract (HM097) was identified in the 2015 audit report in the Hami County, Xinjiang. The county implemented the project activities before loan effectiveness and signed a false contract to claim the expenses.

The grant disbursement was however much slower, concentrating in the extended implementation from 2016 to 2019, mainly because of the change of activities in Xinjiang and Shaanxi.

E. Project Schedule

24. The loan was approved on 29 March 2011, the loan and project agreements were signed on 3 June 2011, and the loan became effective on 29 September 2011. The GEF chief executive officer endorsed the GEF grant on 3 August 2010, and ADB approved it on 29 March 2011. The grant agreement was signed on 3 June 2011 and became effective on 22 September 2011.

25. The original loan closing date was 31 March 2017 and grant closing date was 30 September 2016. ADB approved one extension of the loan closing date from 31 March 2017 to 30 September 2018. The grant closing date was extended twice, with the first extension from 30 September 2016 to 31 March 2017 and the second extension from 31 March 2017 to 30 September 2018. The main reason for the loan and grant extensions was to address delays at project start-up and to allow more time for implementation of loan and grant activities brought about by the minor project changes at midterm.

F. Implementation Arrangements

26. At appraisal, the executing agency was the State Forestry and Grassland Administration (SFGA) through its ADB loan project management office. The forestry departments of the participating provinces together with the county forestry bureaus were the implementing agencies. The SFGA national project management office (NPMO) was responsible for overall project management, communication with ADB, consolidation of progress reports once every six months, supervision and monitoring, and training and other technical support.

27. Each province was to set up a provincial project leading group, comprising the provincial finance department, the provincial forestry department, and the provincial development and reform commission, to ensure interagency coordination and to address project strategic decisions. A provincial project management office (PPMO) was to be established as a unit within the provincial forestry department to be responsible for coordination and liaison with municipality and county project management offices (CPMOs) within the county forestry bureaus. The CPMOs were to work with the county forestry bureaus to prepare work plans and to undertake project activities.

28. In 2014, all three provinces had set up their PPMOs and CPMOs.[10] The PPMO staff were deemed technically qualified, but still lacking in experience with the implementation and reporting of foreign funded projects. An ADB review mission recommended using the training budget to engage project management consultants to support and train the PPMO staff. The mission also noted that the NPMO should provide more support and be directly involved in coordinating, monitoring, and preparing project progress reports. In 2018, project management structures were fully operational, with 75 project implementation units established at different levels, including 27 in Gansu, 39 in Shaanxi, and 9 from Xinjiang.[11]

[10] ADB (East Asia Department). 2014. Project Review Mission to PRC: Forestry and Ecological Restoration Project in Three Northwest Provinces. Back-to-office report. 29 September (internal).

[11] ADB (East Asia Department). 2018. Project Review Mission to PRC: Forestry and Ecological Restoration Project in Three Northwest Provinces. Back-to-office report. 27 August (internal).

G. Technical Assistance

29. The project was prepared through a project preparatory technical assistance (TA) approved on 14 December 2007 with a budget of $800,000 from ADB's Technical Assistance Special Fund, and with supplementary financing from the GEF of $335,000 approved on 18 March 2009.[12] The TA (i) conducted assessments of sectors, institutions, strategies, policies, and plans; (ii) appraised project proposals prepared by the provincial governments; (iii) assessed a range of problems constraining economic and ecosystem development; (iv) undertook stakeholder consultations and workshops, and conducted social, poverty, institutional, and environmental assessments and surveys; and (v) conducted ecosystem surveys and assessments to determine the baseline situations. The TA contributed to (i) the initial project design and monitoring framework (DMF); (ii) financial, economic, social, and environmental safeguards; (iii) sector analysis; (iv) the roles and institutional capacities of participating agencies; (v) implementation arrangements; and (vi) interrelated issues of poverty reduction, gender, good governance, and private sector development. It was noted that the carbon related indicators in the DMF were not properly defined and calculated. The TA took more than three years to prepare the project because of the difficulties in working out the implementation arrangements with the government.

H. Consultant Recruitment and Procurement

30. There are no consulting services packages under the loan. Under the grant, at appraisal, one quality- and cost-based package and nine individual consulting services contracts were planned, comprising 7 months of international consulting services and 18 months of national consulting services. During implementation, consulting services inputs were changed to national individual consultant inputs and at completion, 31.5 person-months of national consultant inputs were provided. The change from international to national consultants on climate change and carbon trade was driven by low carbon prices and a stagnant carbon trade market. However, the change weakened capacity development in related fields. The consultants focused on technical and procurement aspects and did not have adequate experience on safeguards nor did they contribute to the ethnic minority development plan (EMDP) and community consultation and disclosure strategy (CCDS). No project management consultants were planned for the project using the loan proceeds. The lack of project management consultant support was an important reason for low quality monitoring and reporting and slow withdrawal with some project implementation units.

31. At appraisal, force account was planned to be utilized as the main procurement method with 1,749 force account contracts to be procured, 50 contracts were to be procured through national competitive bidding, and 52 contracts were to be procured through shopping. By project completion, force account works comprised 1,322 force account contracts, while 39 national competitive bidding contracts and 42 shopping contracts were procured. For tree plantations involving local farmers and small enterprises, the contract amount is usually small. The arrangement was necessary for simultaneous implementation by 75 project implementation units in three provinces. The PPMOs and CPMOs had good experience in preparing and implementing force account contracts, which enabled much faster contract awards beginning in 2013, after the delayed initial start-up. The cumulative contract awards were higher than projected until 2016. Contract awards for grant activities were, however, much slower. The grant had to be extended twice for a total period of 2 years because of slow progress and changes in scope.

[12] ADB. 2007. *Technical Assistance to the People's Republic of China for Preparing the Silk Road Ecosystem Restoration Project*. Manila.

I. Gender Equity

32. The project was classified as *some gender elements,* and gender strategy and measures were incorporated into the project design and implemented to promote gender equality and women's empowerment.[13] These measures ensured women's access to and use of services and participation in decision-making process.[14] By completion, about 398,950 women farmers (50.2% of the total) were consulted for economic tree planting and development. A total of 67,036 women, 46.5% of the total, participated in the project training activities, and 40,178 jobs (40.8% of the total) created were for women, slightly exceeding the only gender disaggregated target of 40%. To avoid an increase in the women's workload, women's participation in the project was on a voluntary basis and most of the project-related works was seasonal and part time (Appendix 10).

J. Safeguards

33. **Environment.** The project was classified category B for environment under the ADB's Safeguard Policy Statement (2009). During project preparation, domestic environmental impact assessment reports were prepared for the three provinces in accordance with PRC regulations. An initial environmental examination (IEE) report was prepared and disclosed in accordance with ADB guidelines. An environmental management plan (EMP) was prepared to guide the NPMO, PPMOs, and CPMOs in environmental supervision and monitoring, but lacked details in environment monitoring requirements. As the participating counties changed, a revised IEE was prepared in 2017 incorporating minor changes (para. 8). The revised IEE was, however, only disclosed on the ADB website after project completion, in a noncompliance of ADB's SPS.

34. At completion, the PPMOs confirmed the following results: (i) no public grievances or complaints reported during project implementation; (ii) domestic environmental approvals issued to all completed subprojects; (iii) approved water allocations issued by the local water resources bureaus for subprojects involving increased water use; (iv) subprojects constructed in accordance with the agreed designs; and (v) no major deviation from the agreed designs or the environmental safeguard measures within the EMP.[15] However, there were no environmental safeguard monitoring reports available to verify the results. The lack of environment monitoring reports constitutes a noncompliance of the SPS and the loan agreement.

35. **Involuntary resettlement.** The project was classified as category C for involuntary resettlement. The PPMOs were to ensure that there were no involuntary land acquisition or resettlement impacts. Ownership of all the land to be occupied with ecological forest and economic plantations was either state-owned or collectively-owned by villagers. No land acquisition was required. For establishment of ecological forests and economic plantations, ownership of the villagers' collectively-owned land remained unchanged. There were no households on the project-occupied land and the project did not involve any relocation.

36. **Land use rights transfers.** Before the project, almost all the collective land needed for the project economic plantation in Shaanxi and Gansu had been contracted to individual households. To establish the project economic plantations, land use rights of contracted collective lands of 680 ha in Shaanxi and 7,319 ha in Gansu were transferred to farmer cooperatives or enterprises. All the land use rights transfers were voluntary. The rental rates, the lease tenure,

[13] At appraisal, a gender action plan was not required.
[14] ADB. 2011. Forestry and Ecological Restoration Project in Three Northwest Provinces: Summary Poverty Reduction and Social Strategy. Manila.
[15] ADB (East Asia Department). 2018. Project Review Mission to PRC: Forestry and Ecological Restoration Project in Three Northwest Provinces. Memorandum of Understanding. 27 August (internal).

and the payment frequency were all fully discussed and agreed with the relevant farmers. Contracts were signed directly with the individual farm households, or with village committees on behalf of the villagers, or with the villager's representatives.

37. **Indigenous peoples.** Project preparation identified that ethnic minority groups lived in five project counties of Xinjiang and that no ethnic minority groups lived in the project areas of Gansu and Shaanxi. An EMDP for Xinjiang and the community consultation and disclosure plan (CCDP) for Gansu and Shaanxi were prepared and implemented by the executing agencies. Ethnic minorities made up 56% of the 7,550 participants in village level consultations in the five counties in Xinjiang. About 4,100 ethnic minority farmers were involved in planting and earned CNY3,000 per farmer. A total of 712 ethnic minority farmers were employed to maintain and manage the project economic and ecological forests; and 345 ethnic minority households owned the project economic plantations. A total of 7,942 ethnic minority farmers were trained on IEM and relevant agricultural techniques. Local languages (Uygur and Kazakh) were used during disclosure, consultations, and training, which also took consideration of meeting areas convenient for and accessible to ethnic minorities, especially ethnic minority women (Appendix 11).

38. **Community consultation and disclosure strategy.** A CCDS was developed and implemented. At least 400,000 farmers had access to the project information. The project information was disclosed through village meetings, distribution of publicity materials, publicity billboards, online news, mass media, and publicity vans. The project objectives were explained to farmers and enterprises. The potential benefits and risks were presented to farmers. The project implementation arrangements were explained to stakeholders. Planting site plans were prepared with participation of the farmers including women, ethnic minorities, and the poor.

K. Monitoring and Reporting

39. Most of the loan covenants have been complied with during project implementation (Appendix 7). The environmental safeguards monitoring, and reporting was partially complied with. The ADB missions' teams, including the environmental specialists, identified the following issues: (i) low PPMO capacity to implement the EMP, including a lack of qualified environment officers within the PPMOs for EMP coordination; (ii) limited reporting compliance in the progress reports to ADB; and (iii) the need to include domestic environmental approvals for the subprojects in the progress reports to ADB. The ADB missions made repeated requests to the PMO as documented in the MOUs of annual review missions from 2012 to 2018. However, there were no remedy actions from the PMO and no follow-up actions from ADB missions to ensure compliance. At completion, major gaps remained in the environmental safeguards monitoring and reporting.

40. The social safeguards covenants were partially complied with. There was weak monitoring and reporting on EMDP for Xinjiang. The project progress reports, and social assessment reports prepared by an external agency included limited information on ethnic minorities. A minor change in scope was approved to remove the ecological forestry center. However, the covenant in the project agreement was not updated, resulting in partial compliance.

41. The NPMO established a project performance management system. The NPMO noted difficulty in obtaining updated and timely information, because of the NPMO's and PPMO's limited prior experience. However, the project performance management system gradually improved, and the final annual report became the main basis of this project completion report (PCR).

42. A total of 23 annual audit reports were submitted to ADB. The audit reports helped identify and handle some implementation issues, such as slow withdrawal, insufficient counterpart

financing, and inefficient disbursement by county finance bureaus. The 2015 audit report identified a fraudulent contract in Xinjiang, based on which ADB recovered the disbursed loan proceeds.

III. EVALUATION OF PERFORMANCE

A. Relevance

43. The project is rated *relevant*, both at appraisal and on completion. It was relevant to the government's development strategy and ADB's country partnership strategy (para. 5 and 6). The project objectives and contents are highly relevant to the national strategy for strengthening the protection of ecological environment since the Twelfth Five-Year Plan. It supports and adds demonstrative values to decades of commitments by the government on sustainable afforestation, with the planted area reaching 800 million ha by 2019 and accounting for 36% of its total forest area, the highest ratio of planted forest in the world. The design was consistent with promoting ecological civilization development and the priorities of the Belt and Road economic cooperation development strategy, which came into effect after the project started. It is also aligned with the government's guiding concept of shifting the ecological development mode and developing ecological forestry for people's livelihood. Consistent with subsequent provincial five-year plans in Gansu, Shaanxi, and Xinjiang, the project established economic plantations and ecological forests, conserved water and soil, and restored degraded land. The project promoted the innovation of forestry management system, the improvement of farmers' income level, and the development of forest multi-functions and benefits; provided a new model for ecological management and forestry reform; and improved government forest management and administration. The carbon trading market in the PRC and around the world did not achieve the level of development expected by many. The changes from the carbon trading training center to education, experience, and ecotourism centers, building on the boom of tourism activities in the PRC, were adaptive and further improved project relevance.

B. Effectiveness

44. The project is rated *effective* in achieving its intended outcome of increasing productivity of forest lands and reduced land degradation in Gansu, Shaanxi, and Xinjiang. The project helped reduce degraded forest land in the project counties by 233,500 ha and increased forest cover and tree density by 43,915 ha, which led to the creation of 99,800 permanent rural jobs, more than double the original targets. They also helped increase the average net income of 215,250 rural beneficiary households from CNY1,600 in 2010 to CNY4,642 in 2018, doubling original targets, although not all the increase could be attributed to the project.

45. The project largely achieved its planned outputs. Output 1 had 39,084 ha of 12 varieties of economic tree crops planted, contributing to local income generation and business opportunities and improved forest coverage. The enterprises participation was not as much as planned because of the project start-up delay and changing market conditions. Output 2 restored 3,800 ha of degraded ecological forest. The output also helped improve the technical, management, and financial capacity of seven SFFs in Shaanxi Province through training and income diversification by building integrated education and experiencing centers and ecotourism facilities. However, the change to ecotourism resulted in partial achievement of the carbon related activities. Output 3 improved project management capacity in the forest sector with the establishment of a network of project management offices from state level to the three provinces, counties, and townships. Extensive training was organized for managers, technicians, community leaders, farmers, and businesses. Although short of the target of 200,000, a total of 144,164 persons participated in IEM related trainings, 46.5% of which were women.

46. The project generated great ecological and environment benefits. The forest planting directly contributed to an estimated carbon sequestration of 645,200 tons. Enhanced SFF capacity in management and income diversifications helped improve protection of state farms, further contributing to climate change mitigation. Tree species diversity increased in the project area. The protection of ecologically sensitive areas increased by 141,450 ha. Improved protection of soil and water was expected with improved vegetation cover. The IEM concepts promoted and mainstreamed afforestation practices, raising awareness of government officials, businesses, and local farmers. However, despite monitoring of project main outputs, such as survival rate of tree plantations, there was lack of compliance with environment safeguards monitoring and reporting.

C. Efficiency

47. The project is rated *efficient*. The project's economic viability was reevaluated based on the actual costs incurred and the benefits achieved and expected over the full project life (Appendix 8). The economic reevaluation shows that the overall project remains economically viable at completion, and that the estimates remain robust despite uneven performance across the three provinces. The economic internal rate of return (EIRR) was 18.8% at completion, marginally lower than 19.5% at appraisal. The EIRR was estimated at 22.4% for Shaanxi, 19.8% for Gansu, and only 5.6% for Xinjiang, where the trees had lower survival rates and low yields because of harsh environment conditions, higher maintenance costs, and lower consideration for the economic values. The withdrawal of all small enterprises from the project also had a negative impact on the economic returns.

48. The process efficiency is *less than efficient*. The implementation of economic plantations, ecological forests, infrastructure construction, institutional support, and project management generally followed the project schedule. The project set up stable management institutions and systems and risk control mechanisms to ensure project implementation. Because over half of the project counties had no prior experience in implementing any foreign funded forestry projects, the PMOs at all levels established new administrative procedures, rules, and regulations and carried out necessary training. ADB recognized the project for outstanding performance in 2015. However, the complex implementation arrangement also had its difficulties. The NPMO had difficulty in timely submission of progress reports. The environment and social safeguards monitoring, and reporting were weak throughout. The PPMOs and county forest bureaus experienced difficulties and delays in timely processing of withdrawal applications, with some delays attributed to ADB review and turnaround times. The financial management could have been improved, as evidenced by a fraudulent contract. The project was extended for 26 months.

D. Sustainability

49. The project is rated as *likely sustainable.* The project's financial viability is reevaluated based on the financial internal rate of return (FIRR) of each of the outputs against the actual investment costs. The recalculated FIRR for each crop indicates that the return on investments for most major crops is reasonable. Two major crops accounted for 35% (apples) and 39% (walnuts) of total planted areas at completion. The FIRR for apples was 23.2% at completion, much higher than 16.6% at appraisal. The FIRR for walnuts was 21.7% at completion, compared with 19.8% at appraisal. Prickly ash had a –10.8% FIRR at completion, which explained the significant reduction in planting areas from 4,625 ha at appraisal to 1,722 ha at completion. In total, 10 of the planted economic tree crops had FIRRs ranging from 2.9% for tea to 43.9% for cherries. Prickly ash (–10.8%) and ginkgo (0.1%) had the lowest FIRRs, yet their combined planted area was only 6.3% of total area, which did not materially change the overall project

financial viability. The average FIRR of the Shaanxi SFFs was 10.2%, higher than the 5.1% weighted average cost of capital at appraisal. The project capitalized on the growing ecotourism market through adaptive management, which helped SFFs diversify their revenue and improved their management capacity and resilience.

50. The project successfully broadened the model of afforestation in the three northwest provinces by combining ecological protection with income generation activities, which is crucial for the provinces where ecosystems are fragile and the economy lags. It helped advance SFF reforms by changing revenue from cutting trees to protecting the forests. It helped develop local processing and storage facilities and promoted internet agriculture to connect economic tree farmers to end users. The extensive training and outreach activities laid a good foundation for post-project care, management, and protection of the planted trees and other forests in the three provinces. The IEM method was widely accepted and successfully established as standard approach. The "mountain-river-forest-farm-lake-grass" method, an integrated landscape approach, is promoted across the country for ecological protection. The demonstrative effects of the project were recognized by the SFGA and included in its 2018 annual report.

E. Development Impact

51. The development impact is rated *satisfactory* because intended impacts of improved incomes and sustainable livelihoods from the use of forest land in Gansu, Shaanxi, and Xinjiang were achieved. The project exceeded all three impact indicators. The average net income of beneficiary households increased by 190%, much higher than the 30% target at appraisal. Rural employment increased by 99,800 jobs by 2018, more than doubling the performance target of 48,000 jobs. The area of ecological sensitive areas under protection increased by 141,450 ha between 2010 and 2018, exceeding the performance target of 130,000 ha.

52. **Social and poverty reduction impacts.** The poverty prevalence at the three northwest provinces were among the highest in PRC at the time of project appraisal and implementation. The project targeted the poorest of the poor in the environmentally disadvantaged areas and greatly helped reduce poverty through prioritizing the economic tree crops and diversifying the income of SFFs. The project created employment, provided initial support to the rural poor in establishing economic plantations, and trained them with corresponding technical and management technology and skills. The project was implemented in 1,257 administrative villages in 256 townships of 53 counties, cities and districts in Shaanxi, Gansu, and Xinjiang. Most of the economic tree crops (81%) are owned by rural households, including 158,003 individual rural households and 4,165 famer cooperatives or associations, benefiting 790,015 persons, of which 50.2% are women, 2.8% ethnic minorities, and 26.2% poor. The project created 57,621 jobs during project implementation and 43,179 jobs for subsequent operations. The project made important contributions to poverty reduction and helped lift 61 counties out of extreme poverty by 2018.

53. **Environmental impacts.** Despite weak environment monitoring and reporting, the project has significant environmental benefits, including water savings in irrigation systems and improved forest cover and biodiversity, leading to reduced soil erosion and increased carbon sequestration. Carbon sequestration and land improvements are considered significant benefits representative of the overall positive impacts of the project. The project helped increase protection of ecologically sensitive areas by 141,450 ha, reduced forest land degradation by 233,500 ha, and contributed to carbon sequestration of more than 645,200 tons. The project also promoted and mainstreamed IEM approach for better mitigation and adaptation to climate change.

F. Performance of the Borrower and the Executing Agency

54. The overall performance of the borrower and the executing agency was *less than satisfactory*. The borrower and the executing agency fulfilled most of their obligations during project implementation. The NPMO provided overall project management, communication, consolidation of progress reports once every six months, supervision and monitoring, and training and other technical support. This was the first ADB project managed by the SFGA through the NPMO. From the project outset, it was recognized that the executing agency and implementing agencies required capacity development in financial management, procurement, disbursement, project performance management systems, and monitoring and reporting. While the executing agency's capacity improved during project implementation, there were remaining performance gaps and loan covenants compliance issues with respect to fulfilling ADB's environmental safeguards and ethnic minority development reporting requirements. There was weakness in submission of good quality safeguard reports to ADB. No groundwater and irrigation water survey and quality test and monitoring were recorded. The borrower and the executing agency did not comply with related loan covenants and ADB's SPS.

G. Performance of the Asian Development Bank

55. ADB's performance was *less than satisfactory*. ADB fielded seven review missions during implementation, including the midterm review mission in June 2015. ADB promptly worked with the executing agency to overcome initial implementation constraints and challenges and supported timely changes of some project activities, which were no longer preferred because of the rapid changes in the PRC since the initial approval of the project. The changes to ecotourism helped implementing agencies capture market opportunities and diversify SFF revenues. ADB supplemented the project implementation with good knowledge support, including publishing IEM approaches and promoting the project through various avenues.

