



Completion Report

Project Number: 39321-013
Loan Number: 2572
Grant Number: 0169
November 2020

People's Republic of China: Shaanxi Qinling Biodiversity Conservation and Demonstration Project

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Asian Development Bank

CURRENCY EQUIVALENTS

Currency unit – yuan (CNY)

	At Appraisal (24 September 2009)	At Project Completion (13 November 2019)
CNY1.00 =	\$0.1465	\$0.1427
\$1.00 =	CNY6.8261	CNY7.0079

ABBREVIATIONS

ADB	–	Asian Development Bank
DMF	–	design and monitoring framework
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
GEF	–	Global Environment Facility
ha	–	hectare
IEM	–	integrated ecosystem management
km	–	kilometer
m ²	–	square meter
NNR	–	national nature reserve
PEO	–	project executing office
PIA	–	project implementing agency
PMO	–	project management office
PRC	–	People's Republic of China
QNBG	–	Qinling National Botanical Garden
SARC	–	Shaanxi Animal Rescue Center
SDRC	–	Shaanxi Provincial Development and Reform Commission
SFD	–	Shaanxi Forest Department
SIEE	–	summary initial environmental examination

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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BASIC DATA

A. Loan and Grant Identification

1.	Country	People's Republic of China
2.	Loan/Grant number and financing source	Loan 2572—ordinary capital resources; Grant 0169—Global Environment Facility
3.	Project title	Shaanxi Qinling Biodiversity Conservation and Demonstration Project
4.	Borrower/Recipient	People's Republic of China
5.	Executing agency	Shaanxi Provincial Government
6.	Amount of loan and grant	Loan: \$40.0 million; Grant \$4.27 million
7.	Financing modality	Project loan and grant

B. Loan and Grant Data

1.	Appraisal	
	– Date started	29 May 2008
	– Date completed	10 June 2008
2.	Loan negotiations	
	– Date started	26 August 2009
	– Date completed	28 August 2009
3.	Date of Board approval	22 October 2009
4.	Date of loan/grant agreement	2 July 2010
5.	Date of loan/grant effectiveness	
	– In loan/grant agreement	30 September 2010
	– Actual	15 October 2010
	– Number of extensions	1
6.	Project completion date	
	– Appraisal	30 April 2015
	– Actual	31 October 2019
7.	Loan closing date	
	– In loan agreement	31 October 2015
	– Actual	31 October 2018
	– Number of extensions	2
8.	Grant closing date	
	– In grant agreement	31 October 2015
	– Actual	30 April 2019
	– Number of extensions	3
9.	Financial closing date	
	– Actual (loan)	13 November 2019
	– Actual (grant)	18 November 2019
10.	Terms of loan	
	– Interest rate	London interbank offered rate-based
	– Maturity (number of years)	25
	– Grace period (number of years)	5

11. Disbursements

a. Dates

Loan

Initial Disbursement 21 March 2012	Final Disbursement 16 August 2019	Time Interval 89 months
Effective Date 15 October 2010	Actual Closing Date 13 November 2019	Time Interval 109 months

Grant

Initial Disbursement 29 June 2013	Final Disbursement 29 May 2019	Time Interval 71 months
Effective Date 15 October 2010	Actual Closing Date 18 November 2019	Time Interval 109 months

b. Loan Amount (\$)

Category	Original Allocation (1)	Increase/Decrease during Implementation (2)	Final Allocation (3=1+2)	Amount Disbursed (4)	Undisbursed Balance (5 = 3-4)
1. Civil Works (A)					
1A. Civil works	23,285,000	1,276,700	24,561,700	22,965,359.38	1,596,340.62
1B. Civil works (community participation)	0	1,730,700	1,730,700	359,669.89	1,371,030.11
Subtotal (A)	23,285,000	3,007,400	26,292,400	23,325,029.27	2,967,370.73
2. Goods (B)					
2A. Office equipment and vehicles	1,330,700	(581,850)	748,850	560,420.39	188,429.61
2B. Construction equipment and materials	10,520,700	1,280,810	11,801,510	14,530,871.50	(2,729,361.50)
Subtotal (B)	11,851,400	698,960	12,550,360	15,091,291.89	(2,540,931.89)
3. Training (C)	202,700	(45,460)	157,240	91,037.94	66,202.06
4. Interest and commitment charge (D)	4,660,900	(3,660,900)	1,000,000	1,000,000.00	0.00
Total (A+B+C+D)	40,000,000	0	40,000,000	39,507,359.10	492,640.90