56. The project preparatory TA was considered relevant but less than effective with potential for improvement. There were errors in loan allocation table that delayed project start-up. Errors in defining and calculating carbon related indicators in the project DMF were recognized but not corrected during project implementation, resulting in difficulty comparing achievements with targets. As the implementing agency, ADB administered the GEF grant effectively. Several changes to the GEF activities were discussed, agreed, and recorded in mission MOUs. There was, however, no documented process to effect the changes. ADB mission leaders were changed three times from 2016 to 2018, which caused some delays in ADB responses and anxiety among executing and implementing agencies. ADB missions identified and recommended remedy actions for the noncompliance with safeguards reporting but did not take resolute actions to enforce compliance with the SPS.

H. Overall Assessment

57. Overall, the project is rated *successful*. It is *relevant* because the intended project impact and outcome were fully aligned with the government's strategy and ADB's country partnership strategy, both at appraisal and at completion. The project was *effective* based on the substantial achievement of project outcomes and outputs. It was *efficient* in delivering the outputs within the allocated resources and remains economically viable. The project is *likely sustainable* because the economic tree crops were established and maintained by trained personnel. The SFFs improved their capacity and increased revenue in ecological forest management. The IEM approach was widely promoted and adopted by communities in the three provinces.

Overall Ratings

Criteria	Rating
Relevance	Relevant
Effectiveness	Effective
Efficiency	Efficient
Sustainability	Likely sustainable
Overall Assessment	Successful
Development impact	Satisfactory
Borrower and executing agency	Less than satisfactory
Performance of Asian Development Bank	Less than satisfactory

Source: Asian Development Bank.

IV. ISSUES, LESSONS, AND RECOMMENDATIONS

A. Issues and Lessons

58. **Optimistic project targets.** While the project's direct output and outcome indicators were straightforward and closely aligned to project inputs, some outreach and indirect benefits were vague and overly ambitious. Reduction in degraded forest land in the three provinces was not directly linked to project activities and cannot be fully assessed shortly after project completion. Carbon forestry improvement of involved SFFs was not a measurable indicator. IEM training for 200,000 households was overly ambitious, resulting in partial achievement even though 144,165 households is still a significant achievement. Six out of 11 crops had lower actual FIRR than that at appraisal, the negative impacts of which were mitigated through reduction in planting areas.

59. **Implementation arrangement.** The project had complex implementation arrangements with the SFGA, three provinces, and 53 counties. A large administrative system was established and delivered the project successfully with coordination from the NPMO. However, PPMOs' capacity varied and delay in one easily caused delay in others. There was inadequate project implementation support, typically provided by project management consultants. The NPMO did not have allocation from loan proceeds for operations and had to rely on the SFGA administrative budget, which was limited and had little flexibility to accommodate unexpected expenses.

60. **Monitoring and reporting.** The project performance management system was established but the reporting quality was less than satisfactory. The capacity constraints in the NPMO, PPMOs, and CPMOs was recognized during project preparation and a capacity development program was designed, but there were no provisions for project management consultant support and the PMOs lacked resources for day-to-day monitoring. The reporting quality gradually improved toward completion, although data quality remained inconsistent.

61. **Environmental and social safeguards.** The project was rated category B for environment, C for involuntary resettlement, and A for indigenous people (for Xinjiang). An EMP was developed but there was an absence of monitoring and reporting because of lack of resources allocation and low safeguard capacity in the PMO. The project progress reports, and social assessment reports prepared by an external agency included some information on ethnic minorities but was weak on social safeguard monitoring reports on the EMDP. ADB review missions repeatedly requested improvement but did not take remedial actions (including withholding disbursement or suspension) to enforce compliance. At completion, the overall monitoring and reporting on safeguards remained weak and noncompliant.

62. **Carbon indicators design.** The project defined two sets of carbon target indicators, sequestration and protection of stocks. However, the indicators were erroneous and were not

comparable to project achievements. The improvement in protection of carbon stocks has indirect links with project interventions and was not quantifiable. The baseline was not properly defined, resulting in an inability to assess the targets at project completion.

63. **Market participation.** The project promoted value chain development for economic tree crops and involved state-owned and private enterprises in post processing, storage, and marketing of products, which were useful to ensure continued growth of forests and famers' income. However, the design did not factor in project delays, market fluctuation, and incentives for longer term engagement. As the project start was delayed, most enterprises withdrew from the project and only four out of 26 remained and were operating profitably.

64. **Carbon market.** Afforestation has great potential to store carbon, contributing to climate change mitigation and benefiting financially from the carbon trade. This potential was recognized at appraisal. Carbon market readiness and education with ecological forestry and climate change capacity development interventions were designed. Unfortunately, the carbon market did not develop and mature as expected. The price was low and provided disincentives for participation. The project did not fully achieve the targets on climate change related capacity development, which may result in lost opportunities in supporting the country's carbon neutrality pledge.

B. Recommendations

65. **Upscaling on successful afforestation solutions.** The IEM approach was a successful model for addressing the dual challenges of economic development and ecosystem restoration. Several knowledge products were published. It is recommended to further promote the model in line with the PRC's drive for sustained economic development and ecological civilization.

66. **Diversifying forestry economy through ecotourism.** The project adapted to changes and shifted focus to ecotourism as a new revenue source for SFFs. It represented a direction in the PRC to diversify forestry conservation economy. Future ADB projects could conduct rigorous financial and economic analyses on ecotourism and other related economic activities. The DMFs could include appropriate financial and economic performance indicators and targets.

67. **New opportunity in carbon trade and eco-compensation.** The PRC's carbon neutrality pledge is unleashing new development in emission reduction and carbon sequestration, offset, and trade. Future ADB projects in forestry will need to ensure sufficient interest, willingness, and buy-in from executing and implementation agencies. Eco-compensation is another mechanism providing opportunities to develop ecological forestry as a revenue generating business.

68. **Further action or follow up.** The executing agency and implementing agencies should still aim to conduct monitoring and collect data and information on the environment and social safeguards aspects because these will be important to ensure sustainability and the long-term success of the project and afforestation activities in the region. The executing and implementing agencies should also continue to monitor economic and ecological forestry performance and aid as may be needed to support farmers and SFFs.

69. **Timing of the project performance evaluation report.** It is recommended that a performance evaluation review be conducted in 2022 or later. This will ensure the evaluation will include the economic and social benefits and risks after the forest is fully grown and has reasonable exposure to market fluctuations.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators		Project Achievements
	Original[a]	Revised[b]	
Impact Improved incomes and sustainable livelihoods from the use of forest land in Gansu, Shaanxi, and Xinjiang.	Average net income of beneficiary households increased by 30%, from CNY1,600 in 2010 to CN 2,080 by 2020	No change	**Achieved**. Average net income of the beneficiary households increased by 190%, from CNY1,600 in 2010 to CNY4,642 in 2018, which includes, Gansu at CNY4,941, Shaanxi at CNY4,400, and Xinjiang at CNY6,600 in 2018.
	Protection of ecologically sensitive areas increased by 130,000 ha, from about 180,000 ha in 2010 to about 310,000 ha by 2020	No change	**Achieved**. Protection of ecologically sensitive areas increased by 141,450 ha, from about 180,000 ha in 2010 to about 310,000 ha in 2018, which includes increase of 90,000 ha in Gansu, 45,000 ha in Shaanxi, and 6,450 ha in Xinjiang.
	Rural employment increased by 48,000 jobs by 2020	No change	**Achieved**. Rural employment increased by 99,800 jobs by 2018, including 53,800 in Gansu, 24,000 in Shaanxi, and 22,000 in Xinjiang of the total, 40,178 jobs (40%) were taken by women.
Outcome Increased productivity of forest lands and reduced land degradation in Gansu, Shaanxi, and Xinjiang.	Degraded forest land in the three provinces reduced by 10% in 2010 from about 3.50 million ha to about 3.15 million ha by 2016	Degraded forest land in the three provinces reduced by 10% in 2010 from about 3.50 million ha to about 3.15 million ha by 2018	**Substantially achieved**. Degraded forest land in the three provinces reduced by 6.67% in 2010 from about 3.50 million ha to about 3.27 million ha by 2018, including 147,000 ha reduction from Gansu, 80,000 ha from Shaanxi, and 6,500 ha from Xinjiang.
	Forest cover and tree density (stand volume) increased by 3% in Gansu (from 680,000 ha to 700,000 ha), 2% in Shaanxi (from 735,000 ha to 750,000 ha), 1% in Xinjiang (from 594,000 ha to 600,000 ha), leading to protection of total carbon stocks of 32 million tons and sequestration of 3.3 tons by 2016	Forest cover and tree density (stand volume) increased by 3% in Gansu (from 680,000 ha to 700,000 ha), 2% in Shaanxi (from 735,000 ha to 750,000 ha), 1% in Xinjiang (from 594,000 ha to 600,000 ha), leading to protection of total carbon stocks of 32 million tons and sequestration of 3.3 tons by 2018	**Achieved**. Forest cover and tree density (stand volume) increased by 3.42% from 680,000 ha to 703,280 ha in Gansu, 1.93% from 735,000 ha to 749,186 ha in Shaanxi, and 1.08% from 594,000 ha to 600,449 ha in Xinjiang by 2018, leading to carbon sequestration of 645,200 tons.
Outputs 1. Mainstreamed IEM approaches applied to	About 38,000 ha of 13 varieties of economic tree crops newly planted and producing	About 39,500 ha of 12 varieties of economic tree crops newly planted and	**Achieved**. A total of 39,130 ha of 12 varieties of economic tree crops newly planted and producing fruit on degraded forest land in the three

Design Summary	Performance Targets and Indicators		Project Achievements
	Original[a]	Revised[b]	
economic tree crop development	fruit on degraded forest land in the three provinces by 2016	producing fruit on degraded forest land in the three provinces by 2018	provinces by 2018, which include 19,601 ha in Gansu, 14,163 ha in Shaanxi, and 5,366 ha in Xinjiang.
	About 207,000 rural households and workers benefiting directly from the production and processing of economic tree crops by 2016	About 207,000 rural households and workers benefiting directly from the production and processing of economic tree crops by 2018	**Achieved**. About 215,250 rural households and workers (889,815 persons in total), including 104,250 from Gansu, 56,000 from Shaanxi and 55,000 from Xinjiang, benefiting directly from the production and processing of economic tree crops by 2018. [c]
	About 26 enterprises operating profitably by 2016	About 21 enterprises operating profitably by 2018	**Partially achieved**. Only 4 enterprises operating profitably with support from the project by 2018. All 17 enterprises from Xinjiang withdrew from the project.
	Increased sequestration of about 368,600 tons of carbon in orchards by 2016	Increased sequestration of about 368,600 tons of carbon in orchards by 2018	**Achieved**. Increased sequestration of about 607,700 tons of carbon in orchards by 2018.
2. Mainstreamed IEM approaches applied to ecological forestry development	About 3,000 ha of degraded forest land in Gansu restored; protection of carbon stocks of 2.7 tons and sequestration of 3.3 tons by 2016	About 3,000 ha of degraded forest land in Gansu restored; protection of carbon stocks of 2.7 tons and sequestration of 3.3 tons by 2018	**Achieved**. A total of 2,984 ha of degraded forest land in Gansu was restored; carbon sequestration was 29,000 tons by 2018.
	At least seven SFFs in Shaanxi improve tree cover and density on about 126,000 ha; protection of carbon stocks of 28.8 tons and sequestration of additional 1 ton of carbon by 2016	At least seven SFFs in Shaanxi improve tree cover and density on about 126,000 ha; protection of carbon stocks of 28.8 tons and sequestration of additional 1 ton of carbon by 2018	**Achieved**. Seven SFFs in Shaanxi improved tree cover and density on about 119,880 ha, resulting in protection of total carbon stocks of 6,841,552 tons by 2018.
	Ecological forestry center providing support to SFFs in forestry management and carbon trading	Two forest education and exhibition centers and three forest/health experience centers	**Achieved**. Two forest education and exhibition centers were established at the Matoutan and Dahanshan SFFs; Three forestry experiences and carbon sequestration education centers were established at Houzhenzi and Matoutan, Xinjiashan SFFs.

Design Summary	Performance Targets and Indicators		Project Achievements
	Original[a]	**Revised**[b]	
	GEF financing: (i) about 700 ha of degraded steeply sloping forest land in Gansu restored, (ii) about 1,000 ha of degraded forest land secured in Xinjiang, and (iii) carbon forestry improvements made on about 12 SFFs in Shaanxi and Gansu; protection of 6,000 tons of carbon and sequestration of 5,000 tons in Xinjiang by 2016	GEF financing: (i) about 700 ha of degraded steeply sloping forest land in Gansu restored, (ii) about 1,000 ha of degraded forest land secured in Xinjiang, and (iii) carbon forestry improvements made on about 12 SFFs in Shaanxi and Gansu; protection of 6,000 tons of carbon and sequestration of 5,000 tons in Xinjiang by 2018	**Achieved**. GEF financing: (i) 695 ha of degraded steeply sloping forest land in Gansu was restored, **Achieved**. (ii) 1106 ha of degraded forest land was secured in Xinjiang (including 435 ha from GEF funding and 630 ha from ADB loan), and **Partially achieved.** (iii) carbon forestry improvements were made on seven SFFs in Shaanxi; **Achieved**. The total carbon sequestration of new forest was 8300 tons in Xinjiang
3. Project management support strengthened to implement forest sector reforms using IEM approaches in the provinces, counties, towns, and households	PPMOs and CPMOs established and operating in each province and county	No change	**Achieved**. Three PPMOs and 27 CPMOs in Gansu, 39 CPMOs in Shaanxi, and 9 CPMOs in Xinjiang were established and operating in each project province and county by 2018
	Enhanced capacity of households and implementing agencies in implementing IEM approaches; about 200,000 households received training in IEM	No change	**Substantially achieved**. About 150,981 persons received training in IEM through 718 trainings by 2018, including 16 provincial and 533 at county and township level in Gansu, 12 provincial and 104 at county and township level in Shaanxi, and 7 provincial and 81 county and township level in Xinjiang.

ADB = Asian Development Bank, CPMO = county project management office, GEF = Global Environment Facility, ha = hectare, IEM = integrated ecosystem management, PPMO = provincial project management office, SFFs = state forest farms.

[a] The performance targets and indicators as approved originally during processing.

[b] The performance targets and indicators were revised consistent with the scope changes approved in March 2016, and as agreed in Memorandum of Understanding in September 2016 review mission.

[c] The benefits include income from higher productivity of economic trees, jobs for the construction and operation of economic tree crops, processing and storage facilities.

Source: Asian Development Bank.

PROJECT COST AT APPRAISAL AND ACTUAL
($ million)

	At Appraisal		At Completion	
Source	**Total**	**%**	**Total**	**%**
Asian Development Bank	100.00	55.3	87.17	59.8
Global Environment Facility	5.12	2.8	4.30	2.9
Provincial, Municipal, and County Governments	44.99	24.9	26.05	17.9
Enterprises	12.74	7.1	8.12	5.6
Households	17.86	9.9	20.03	13.7
Total	**180.71**	**100.0**	**145.66**	**100.0**

Numbers may not sum precisely because of rounding
Source: Asian Development Bank estimates.

PROJECT COST BY FINANCIER

Table A3.1: Project Cost at Appraisal by Financier
($ million)

Item		Asian Development Bank		Global Environment Facility		Provincial, Municipal, and County Governments		Enterprises		Households		Total Cost	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Total Project Cost
A.	**Planting Crop Inputs**												
	1. Economic tree crops	65.99	66.6%	0.00	0.0%	6.04	6.1%	9.72	9.8%	17.38	17.5%	99.13	54.9%
	2. Ecological Forestry	3.45	52.10%	2.38	35.8%	0.33	4.9 %	0.00	0.0%	0.48	7.2%	6.64	3.7%
B.	**Infrastructure**												
	1. Economic tree crops	20.77	91.6%	0.00	0.0%	0.00	0.0%	1.90	8.4%	0.00	0.0%	22.67	12.5%
	2. Ecological Forestry	7.56	76.2%	0.00	0.0%	2.36	23.8%	0.00	0.0%	0.00	0.0%	9.92	5.5%
C.	**Carbon Readiness and Education**												
	Shaanxi	0.00	0.0%	0.70	100.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.70	0.4%
D.	**Ecological Forestry Center**	0.00	0.0%	1.00	100.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%	1.00	0.6%
E.	**Office Equipment**	0.44	35.8%	0.45	37.1%	0.33	27.1%	0.00	0.0%	0.00	0.0%	1.22	0.7%
F.	**Vehicles**	0.00	0.0%	0.00	0.0%	3.44	100.0%	0.00	0.0%	0.00	0.0%	3.44	1.9%
G.	**Training**	1.79	59.2%	0.59	19.4%	0.65	21.4%	0.00	0.0%	0.00	0.0%	3.02	1.7%
H.	**Design, Monitoring, Evaluation**	0.00	0.0%	0.00	0.0%	8.42	100.0%	0.00	0.0%	0.00	0.0%	8.42	4.7%
I.	**Contingencies**	0.00	0.0%	0.00	0.0%	9.65	100.0%	0.00	0.0%	0.00	0.0%	9.65	5.3%
J.	**Financial Charges During Construction**	0.00	0.0%	0.00	0.0%	13.78	92.5%	1.11	7.5%	0.00	0.0%	14.89	8.2%
	Total Project Cost	**100.00**	**55.3%**	**5.12**	**2.8%**	**44.99**	**24.9%**	**12.74**	**7.1%**	**17.86**	**9.9%**	**180.71**	**100.0%**

Note: Numbers may not sum precisely because of rounding.
Source: Asian Development Bank.

Table A3.2: Project Cost at Completion by Financier

($ million)

Item		Asian Development Bank		Global Environment Facility		Provincial, Municipal, and County Governments		Enterprises		Households		Total	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Total Project Cost
A.	**Planting Crop Inputs**												
	1. Economic tree crops	58.90	65.0%	0.00	0.0%	12.25	13.5%	0.00	0.0%	19.52	21.5%	90.68	62.3%
	2. Ecological Forestry	3.82	58.1%	1.66	25.3%	0.58	8.9%	0.00	0.0%	0.51	7.7%	6.57	4.5%
B.	**Infrastructure**												
	1. Economic tree crops	16.61	95.4%	0.00	0.0%	0.00	0.0%	0.80	4.6%	0.00	0.0%	17.41	11.9%
	2. Ecological Forestry	7.29	50.6%	0.00	0.0%	0.00	0.0%	7.11	49.4%	0.00	0.0%	14.40	9.9%
C.	**Carbon Readiness and Education**												
	Shaanxi	0.00	0.0%	0.68	95.4%	0.03	4.6%	0.00	0.0%	0.00	0.0%	0.72	0.5%
D.	**Ecological Forestry Center**	0.00	0.0%	1.03	94.8%	0.06	5.2%	0.00	0.0%	0.00	0.0%	1.09	0.7%
E.	**Office Equipment**	0.21	19.6%	0.39	37.1%	0.45	43.2%	0.00	0.0%	0.00	0.0%	1.04	0.7%
F.	**Vehicles**	0.00	0.00%	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
G.	**Training**	0.35	15.2%	0.53	23.2%	1.41	61.6%	0.00	0.0%	0.00	0.0%	2.29	1.6%
H.	**Design, Monitoring, Evaluation**	0.00	0.0%	0.00	0.0%	1.83	100.0%	0.00	0.0%	0.00	0.0%	1.83	1.3%
I.	**Contingencies**	0.00	0.0%	0.00	0.0%	2.15	100.0%	0.00	0.0%	0.00	0.0%	2.15	1.5%
J.	**Financial Charges During Construction**	0.00	0.0%	0.00	0.0%	7.28	97.2%	0.21	2.8%	0.00	0.0%	7.50	5.1%
	Total Project Cost	**87.17**	**59.8%**	**4.30**	**2.9%**	**26.05**	**17.9%**	**8.12**	**5.6%**	**20.03**	**13.70.0%**	**145.66**	**100.0%**

Note: Numbers may not sum precisely because of rounding.
Sources: Asian Development Bank, executing agency, and implementing agencies.

DISBURSEMENT OF ADB LOAN AND GRANT PROCEEDS

Table A4.1: Annual and Cumulative Disbursement of ADB Loan Proceeds[a, b]
($ million)

	Annual Disbursement		Cumulative Disbursement	
Year	Amount ($ million)	% of Total	Amount ($ million)	% of Total
2011	0.00	0.0%	0.00	0.0%
2012	9.47	10.9%	9.47	10.9%
2013	8.26	9.5%	17.73	20.3%
2014	22.14	25.4%	39.87	45.7%
2015	26.54	30.5%	66.42	76.2%
2016	13.57	15.6%	79.99	91.8%
2017	6.33	7.3%	86.32	99.0%
2018	1.59	1.8%	87.91	100.9%
2019	(0.75)	(0.9%)	87.17	100.0%
Total	**87.17**	**100.0%**	**87.17**	**100.0%**

ADB = Asian Development Bank.
[a] Includes disbursements to advance accounts.
[b] Numbers may not sum precisely because of rounding.
Source: Asian Development Bank.