() = negative.

c. Grant Amount (\$)

Category	Original Allocation (1)	Increase/Decrease during Implementation (2)	Final Allocation (3=1+2)	Amount Disbursed (4)	Undisbursed Balance (5 = 3-4)
1. Civil Works	929,200.00	270,800.00	1,200,000.00	456,106.14	743,893.86
2. Equipment	109,800.00	228,200.00	338,000.00	892,448.52	(554,448.52)
3. Survey, Design, and Monitoring	1,116,120.00	(166,120.00)	950,000.00	366,383.45	583,616.55
4. Planning and Institutional Strengthening	662,700.00	(112,700.00)	550,000.00	1,564,542.51	(1,014,542.51)
5. Training and Communication	625,300.00	(54,300.00)	571,000.00	246,090.51	324,909.49
6. Consulting Services	643,580.00	(162,580.00)	481,000.00	454,254.15	26,745.85
7. Dissemination	133,300.00	46,700.00	180,000.00	115,006.46	64,993.54
8. Unallocated	50,000.00	(50,000.00)	0.00	0.00	0.00
Total	4,270,000.00	0.00	4,270,000.00	4,094,831.74	175,168.26

() = negative.

C. Project Data

1. Project Cost (\$ million)

Item	Appraisal Estimate	Actual
Base Cost	114.1	108.2
Contingencies	13.9	0.0
Financing Charges During Implementation	4.6	1.0
Total	132.6	109.2

2. Financing plan (\$ million)

Source	Appraisal Estimate	Actual
Implementation costs		
Borrower financed	88.4	65.6
ADB financed	35.3	38.5
Global Environment Facility	4.3	4.1
Total implementation cost	128.0	108.2
Interest during construction costs		
Borrower financed	0.0	0.0
ADB financed	4.7	1.0
Total interest during construction cost	4.7	1.0

3. Cost breakdown by subproject (\$ million)

Subproject	Appraisal Estimate	Actual
A. Base Cost		
1. Participatory Biodiversity Management	16.3	14.2
2. Enhancing Biodiversity Conservation	93.9	82.5
3. Improved Project Management	3.9	11.5
Subtotal (A)	114.1	108.2
B. Contingencies (B)	13.9	0.0
C. Financing charges during implementation (C)	4.6	1.0
Total (A+B+C)	132.6	109.2

4. Project schedule

Item	Appraisal Estimate	Actual
Date of contract with consultants	Q1 2011	Q3 2013
Civil works contract		
Date of award	Q2 2011	Q1 2013
Completion of work	Q4 2015	Q4 2018
Equipment and supplies		
Dates		
First Procurement	Q2 2011	Q4 2013
Last Procurement	Q4 2015	Q4 2018
Completion of Equipment Installation	Q4 2015	Q4 2018

Source: Asian Development Bank.

5. Project performance report ratings

Implementation Period	Ratings	
	Development Objectives	Implementation Progress
From 22 October 2009 to 31 March 2010	Satisfactory	Satisfactory
From 1 April 2010 to 30 April 2010	Satisfactory	Unsatisfactory
From 1 May 2010 to 31 May 2010	Satisfactory	Satisfactory
From 1 June 2010 to 30 July 2010	Satisfactory	Unsatisfactory
From 1 August 2010 to 31 December 2010	Satisfactory	Satisfactory

Implementation Period	Single Project Rating ^a
From 1 April 2011 to 30 June 2011	Potential Problem
From 1 July 2011 to 31 December 2011	On Track
From 1 January 2012 to 31 March 2012	Actual Problem
From 1 April 2012 to 30 September 2012	Potential Problem
From 1 October 2012 to 30 June 2013	On Track
From 1 July 2013 to 30 September 2013	Potential Problem
From 1 October 2013 to 31 December 2013	Actual Problem
From 1 January 2014 to 31 March 2014	Potential Problem
From 1 April 2014 to 31 March 2015	Actual Problem
From 1 April 2015 to 30 June 2015	On Track
From 1 July 2015 to 31 December 2015	Potential Problem
From 1 January 2016 to 31 March 2016	On Track
From 1 April 2016 to 30 June 2016	Potential Problem
From 1 July 2016 to 31 March 2017	Actual Problem
From 1 April 2017 to 30 June 2017	On Track
From 1 July 2017 to 30 September 2017	Potential Problem
From 1 October 2017 to 31 March 2020	On Track

^a Project performance report rating for 1 January 2011 to 31 March 2011 is not available in e-Operations.