Figure A4.1: Projection and Cumulative Disbursement of ADB Loan Proceeds
($ million)

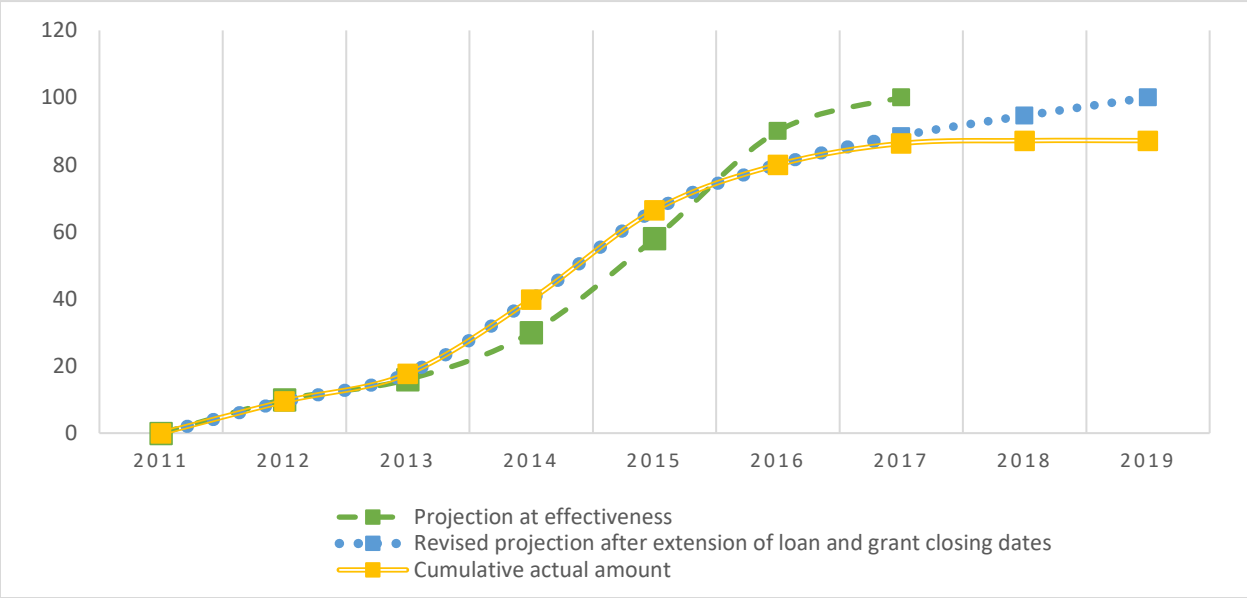
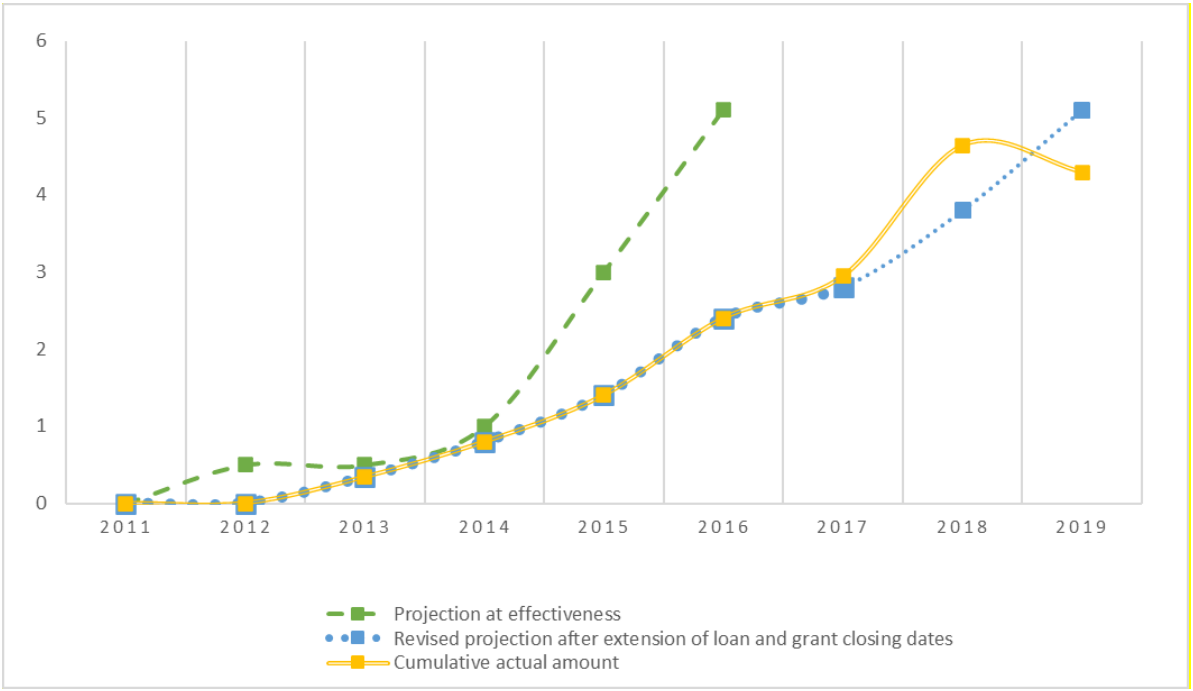


Table A4.2: Annual and Cumulative Disbursement of GEF Grant Proceeds[a, b]
($ million)

	Annual Disbursement		Cumulative Disbursement	
Year	**Amount** ($ million)	**% of Total**	**Amount** ($ million)	**% of Total**
2011	0.00	0.0%	0.00	0.0%
2012	0.00	0.0%	0.00	0.0%
2013	0.34	7.9%	0.34	7.9%
2014	0.46	10.6%	0.80	18.5%
2015	0.61	14.1%	1.40	32.6%
2016	1.00	23.3%	2.40	55.9%
2017	0.55	12.7%	2.95	68.6%
2018	1.70	39.5%	4.64	108.1%
2019	(0.35)	(8.1) %	4.30	100.0%
Total	**4.30**	**100.0%**	**4.30**	**100.0%**

() = negative, ADB = Asian Development Bank.
[a] Includes disbursements to advance accounts.
[b] Numbers may not sum precisely because of rounding.
Source: Asian Development Bank.

Figure A4.2: Projection and Cumulative Disbursement of GEF Grant Proceeds
($ million)



CONTRACT AWARDS OF ADB LOAN AND GRANT PROCEEDS

Table A5.1: Annual and Cumulative Contract Awards of ADB Loan Proceeds
($ million)

	Annual Contract Awards		Cumulative Contract Awards[b]	
Year[a]	Amount ($ million)	% of Total	Amount ($ million)	% of Total
2011	0.00	0.0%	0.00	0.0%
2012	1.80	2.1%	1.80	2.1%
2013	31.31	35.9%	33.11	38.0%
2014	15.06	17.3%	48.17	55.3%
2015	15.35	17.6%	63.52	72.9%
2016	8.60	9.9%	72.12	82.7%
2017	6.96	8.0%	79.08	90.7%
2018	5.97	6.9%	85.05	97.6%
2019	2.11	2.4%	87.17	100.0%
Total	**87.17**	**100.0%**	**87.17**	**100.0%**

ADB = Asian Development Bank.
[a] Classified by contract signing dates.
[b] Numbers may not sum precisely because of rounding.
Source: Asian Development Bank.

Figure A5.1: Projection and Cumulative Contract Awards of ADB Loan Proceeds
($ million)

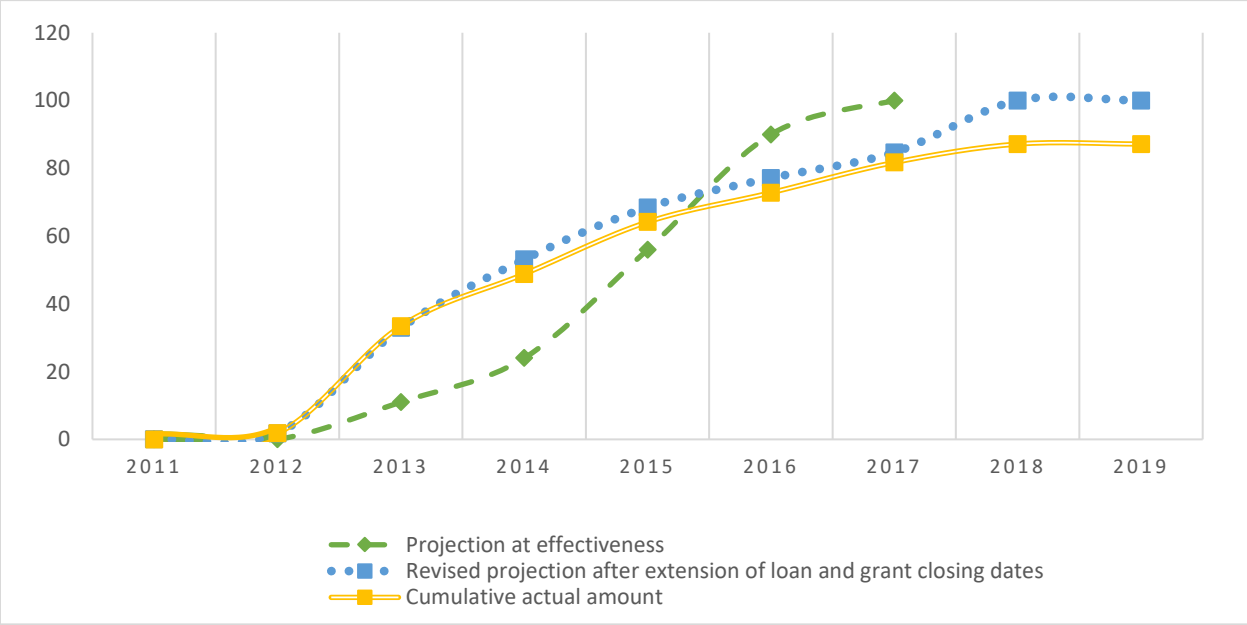
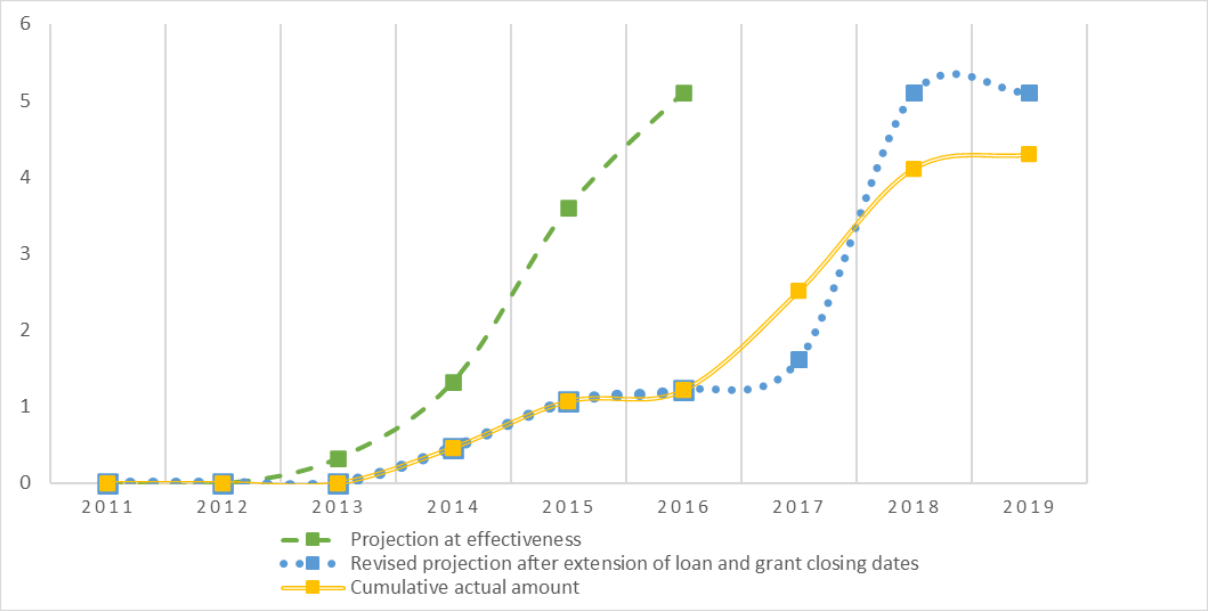


Table A5.2: Annual and Cumulative Contract Awards of GEF Grant Proceeds
($ million)

	Annual Contract Awards		Cumulative Contract Awards[b]	
Year[a]	Amount ($ million)	% of Total	Amount ($ million)	% of Total
2011	0.00	0.0%	0.00	0.0%
2012	0.00	0.0%	0.00	0.0%
2013	0.00	0.0%	0.00	0.0%
2014	0.46	10.8%	0.46	10.8%
2015	0.61	14.1%	1.07	24.9%
2016	0.14	3.4%	1.21	28.3%
2017	1.29	30.1%	2.51	58.4%
2018	1.60	37.3%	4.11	95.7%
2019	0.18	4.3%	4.30	100.0%
Total	**4.30**	**100.0%**	**4.30**	**100.0%**

ADB = Asian Development Bank.
[a] Classified by contract signing dates.
[b] Numbers may not sum precisely because of rounding.
Source: Asian Development Bank.

Figure A5.2: Projection and Cumulative Contract Awards of GEF Grant Proceeds
($ million)



CHRONOLOGY OF MAIN EVENTS

Date	Event
2009	
25 June–7 February 2009	Reconnaissance mission
4 June 2009	Concept paper approval
4–16 June 2009	Fact-Finding mission
2010	
28 January 2010	ADB Management Review Meeting
2011	
28 February–1 March 2011	Loan Negotiations
29 March 2011	ADB Board approval
3 June 2011	Loan signing
29 September 2011	Loan effectiveness date
2012	
20 September 2012	First loan disbursement
7–15 May 2012	Project inception mission
2013	
4–11 June 2013	Project review mission
12 August 2013	First grant disbursement
25 September 2013	ADB approval of the request for minor change which cover the reallocation of the loan cost categories and changes in ADB financing percentages for specific new categories
2014	
26 August–3 September 2014	Project review mission
2015	
12–19 June 2015	Project review mission
2016	
10 March 2016	ADB approval of the request for minor change for reallocation of loan and grant proceeds and first extension of the grant closing date by six months from 30 September to 31 March 2017
29 August–5 September 2016	Project review mission
2017	
30 March 2017	ADB approval of the request for first extension of loan closing date by 18 months from 31 March 2017 to 30 September 2018 and second extension of grant closing date by 18 months from 31 March 2017 to 30 September for a cumulative of 24 months
25–28 August 2017	Project review mission
2018	
15–17 August 2018	Project review mission
17 August 2018	Loan final disbursement
29 May 2019	Actual loan and grant closing date
2019	
29 March 2019	Loan financial closing date
10 December 2019	Grant financial closing date

ADB = Asian Development Bank.
Source: Asian Development Bank.

STATUS OF COMPLIANCE WITH LOAN COVENANTS

Covenant	Reference in Legal Agreements	Status of Compliance
PARTICULAR COVENANTS		
(a) The Borrower shall cause the EA, GPG, SPG, and XUG to each carry out the Project with due diligence and efficiency and in conformity with sound administrative, financial, engineering, environmental, and forestry practices. (b) In the carrying out of the Project and operation of the Project facilities, the Borrower shall perform, or cause to be performed, all obligations set forth in Schedule 5 to this Loan Agreement and the Schedule to the Project Agreement.	LA, Section 4.01	Complied with.
The Borrower shall make available to the EA, GPG, SPG, and XUG, and shall cause GPG, SPG, and XUG to make available to the Participating Counties, promptly as needed and on terms and conditions acceptable to ADB, the funds, facilities, services, land and other resources which are required, in addition to the proceeds of the Loan, for the carrying out of the Project.	LA, Section 4.02	Complied with. The needed resources to carry out the project were provided to the executing and implementing agencies.
The Borrower shall ensure that the activities of its departments and agencies with respect to the carrying out of the Project and operation of the Project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.	LA, Section 4.03	Complied with.
The Borrower shall take all action which shall be necessary on its part to enable each of GPG, SPG, and XUG to perform its obligations under the Project Agreement, and shall not take or permit any action which would interfere with the performance of such obligations.	LA, Section 4.04	Complied with.
(a) The Borrower shall exercise its rights to ensure that GPG, SPG, and/or XUG exercise their rights under the relevant Onlending Agreement to protect the interests of the Borrower and ADB and to accomplish the purposes of the Loan. (b) No rights or obligations under the Subsidiary Loan or Onlending Agreements shall be assigned, amended, abrogated or waived without the prior concurrence of ADB.	LA, Section 4.05	Complied with.
SAFEGUARD COVENANTS		
Environment GPG, SPG, and XUG shall, and shall cause the participating counties to ensure that they comply with undertakings set out in the PAM, including that: a) All the project facilities shall be constructed,	PA, Sch. 1, para. 7	Partially complied with. Construction was carried out in conformity with national laws and regulations and ADB's Safeguard Policy Statement.

Covenant	Reference in Legal Agreements	Status of Compliance
operated, maintained, and monitored in strict conformity with: (i) all applicable environmental laws and regulations, policies, procedures, and guidelines of the Borrower, (ii) ADB's Safeguard Policy Statement; and (iii) the environmental mitigation and monitoring measures detailed in the EMP; b) for other project activities, there will be compliance with environmental safeguards during project implementation; c) monitoring of the project facilities is conducted in strict conformity with all applicable national and provincial environmental laws, regulations, and guidelines, ADB's Safeguard Policy Statement, and other national, provincial, and local laws and regulations and standards on environmental protection, health, labor, and occupational safety; and d) implementation of all environmental mitigation and monitoring measures detailed in the PAM, operational guidelines, and the approved IEE and EMP for the project.		The safeguards reporting was however not complied with ADB's SPS 2009.
GPG, SPG, and XUG shall update: (a) the EMP in a form and manner satisfactory to ADB, if any unanticipated environmental risks and impacts arise; and (b) the IEE in a form and manner satisfactory to ADB, if there are any changes to project design that would cause significant environmental risks or impacts not within the scope of the IEE and submit such updated IEE to ADB for clearance.	PA, Sch. 1, para. 8	Complied with. Shaanxi has submitted and updated IEE that has been reviewed by ADB. The changes to project design are unlikely to cause significant environmental risks or impacts beyond the scope of the IEE. There were no changes to design that requires updates of the IEE.
GPG, SPG, and XUG shall, as part of the progress report, include environmental monitoring issues, if any.	PA, Sch. 1, para. 9	Not complied with. GPG, SPG, and XUG did not provide environmental safeguard monitoring reports as required.
SOCIAL COVENANTS		

Covenant	Reference in Legal Agreements	Status of Compliance
Social Safeguards GPG, SPG, and XUG shall ensure that: (a) the project does not adversely affect any ethnic minority peoples; and (b) the CCDS is implemented effectively. In terms of project beneficiaries in Xinjiang, XUG shall ensure that the EMDP endorsed by the EA and approved by ADB is implemented in accordance with its terms and the ADB's Safeguard Policy Statement. XUG shall, and shall cause PIAs to ensure that: (a) project benefits target ethnic minorities; (b) all contracts for Works specify requirements to comply with the EMDP and, as a priority, provide employment to ethnic minorities; (c) adequate staff and resources are dedicated to supervise and implement the EMDP; and (d) an independent monitoring agency acceptable to ADB is engaged to monitor the progress and results of the EMDP implementation, and to submit, as part of the progress report, the social safeguard monitoring report to ADB.	PA, Sch. 1, para. 10	Partially complied with. SPG and GPG did not have projects affecting ethnic minority peoples. The CCDS was implemented. XUG did implement the EMDP. The project progress reports, and social assessment reports prepared by an external agency included some information on ethnic minorities, but there was weakness in terms of submission of good quality social safeguard monitoring reports on EMDP.
GPG, SPG, and XUG shall ensure that the project does not cause any land acquisition or involuntary resettlement impacts as defined in ADB's Safeguard Policy Statement. GPG, SPG, and XUG shall ensure that project design and implementation includes measures to avoid involuntary resettlement, including: (a) avoidance of basic farmland for forest development; (b) voluntary participation of farmers, using a community consultative process, who will be direct beneficiaries under the project; (c) payment of wages to farmers that participate in the project and provide labor inputs; (d) no land acquisition will be required for irrigation infrastructure upgrading; and (e) ecological trees will· utilize state-owned forest land or hilly and marginal collective land.	PA, Sch. 1, para. 11	Complied with. No land acquisition or involuntary resettlement took place under GPG, SPG, or XUG projects. The project used state-owned land for ecological forest. Use of collective land was through voluntary land use right transfers.
GPG, SPG, and XUG shall ensure that all works contracts under the Project incorporate provisions and budgets to the effect that contractors (a) comply with the Borrower's applicable labor laws and related international treaty obligations and do not employ child labor; (b) provide safe working conditions and separate water and sanitation facilities for male and female workers in the construction camps and in the construction sites; and (c) provide equal wages to male and female workers or work of equal value.	PA, Sch. 1, para. 12	Complied with. Model national competitive bidding works contracts were reviewed by ADB to ensure that such provisions are included. Subsequent works contracts followed the model as approved by ADB.

Covenant	Reference in Legal Agreements	Status of Compliance
GPG, SPG, and XUG: shall (a) take all necessary actions to encourage women living in the Project area to participate in planning and implementing and working on, Project activities; and (b) monitor the Project effects on women during the implementation, though, where relevant, gender disaggregated data collected pursuant to the monitoring and evaluation system referred to in the PPMS.	PA, Sch. 1, para. 14	Complied with.
Other Social Aspects GPG, SPG, and XUG shall ensure that: (a) training programs developed under the project address the specific needs of women; (b) participation of women in training is actively encouraged; and (c) forums are organized to allow women to discuss their training and capacity building needs.	PA, Sch. 1, para. 13	Complied with. Training programs for women were implemented.
GPG, SPG, and XUG shall ensure that households and villages participating in the project are informed in a timely manner and in a culturally appropriate and gender sensitive way about project benefits and potential project risks prior to project activities being undertaken.	PA, Sch. 1, para. 16	Complied with.
FINANCIAL COVENANTS		
Except as ADB may otherwise agree, the Borrower shall cause each of GPG, SPG, and XUG to establish immediately after the Effective Date, an imprest account at a commercial bank acceptable to ADB. The 3 imprest accounts shall be established, ' managed, replenished and liquidated in accordance with ADB's Loan Disbursement Handbook, and detailed arrangements agreed upon between the Borrower and ADB. The currency of the imprest accounts shall be the Dollar. The initial amount to be deposited into each imprest account shall not exceed the lower of (i) the estimated expenditure for the first 6 months of project implementation, or (ii) the equivalent of 10% of the Loan proceeds allocated to the project province.	LA, Sch. 3, para. 5 (a)	Complied with. Three imprest accounts were established at acceptable commercial banks.
GPG, SPG, and XUG shall, and shall cause the participating counties to, (i) maintain separate accounts for the project and for its overall operations; ·(ii) have such accounts arid related financial statements (balance sheet, statement of income and expenses, and related statements) audited annually, in accordance with appropriate auditing standards consistently	PA, Art. II Section 2.09 (a), (b)	Complied with. SPG, GPG and XUG set up separate project accounts for the project. Audit reports were submitted for fiscal years 2012 to 2018 and all audit reports indicated unqualified opinion from auditors.

Covenant	Reference in Legal Agreements	Status of Compliance
applied, by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB; and (iii) furnish to ADB, promptly after their preparation but in any event not later than 6 months after the close of the fiscal year to which they relate, certified copies of such audited accounts and financial statements and the report of the auditors relating thereto (including the auditors' opinion on the use of the Loan proceeds and compliance with the covenants of the Loan Agreement as well as a separate opinion on the use of the procedures for imprest account/statement of expenditures), all in the English language. GPG, SPG, and XUG shall, and shall cause the participating counties to, furnish to ADB such further information concerning such accounts and financial statements and the audit thereof as ADB shall from time to time reasonably request.		
GPG, SPG, and XUG shall, and shall cause Participating Counties to, enable ADB, upon ADB's request, to discuss GPG's, SPG's, XUG's and/or the Participating County's financial statements and its financial affairs from time to time with the auditors appointed by GPG, SPG, XUG, or the concerned Participating County pursuant to paragraph (a) of this Section, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB, provided that any such discussion shall be conducted only in the presence of an authorized officer of GPG, SPG, XUG, or the concerned Participating County, unless GPG, SPG, XUG, or the concerned Participating County shall otherwise agree.		
GPG, SPG, and XUG shall and shall cause the Participating Counties to ensure that Participating Sub-borrowers which are enterprises: (a) have their accounts audited and their financial statements prepared in accordance with international financial reporting standards by auditors acceptable to ADB; and (b) make their financial statements available to the finance bureau of the relevant Participating County within 3 months of the end of each financial year.	PA, Sch. 1, para. 21	Complied with.

Covenant	Reference in Legal Agreements	Status of Compliance
Counterpart Funds and Funds Flow The Borrower shall ensure that all counterpart financing necessary for the Project is provided as and when due to enable the EA and the IAs to discharge their responsibilities under the Project effectively, and to provide additional counterpart financing in the event of any shortfall of funds or cost overruns to complete the Project. GPG, SPG, and XUG shall, and shall cause the participating counties to ensure that: (a) all domestic financing necessary for the project is provided in a timely manner; and (b) additional counterpart financing is provided in the event of any shortfall of funds or cost overruns to complete the project.	LA, Sch. 5, para. 2 PA, Sch. 1, para. 4	Complied with. Counterpart financing was provided.
The Borrower shall ensure that Loan proceeds are not to be applied to the activities described on the ADB Prohibited Investment Activities List which is set forth at Appendix 5 of ADB's Safeguard Policy Statement (2009). GPG, SPG, and XUG shall, and shall cause the participating counties to ensure that: (a) Loan proceeds are not to be applied to the activities described in the ADB Prohibited Investment Activities List which is set forth at Appendix 5 of ADB's Safeguard Policy Statement (2009); and (b)· participating counties ensure that their Sub loans are used only for project activities that are carried out in compliance with applicable national laws and regulations.	LA, Sch. 5, para. 3 PA, Sch. 1, para. 6	Complied with. Loan proceeds did not finance any activity included in the ADB Prohibited Investment Activities List.
Accounting GPG, SPG, and XUG shall and shall cause the participating counties to maintain separate records and accounts that identify goods and services financed from the Loan proceeds, financing resources received, expenditures incurred, and use of local funds. These accounts will be established and maintained in accordance with sound accounting principles and internationally accepted accounting standards.	PA, Sch. 1, para. 20	Complied with. Separate records and accounts were maintained.
OTHER COVENANTS		
In the carrying out of the project, GPG, SPG, and XUG shall, and shall cause the participating counties to, employ competent and qualified consultants and contractors, acceptable to ADB, to an extent and upon terms and conditions acceptable to ADB.	PA, Art. II, Section 2.03. (a), (b)	Complied with.

Covenant	Reference in Legal Agreements	Status of Compliance
Except as ADB may otherwise agree, all Goods, Works and Consulting Services to be financed out of the proceeds of the Loan shall be procured in accordance with the provisions of Schedule 4 to the Loan Agreement. ADB may refuse to finance a contract where Goods, Works or Consulting Services have not been procured under procedures substantially in accordance with those agreed between the Borrower and ADB or where the terms and conditions of the contract are not satisfactory to ADB.		
(a) GPG, SPG, and XUG shall; and shall cause the participating counties to, furnish to ADB all such reports and information as ADB shall reasonably request concerning (i) the Loan and the expenditure of the proceeds thereof; (ii) the Goods, Works and Consulting Services and other items of expenditure financed out of such proceeds; (iii) the project; (iv) the administration, operations and financial condition of GPG, SPG, and XUG with respect to the operation of the project; and (v) any other matters relating to the purposes of the Loan. (b) Without limiting the generality of the foregoing, GPG, SPG, and XUG shall furnish to ADB semiannual reports on the execution of the project and on the operation and management of the project facilities. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the 6 months under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following 12 months.	PA, Art. II, Section 2.08. (a), (b)	Partially complied with. Progress reports at times were not submitted in a timely manner and did not include all data needed to adequately record and monitor project progress.
Reporting and Project Review GPG, SPG, and XUG shall and shall cause the Participating Counties to, furnish to the EA for consolidation and submission to ADB, semiannual and annual reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the 6 months under review, steps taken or proposed to be taken to remedy these problems, and the proposed	PA, Sch. 1, para. 22	Partially complied with. Progress reports at times were not submitted in a timely manner and did not include all data needed to adequately record and monitor project progress.

Covenant	Reference in Legal Agreements	Status of Compliance
program of activities and expected progress during the following 6 months and year respectively.		
GPG, SPG, and XUG shall cause the participating counties to facilitate project supervisory review missions to be carried out by the Borrower and ADB to evaluate the scope, implementation arrangements; progress and achievement of scheduled targets: Before each visit, an updated progress report shall be prepared by each of GPG, SPG, and XUG which shall, and shall cause the participating counties to, prepare a progress report, and submit it to the EA. Within 2 years after the commencement of the project, each of GPG, SPG, and XUG shall, and shall cause the Participating Counties to, support the EA to undertake a comprehensive midterm review of the project to:(a) examine the scope, design, implementation arrangements, and other relevant issues; (b) assess the project's progress and achievement of its objectives; (c) identify problems and constraints; and (d) recommend any required modifications, restructuring, and reallocations. At the end of the project, each of GPG, SPG, and XUG shall, and shall cause the participating counties to, submit to the EA, a project completion report within 2 months of physical completion of the relevant section of the project.	PA, Sch. 1, para. 23	Complied with. Review missions were conducted on an annual basis during project implementation. A government PCR was submitted during the final review mission.
Promptly after physical completion of the project, but in any event not later than 6 months thereafter or such later date as ADB may agree for this purpose, GPG, SPG, and XUG shall prepare and furnish to ADB a report, in such form and in such detail as ADB shall reasonably request, on the execution and initial operation of the project, including its cost, the performance by GPG, SPG, and XUG of their obligations under this project Agreement and the accomplishment of the purposes of the project.	PA, Art. II, Section 2.08. (c)	Complied with. A government PCR was submitted.
Implementation Arrangements The Borrower, the EA, and IAs shall ensure that the Project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM and this Loan Agreement; the provisions of this Loan Agreement shall prevail.	LA, Sch. 5, para. 1	Complied with.

Covenant	Reference in Legal Agreements	Status of Compliance
GPG, SPG, and XUG shall, and shall cause the participating counties to ensure that the project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM and the Loan Agreement or this project Agreement, the provisions of the Loan Agreement and/or this project Agreement shall prevail.	PA, Sch. 1, para. 1	Complied with.
The government shall, and shall cause the GPG, SPG, and XUG to, ensure that he activities under the GEF Component are implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM, the Loan Agreement, the Project Agreement, or this Financing Agreement, the provisions of the Loan Agreement, the Project Agreement, and/or this Financing Agreement shall prevail.	FA, Sch. 3, para. 1	Complied with.
(a) GPG, SPG, and XUG shall, and shall cause the Participating Counties to, carry out the Project with due diligence and efficiency, and in conformity with sound administrative, financial, engineering, environmental, and forestry practices. (b) In the carrying out of the Project and operation of the Project facilities, GPG, SPG, and XUG shall, and shall cause the Participating Counties to, perform all obligations set forth in the Loan Agreement to the extent that they are applicable to GPG, SPG, and XUG and all obligations set forth in the Schedule to this Project Agreement; and GPG, SPG, and XUG shall, and shall cause the Participating Counties to perform all obligations set forth in the Schedule to this Project Agreement, to the extent that they are applicable to the Participating Counties, and in the Onlending Agreements.	PA, Section 2.01	Complied with.
GPG, SPG, and XUG shall, and shall cause the Participating Counties to, make available, promptly as needed, the funds, facilities, services, equipment, land and other resources which are required, in addition to the proceeds of the Loan, for the carrying out of the Project.	PA, Section 2.02	Complied with.
GPG, SPG, and XUG shall, and shall cause the Participating Counties to, carry out the Project in accordance with plans, design standards,	PA, Section 2.04	Complied with.

Covenant	Reference in Legal Agreements	Status of Compliance
specifications, work schedules and construction methods acceptable to ADB. GPG, SPG, and XUG shall furnish, or cause the Participating Counties to, furnish, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.		
(a) GPG, SPG, and XUG shall, and shall cause the Participating Counties to take out and maintain with responsible insurers, or make other arrangements satisfactory to ADB for, insurance of the Project facilities to such extent and against such risks and in such amounts as shall be consistent with sound practice. (b) Without limiting the generality of the foregoing, GPG, SPG, and XUG shall, and shall cause the Participating Counties to, insure, or cause to be insured, the Goods to be imported for the Project and to be financed out of the proceeds of the Loan against hazards incident to the acquisition, transportation and delivery thereof to the place of use or installation, and for such insurance any indemnity shall be payable in a currency freely usable to replace or repair such Goods.	PA, Section 2.05	Complied with.
GPG, SPG, and XUG shall, and shall cause the Participating Counties to, maintain, or cause to be maintained, records and accounts adequate to identify the Goods, Works and Consulting Services and other items of expenditure financed out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, its operations and financial condition.	PA, Section 2.06	Complied with.
(a) GPG, SPG, and XUG shall, and shall cause the Participating Counties to, cooperate fully to ensure that the purposes of the Loan will be accomplished. (b) GPG, SPG, and XUG shall, and shall cause the Participating Counties to, promptly inform ADB of any condition which interferes with, or threatens to interfere with, the progress of the Project, the performance of their obligations under this Project Agreement, the Subsidiary Loan Agreements, the Onlending Agreements, or the accomplishment of the purposes of the Loan. (c) ADB and GPG, SPG, and XUG shall from time to time, at the request of either party, exchange views through their representatives with regard to	PA, Section 2.07	Complied with.

Covenant	Reference in Legal Agreements	Status of Compliance
any matters relating to the Project, including GPG's, SPG's, and XUG's and the Participating Counties' operations and the Loan proceeds.		
Except as ADB may otherwise agree, GPG, SPG, and XUG shall, and shall cause the Participating Counties to, apply the proceeds of the Loan to the financing of expenditures on the Project or financing Subloans, in accordance with the provisions of the Loan Agreement, this Project Agreement, and the PAM, and shall ensure that all Goods, Works and Consulting Services financed out of such proceeds are used exclusively in the carrying out of the Project.	PA, Section 2.12	Complied with.
GPG, SPG, and XUG shall, and shall cause the Participating Counties to, enable ADB's representatives to inspect the Project, the Goods and Works financed out of the proceeds of the Loan, all other plants, sites, properties and equipment of GPG, SPG, XUG, and the Participating Counties, as they relate to the Project, and any relevant records and documents.	PA, Section 2.10	Complied with. Inspection of works in selected project sites were carried out during review missions.
Except as ADB may otherwise agree, GPG, SPG, and XUG shall, and shall cause the Participating Counties to, not sell, lease or otherwise dispose of any of their assets which shall be required for the efficient carrying on of their operations or the disposal of which may prejudice its ability to perform satisfactorily any of their obligations under this Project Agreement or the Onlending Agreement.	PA, Section 2.11	Complied with.
GPG, SPG, and XUG shall ensure that their respective Provincial Leading Group ensures coordination between sector agencies, addresses project strategic decisions. in a timely manner and brings any dispute to higher authorities within a reasonable period.	PA, Sch. 1, para. 2	Complied with.
SPG shall ensure that it establishes the EFC in a timely manner and that the EFC complies with the requirements and criteria set out in the PAM when making investment and distribution decisions covering; (a) eco- compensation, (b) carbon trading; and (c) private sector participation in ecotourism.	PA, Sch. 1, para. 3	Partially complied with. SPG canceled the planned Shaanxi Ecological Forestry Center and Shaanxi Carbon Readiness Education and reallocated the funds to the establishment of two exhibition and three forest /health experience centers, as was discussed and agreed with ADB.

Covenant	Reference in Legal Agreements	Status of Compliance
GPG, SPG, and XUG shall ensure that no Loan proceeds shall be on lent to participating counties until: (a) the relevant Participating County and relevant Participating Sub borrowers have executed and delivered the Sub loan Agreement related to such activity; and (b) such Sub loan Agreement includes terms and conditions as are required in Section 3.01 (d) of the Loan Agreement and has become effective and binding upon the parties thereto in accordance with its terms, unless otherwise agreed with ADB.	PA, Sch. 1, para. 5	Complied with. PPMOs signed onlending agreements with relevant participating counties.
Project Website and Communication Measures Within 6 months of the Effective Date, or as otherwise agreed with ADB, GPG, SPG, and XUG shall each create or enhance a project website to provide the public with free access to information about various matters and activities relating to their involvement under the project. The website will include general project information, project progress, a summary of the audited financial statements of the project, tracking of procurement contract awards, relevant laws and regulations, and contact details for GPG's, SPG's, and XUG's counterpart staff in the Chinese and English languages, and will provide a link to ADB's Integrity Unit (http://www~adb.org/Integrity/complaint.asp) for reporting to ADB any grievances or allegations of corrupt practices arising out of the project and/or project activities. GPG, SPG, and XUG shall ensure that all project staff are fully aware of ADB's procedures, including, but not limited to, procedures for implementation, procurement, use of consultants, disbursements, reporting, monitoring, and prevention of fraud and corruption.	PA, Sch. 1, para. 15	Complied with. SPG and GPG Forestry Department has an existing project website where various project matters and activities are available. The Project's Asian Development Bank Information System was put into operation.
GPG, SPG, and XUG shall periodically make random checks to ensure such general· information regarding the project is freely publicly available (such as on radio and in newspapers) in the project area.	PA, Sch. 1, para. 17	Complied with. Work relating to the three provinces project areas has been deployed; annual statistics and sampling were conducted and made available to the public· during information release.

Covenant	Reference in Legal Agreements	Status of Compliance
Anticorruption Measures During Project implementation, the Borrower shall cause the EA and IAs to ensure that: (a) ADB's Anticorruption Policy is followed; (b) periodic inspections of the contractors' activities related to Project funds withdrawals and settlements are carried out; (c) relevant provisions of ADB's Anticorruption Policy are included in all bidding documents for the Project; (d) all contracts financed by ADB in connection with the Project include provisions specifying the right of ADB to audit and examine the records and accounts of the IAs and all contractors, suppliers, consultants and other service providers as they relate to the Project. ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive or coercive practices relating to the Project; and. (e) representation letters from the Project auditor are submitted to ADB and any outstanding issues attended to within 1 month of receipt by the EA, GPG, SPG or XUG, unless otherwise agreed with ADB.	LA, Sch. 5, para. 4	Complied with. Periodic inspection of contractors' activities as related to fund withdrawals are carried out as part of the annual audit conducted by government auditors and findings of incidents of corruption are reported therein. Model NCB documents reviewed and approved by ADB upon which subsequent NCB bidding documents were patterned, contain the specified provisions.
During project implementation, GPG, SPG, and XUG shall ensure that: (a) ADB's Anticorruption Policy is followed; (b) periodic inspections of the contractors' activities related to project funds withdrawals and settlements are carried out; (c) relevant provisions of ADB's Anticorruption Policy are included in all bidding documents for the project; and (d) all contracts financed by ADB in connection with the project include provisions specifying the right of ADB to audit and examine the records and accounts of GPG, SPG, and XUG and all contractors, suppliers, consultants and other service providers as they relate to the project. ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the project.	PA, Sch. 1, para. 18	

Covenant	Reference in Legal Agreements	Status of Compliance
Grievance mechanisms; prior to commencement of Works, within 4 months of the Effective Date, GPG, SPG, and XUG shall and shall cause the participating counties to: (a) establish or adapt a grievance redress mechanism, acceptable to ADB, to receive and facilitate resolution of Affected Peoples' concerns, complaints, and grievances about the project's environmental performance; and (b) make public the existence of this grievance redress mechanism through public awareness campaigns; review and address grievances of stakeholders in relation to the project, any of the service providers, or any person responsible for carrying out any aspect of the project; and proactively and constructively respond to such grievances.	PA, Sch. 1, para. 19	Complied with. Grievance redress mechanism for PPMOs established.
Project Performance Management System (PPMS) GPG, SPG, and XUG shall and shall cause the participating counties to: (a) update the PPMS, previously established under the first phase of the capacity building support in a form acceptable to ADB and in accordance with-project performance indicators as agreed with ADB, to continually assess project impact within 6 months of the effective date; (b) examine the project's technical performance; (c) evaluate the delivery of the planned activities; (d) assess the achievement of the project's objectives; (e) measure the project's financial, and institutional impacts; (f) submit semiannual PPMS reports to the EA for consolidation and submission to ADB; and (g) carry out the plan during project implementation and PPMS activities for their relevant areas of responsibility, including pre-project and post project data collection and analysis.	PA, Sch. 1, para. 24	Complied with. The PPMS was established and put into operation.
GEF COVENANTS		
(a) ADB shall administer the GEF Grant in an amount equivalent to five million one hundred thousand Dollars ($5,100,000). (b) The proceeds of the GEF Grant shall be disbursed to the imprest accounts established and maintained by each of GPG, SPG, and XUG, respectively, through the relevant provincial finance department, in accordance with paragraph 4 of Schedule 2 to this Financing Agreement.	FA, Section 2.01	Complied with. ADB administered the GEF grant of $5.1 million. Three grant imprest accounts, one by each province, were established.

Covenant	Reference in Legal Agreements	Status of Compliance
The government shall cause GPG, SPG, and XUG to ensure that the proceeds of the GEF Grant are applied to the financing of expenditures for the GEF Component, and in accordance with the provisions of this Financing Agreement.	FA, Section 2.02	Complied with. The grant proceeds were utilized for activities and expenditures under the GEF component.
The Goods, Works, Consulting Services and other items of expenditure to be financed out of the proceeds of the GEF Grant and the allocation of amounts of the GEF Grant among different categories of such Goods, Works, Consulting Services and other items of expenditure shall be in accordance with the provisions of Schedule 2 to this Financing Agreement, as such Schedule may be amended from time to time by agreement between the government and ADB.	FA, Section 2.03	Complied with. Expenditures were made in accordance with the grant allocation.
Except as ADB may otherwise agree, all Goods, Works and Consulting Services to be financed out of the proceeds of the GEF Grant shall be procured in accordance with the provisions of Schedule 4 to the Loan Agreement. ADB may refuse to finance a contract where Goods, Works or Consulting Services have not been procured under procedures substantially in accordance with those agreed between the government and ADB or where the terms and conditions of the contract are not satisfactory to ADB.	FA, Section 2.04	Complied with. Procurement under the grant were in accordance with the procedures set forth in Schedule 4 of the Loan Agreement.
Except as ADB may otherwise agree, the government shall cause GPG, SPG, and XUG to ensure that all Goods, Works and Consulting Services financed out of the proceeds of the GEF Grant are used exclusively in the carrying out of the GEF Component.	FA, Section 2.05	Complied with.
Disbursements from the GEF Grant Account in respect of Goods, Works and Consulting Services shall be made only on account of expenditures relating to: (a) Goods which are produced in and supplied from and services which are supplied from such member countries of ADB as shall have been specified by ADB from time to time as eligible sources for procurement; and (b) Goods, Works and Consulting Services which meet such other eligibility requirements as shall have been specified by ADB from time to time.	FA, Section 2.06	Complied with. Procured goods met the eligibility requirements of ADB.
Subject to any conditions or restrictions specified in this Financing Agreement, ADB shall make disbursements from the GEF Grant Account for purposes of the GEF Component upon application by GPG, SPG, or XUG in such form and supported by such documents as ADB shall reasonably request.	FA, Section 2.07	Complied with. Withdrawal applications under the grant complied with ADB requirements.

Covenant	Reference in Legal Agreements	Status of Compliance
Notwithstanding any other provision of this Financing Agreement, ADB is not obliged to make any disbursement from the GEF Grant Account, except to the extent that ADB has received the GEF Grant funds. Except as ADB may otherwise agree, the GEF Grant Account shall be closed on 31 March 2017, or such other date as may from time to time be agreed between ADB and the government.	FA, Section 2.08	Complied with. The GEF grant account was financially closed on 10 December 2019 following extension of the grant closing date, satisfactory liquidation of advances to the imprest account, and return of unutilized advances to the grant account.
In the carrying out of the GEF Component and operation of the Project facilities, the government shall perform, or cause to be performed, all obligations set forth in Article IV of the Loan Agreement, Schedule 5 to the Loan Agreement, the Schedule to the Project Agreement, and Schedule 3 to this Financing Agreement.	FA, Section 2.09	Complied with.
The government shall cause GPG, SPG, and XUG to; (a)maintain separate accounts for the GEF Component; (b) have such accounts and related financial statements (balance sheet, statement of income and expenses, and related statements) appropriately audited; and (c) furnish to ADB, promptly after their preparation but in any event not later than 6 months after the close of the fiscal year to which they relate, certified copies of such audited accounts and financial statements and the report of the auditors relating thereto (including the auditors' opinion on the use of the GEF Grant funds and compliance with the covenants of this Financing Agreement as well as a separate opinion on the use of the procedures for imprest account/statement of expenditures), all in the English language. Within 6 months after the closing of the GEF Grant Account the government shall cause GPG, SPG, and XUG to submit to ADB the final audited financial statements on the GEF Grant.	FA, Section 2.10	Complied with. Three separate imprest accounts, one for each province, were established. These accounts were audited for which audited project financial statements were submitted to ADB.