D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members
Loan Fact Finding	13–25 August 2007	5	65	a, b, e, h, j
Loan Appraisal	29 May–10 June 2008	4	52	b, f, h, k
Inception	15–22 December 2010	2	12	b, h
Special review 1	19–25 March 2012	4	21	b, j, h, k
Review 1 ^a	20–25 January 2013	6	36	b, e, f, h, j, k
Review 2	11–16 November 2013	4	15	b, c, d, f
Special review 2	26–28 March 2014	2	6	b, i
Midterm review	25–30 August 2014	6	26	b, c, d, f, h, l
Review 3	26–30 October 2015	3	11	b, f, m
Special review 3	31 July–4 August 2016	3	11	b, d, h
Review 4	4–11 November 2016	3	16	b, f, h
Special review 4	17–19 April 2017	1	3	b
Review 5	5–8 December 2017	2	8	b, h
Review 6	14–18 May 2018	4	16	b, e, f, h
Review 7	3–7 December 2018	2	10	b, h
Project completion review	16–19 December 2019	4	20	b, e, f, h

a = young professional, b = project manager, c = finance specialist, d = procurement specialist, e = environment specialist, f = resettlement specialist, g = financial control analyst, h = project analyst, i = deputy country director, j = project officer, k = social specialist, l = head of portfolio management unit, m = country director

^a Project administration was transferred to the Asian Development Bank Resident Mission in the People's Republic of China on 1 February 2013.

Source: Asian Development Bank.

I. PROJECT DESCRIPTION

1. The Shaanxi Qinling Biodiversity Conservation and Demonstration Project is located in the Qinling Mountains, about 45 kilometers (km) southwest of Xi'an, the capital city of Shaanxi Province, the People's Republic of China (PRC).¹ The Qinling Mountains are a global biodiversity hotspot, supporting many endangered, rare, and/or endemic plant and animal species.² As well as very high levels of endemism, the mountains contain a vertical spectrum of vegetation types in which 70% of all vegetation types in the PRC are found. More than 90% of the range lies within Shaanxi Province, where it forms a north–south divide and is a major climatic influence on the northern PRC and the water resources of the Yellow and Yangtze rivers.³ The range is one of the country's most critical ecological function zones according to the National Principal Function Zoning Plan.⁴

2. In addition to its geographic and ecological significance, about 15.7 million people live in the Qinling Mountains. Of the 38 counties, 21 were listed as national key poverty counties in 2018. More than 60% of the region's people rely on land resources for farming and agricultural production. The extensive poverty, heavy reliance on agriculture, and competing land uses, particularly in the hilly areas, have caused significant environmental, land, and biodiversity degradation. The high level of land-use pressure in the project area and nature reserves of the Qinling Mountains created an urgent need to conserve the precious ecosystem while pursuing better livelihoods for the local people.

3. The project aimed to strengthen ecosystem management in the Qinling Mountains through integrated approaches, including market-oriented measures to sustain environmental and biodiversity objectives, while increasing rural incomes and reducing poverty. The project area is about 63,900 hectares (ha), covering in-situ ecological conservation in the mountainous area and ex-situ demonstration (about 2,000 ha) in the plains area. The ex-situ demonstration included the establishment of the Qinling National Botanical Garden (QNBG) and updating of the Shaanxi Animal Rescue Center (SARC). The project received grant cofinancing from the Global Environment Facility (GEF)⁵ and was included under the China Biodiversity Partnership Framework.⁶

4. At appraisal, the project impact was sustainable biodiversity conservation in order to protect globally significant species and to sustain economic growth. The outcome was improved and integrated biodiversity management that provides sustainable livelihoods for the population in the project area. The project outputs were (i) participatory biodiversity management in the

¹ Asian Development Bank (ADB). 2009. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Grant to the People's Republic of China for the Shaanxi Qinling Biodiversity Conservation and Demonstration Project*. Manila.

² These include 10 Class I and 31 Class II animal species, and 9 Class I and 17 Class II plant species. Flagship animal species include the giant panda, golden monkey, golden takin, leopard, crested ibis, oriental white stork, and giant salamander. The Qinling Mountains contain the highest population density of giant pandas in the PRC and are home to about 20% of the PRC's wild giant panda population. The mountains also have the only known wild population of one of the world's rarest birds, the crested ibis.