ADB = Asian Development Bank, CCDS = community consultation and disclosure strategy, EA = executing agency, EFC = Ecological Forestry Center, EMDP = ethnic minority development plan, EMP = environmental management plan, FA = financing agreement, GPG = Gansu Provincial Government, IEE = initial environmental examination, LA = loan agreement, PA = project agreement, PAM = project administration manual, PCR = project completion report, PIA = project implementation agency, PPMO = provincial project management office, PPMS = Project Performance Management System, SPG = Shaanxi Provincial Government, SPS = Safeguard Policy Statement, XUG = Xinjiang Uygur Autonomous Government.

ECONOMIC AND FINANCIAL REEVALUATION

A. General Approach

1. Financial and economic reevaluation was undertaken to reassess the financial and economic viability of the project based on the actual costs incurred and the benefits achieved and expected over the full project life for the project completion review at project completion. Due to the coronavirus disease (COVID-19) situation, the consultants were unable to visit the project areas and had to rely on a combination of data collected electronically from the provincial project management offices (PPMOs) under the guidance of the national consultant and subsequently reviewed by the international consultant and information included in the government's Project Completion Report. Specifically, an updated set of crop budget data was collected from each province using the data format used for both the project preparation and midterm financial and economic analysis. The format was circulated with the respondents requested to update the midterm information to reflect the actual situation at project completion. Since most of the project costs related to the cost of planting and initial care of the economic tree crops, the project costs were largely drawn from this source. Costs for storage facilities, which were minimal, were retained the same as at midterm and were obtained from the government's PCR, which did not include financing charges during implementation. Implementation costs were updated based on data from the Asian Development Bank (ADB). At appraisal, the project comprised three outputs to be implemented over a 5-year period in Gansu, Shaanxi, and Xinjiang: (i) economic tree crop development; (ii) ecological forestry development; and (iii) project management support for local government implementation and participating farm households, enterprises, and state forest farms (SFFs). At project completion, the project comprised the same three outputs but the relative importance of output 2 had decreased together with the investment in expanded storage facilities

2. Financial and economic analyses were undertaken in accordance with the relevant guidelines of the ADB.[1] The analysis was conducted for each of the economic tree crops produced under the project based on a comparison against the without-project scenario of production of a marginal crop of wheat and for each of the storage subprojects. The results were aggregated to the provincial and overall project levels.[2] The main assumptions include the following:

(i) A project life of 20 years is assumed with tree planting taking place from 2011 to 2016 and initial tree tending up to project completion in 2019.
(ii) Project investment costs are based on actual costs, in local currency, incurred during project implementation adjusted to constant 2019 values.
(iii) A constant exchange rate of $1 = CNY6.5 is used reflecting the actual average situation over the project implementation period.
(iv) The financial prices of economic tree crop inputs and outputs were based on actual prices for 2019.
(v) Recurrent costs are assumed to commence in the year following completion of tree planting and were estimated based on the costs provided by the PPMOs. These are consistent with data collection approach used for project preparation and the midterm review.
(vi) Economic costs and benefits are expressed in constant 2019 terms and are valued in local currency using the *domestic price-level numeraire*.

[1] ADB. 2017. *Guidelines for the Economic Analysis of Projects*. Manila.
[2] The analysis used the same approach as adopted for the appraisal and midterm analyses with the adjustment that all the files used in the earlier analyses were aggregated into a single Excel workbook to facilitate processing.

(vii) Taxes and subsidies are excluded in the economic evaluation of the subprojects and overall project by adopting the same percentage taxes and duties as in project preparation.
(viii) Economic prices for wheat, and traded fertilizers – triple superphosphate, urea, and potassium chloride – are estimated by adjusting world market prices by transportation and processing costs to obtain the economic market prices in the project area.[3]
(ix) Economic costs and benefits for tradable inputs and outputs were derived by adjusting their values by a shadow exchange rate factor (SERF) of 1.01, which is consistent with current ADB guidelines.
(x) The opportunity cost of surplus labor is estimated as 0.95 of the prevailing wage rates reflecting the relative scarcity of farm labor in recent years, and the opportunity cost of scarce labor for skilled labor is estimated as 1.0.
(xi) The opportunity cost of capital used in the analysis is 12% in accordance with the assumption at appraisal.

3. The financial and economic analyses were undertaken using with- and without-project scenarios based on the crop budget data obtained from the PPMOs. The without-project scenario involved continued production of a marginal crop of wheat on poor quality land while the with-project scenario involved planting of an economic tree crop with inter-cropping of wheat, where possible, in the early years. Financial investment costs were converted to economic values based on the same principles as used in project preparation and the midterm review apart from a change in the SERF to reflect current ADB policy.

B. Financial Reevaluation

4. Farm incomes have increased because of diversification into high-value economic tree crops, adoption of improved production packages, reduced use of agrochemicals (fertilizers and pesticides), use of organic fertilizers, and increased prices received from improved quality of outputs. The incremental income flows were derived from the financial analysis of economic tree crop investments, which indicate appreciable returns on investment. By the end of the project, over 39,000 hectares (ha) of 12 types of fruits, nuts, and timber trees were planted compared to the appraisal estimate of over 37,000 ha. At full development, about 369,000 tons of additional fruit and nuts are expected to be produced, significantly lower than the 440,000 tons expected at appraisal but with a higher unit value (Table A8.1).

5. The project's financial viability is assessed based on the financial internal rate of return (FIRR) of each of the outputs and the overall project being greater than the weighted average cost of capital (WACC), which was estimated at appraisal to be 0.5% for economic tree crops, 5.1% for enterprises, and 2.7% for project management, yielding an overall WACC of 0.8%, and a positive financial net present value (FNPV) using the WACC as the discount factor. The WACC was estimated at appraisal as the weighted value of the proportion of the project costs proposed to be financed by ADB using an interest rate of LIBOR +0.40% and the proportion proposed to be financed by counterparts, including beneficiary, contributions using an interest rate of 10%.[4] The same WACC was used for the financial assessment at project completion.

[3] The World Market prices used in the analysis are derived from the World Bank Commodities Price Forecast of 29 October 2019.
[4] 10% is selected as the appropriate interest rate for the opportunity cost of counterpart funding as this is widely considered to be the achievable financial rate of return for locally financed agricultural projects in the PRC.

6. An assessment of the FIRR for each crop indicates that the return on investments for most major crops is reasonable. For prickly ash, which has the lowest FIRR, the area planted is less than expected at appraisal as farmers did not want to plant the crop. Other crops with a low FIRR also accounted for minor areas at both appraisal and project completion (Table A8.1). The table also shows that at appraisal about 33% of the area was expected to be under apples and about 29% under walnuts. At completion about 35% of the area had been planted to apples and 39% to walnuts. Apples had an estimated FIRR of 16.6% and walnuts an estimated FIRR of 19.8%, compared to 23.2%, and 21.7% at completion. Prickly ash was expected to account for about 13% of the area at appraisal but only achieved 4% by completion, which was justified by the extremely low FIRR achieved.

Table A8.1: Summary of Financial Indicators for Various Crops

	At Appraisal			At Completion			
Crop	Planned Area (ha)	Annual Output (tons)	FIRR (%)	Planned Area (ha)	Planted Area (ha)	Annual Output (tons)	FIRR (%)
Apples	12,484	284,040	16.6	12,564	13,987	279,041	23.2
Walnuts	11,112	25,000	19.8	11,508	15,712	46,022	21.7
Prickly ash	4,951	4,455	19.6	4,625	1,722	3,099	-10.8
Chinese dates	3,195	31,950	21.7	3,195	3,445	17,275	3.0
Mulberries	1,740	36,540	16.3	1,,698	566	1,132	11.3
Grapes	1,810	32,390	18.2	1810	1,718	13,742	5.1
Persimmons	1,237	18,555	19.5	1,224	1,224	1,800	22.1
Ginkgo	810	1,215	12.1	810	810	1,458	0.1
Tea	418	217	26.1	487	487	1,106	2.9
Cherries	180	1,620	24.2	180	180	3,240	43.9
Apricots	70	4,200	13.6	70	70	1,050	30.3
Others	0	0		30	30		19.7
Overall Project	**38,007**	**440,180**		**38,201**	**39,951**	**368,965**	

FIRR = financial internal rate of return; ha = hectares.
Source: Asian Development Bank.

C. Economic Reevaluation

7. The economic analysis was undertaken separately for each activity—individual economic tree crops, crop storage and processing, ecological tree crops and state forests, and management—and the results aggregated by project component to the provincial and overall levels.

8. The economic benefits of economic tree crop production were estimated by converting the financial costs and benefits to economic values.[5] To provide consistency with the appraisal analysis, no account was taken of carbon sequestration by these trees, which is likely to be relatively small due to the regular pruning of these crops. The economic benefits of crop storage and processing were assessed by updating of the midterm assessment due to the limited availability of more recent data, while the economic value of ecological tree crops and state forests were assessed by updating of the carbon value and assessment of carbon sequestration by year. No information was available for integrated rural infrastructure (power supply facilities, water conservation and irrigation facilities, roads, and pasture fences in Xinjiang) completed under the project (para. 12 of the main report) and these were assumed to be linked to output 1. Similarly, no information was available on the benefits from facility improvements through infrastructure construction that were undertaken for seven forest parks in Shaanxi (para. 14), but were considered to be minor compared to the overall economic benefits.

[5] Based on the assumptions in para. 2.

9. The analysis indicated that economic tree crops in output 1 were the main source of economic benefits, accounting for 96.2%.[6] The economic benefits from output 2, which included the carbon sequestration benefits from ecological tree crops and state forests, accounted for only 3.3% of economic benefits while storage and processing (output 1) accounted for the remaining 0.5%.

10. At appraisal, the analysis indicated that the overall project is economically viable with an economic internal rate of return (EIRR) of 19.5%, and an economic net present value (ENPV) of CNY1,044.4 million. The reevaluation at completion indicates a marginally lower EIRR of 18.8% and ENPV of CNY1,307.3 million (Table A8.2). At appraisal, each of the provincial level investments was expected to be economically viable with EIRRs ranging from 18.7% for Shaanxi to 19.8% for Xinjiang. At completion, the EIRR of Shaanxi was estimated at 22.4%, significantly higher than at appraisal and largely due to the better-than-expected performance of the economic tree crops. The EIRR of Gansu at completion is marginally higher that at appraisal (19.8% vs. 19.0%), while that of Xinjiang is considerably lower (5.6% vs 19.8%) due to the poor performance of economic tree crop production both in terms of implementation delays and lower than expected yields particularly of apples and walnuts.

Table A8.2: Summary of Economic Indicators by Province and for the Overall Project

	Gansu		Shaanxi		Xinjiang		Overall Project	
Project and/or Subproject Boundary	**EIRR** (%)	**ENPV** (CNY'000)	**EIRR** (%)	**ENPV** (CNY'000)	**EIRR** (%)	**ENPV** (CNY'000)	**EIRR** (%)	**ENPV** (CNY'000)
At Appraisal								
Output 1:								
a. Economic tree crop development	19.7	444,408	17.5	190,560	21.1	271,078		
b. Storage and processing	27.3	25,403						
Subtotal	**20.0**	**469,811**	**17.5**	**190,560**	**21.1**	**271,078**	**19.8**	**931,449**
Output 2:								
a. Ecological forestry development	26.3	70,181	44.6	121,847	17.5	4,731		
b. State forest farms								
Subtotal	**26.3**	**70,181**	**44.6**	**121,847**	**17.5**	**4,731**	**32**	**196,759**
Output 3:								
a. Management support		(26,952)		(34,391)		(22,503)		(83,846)
Total	**19.0**	**513,040**	**18.7**	**278,016**	**19.8**	**253,306**	**19.5**	**1,044,362**
At Completion								
Output 1:								
a. Economic tree crop development	20.0	811,838	23.5	530,734	2.7	-138,192		
b. Storage and processing	17.8	6,484	0.0	0	0.0	0		
Subtotal	**20.0**	**818,322**	**23.5**	**530,734**	**2.7**	**-138,192**	**19.3**	**1,210,863**
Output 2:								
a. Ecological forestry development	20.5	30,183	0.0	0	23.6	15,912		
b. State forest farms	0.0	0	10.2	(4,476)	0.0	0		0
Subtotal	**20.5**	30,183	**10.2**	**-4,476**	**23.6**	**15,912**	**17.7**	**41,619**
Output 3:								

[6] Excluding the negative economic benefits associated with output 3.

Project and/or Subproject Boundary	Gansu EIRR (%)	Gansu ENPV (CNY'000)	Shaanxi EIRR (%)	Shaanxi ENPV (CNY'000)	Xinjiang EIRR (%)	Xinjiang ENPV (CNY'000)	Overall Project EIRR (%)	Overall Project ENPV (CNY'000)
a. Management support		(12,420)		(17,358)		(25,046)	n.a.	(54,824)
Total	**19.8**	**836,085**	**22.4**	**508,900**	**5.6**	**(97,234)**	**18.8**	**1,307,307**

( ) = negative values, EIRR = economic internal rate of return, ENPV = economic net present value. n.a. = not applicable
Source: Asian Development Bank estimates

11. Key risks that could affect the economic viability of the project are incorporated into standard sensitivity tests that duplicated those use at appraisal. For economic tree crops these included a 20% crop benefit increase, a 20% crop benefit decrease, a 20% crop input cost increase, a 20% crop input cost decrease, a 20% labor cost increase, and a 20% labor cost decrease. For ecological crops these included a 20% increase in ecological benefits and a 20% decrease. The results are summarized and for the overall project at project appraisal and completion in Table A8.3. The overall project appears to have remained sufficiently robust and exceeded the minimum required EIRR with respect to all changes.

Table A8.3: Sensitivity Tests of Economic Analysis for Overall Project at Appraisal and Completion

Item	% Change	At Appraisal EIRR (%)	At Appraisal Change in EIRR (%)	At Completion EIRR (%)	At Completion Change in EIRR (%)
Base case		**19.5**		18.8	
Sensitivity test 1					
1.1 Crop benefits increased	20.0	25.4	5.9	25.3	5.7
1.2 Crop benefits decreased	20.0	11.3	(8.2)	14.3	(5.4)
1.3 Crop input cost increased	20.0	17.3	(2.0)	17.4	(2.3)
1.4 Crop input cost decreased	20.0	21.5	2.1	23.8	4.1
1.5 Crop labor cost increased	20.0	16.9	(2.5)	18.0	(1.7)
1.6 Crop labor cost decreased	20.0	21.8	2.1	23.0	3.3
Sensitivity test 2					
2.1 Ecological benefits increased	20.0	20.4	1.0	20.4	0.7
2.2 Ecological benefits decreased	20.0	18.5	(1.0)	14.5	(5.2)

( ) = negative, EIRR = economic internal rate of return, ENPV = economic net present value.
Source: Asian Development Bank estimates.

D. Conclusions

12. Based on the information collected and the analysis conducted, it appears the overall project remains financially and economically viable at project completion, and that the estimates remain robust. However, when considered by province there are clearly major issues with Xinjiang where economic tree crops appear to have performed far worse than expected, particularly with respect to the yields achieved to date and expected in the future, resulting in a much lower EIRR. By contrast the better-than-expected performance in Shaanxi province resulted in a substantially higher EIRR.

ENVIRONMENTAL ANALYSIS

1. The project was expected to achieve environmental benefits, including (i) water savings, (ii) reduced use of agrochemicals (fertilizers and pesticides), (iii) reduced soil erosion, and (iv) increased carbon sequestration both in trees and soils. Carbon sequestration and land improvements were considered significant benefits representative of the overall direct and indirect positive impacts of the project. The project fully achieved these benefits and contributed to carbon sequestration of 645,200 tons, and protection of ecologically sensitive areas increased by 141,450 ha. The other benefits on water saving, and reduced soil erosion were not monitored but are expected with the successful establishment of economic and ecological tree plantations. Trainings on reduced use of agrochemicals were performed for large number of participants. There was however no monitoring and testing results to verify the results. The project also enabled participating farmers and beneficiaries to better adapt to climate change impacts by introducing sustainable land and management practices.

2. **Environmental safeguards**. The project was classified environmental category B under the ADB's Safeguard Policy Statement (2009). During the project preparation, domestic environmental impact assessment reports were prepared for the three provinces in accordance with the People's Republic of China (PRC) regulations. An initial environmental examination (IEE) report was prepared and disclosed in accordance with ADB guidelines. As the counties participating in the project changed, a revised IEE was prepared in 2017 but was not disclosed on ADB website until project completion. Due diligence review of environmental management practices by the participating enterprises has been undertaken. The review shows that the enterprises comply with all national regulations and apply adequate environmental management procedures acceptable to ADB. The initial environmental examinations were approved by the provincial environmental protection bureaus in August 2010.

3. An environmental mitigation and monitoring plan was prepared to guide the national project management office (NPMO), provincial project management offices (PPMOs) and county project management offices (CPMOs) in supervision and monitoring of project activities. The NPMO was assigned overall responsibility for supervising implementation and compliance with the environmental mitigation and monitoring plan. The PPMOs in the provincial forestry bureaus of Gansu, Shaanxi, and Xinjiang as the project implementing agencies, were responsible for the day-to-day implementation and compliance with the environmental management plan (EMP) and will provide the periodic environmental monitoring reports to the NPMO. The county project management office (CPMO) technical staff were assigned the task to organize county forestry bureaus and township forest stations (TFS) to undertake environmental monitoring, which will be carried out by operational staff, some of them part time, augmented by specialized services (e.g., pesticide residue sampling and analysis) from other agencies as necessary, with oversight and random inspection checks by the PPMOs in provincial forestry departments.

4. PPMOs were to submit to EMP progress reports and information on project implementation and the environmental performance of the contractors and implementing to ADB through the national project management office (PMO) in the State Forestry Administration (SFA). These reports were to include (i) semiannual environmental reports on EMP implementation, and (ii) environmental compliance monitoring and audit report of the completion of each agro-processing facility. Progress reports were to emphasize (i) compliance with water use targets; (ii) monitoring results for groundwater depth and quality; (iii) implementation of mitigation measures, especially IPM; (iv) compliance with other specific requirements of the EMP; (v) training; and (vi) capacity building progress.

5. There was little compliance with environmental safeguard reporting requirements throughout the project implementation. It is noted that infrequently one or more of the PPMOs provide a short one-page environmental monitoring report in the project semiannual progress report. However, it is unlikely that the PPMOs and CPMOs conducted supervision and monitoring to ensure environmental management requirements of EMP. No environmental or social safeguard monitoring reports were disclosed on the ADB website during the project implementation.

6. ADB review missions repeatedly requested that improvements be made in the implementation of environmental safeguards. These missions identified the following issues: (i) the need to update the IEE and EMP, to reflect minor changes in scope for some subprojects; (ii) low PPMO capacity to implement the EMP, including a lack of qualified environment officers within the PPMOs responsible for EMP coordination; (iii) limited reporting compliance with EMP implementation in the progress reports to ADB; and (iv) the need to include domestic environmental approvals for the subprojects in the environmental progress reports to ADB (e.g., including confirmation of approved water allocations for subprojects). Corrective actions that were agreed between the executing agency and ADB in these previous missions included: (i) more comprehensive reporting on EMP implementation in the progress reports to ADB; (ii) the appointment of qualified PPMO environment officers; and (iii) updating of the IEE and EMP.

7. **Carbon forestry and carbon sequestration.** Estimating the amount of carbon sequestration and carbon storage has proven to be difficult. In the project, the design and monitoring framework (DMF) indicators chosen for carbon forestry were not well defined and some indicators did not provide a clear baseline. This problem was exacerbated by lack of capacity of the NPMO, PPMO, and CPMO to survey, collect data, monitor, and report. The Project monitoring reporting systems did not generate credible information on carbon sequestration and carbon storage, which makes it difficult to assess carbon related performance indicators in the DMF.

8. A separate analysis was performed based on "(PRC) Guideline of provincial level greenhouse gas inventory preparation" ("Guideline 2011" hereafter). The analysis is based on a country-wide survey and defined the biomass of the economic forest and shrub as 35.21 t/ha and 17.99 t/ha respectively in PRC. The carbon concentration (carbon content in unit biomass) is defined as 0.5 tC/t (Guideline 2011). It is noted however, the ecological forest in this project has not grown up to the normal forest standard, therefore the carbon storage of the ecological forest is calculated based on shrub specification. In PRC, the normal forest carbon storage is between 40 tC/ha to 60 tC/ha, with average of 57.07 tC/ha (Zhou et al. 2000). For this analysis, 9.0 tC/ha (which is the product of shrub biomass and carbon concentration of biomass, i.e., 17.99 ´ 0.5) is used, which is about 1/6 of the normal forest. Walnut and apple orchard areas are the largest among the economic forest development in this project. A study has revealed that the average apple orchard carbon concentration of south Xinjiang is 14.1 tC/ha (Zhao, 2015). Walnut has a higher biomass than apple tree, therefore the apple tree carbon concentration is used as an average carbon storage calculation for the economic forest.