³ Its southern slopes are a water source for the South–North Water Transfer Project, contributing over 50% of the water stored in the Danjiangkou Reservoir on the Yangtze River. The northern slopes supply water to the Yellow River system.

⁴ The State Council. 2011. *National Principal Function Zoning Plan*. Beijing.

⁵ Administered by ADB.

⁶ The China Biodiversity Partnership and Framework for Action was a 10-year program (2008–2017) adapting integrated and programmatic approaches to coordinate actions for biodiversity conservation by stakeholders involving line agencies, governments, land users, local communities, development institutions, and nongovernment organizations. The program was funded by the GEF and executed by the PRC's Ministry of Environmental Protection.

mountainous area, (ii) enhancement of biodiversity conservation in the plains area, and (iii) improved project management.

II. DESIGN AND IMPLEMENTATION

A. Project Design and Formulation

5. At appraisal, the project was consistent with the Asian Development Bank (ADB) country partnership strategy for the PRC, 2008–2010, which aimed to promote environmentally sustainable development and inclusive growth.⁷ During implementation, the project interventions contributed to ADB's subsequent country partnership strategies by conserving ecological services and improving rural livelihoods. The project was in line with the GEF strategic objectives and contributed to global environmental benefits of biodiversity conservation and land degradation.⁸

6. The project fit well into the government's Twelfth Five-Year Plan, 2011–2015⁹ and the Thirteenth Five-Year Plan, 2016–2020.¹⁰ Both plans emphasized ecological restoration and the protection of critical ecosystems and attached importance to the development of rural livelihoods. The project was included as a priority in the Twelfth Five-Year Plan, 2011–2015 of Shaanxi provincial government for ecological conservation of the Qinling Mountains.¹¹ At completion, it contributed directly to the plan's target for the development of the QNBG. The project interventions were in line with the China National Biodiversity Conservation Strategy and Action Plan, 2011–2030.¹²

7. During preparation, the project was classified category B for environmental safeguards according to ADB's Environment Policy (2002). ADB undertook a summary initial environmental examination (SIEE) based on the domestic environmental impact assessment and was disclosed on the ADB website in May 2008. The executing agency prepared two separate resettlement plans for the QNBG and SARC components, which ADB approved in August 2008. ADB developed a summary poverty reduction and social strategy. During implementation, the executing agency updated the SIEE and resettlement plans to reflect a minor scope change approved in April 2015, in accordance with ADB's Safeguard Policy Statement (2009).

8. During implementation, there were two minor changes in scope. The first one, approved in February 2014, updated retroactively the financing plan and cost estimates emanating from the procurement plan updates.¹³ It also refined the GEF implementing program to make the project more relevant to the government ecological conservation plans (para. 6). The second one, approved in April 2015, supported engineering changes in two QNBG buildings and changes in the location of conservation facilities in SARC.

⁷ ADB. 2008. *Country Partnership Strategy: People's Republic of China, 2008–2010*. Manila.

⁸ GEF. 2009. *Request for CEO Endorsement of Shaanxi Qinling Biodiversity Conservation and Demonstration Project*. Washington, DC.

⁹ The State Council. 2011. *National Economic and Social Development Twelfth Five-Year Plan, 2011–2015*. Beijing.

¹⁰ The State Council. 2016. *National Economic and Social Development Thirteenth Five-Year Plan, 2016–2020*. Beijing.

¹¹ Shaanxi Provincial Government. 2011. *Shaanxi Provincial Economic and Social Development Twelfth Five-Year Plan, 2011–2015*. Xi'an.

¹² The State Council. 2010. *China National Biodiversity Conservation Strategy and Action Plan, 2011–2030*. Beijing.

¹³ The procurement plan updates involved changes in the cost estimates and financing plan of various contract packages, which created inconsistencies between the procurement plan and the loan agreement. The scope change resulted in reallocation of the loan and GEF grant proceeds.