9. According to the guideline, the project afforestation carbon storage is calculated as:

$$\Delta C_{\mathrm{E/S}} = \Delta A_{\mathrm{E/S}} \times B_{\mathrm{E/S}} \times 0.5 - \Delta C_{\mathrm{L}} \qquad (1)$$

where: $\Delta C_{\mathrm{E/S}}$: the carbon storage changes of economic forest or shrub from afforestation (tC);

$\Delta A_{\mathrm{E/S}}$: the area changes of economic forest or shrub from afforestation (ha);

$B_{\mathrm{E/S}}$: the average unit biomass of economic forest or shrub (t/ha)

ΔC_{L}: carbon storage changes from biomass loss in afforestation (t). It is defined as 0 in this project;

0.5: carbon concentration as carbon content per unit forest biomass (tC/t)

10. The relevant data is obtained from the following source: provincial forest resource survey reports; reports from provincial institutes of forest survey and planning; provincial and county yearbook and annual report; reports of provincial forest administration; project benefit monitoring reports of provincial and county PMOs; reports from state-own forest farms operation and auditing; project benefit monitoring reports and project progress reports. Based on data source, the data related to carbon storage is obtained as follow:

Table A9.1: The Classification of Economic Forest

	Survival rate	Tree form and growing condition	Pollenizer allocation and quality rate
Class I forest	⩾90%	Excellent	⩾95%
Class II forest	⩾85% ~ <90%	Good	⩾90% ~ <95%
Class III forest	<85%	Normal	<90%

Table A9.2: The Classification of Ecological Forest

	Survival rate	Growing rate	Pest/disease rate
Class I forest	⩾90%	Good	⩽10%
Class II forest	⩾85% ~ <90%	Normal	>10% ~⩽30%
Class III forest	<85%	Sub	>30%

11. Weightings are added to the biomass calculation according to the forest classification for both economic and ecological forest and the forest area by classes as below:

Table A9.3: Weighting Factors of Economic and Ecological Forest

	Class I	Class II	Class III
Economic forest	0.95	0.88	0.50
Ecological forest	0.90	0.85	0.10

Table A9.4: The Economic Forest Area

(hectare)

	Class I	Class II	Class III	Subtotal
Gansu	13,904.10	5,488.54	208.20	19,600.84
Shaanxi	5,026.45	5,668.40	3,476.15	14,171.00
Xinjiang	4,336.70	661.30	345.00	5,343.00
Subtotal	23,267.25	11,818.24	4,029.35	39,114.84
Ratio (%)	59.48	30.21	10.30	

Table A9.5: Plantation Area by Economic Forest Tree Species

(hectare)

Species	Target	Planted	Ratio (%)	Class I	Class II	Class III
Walnut	11,508	16,676.20	42.62	9,919.03	5,038.37	1,717.13

Species	Target	Planted	Ratio (%)	Class I	Class II	Class III
Wild pepper	4,625	590.50	1.51	351.23	178.39	60.82
Apple	12,564	14,272.64	36.48	8,489.39	4,312.25	1,469.57
Cherry	180	180.00	0.46	107.06	54.38	18.54
Persimmon	1,224	95.40	0.24	56.74	28.82	9.83
Tea	487	661.40	1.69	393.40	199.81	68.12
Mulberry	1,698	566.00	1.45	336.66	170.99	58.30
Apricot	280	70.00	0.18	41.64	21.15	7.21
Grapes	1,810	1,717.70	4.39	1,021.69	518.92	176.92
Ginkgo	810	810.00	2.07	481.79	244.70	83.43
Red date	3,195	3,458.00	8.83	2,055.03	1,043.76	355.87
Others	30	30.00	0.08	17.84	9.06	3.09
Total	**38,411**	**39,129.84**	**100.00**	**23,271.51**	**11,821.59**	**4,028.83**

12. As shown in the above table, the total economic forestation area is 1.8% higher than the project appraisal target. Walnut, apple, and tea area have relatively large increment from the target, which other tree crops have similar or smaller than the target area. The area of fruit forest (apple, cherry, persimmon, apricot, grapes) is 16,330.74 ha, which accounts for 41.75% of economic forest. The area of apple orchids is 14,267.64 ha, which accounts for 87.37% of fruit forest and 36.48% of economic forest.

Table A9.6: Ecological Forest
(hectare)

	Class I	Class II	Class III	Subtotal
Gansu	1,968.63	1,710.37	0.00	3,679.00
Shaanxi	0.00	0.00	0.00	14.83
Xinjiang	384.93	678.27	43.10	1,106.30
Subtotal	2,353.56	2,388.64	43.10	4,785.30
Ratio (%)	49.34	49.76	0.90	

13. **Afforestation summary.** Through project implementing, Gansu increases forest area (economic and ecological forests) 23,280 ha, Shaanxi increases 14,171 ha, and Xinjiang increases 6,449.3 ha.

14. Carbon storage analysis: Based on Equation 1, the carbon storage of the project can be derived as follow:

Table A9.7: Carbon Storage of Economic Forest
(total carbon)

	Class I	Class II	Class III	Subtotal
Gansu	232,542.60	85,030.66	1,832.68	319,405.94
Shaanxi	84,066.19	87,817.12	30,598.78	202,482.09
Xinjiang	72,530.22	10,245.12	3,036.86	85,812.20
Subtotal	389,139.00	193,092.90	35,468.32	607,700.23

Table A9.8: Carbon Storage of Ecological Forest
(total carbon)

	Class I	Class II	Class III	Subtotal
Gansu	15,937.07	13,077.04	0.00	29,014.11
Shaanxi	0.00	0.00	0.00	0.00

Xinjiang	3,116.20	5,185.88	38.77	8,340.85
Subtotal	19,053.27	18,262.92	38.77	37,354.96

15. Carbon storage summary. The total carbon storage is 645,055.19 tC, with economic forest of 607,700.23 tC, which accounts for 94.2%; ecological forest of 37,354.96 tC, which accounts for 5.8% of total carbon storage.

Reference:

(PRC) Guideline of provincial level greenhouse gas inventory preparation (2011).
Zhao J. (2015), Study on the Estimation of Characteristic Fruit Forest Carbon Storage Based on Climate Change, *Master Thesis*, Nanjing Information Engineering University.
Zhou Y., Yu Z., Zhao S., (2000), Carbon storage and budget of major Chinese Forest Types, *Acta Phytoecologica Sinica*, Vol. 24(5), 518-522

SOCIAL DEVELOPMENT AND POVERTY REDUCTION

A. Introduction

1. The project was implemented in 1,270 administrative villages (participating villages) in 256 townships of 53 counties/cities/districts (collectively participating counties) in Shaanxi and Gansu Provinces and Xinjiang Uygur Autonomous Region (collectively participating provinces) between September 2011 and September 2018.[1]

2. The expected impact of the project is improved incomes and sustainable livelihoods from use of the forest land in the three participating provinces. The intended outcomes were increased productivity of forest lands and reduced land degradation in the three participating provinces.

3. The project outcomes were achieved through (i) mainstreamed integrated ecological management (IEM) approaches with newly planted economic tree crops and cold storage facilities, newly planted ecological forest, and supported irrigation and agricultural services to the economic and ecological forests, (ii) strengthened infrastructure and reformed functions of national forest parks; and (iii) enhanced capacity of the project management, technicians, and the farmers in the participating provinces.

4. The owners of the economic plantations can be classified into four groups: (i) individual farm households who planted the tree crops on their own land, (ii) large farms who planted the tree crops on their own land and/or rented land from others and the economic plantations are managed by themselves; (iii) farmer cooperatives/associations; and (v) enterprises. Most of the plantations (66.5%) belong to the individual farm households (Table A10.1).

Table A10.1: Owners of the Economic Plantations (2019)

			Individual household	Large farm	FC/FA	Enterprise	Total
Shaanxi	Economic plantation	ha	12,113	1,000	600	450	14,163
	No. of the owners	no.	91,567	53	30	10	91,660
Gansu	Economic plantation	ha	11,139	2,131	5,216	1,115	19,601
	No. of the owners	no.	65,000	253	4,135	14	69,402
Xinjiang	Economic plantation	ha	2,775	0	0	2,591	5,366
	No. of the owners	no.	1,436[a]	0	0	4	1,440
Total	Economic plantation	ha	26,027	3,131	5,816	4,156	39,130
	No. of the owners	no.	158,003	306	4,165	28	162,502

FA = farmers' association, FC = farmers' cooperative, ha = hectare.

[a] The land use rights were contracted to individual households many years ago, and for 30 years.

Sources: Government PRC, PMOs between March–May 2020.

5. The project ecological forests are on either villagers' collectively-owned land such as in Gansu or on state-owned land such as in Shaanxi and Xinjiang. The land use rights of collective-owned lands in Shaanxi and Xinjiang were not transferred. The county forest departments are responsible for the forest management except a little area around the project economic plantations in Xinjiang that the management of the ecological forests was contracted to the enterprises who are also the contractors of the project economic plantations. The ecological forests in Gansu are on collective land of Tongwei County and Lintao County. The land use rights in Tongwei County do not transfer. Land use rights of 106.5 hectares of the ecological forest in

[1] An administrative village usually consists of several natural villages.

Lintao County were transferred to a company. Both county forest bureaus are responsible for fire prevention and stopping illegal cutting of the ecological forests. The village committees are responsible for the other management and maintenance tasks (Table A10.2).

Table A10.2: Management of the Project Ecological Forest (2019)

	Shaanxi	Gansu	Xinjiang
Area (ha)	24	3,679	1,095
Land ownership	State-owned	Collectively-owned	State-owned
LURs	State-owned	In Tongwei, collectively-owed In Lintao, 106.5 ha transferred to company, the others collectively-owned	State-owned
Management responsibility	CFB	CFBs for fire prevention and illegal cutting Village committees and the company for the others	CFBs for the majority, and enterprises for small proportion

CFB = county forest bureau, ha = hectare, LURs = land use rights.
Sources: project management offices at provincial and county levels between March–May 2020.

B. Consultation and Participation

6. It was assessed during the project preparation that more than 200,000 households would participate in the economic tree crops planting, with a small average land size of 0.27 ha per household. Given the large scope and complexity of the household economic tree crop planting, a community consultation and disclosure strategy (CCDS) were developed to achieve consistent, comprehensive, and equitable implementation of the activities. The CCDS was the methodology by which people and communities could be involved in the project decision-making.

7. **CCDS institutional arrangement.** With guidance of the National Forestry and Grassland Administration (NFGA)[2] and national level project management office (NPMO) which was set up in the NFGA, the provincial forestry and grassland departments (FGDs)[3] on behalf of the provincial governments implementing agencies and the project county forestry and grassland departments on behalf of the county governments (IAs) were responsible for the project implementation including implementation of the CCDS in their own jurisdictions. A PMO had been set up in each of the forest and grassland department who oversaw the everyday coordination of the project implementation including the CCDS implementation.

8. **Implementation of the CCDS.** During the project implementation, the CCDS was well followed. The project information was disclosed in various forms, such as village meetings, distribution of publicity materials, publicity billboards, online news, mass news, publicity vans. The objectives of the project were explained to the relevant farmers and enterprises; the cash flows of shifting from traditional grain-focused cropping systems to the economic plantations were analyzed. The potential benefits and risks were assessed accordingly and informed the relevant farmers. The project implementation arrangements were explained especially the arrangements of the labor grant payment and the amount and timing of these payment. The planting site plans were prepared with participation of the relevant farmers including women, ethnic minorities, the

[2] Former name of the agency was State Forest Administration, which was changed to the National Forestry and Grassland Administration since March 2018

[3] Former name of the agency was provincial forestry department, which was changed to the Provincial Forestry and Grassland Department since 2018.

poor and the near poor. At least 400,000 farmers had direct access to the project information (Table A10.3).

Table A10.3: Project Information Disclosure (by project completion)

		Shaanxi	Gansu	Xinjiang	Total
Village meetings	Time	800	825	67	1,692
Farmer participants in the meetings	Person	50,000	88,850	7,550	146,400
Publicity leaflets	Set	48,500	335,800	24,000	408,300
Publicity billboards	No.	31	250	78	359
News on internet	No.	33	778	430	1,241
News by mass media	Pieces	22	218	140	380
Publicity vans	No.	0	1,938	0	1,938

Sources: Project progress reports, project management offices between March–May 2020.

9. Women, ethnic minorities, and the poor equally participated in the village meetings and were equally consulted (Table A10.4).

Table A10.4: Participants in the Village Meetings

	Total (person)	Women (%)	EM (%)	The Poor (%)
Participants in the village meetings	790,015	50.5	4.0	27.0
Baseline situations[a]	NA	50.2	3.6	20.8

EM = ethnic minority, NA = not applicable.

[a] The baseline situations refer to percentages of women, ethnic minorities, and the poor respectively in the total population of the project area in the beginning of the project implementation.

Sources: Project progress reports, project management offices between March–May 2020.

10. Consultations were conducted with all relevant farm households including ethnic minority households. Selection of project participating households was with transparency. Household's participation willingness was the first and foremost principle of the selection. Farm households provided their preferences to species and varieties of the economic forests, and local governments selected tree species based on the farmer preference, market demand, climatic and ecological suitability to specific site conditions, technical experience, and acceptability in the PRC.

C. Land Acquisition and Resettlement

11. The project was classified as Category C for involuntary resettlement following ADB's Safeguard Policy Statement (2009) in the preparation phase. By the project completion, the project did not involve any land acquisition and resettlement. The project just involved some land use rights transfer (LURT).

12. **Measures to avoid involuntary land acquisition and resettlement.** The project design included measures to avoid involuntary land acquisition and resettlement, including (i) avoidance of basic farmland for forest development; (ii) voluntary participation of farmers, using a community consultative process, who will be direct beneficiaries; (iii) payment of wages to farmers that voluntarily participate in the project and provide labor inputs; (iv) no land acquisition will be required for irrigation infrastructure upgrading; and (v) ecological trees will utilize state-owned forest land or hilly and marginal collective land. During the project design and implementation, these measures were fully followed. The implementing agencies undertook the design and implementation of their subprojects in ways which ensured that no involuntary land acquisition or resettlement happened for the project.

13. Ownership of all the land occupied by the project ecological forest and economic plantations are either state-owned or collectively-owned by villagers. For establishment of the project ecological forests and economic plantations, ownership of the villagers collectively-owned land did not need to be transferred to state-owned, that is, the lands are still villagers collectively-owned lands, and no land acquisition was needed. No households lived on the project-occupied land. Therefore, establishment of the project ecological forests and economic plantations has not caused any involuntary resettlement.

14. **Measures of land use rights transfer.** All the 1,119 ha of the project ecological forests in Shaanxi and Xinjiang are on state-owned land. The use rights of the land are also under the name of the state. No LURT was involved for the ecological forests in subproject areas these two provinces.

15. All the 3,679 ha of the project ecological forest land in Gansu is collectively-owned, which belong to two administrative villages in two counties, Tongwei and Lintao counties. Before the project, all the project ecological forest land was waste land, and the use rights were collectively-owned and were not contracted to individual households. For establishment of the project ecological forests, 106.5 hectares of the ecological land in Lintao County involved LURT, which transferred land use rights from the village to a company at CNY600 per ha per year for 70 years. Use rights of the other project ecological forest land in Lintao County and in Tongwei County are still owned by the villagers collectively. The LURT contract terms of the 106.5 ha forests were made with full consultation with and agreed by the villagers. Although the project did not prepare a separate due diligence report on LURT, it was known from interviewing the county forest bureau that the LURT was made on voluntary basis. The land was originally barren land, and the company leased the land, mobilized labor to plant the forests and are well maintaining the forest using their own resources with an expectation of developing non timber forest product in the future. The duration of 70 years of the LURT contract is in compliance with relevant government policy. The rent was paid to the village which was used for the villagers' public welfare.

16. The 39,130 hectares of project economic plantations are on state-owned land in Xinjiang (5,366 ha) and on villagers collectively-owned land in Shaanxi (14,163 ha) and Gansu (19,601 ha). Before the project, almost all the collective land for the project economic plantation in Shaanxi and Gansu had been contracted to individual households. For establishment of the project economic plantations, 20.4% (7,998.88 hectares) of the total economic plantations land owned by 16,979 individual households in Shaanxi and Gansu were transferred to farmer cooperatives or enterprises or large farms. [4] Land use rights of the other 79.6% (31,132.12 hectares) of economic plantation did not transfer and still belong to the individual households. Situation of the LURT is presented in Table A10.5. All the LURTs were done on voluntary basis. The rental rates, the lease tenure, and the payment frequency were all fully discussed with the relevant farmers. Some contracts were signed directly with the individual farm households, and some signed with village committees on behalf of the villagers, or with the villager's authorizations. By the project completion, all the due rents were paid to the relevant farm households.

Table A10.5: LURT for the Project Economic Plantations (by 2019)

			Large farms	Cooperatives /Associations	Enterprises	Total
Shaanxi	LURT area	Ha	0	230	450	680
	No. of LURT agreements	No	0	1200	2300	3500

[4] Land use rights of 680 hectares owned by 1,200 individual households in Shaanxi and 7,318.88 hectares owned by 3,472 individual households in Gansu were transferred.

			Large farms	Cooperatives /Associations	Enterprises	Total
	Households involved	No.	0	1200	2300	3500
Gansu	LURT area	ha	1,609.51	4,020.22	1,689.15	7,318.88
	No. of LURT agreements	No.	37	144	54	235
	Households involved	No.	3,472	7321	2,686	13,479
Total	LURT area	ha	1,609.51	4,250.22	2,139.15	7,998.88
	No. of LURT agreements	No.	37	1,344	2,354	3,735
	Households involved	No.	3,472	8,521	4,986	16,979

ha = hectare, LURT = land use rights transfer, no. = number.
Sources: Government project completion report, the project management offices between March–May 2020.

D. Project Direct Beneficiaries

17. A cumulative total of 889,815 people directly benefited from the project. Of the farmer beneficiaries, 50.2% are women, 21.6% are ethnic minority people, and 26.2% were people from poverty households (Table A10.6).

18. The farmers directly benefited from the project in various ways. Some are the owners of the project supported economic plantations with initial support from the project, some were employed for the project construction and/or the project operation. Technical and management capacity of some farmers has been strengthened. Many of the farmers benefited from the project in more than one area.

Table A10.6: Direct Farmer Beneficiaries of the Project (By 2019)

Beneficiary areas	Number of Benefited households & workers	Farmers/ workers (person)	Women (%)	Ethnic minority (%)	The Poor (%)
Owners of the economic plantations	158,003	790,015	50.2	2.8	26.2
Participation in the trainings	144,164	144,164	46.1	21.6	22.8
Workers for the project construction	57,621	57,621	36.9	10.4	29.1
Workers for the project operation	42,179	42,179	40.9	3.3	24.0
Total	**215,250**	**889,815**	**50.2**	**21.6**	**26.2**
Baseline situations	N/A	N/A	50.2	3.6	20.8

Sources: Government project completion report and project management offices between March–May 2020.

E. Project Benefits

19. The project benefited and is benefiting farmers in several ways which are described in the following paragraphs.

20. **Strong initial support.** All individual farm households were free from the repayment of the project loan for the economic plantations.[5] The local governments provided seedlings and other production materials for the individual farm households freely instead of loan. The local governments repaid or will repay the loans. It was strong initial support for the individual farm households especially the poor to be engaged in the economic tree crops component, and greatly

[5] Excluding the large farms who are also maintained by individual farm households.

facilitated shift of the farming cropping system from grain-focused to more valuable and higher sustainable economic tree crop system.

21. Although the participating large-scale farms and the participating enterprises need to repay the loans, the loans were also strong initial financial support to them, because these farms and enterprises have less access to commercial loan.

22. **Trainings.** The project provided trainings to a total of 150,981 people including 144,164 farmers. The trainings enabled the farmers to fertilize, prune and shape trees at a high standard and rectify technical weaknesses. More ethnic minorities and the poor farmers participated in the trainings, while less women participated in the trainings. The main reason was that women were engaged in many other activities than men.

Table A10.7: The Project Organized Trainings (cumulatively by 2018)

		Shaanxi	Gansu	Xinjiang	Total
Total	person	43,640	64,561	42,780	150,981
Management staff	Person	860	977	89	1,926
Technicians	person	2,465	1,980	446	4,891
Farmers	person	40,315	61,604	42,245	144,164
-women	%	45.3	49.6	43.1	46.5
-ethnic minority	%	0	7.5	72.1	24.3
-the poor	%	17.0	37.5	25.8	28.3

Sources: Domestic project completion report and project management offices between March–May 2020.

23. **Employment.** The project created many jobs during the project construction and operation. A total of 99,800 farmers including 40.8% of women, 11.8% of ethnic minorities, and 27.3% of poor farmers were engaged in the project construction and operation (Table A10.8). More ethnic minority and poor farmers engaged in the employment.

Table A10.8: The Project Created Employment

			Shaanxi	Gansu	Xinjiang	Total
1	For the project construction					
	Farmers engaged in the construction	Person	9,000	32,621	16,000	57,621
	Of which, women	%	40.0	42.3	41.5	41.7
	Ethnic minority people	%	0	6.2	38.6	14.2
	The poor	%	13.0	36.1	23.9	29.1
2	For the project operation					
	Farmers engaged in the operation	Person	15,000	21,179	6,000	42,179
	Of which, women	%	40.0	42.2	28.3	39.4
	Ethnic minority people	%	0.0	6.6	35.9	8.4
	The poor	%	13.0	37.2	10.0	24.7
3	Total	Person	24,000	53,800	22,000	99,800
	Of which, women	%	40.0	42.3	37.9	40.8
	Ethnic minority people	%	0.0	6.4	37.9	11.8
	The poor	%	13.0	36.5	20.1	27.3

Sources: Project management offices between March–June 2020.

24. **Reduced labor cost.** The project systematically supported agricultural infrastructure such as drip irrigation systems, access roads, electricity for the economic plantations in the five participating counties in Xinjiang.[6] The project also provided training on using and maintaining the infrastructure. The strengthened infrastructure increased management efficiency of the economic plantations and reduced labor cost accordingly.

25. **Extended value chain**. The project supported fruit storage capacity of 8,250 tons in three participating counties in Gansu where the project has also supported establishment of 2,204 ha of economic plantations. The storages can keep the fruits in fresh for as long as 6 months when farmers seek for good market. The storages can also minimize loss due to pests. Without the storages, the project supported fruits could only sell immediately after harvest whatever the market prices were.

26. **Increased yields.** The land for the project economic plantations was low- or medium-yield land or waste land before the project (Table A10.9).

Table A10.9: Pre-project Use of the Land of the Project Economic Plantations

		Total (ha)	Grain crops (%)	Cash crops[7] (%)	Waste land (%)
Shaanxi		14,163	80.0	0.0	20.0
Gansu		19,601	88.1	7.1	4.8
Xinjiang		5,366	0.0	49.0	51.0
Total		**39,130**	**73.1**	**9.2**	**17.7**

Sources: Government Project Completion Report, and the Project management offices between March–June 2020.

27. The cultivable land usually was cultivated with food crops once a year, either wheat or maize in Shaanxi and Gansu, and cotton in Xinjiang. Wheat grows from September of the first year to June of the second year, maize grows from April to September, and cotton growth from April to October. The other months were unused or planted with some minor crops such as beans, millets, which were just for farmers' self-consumption.

28. Due to poor quality and small scale of the land areas, the productivity was low and unstable before the project. It generated a little product in some years, and lost money in other years. With the project support, the unstable crop-focused cropping systems shifted to higher value and more sustainable tree crop systems. Compared with surrounding crops in the similar quality of land, the yields of the project economic plantations increased in 2019 (Table A10.10). Meanwhile, the plantations also play great ecological function of reforesting and revegetating the hilly and degraded land.

29. Most of the land for the economic plantations in Xinjiang was waste hilly land or Gobi-desert land. With the project support, electricity, drip irrigation system, and access roads have been introduced to the land, plus technical training organized by the project, the lands are used for economic plantations such as walnut, grape, and Chinese jujube. While producing economic benefits, the trees also played function of reforesting and revegetating the hilly and waste land. The project economic plantations produced more income than the grain crops and cotton in the land outside the project in 2019. For example, in 2019, on average, similar quality of land around the project economic plantations generated 15,000 kg of wheat per ha, with a net income of CNY 2,000 per ha (10).

[6] These kinds of support were only in Xinjiang subproject area, not in Shaanxi and Gansu subproject areas.
[7] It was Chinese medicine or other cash crops in Gansu and cotton in Xinjiang.

Table A10.10: Productivities of the project Economic Plantations and Similar Land

		2019	Full productive age
	Yield (kg/ha)	Net income (CNY/ha)	Yield (kg/ha)
Project economic plantations			
Tea (5 years)	450[a]	120,000	750
Mulberry (3-5 years)	15,000[b]	30,000	30,000
Apple (7 years)-Gansu	18,900	47,250[8]	32,850
Apple (7 years)-Xinjiang	15,000	75,000	30,000
Walnut (6.6 years)	1,125	15,450	3,000
Chinese date (7 years)	6,000	90,000	12,000
Wine grape (7 years)	12,000	60,000	22,500
Similar quality of land outside and around the project area			
Wheat in Gansu	15,000	2,000	
Cotton in Hami	4,200	15,000	

[a] Dry tea leaves.
[b] Mulberry leaves.
Sources: Government project completion report, and project management offices between March–May 2020.

30. **Increased farmers income.** The farmers' increased income was mainly from the income of the farmers' employment in the project construction (Table A10.11) and operation, and the increased income from the project supported economic plantations.

Table A10.11: Farmers Income from the Project Construction (cumulatively by 2018)

	Total Labor inputs (person-day)	Total income (CNY million)	Women (%)	Ethnic minorities (%)	The poor (%)
Shaanxi	2,000,000	70.0	40.0	0	17.0
Gansu	1,871,878	93.6	40.9	21.1	26.8
Xinjiang	245,000	46.5	21.6	26.5	25.4
Total	**2,116,878**	**140.1**	**34.5**	**22.9**	**26.4**

Sources: Government project completion report, and project management offices between March–June 2020.

31. As the results, the per capital disposable income of the project beneficiary households increased by 190% from CNY1,600 in 2010 up to CNY4,642 in 2018. The growth rates of the beneficiary households in the three provinces/region were all higher than the provincial averages in the same period (Table A10.12).

Table A10.12: Per Capita Rural Disposable Income (CNY/person)

	The Beneficiary Households			The Provincial Average		
	2010	2018	2018/2010 (%)	2010	2018	2018/2010 (%)
Shaanxi	1,600	4,400	275	4,105	11,213	273
Gansu	1,600	4,941	309	3,425	8,804	257
Xinjiang	1,600	6,600	413	4,623	11,975	259
Total	**1,600**	**4,642**	**290**	**N/A**	**N/A**	**N/A**

N/A = not applicable.
Sources: Project management offices between March–June 2020. The provincial statistics yearbooks for 2010 and for 2018.

F. Ethnic Minority Development

32. There are no ethnic groups involved in the project areas of Shaanxi and few in Gansu. The project was classified as Category A for its Indigenous Peoples impact because ethnic

[8] Due to disaster of hail, quality of the apple was low, and the price was low accordingly.

minority people lived in all the five project counties of Xinjiang. An ethnic minority development plan (EMDP) for Xinjiang subproject was developed during the project preparation. Detailed status and achievements of the EMDP implementation is presented in Appendix 11.

G. Gender Equality

33. According to ADB's gender policy, the project was classified as Some Gender Element. Some gender measures were incorporated into the project design, and a separate gender action plan was not prepared (Table A10.13).

Table A10.13: Gender Measures and the Achievements

Gender measures	Achievements (by the project completion)
Ensure women farmers are equally consulted on economic tree planting and development	Activity completed. Farmers were consulted mainly in form of village meetings. Of the total farmers consulted, 51% were women farmers.
Ensure women's equal participation in the economic tree planting and the associated loans	Activity completed. Of the farmers participated in the economic tree planting, 50.2%[a]were women
Ensure women's equal participation in the project training activities	Activity completed. Of the farmers trained, 46.5% were women.
Of the project created employment, at least 40% will be taken by women	Target achieved. Of the project created employment, 40.8% were taken by women
Ensure equal labor grant pay to women	Activity completed. Equal pay for equal value of work for both men and women
Ensure not increase women's workload	Activity completed. All the participation in the project were on a voluntary basis. Moreover, the majority of the project-related work were seasonal and for short time period
Recruit a gender expert to design and deliver three gender analysis and mainstreaming courses	Partly completed. Not gender expert was recruited, but Gansu and Xinjiang, each recruited a social monitoring team
Gender analysis and mainstreaming training will be provided to the forest agencies at state, provincial, county and township levels	Partly completed. Some trainings included gender.
SFGA identifies, collects, and reports gender mainstreaming performance indicators	Partly completed. Some sex-disaggregated indicators were included in the project reports.

SFGA = State Forestry and Grassland Administration
[a] Include those who worked on their own farmland.
Sources: Project management offices between March–May 2020.

34. **The project's grant components targeted to women**. The project included two grant components. One was the project grant for labor inputs of the participating farmers who planted the economic tree crops on their own land. The grants were for the first two years during the project construction phase. The other was the GEF grant for the project.

35. The grants for farmers' labor input were equally targeted to men and women. It was common that both husband and wife worked together in planting economic tree crops on their own land. Both women and men were equally paid. The grant payments were usually delivered to the wives, because in most villages nowadays women take care of money for their families.

36. The GEF grants supported 1,130 ha of ecological forest in Gansu and Xinjiang, which created some employments. Women's participation in both planting the trees and management of the forests is shown in Table A10.14.

Table A10.14: Women's Participation in the GEF Component

		Unit	Gansu	Xinjiang	Total
1	Ecological forest planting				
1.1	Ecological forests planted	ha	695.0	435.0	1,130.0
1.2	People participated in planting the forest	person	4,978.0	200.0	5,178.0
	Of which, women	%	42.5	40.0	42.4.0
1.3	Total input in the forest planting	Person-day	28,950.0	3,000.0	31,950.0
	Of which, women	%	40.8	33.9	40.2
2	Management of the ecological forests (by 2019)				
2.1	People involved in the management	Person	6.0	20.0	26.0
	Of which, women	%	33.3	30.0	30.8
2.2	Total inputs in the forest management	Person-year	30.0	100.0	130.0
	Of which, women	%	30.0	29.0	29.2

ha = hectare, GEF = Global Environment Facility
Sources: Project management offices between March–June 2020.

H. Poverty Reduction

37. The project maximized its contribution to poverty reduction through prioritizing the project activities to poverty counties, the poor farmers, and financially and technically supporting the poor.

38. **Prioritized poverty counties.** Of the 53 project participating counties, 45 participated in the project economic tree crops planting, with 22 in Shaanxi, 18 in Gansu and 5 in Xinjiang. Of the 45 counties engaged in the project economic forests planting, 32 (71.1%) were either nationally designated poverty counties (29 counties) or provincial counties (3 counties) in 2011, the beginning of the project implementation (Table A10.15). The other two counties who were involved only in the project ecological forest in Gansu were also nationally designated poverty counties in 2011. That is, all the project counties in Gansu were poverty counties in the beginning of the project implementation.

Table A10.15: Project Participation of Poverty Counties

	Shaanxi	Gansu	Xinjiang	Total
Project participating counties	28	20	5	53
Counties involved in the project economic forests	22	18	5	45
-Poverty counties in 2011	14	18	0	32
-Poverty counties in 2018	14	15	0	29

Sources: Project management offices between March–June 2020.

39. **Prioritized participation of poor households.** The economic forests areas of the project were selected based on two key criteria: first, the areas consisted of large blocks of wasteland with suitable agronomic and climatic conditions for economic plantations, and second, the project could directly benefit more poor households.

40. The project prioritized participation of the poor households. Of the 158,003 economic forest participating households, 22.9% were poverty households which was higher than the poverty incidence of 20.8% in the project area in 2011.

41. **Stronger initial support to the poor.** Considering the poverty situation and other costs and risks, 35 local governments of the 40 economic forests participating counties in Shaanxi and

Gansu, and the local governments in Xinjiang where individuals were engaged in the economic forest finally decided to repay the ADB loan by the government themselves instead of the individual farm households. [9] Individual households especially poverty households were encouraged to participate in the project by providing free seedlings, free production material such as fertilizers and pesticides, and payment for their labor inputs in planting and management of the economic plantations in their own land in the first two years. The poor were also strongly supported in terms of labor input. Some poverty households lacked labor-force to plant the economic trees on their own land. The project implementing agencies outsourced labors to help the poor households plant the crops.

42. **Prioritized trainings to the poor.** The project provided trainings to a total of 144,164 farmers. Of which, 28.3% were farmers from poverty households, which were higher than the poverty incidence in the project area.

43. **Prioritized project employment to the poor.** The project enterprises prioritized the employment opportunities to the poor households. Of the total 99,800 jobs created by the project, 27,199 (27.3%) were offered to poverty households.

44. **Increased income of the poor.** The poor farmer households' income increased from CNY1,400 ($200) in 2010 to CNY3,800 ($543) in 2018 with an increase by 171% in Shaanxi subproject area, and from CNY1,300 ($186) in 2010 to CNY3,800 ($543) in 2018 with an increase by 192% in Gansu Subproject area.

45. The increased income of the poor came from, among others, the project created employment, and the increased productivities of the project supported economic tree crops.

I. Conclusions

46. The following main conclusions can be drawn from the project implementation on social aspects: (i) wide and inclusive consultations and involvement enhanced farmers' participation; (ii) the project financial and technical support greatly enabled shift of the land use from grain-focused cropping system to the ecologically sustainable and economically profitable economic tree crop production; (iii) farmers income increased from the project created employment and the economic tree crop development; (iv) all farmers, including women, ethnic minorities, and the poor, benefited from the project; and (v) the project made great contribution to poverty reduction in the project area.

[9] Not include the large farms which were engaged in the project economic forest. Some of the large farms belong to individual households.

ETHNIC MINORITY DEVELOPMENT PLAN

A. Introduction

1. It was assessed at the time of project preparation that there were no ethnic minority groups involved in the project area of Shaanxi and Gansu. The project was classified as Category A for its Indigenous Peoples aspect because ethnic minority people lived in all the five project counties in Xinjiang. An ethnic minority development plan (EMDP) for Xinjiang was developed during the project preparation. The EMDP was designed to ensure that project benefits were distributed equitably among relevant communities and individuals, and that culturally appropriate measures were taken to avoid or mitigate adverse impacts and enhance benefits for ethnic monitories. The EMDP was envisaged to be implemented with the community consultation and disclosure strategy (CCDS). The EMDP was disclosed on the ADB website as a draft plan in 2009 and a summary plan in 2011.

B. Ethnic Minorities in the Project Area in Xinjiang

2. The project was implemented in Changji City, Hami City, Korla City, Hejing County, and Yanqi Hui Autonomous County that involved ethnic minority groups. Of the total population of 1.66 million in the project area in 2018, 595,159 (35.8%) were ethnic minorities, including 21.6% Urghur, 8.7% Hui, 2.7% Mongolian, 2.0% Kazak, and 1.0% other ethnic minorities (Table A11.1).

Table A11.1: Ethnic Minorities Population in the Project Area (2018)

		Total project area	Hami	Changji	Korla	Hejing	Yanqi
Total Population	person	1,660,344	432,200	383,554	472,600	201,990	170,000
Han	%	64.2	68.9	72.8	66.6	53.7	38.3
Ethnic minority	%	35.8	31.1	27.2	33.4	46.3	61.7
Urghur	%	21.6	23.9	2.8	28.8	24.6	34.2
Hui	%	8.7	3.6	17.8	2.4	3.7	24.3
Mongolian	%	2.7	0.2	0.4	1.1	16.5	2.3
Kazak	%	2.0	2.7	5.2	0.0	0.5	0.0
Manchu	%	0.3	0.4	0.4	0.2	0.0	0.1
Others	%	0.7	0.4	1.0	0.5	0.9	0.7

Source: Xinjiang Statistical Yearbook, 2019.

3. The total population in the project area increased from 1,556,813 in 2007 to 1,660,344 in 2018, while the ethnic minority population increased from 524,211 to 595,159 in the same period. The percentage of ethnic minority population in the total increased from 33.7% to 35.8%.

C. Project Implementation in Xinjiang

4. The Xinjiang subproject was implemented in 13 villages in 5 counties since 2011. A total of 5,366 hectares (ha) of economic tree crops and 1,095 ha of ecological forest were planted.[1] Before the project, over half (51%) of the economic plantations occupied land was waste land and the remaining was cultivated with cotton. Ownership of all the economic and ecological forest land was state-owned. Of the 5,366 ha of economic plantations, 2,775 ha belong to 1,436 individual farmer households, and the others were contracted to enterprises. The project provided free

[1] By September 2019.

seedlings and other production materials to the individual farmer households, organized technical trainings, and employed farmers for planting and managing the forests. The trainings and the employment were prioritized to the ethnic minority farmers. Detailed information is presented in the following sections.

D. Implementation of the EMDP Activities

5. The implementing agencies implemented the EMDP. Of the 20 targets in the EMDP, 12 (60%) were achieved. Achievements and the major reasons for shortfalls are summarized in the following sections. Detailed implementation achievements of the EMDP targets and monitoring indicators are presented in Table . The project activities in Xinjiang consisted of three types/models of activities and EMDP activities are grouped accordingly.

6. **Household economic tree planting (household model).** The EMDP had the following targets under this model for Xinjiang: a total of 3,245 ha of economic trees planted with participation of a total of 12,019 rural households in 5 counties, of which 40% or 4,800 would be ethnic minority households; and average loan of CYN 4,800 and average labor payment of CNY1,700 per household. By the project completion, a total of 1,436 households including 345 (24%) ethnic minority households participated in economic tree crops planting and got free seedlings and other production materials worth CNY5,300 per household on average from the local governments. The households also received subsidies of CNY1,700 per household on average from the project for their labor inputs in planting the economic tree crops during the first two years of planting. The beneficiary households received the support as subsidies or grants instead of loan. The local governments paid these subsidies, and they will repay the ADB loan. The achievement of 1,436 households is much less than the target of 12,019 rural households. The reason was that the originally planned 17 small enterprises dropped out from the economic tree crops planting. It was originally designed that the 17 small enterprises would work together with and strongly support individual households in the economic tree crops planting. The dropout of the 17 small enterprises led to some changes in the subproject area and decreased participation of individual farm households in planting the economic tree crops.

7. Of the total 1,436 participating households, 24% are ethnic minority households, which is less than the 40% target.[2] The project supported farmers including ethnic minority households shifting of the cotton-focused cropping system toward economic tree crops system by providing free seedlings, other production materials, and paying the households grants for their labor inputs in planting the tree crops.

8. **Enterprise economic tree planting (enterprise model).** The EMDP had the following targets under this model for Xinjiang: a total of 2,770 ha of economic trees planted with 2,200 full time equivalent jobs during the establishment and 490 jobs at the maturity stage, of which 33% jobs for ethnic minorities. The originally planned 17 enterprises dropped out. Instead, the local governments were in-charge of planting the economic tree crops, which was 2,591 ha by the project completion.

9. About 920 full-time equivalent jobs were created by planting the economic tree crops during the first two years. The full-time equivalent jobs were less than the target of 2,200 because more machines were used than planned, such as for land flattening.

[2] Percentage of ethnic minority households in the total original land-contractual households was about 26%; and thus, the percentage of ethnic minority households among the project beneficiary households is nearly the same.

10. In 2018 (nearly at maturity), about 400 full time jobs were created by maintaining and managing these economic plantations, which was less than the target of 490 because many activities were done by machines, such as spreading pesticide, and harvesting jujube fruits. Of the full-time jobs at maturity, 37.9% were taken by ethnic minorities, which was higher than 33% target.

11. **Ecological planting.** The EMDP had the following targets: a total of 650 ha of shelter belts planted with 435 people gaining employment including 50% ethnic minorities; and 435 ha of sand fixing with 15 people gaining employment including 70% ethnic minorities. By the project completion, 660 hectares of shelter belts were planted, and 450 people gained employment, both were higher than the targets. Of the employed people, 52% were ethnic minorities, higher than the target.

12. A total of 435 hectares of sand fixing forest were planted, and 20 people gained employment in sand fixing forests which was higher than the target of 15 people. Of the employed people, 25% were ethnic minorities which was less than the 70% target. The sand fixing forests are mainly in Hami City, where the ethnic minorities are about 30% of the total population.

E. Impact of the EMDP implementation

1. Increased Ethnic Minority Farmers' Participation and Awareness

13. Consultations were carried out in 13 villages of the 5 participating counties/cities with ethnic minority groups. At least, 67 village meetings were organized with 7,550 farmers' participation. Of the participants, 56% were ethnic minorities. The consultations and village meetings raised ethnic minority farmers' participation and awareness, which was mainly indicated by their active participation in the community activities. In 2019, after the project completion, many ethnic minority farmers kept communication with technicians of township forestry stations for technical advice, actively searched for market information, and participated in other community activities.

2. Ethnic Minority Farmers' Employment and Additional Income

14. There were about 6,176 ethnic minority farmers involved in planting the project economic and ecological trees, with an earning of CNY3,000 per farmer. A total of 2,154 ethnic minority farmers were employed for maintaining and managing the project economic and ecological forests, with an average salary of CNY36,000 per year. About 345 ethnic minority households owned the project economic plantations which are expected to increase their income.

15. The consulting firm of the Xinjiang subproject collected some information related to income of the ethnic minority farmers. The surveys were done in 2014, 2016 and 2018, respectively. The survey results are presented in Table A11.2. Of the 171 ethnic minority farmers surveyed in 2014, 50.4% answered that their households' income increased. The percentage went up to 81.4% in 2016 and 95.0% in 2018, which indicates that income of the ethnic minority farmers was going up as the project implementation was going on. The reported percentages for ethnic minorities were all higher than the percentages of all farmers interviewed in the corresponding period.

Table A11.2: Farmers Interviewed in the Xinjiang Subproject Area

		2014	2016	2018
All interviewees:	person	242	185	210
Interviewees answered their household's income increased	%	51.2	76.2	78.1
Ethnic Minorities interviewees:	person	171	118	120
Interviewees answered their household's income increased	%	50.4	81.4	95.0

Sources: Surveys done by the consulting firms of the Xinjiang subproject.

3. Enhanced Ethnic Farmers' Capacity

16. Under the project, 30,459 ethnic minority farmers were trained on IEM and relevant agricultural techniques in the five participating counties in Xinjiang, comprising 72.1% of the total trained farmers. These ethnic minority farmers learned knowledge and skills to cultivate and manage the fruit trees economically and ecologically.

F. Implementation Consultation and Disclosure Activities in Xinjiang

17. All the community consultation and disclosure activities were implemented. The project information was timely disclosed to the relevant farmers, including ethnic minorities, in forms of village meetings, distribution of leaflets, news on internets, and mass media. The relevant farmer households, including ethnic minorities were fully consulted. The farmer households were informed about the cash flow of the shift from traditional cropping system to the economic tree crops. The participating farmer households were selected based on farmers willingness, and other technical, economic, and ecological factors.

18. The consultations and communication with the ethnic minorities especially with ethnic minority women and the elderly used their own language such as Uygur and Kazak, and in the convenience areas where the ethnic minority women feel comfortable and accessible. The trainings were provided to the ethnic minority farmers in Uygur or Kazak or interpreted in their languages. The information leaflets were in both Han and Uygur characters.

G. Grievance Redress Mechanism

19. During the project preparation, a grievance redress mechanism (GRM) was developed for effectively addressing any grievance especially from the farmers during the project preparation. The GRM process was as follows: (i) if a farmer had any grievance or complain, she/he could report to their village committee who would together with the town governments find out solution within two weeks; (ii) if dissatisfied, the farmer could further report to the county forest bureau for getting answers within two weeks; (iii) if still dissatisfied, the farmer could further report to the provincial forest bureau for solution within two weeks; (iv) the farmer could file an appeal to the administrative authorities if still dissatisfied; and (v) bring an action to a civil count if dissatisfied with all the above solutions.

20. During the project implementation, the GRM was disclosed to the relevant farmers through the village meetings. By the project completion, there were no complaints reported by farmers.

H. Institutional Arrangements in Xinjiang

21. Under guidance of the National Forestry Administration (NFA),[3] the Xinjiang Uygur Autonomous Forestry Department (XFD)[4] was responsible for overall coordination and supervision of the project implementation in Xinjiang including implementation of the relevant activities in the five counties involving ethnic minorities. The five county forestry departments and the county PMOs were in-charge of the day-to-day project implementation in their jurisdiction.

I. Monitoring and Reporting

22. In the beginning of the project implementation, the PMO established a project management information system (PMIS). It was functional for some time, but there were weaknesses subsequently in terms of its continued function. Systematic collection and reporting of information on implementation of EMDP also had problems.

23. In 2013, the Xinjiang PMO recruited the Social Assessment Center of Xinjiang Normal University as the external monitoring institution for monitoring the project implementation on social aspects. The institution prepared reports named “Social Assessment Report.” The project progress reports, and social assessment reports prepared by the external agency included some information, but there was weakness in terms of submission of good quality social safeguard monitoring reports on EMDP.

J. Conclusions and recommendations

24. Ethnic minority people were consulted during the project design and implementation. The community consultation and disclosure measures facilitated equal consultation and participation of ethnic minority farmers in relevant project activities.

25. Majority of EMDP activities were implemented. The project employment and trainings prioritized ethnic minorities. Ethnic minorities benefited from project jobs as well as economic plantations. Income of the ethnic minority farmers increased. Some targets in the EMDP were not achieved, such as lower number of jobs due to use of machines and withdrawal of enterprises during the project implementation.

26. The project progress reports, and social assessment reports prepared by an external agency included some information on ethnic minorities, but there was weakness in terms of submission of good quality social safeguard monitoring reports on EMDP.

27. It is recommended that future projects (i) prepare EMDP with realistic targets considering the nature of the project activities and implementation arrangements; and (ii) recruit experienced consultants and monitoring agencies that are familiar with ADB requirements and can prepare good quality monitoring reports on EMDP implementation.

[3] The name was changed to the National Forestry and Grassland Administration since March 2018.
[4] The name was changed to the Xinjiang Uygur Autonomous Forestry and Grassland Department since 2018.

Table A11.3: Ethnic Minority Development Plan: Targets and Achievements

Proposed Actions	Targets	Monitoring Indicators	Achievements (by project completion)
PROJECT BENEFITS			
Household Model In Xinjiang, a total of 3,245 hectare of economic trees planted	In total 12,019 rural households in 5 counties will participate About 40% or 4,800 of these will be ethnic minority households Average loan=CNY4,800 Average labor payment CNY1,700 per household In Year 1, about 49% of the loan participants or 5,928 households (40% or 2,371 ethnic minority households) will be identified and receive loans for economic planting In Year 2, another 49% of the loan participants or 5,928 households (40% or 2,371 ethnic minority households) will be identified and receive loans for economic planting In Year 3, the remaining 2% of loan participants or 163 households will be identified and receive loans for economic planting	No. of households participating No. of ha planted No. of loans No. and amount of labor payments	1,436 households including 345 (24%) ethnic minority households participated in economic tree crops planting who received free seedling and other production materials instead of loan from the local governments; and they also received grants for their labor inputs in planting the economic tree crops in their own land. Local governments instead of individual farm households paid and/or will pay the ADB loan. 1,436 is much less than the target of 12,019 rural households, because the originally planned 17 small enterprises dropped from the economic tree crops planting. It was designed that the 17 small enterprises worked together with and strongly support individual households in the economic tree crops planting. Dropout of the 17 small enterprises decreased individual households' participation in planting of the economic tree crops. Of the total 1,436 participating households, 24% are ethnic minorities, which is less than the target of 40% of ethnic minority households. 2,775 ha of economic plantations belong to individual farm households. The households received free seedlings and other production materials worth CNY5,300 per household. On average per household also received CNY1,700 payment for their labor inputs in the economic tree crops planting in their own land in the first two years. By 2012, 65% of the individual households were identified and the economic tree crops were planted. Another 23% were identified between 2013-2014, and the remaining were identified between 2015-2017.
Enterprise Model In Xinjiang 2,413 ha of economic trees will be planted.	About 2,770 ha of economic tree crops will be planted in Xinjiang by enterprise by 2016. About 2,200 people (full time equivalent) will gain direct	No. of enterprises participating No. of ha planted No. of full times job created	The originally planned 17 enterprises dropped out. Instead, the local governments were in-charge of planting the economic tree crops, which was 2,591 hectares. About 920 full time equivalent jobs were created by planting the economic tree crops during the first two years. The full time

Proposed Actions	Targets	Monitoring Indicators	Achievements (by project completion)
	employment through the enterprise model during the first two years of establishment. At maturity, the enterprise model will create about 490 full time jobs, the majority of which will go to poor unskilled laborers. Ethnic minorities will account for about 33% of this employment (their proportion in the Project area population). It is expected that 40% of enterprise jobs will go to women		equivalent jobs were less than the target because more machines were used than the planned, such as for land flatting etc. In 2019 (nearly at maturity), about 400 full time jobs were created by maintaining and managing these economic plantations, which is a little bit less than the targets because many activities were done by machines, such as spreading pesticide, harvesting jujube fruits etc. Of the full time jobs, about 10% went to the poor unskilled laborers, which did not meet "the majority," because there were very few poverty people in Xinjiang subproject area. Poverty incidence was 0.65% in the subproject area in 2019. 37.9% of the jobs for were taken by ethnic minorities 37.9% of the jobs were taken by women, which was less than the expectation, because the economic plantations are on desert area, away from residential area, and many women did not prefer working there.
Ecological Planting In Xinjiang, a total 650 ha of shelter belts In Xinjiang 435 ha of sand fixing	435 people gain employment for shelter belts, 50% ethnic minority people 15 people gain employment through sand fixing, 70% ethnic minority 585 houses and 7,065 ha of crop land save	No. of ha planted No. of full times job created No. of houses and hectares saved	660 ha of shelter belts were planted, 450 people gained employment. Of which, 52% were ethnic minority people. 435 ha of sand fixing forest planted. 20 people gained employment through sand fixing forests, 25% ethnic minority. 600 households and 7,100 ha of crop land saved
Mitigation Measures			
EMDP/Community Consultation and Disclosure Plan	All project sites	No. of village consultations No. of community meetings No. of poster/brochures No. of TV/radio announcements Independent monitoring report	13 administrative villages consulted 67 community meetings organized 78 posters set up 1,241 internet news issued 380 mass media news issued 4 reports named "social assessment report" by engaged institution
Gender Strategy	a) Gender inclusive approaches - all project sites	No. women receiving loan and labor payments No. of village consultations for women	Project activities conducted in all the project sites used gender inclusive approaches. 13 village consulted included women and ethnic minority people

Proposed Actions	Targets	Monitoring Indicators	Achievements (by project completion)
	b) 3 Gender Analysis training courses for State Forestry Agencies	No. of community meetings for women No. of gender inclusive poster/brochures No. of gender inclusive TV/radio announcements with No. of gender analysis training sessions No. of SFGA staff trained Independent monitoring report	67 community meetings organized included women and ethnic minority people 78 gender inclusive posters set up and 24,000 gender inclusive leaflets distributed 380 gender inclusive TV/radio announcements 5 Gender analysis training sections/courses for the State Forest Agencies 10 SFGA staff trained. 4 reports named “social assessment report” by engaged institution
Assurances to Household			
Labor: The State Forestry Agencies will ensure that households that fully compensation for the labor required for planting. Both husband and wife will receive payments regardless of whether both names appear on the land certificate. **Assurance to Local Labor** Actively target and recruit ethnic minority people, women and the poor and vulnerable. Employment contract include clauses prohibiting child labor and ensuring equal pay for men and women for work of equal value.	a) All project sites b) all enterprise and State Forestry employment		The local government provided free seedlings, and other production materials to the participating farm households, and provided compensation for the labor required for planting. Both husband and wife received the payments regardless of whether both names appear on the land certificate. The project employment opportunities actively targeted ethnic minority people, women, and the poor. Of the operation jobs, 35% provided to ethnic minority people, and 10% to the poor, which was higher the poverty incidence in the project area during the project implementation. The project activities actively targeted and recruited ethnic minority people for involving in the economic forest planting and operations, and engaged them in the project created jobs Child labor was prohibited and equal pay for men and women for work of equal value was followed. All enterprises involved in the project complied with the requirements.

EMDP = ethnic minority development plan, ha = hectare, No. = number, SFGA = State Forestry and Grassland Administration.
Sources: Government PCR and XPMO. between March–May 2020.

GRANT TERMINAL EVALUATION REPORT

A. Background

1. The Chief Executive Officer of the Global Environment Facility (GEF) endorsed the GEF grant on 3 August 2010 and Asian Development Bank (ADB) approved the grant on 29 March 2011, alongside with the Loan 2744-PRC Forestry and Ecological Restoration Project in Three Northwest Provinces. The grant agreement was signed on 3 June 2011 and became effective on 22 September 2011. The grant was implemented together with the ADB loan financed activities in the project. The original grant closing date was 30 September 2016, which was extended twice, first to 31 March 2017, and then to 30 September 2018. The main reason for the grant extensions was to address delays at the project start-up and to allow more time for implementation brought about by the minor project changes at midterm review.

2. The outcome of the project was increased productivity of forest lands and reduced land degradation in Gansu, Shaanxi, and Xinjiang through appropriate and sustainable land use, through demonstration and promotion of integrated ecosystem management (IEM) approach. The project outputs were: (i) mainstreamed IEM approaches applied to economic tree crop development; (ii) mainstreamed IEM approaches applied to ecological forestry development; and (iii) project management support to implement forest sector reforms in the provinces, counties, towns, and households. The GEF grant mainly supported ecological forestry development, climate change mitigation, and related capacity building activities. The cost details and project key milestones are presented in Annex A.

3. The project was jointly financed with an Asian Development Bank (ADB) loan, a GEF grant, counterpart government financing, enterprises, and farmers. The total project cost was $180.7 million at appraisal, of which $100 million was financed by ADB, $5.1 million by GEF, $45.0 million by the borrowers, $12.7 million by public and private enterprises, and $17.9 million by local households. At completion, the actual cost of the project was $145.47 million in total. There were savings of $12.8 million from the ADB loan, and $0.8 million from the GEF grant. The actual cost by financier was $87.2 million for ADB, $4.3 million for GEF, $26.1 million for the borrowers, $8.1 million from the enterprises, and $20.0 million from local households.

B. Terms of Reference

4. The terminal evaluation report is prepared as part of the project completion report for the entire investment project. The GEF grant was an integral part of the baseline project, and it was necessary to apply same methodology with same data for all the inputs and outputs. The evaluation involved desk review of the executing agency's project completion report, all the project performance monitoring reports (PPMS), ADB review mission and management records and audit reports. The coronavirus disease (COVID-19) related travel restrictions affected ADB mission's ability to visit sites. National consultants were recruited to conduct data collection and field investigations, completed with online discussions.

C. Implementation

5. The project was coordinated by the State Forestry and Grassland Administration (SFGA), formerly State Forestry Administration, and implemented in three provinces. The SFGA sets up a national project management office (NPMO) responsible for supervision, monitoring and reporting, training, and other technical support. Each province has a provincial project leading

group, comprising the Department of Finance, the Forestry Department, and the Provincial Development and Reform Commission, to ensure interagency coordination and to address project strategic decisions. A provincial project management office (PPMO) was established as a unit within each of the three provincial forestry departments and are responsible for coordination and liaison with municipalities and county project management offices (CPMOs) within the county forestry bureaus. The CPMOs were to work closely with the county forestry bureaus to prepare work plans and to undertake project activities. By 2018, project management structures were fully operational, with 75 project implementation units established at different levels, including 27 in Gansu, 39 in Shaanxi and 9 from Xinjiang.

6. Several changes were made to the project, including the GEF financed activities. Part of GEF financing was originally planned to support the establishment of Shaanxi Ecological Forestry Center and conduct carbon readiness education. However, the persistent low carbon prices meant the carbon trade unprofitable. In the meantime, tourism industry brought opportunities to previously underdeveloped forestry sector. ADB agreed with the Shaanxi Province to adapt to the changing situation and reallocated the funding for the establishment of two exhibition and three forest/health experiences centers. In Xinjiang, part of the GEF grant was reallocated to capacity building. However, it was not fully utilized at the completion of the project and the unused grant of $805,240 was returned.

D. Relevance, Effectiveness, and Impact

1. Relevance

7. The project was highly relevant for its close alignment with the People’s Republic of China’s (PRC) national and regional priorities and the strategic goals of GEF. The objectives and contents of the project are highly relevant to the national strategy for strengthening the protection of ecological environment since the Twelfth Five-Year Plan. It supports and adds demonstrative values to decades of commitments by the government on sustainable afforestation with planted area reaching 800 million ha by 2019 and accounted for 36% of its total forest area, the highest ratio of planted forest in the world. The design was highly consistent with the promotion of ecological civilization development and the priority of 'Belt and Road' economic cooperation development strategy, which came into effects after the project started. It is also aligned with the government’s guiding concept of shifting the ecological development mode and developing ecological forestry for people's livelihood.

8. The project established economic plantations, ecological forests, conserved water, and soils, and restored degraded land. The project promoted the innovation of forestry management system through IEM approach, the improvement of farmers' income level, the development of forest multi-functions and benefits; provided a new model for ecological management and forestry reform, and improvement of government forest management and administration. The GEF grant was used for ecological tree plantation, complementing the ADB loan objectives and expanding activities on ecological plantation and capacity building of state forest farms (SFFs), forestry departments, farmers, and businesses.

9. The GEF grant was also designed to help improve the carbon education and improve preparedness for carbon market participation. However, the carbon trading market in PRC and around the world did not achieve the level of development expected and the carbon prices remained low and unprofitable. The project changed from carbon trading efforts to education, experiences, and ecotourism centers, building on the boom of tourism activities in PRC, which were adaptive and further improved project relevance, and increased resilience of SFFs.

10. The project is strongly aligned with multiple GEF Strategic Goals (SGs). It supported the SG 1 on conserving, sustainably use, and managing biodiversity, ecosystems, and natural resources through restoration of ecological and economic forest in the loess plain. It supported SG 2 on reducing global climate change risks by increasing carbon sequestration through afforestation and reforestation, and improved management of SFFs. It also contributed to SG 4 on building national capacities for environment protection and sustainable development by working with SFFs and improve their management, technical, and revenue generating capacities.

2. Effectiveness

11. The project is effective in achieving its intended outcome of increasing productivity of forest lands and reduced land degradation in Gansu, Shaanxi, and Xinjiang. The project helped reduce degraded forest land in the project counties of the three provinces by 233,500 hectare (ha) and increased forest cover and tree density by 43,915 ha, which led to creation of 99,800 rural jobs, more than double of original targets. They also helped increase the average net income of 215,250 rural beneficiary households from CNY1,600 in 2010 to CNY4,642 in 2018, doubling original targets. The IEM approach was mainstreamed to afforestation and rural economic activities in the three provinces, resulting in effective livelihoods enhancement through better forest and ecological protections.

12. The project generated enormous ecological and environment benefits. The planting of forests directly contributed to carbon climate change mitigation with an estimated 645,200 tons of carbon sequestrated. Enhancement in SFFs' capacity in management and income diversifications helped improving protection of state farms, further contributing to climate change mitigation. Biodiversity, especially tree species diversity, has increased in the project area. The protection of ecologically sensitive areas increased by 141,450 ha. Protection of soil and water was improved because of improved vegetation cover. New management concepts and systems related to IEM approach was mainstreamed in afforestation practices. The approach has been promoted at all levels, raising awareness of government officials, businesses, and local farmers.

3. Impact

13. The project impact indicators have all been exceeded which shows good progress toward longer term impacts. The average net income of beneficiary households has increased by 190%. Rural employment increased by 99,800 jobs by 2018. The area of ecological sensitive areas under protection increased by 141,450 ha between 2010 and 2018. The positive dual impacts on people's livelihoods and the environment are both highly desired for the less developed and ecologically fragile northwest areas of the PRC.

14. The environmental impacts of project are more diverse and resilient ecosystems, reduced land and water degradation, and increased carbon sequestration. The project improved forest cover and biodiversity through afforestation and reforestation with a variety of indigenous and improved species. Soil erosion, a key problem of the Yellow River and in the loess plain, was reduced in Shaanxi and Gansu due to improved vegetation cover, which also helped increase carbon sequestration both in trees and soils. Water saving irrigation infrastructure and practices were improved in Xinjiang. Trees were planted around irrigation systems, which also serve as wind breaks, improving agricultural productivity and reducing desertification. The project also promoted strategies in reducing the use of agrochemicals (fertilizers and pesticides). Overall, the IEM approach was successfully demonstrated and widely promoted in Northwest PRC for better management of natural resources, sustainable ecosystem restorations, and improved mitigation and adaptation to climate change.

E. Global Environmental Benefits and Catalytic Roles

15. The project contributed to multiple global environmental benefits through interventions in ecologically sensitive northwest areas of PRC. These are:

(i) Restoration of ecological and economic forest in the loess plain. The project supported plantation of 39,084 ha of economic tree and 4,800 ha of ecological plantation;
(ii) Expansion of protected areas by 141,450 ha managed by SFFs;
(iii) Improvement in revenue generating capacity of the SFFs and small enterprises through participation in project implementation and trainings;
(iv) Improvement in IEM implementation capacity of government officials, forestry workers, and farmers;
(v) Increased carbon sequestration by the new plantations and improved management of protected areas and state farms; and
(vi) Contribution to soil erosion control, water savings, and biodiversity in the project areas.

16. The project demonstrated a successful model for ecosystem restoration and natural resources management. The project played a catalytic role in promoting wider update and adoption of IEM approach across the region, and continued interests for public and private sectors in investing in ecosystem restoration.

F. Sustainability

17. The project is likely to be sustainable. The project objective and design were consistent with current goals and increasing focus on ecological civilization of the central and local governments. The project combined a range of revenue generating and job creation activities in project design and implementation. It conducted extensive public awareness campaign and training activities for wide range of participants. The project has created positive impacts which will in turn improve its sustainability.

18. The financial viability was confirmed at completion for 12 varieties of economic tree crops planted by the project. The recalculated financial internal rate of return (FIRR) for each crop indicates that the return on investments for most major crops is reasonable. The average FIRR of the Shaanxi SFFs was 10.2%, higher than the 5.1% weighted average cost of capital at appraisal. The project capitalized on the growing ecotourism market through adaptive management, which helped SFFs diversify their revenue and improved their management capacity and resilience.

19. The project successfully broadened the model of afforestation in the three northwest provinces by combining ecological protection with income generation activities, which is crucial for the provinces where ecosystems are fragile and economy lags. It helped advance SFF reforms by changing revenue from cutting trees to protection of forests. It supported development of local processing and storage facilities and promoted internet agriculture to connect economic tree farmers to end users. The extensive training and outreach activities laid good foundation for post-project care, management, and protection of the planted trees and other forests in the three provinces. The IEM method was widely accepted and successfully established as standard approach. The “mountain-river-forest-farm-lake-grass” landscape approach is a major concept being promoted across the county for ecological protection. The demonstrative effects of the project were recognized by the SFGA and included in its 2018 annual report.

G. Monitoring and Evaluation Framework and Institutional Arrangements

20. The executing agency was the State Forestry Administration, which later became SFGA, through its ADB loan project management office. The forestry departments of the participating provinces together with the county forestry bureaus were the implementing agencies. The SFGA NPMO was responsible for overall project management, communication with ADB, consolidation of progress reports, supervision and monitoring, and training and other technical support. All three provinces had set up respective PPMO and county project management offices (CPMOs). By 2018, project management structures were fully operational, with 75 project implementation units established at different levels, including 27 in Gansu, 39 in Shaanxi and 9 from Xinjiang.

21. The project performance management system was established by the NPMO. Through the PPMO 6-monthly progress and monitoring reports were submitted to ADB. The reports contain loan and grant financing and disbursement information, physical activities, safeguards reports, and project achievements against target indicators as defined in the project Design and Monitoring Framework. Implementation of the project performance management system was weak at the beginning, but gradually improved during the implementation of the project, although the environmental monitoring remained weak to the end.

H. Rating

22. The GEF project is rated *successful*. The project was overall well designed and implemented successfully. The project impacts have exceeded expectations when comparing the actual achievements against the planned target indicators. The outcome and most output indicators were also successfully achieved. It contributed to sustainable ecosystem restorations, livelihoods improvement, and climate change mitigation. Large number of participants received trainings in IEM approach. Residents, including men and women, benefited directly, either through job creation or improved land productivity, from the project achievements.

Annex to the GEF Terminal Evaluation Report

A. Project Identification

1. **GEF Project ID:** 3483
2. **GEF Agency Project ID:** G0250
3. **Country:** People's Republic of China
4. **Project Title:** Forestry and Ecological Restoration Project in Three Northwest Provinces
5. **GEF Agency:** Asian Development Bank

B. Dates

Milestone	Expected Date	Actual Date
CEO endorsement	--	3 August 2010
Agency approval date	--	29 March 2011
Implementation start	--	22 September 2011
Midterm evaluation	--	12-19 June 2015
Project completion	30 September 2016	30 September 2018
Terminal evaluation completion	--	12 December 2019
Project closing	30 September 2016	30 September 2018

C. Project Framework

Project Component[a]	Activity type (TA or INV)	GEF financing ($'000) Approved	GEF financing ($'000) Actual	Cofinancing ($'000) Promised[b]	Cofinancing ($'000) Actual
1. IEM for economic tree crops development	INV	0.00	0.00	138,808.69	108,299.33
2. IEM for ecological forestry development	INV/TA	3,250.30	1662.00	14,482.11	19,300.10
3. Capacity building and sector reforms	TA	1,520.40	1714.00	8,452.00	89.42
4. Project Management support	TA	348.85	919.0000	11,917.20	13,892.65
Total		**5,119.55**	**4,295.00**	**173,660.00**	**141,581.50**

ADB = Asian Development Bank, GEF = XXX, IEM = XXX, INV = investment; TA = technical assistance.

[a] Components shown here are as per the GEF Project Framework in the CEO Endorsement Request. The ADB project Design and Monitoring Framework combined component 3 and 4 into a single component: Project management support strengthened to implement forest sector reforms using IEM approaches in the provinces, counties, towns, and households.

[b] Including $100,000,000 of ADB loan and funding from the government, enterprises, and households.

Source: Asian Development Bank