B. Project Outputs

9. **Output 1: Participatory biodiversity management in the mountainous area.** At appraisal, this output intended to deliver demonstration of biodiversity conservation and improved village and forest-based livelihoods. Under the biodiversity conservation demonstration subcomponent, the expected project outputs were (i) restoration of habitat on about 2,000 ha of state forest land, (ii) preparation of a forest management plan, and (iii) development of endangered species management programs for five species.¹⁴ Under the improved village and forest-based livelihoods subcomponent, the project was expected to (i) develop about 5,000 ha of conservation forestry and agriculture on collective forest land in the mountainous area in cooperation with local inhabitants, (ii) upgrade community infrastructure including up to 17.5 km of roads along the Tianyu River and about 100 km of mountain paths, (iii) promote homestays and other income-generating activities, and (iv) provide training and technical advice to farmers to encourage them to adopt ecofriendly activities.

10. At completion, more than 10,000 ha of forests were under effective management, including 4,000 ha (200% of the area targeted) of state forestry lands under QNBG management for improved habitats, and more than 6,000 ha (120% of the target) of collective forests in which individual households are awarded certificates for conservation forestry and other conservation practices. The management of these forests is guided by a forestry management plan formulated by the provincial government in 2015. The project supported the development of species management programs for four globally threatened animal species—the giant panda, the golden monkey, the golden takin, and the crested ibis, which SARC has adopted for species and habitat management. (The giant salamander conservation program was developed by the government.) The QNBG built or upgraded community infrastructure, including 18 km of roads (103% of the targeted length) along the Tianyu river and more than 120 km of mountain paths (120% of the targeted length); and village facilities such as solar lighting stands, water supply, and ecological toilets for 5 villages containing 160 households. Twenty enterprises or households operate homestay ecotourism business, and the project also promoted other small income-generating business, such the sale of local fruits and other goods. In addition, local communities implemented conservation agriculture on about 35 ha and ecological forestry rehabilitation on about 70 ha with support from the QNBG.

11. **Output 2: Enhancement of biodiversity conservation in the plains area.** At appraisal, this output intended to develop the QNBG and rehabilitate SARC. Under the QNBG subcomponent, the expected outputs were (i) the development of gardens and interlinked walkways with public education and awareness displays covering about 269 ha; (ii) the development of 18 contiguous botanical gardens and other infrastructure, including a cable car for tourism sightseeing; and (iii) construction of a major exhibition hall to mount natural history exhibits and a reception center. The SERC subcomponent planned to support (i) an expansion of the area for the rescue, breeding, research, and husbandry facilities; (ii) development of satellite sites in other natural environments where the major endangered species are found; and (iii) modernization of the existing animal rescue center.

¹⁴ The five targeted species were the giant panda (*Ailuropoda melanoleuca*), the golden takin (*Budorcas taxicolor*), the golden monkey (*Rhinopithecus roxellana*), the crested ibis (*Nipponia nippon*), and the giant salamander (*Andrias davidianus*). The project area is not a typical or officially designated protected area for the giant salamander. Conservation of the giant salamander in the Qinling Mountains is mainly covered by three national nature reserves (NNRs)—the Taibai Giant Salamander NNR, the Lueyang Rare Aquatic Animal NNR, the Zhouzhi Hehei River Rare Aquatic Animal NNR (close to the project area), and Luonan Provincial Giant Salamander Nature Reserve.

12. At completion, outputs for the QNBG included (i) about 263.6 ha of gardens (98% of the planned area), including 22 specialized contiguous botanical gardens interlinked with walkways connecting to public education and awareness displays;¹⁵ (ii) public education facilities comprising an 800 square meter (m²) research and public education center; a 3,100 m² herbarium, a 3,500 m² greenhouse, a 1,400 m² apartment to house experts, and two outdoor scientific and research education camps occupying 80,000 m²;¹⁶ (iii) a major exhibition hall covering about 45,000 m² including the service reception center; (iv) 4 constructed wetlands covering 56,700 m²; and (v) infrastructure including 45.0 km of roads in the ex-situ area, 6.5 km of water supply and drainage networks, 6.1 km of power supply lines, 1 solid waste concentration station, 2.4 km of water pipes for firefighting, 12 toilets, and 12 rubbish bins.

13. At completion, the outputs for SARC included (i) establishment of 932 m² of research facilities, a 1,506 m² laboratory, an animal rescue hospital occupying 1,164 m², and a 1,784 m² apartment for experts, all of which were equipped with necessary instruments and equipment; (ii) breeding enclosures and exhibition spaces in natural environments, such as nine breeding and resting areas for giant pandas covering 28,000 m², one breeding ground with fencing for crested ibis (13,000 m²), a breeding and exhibition area for golden monkeys (1,900 m²), rooms and exhibition ground for takin (2,560 m²); and exhibition space for other animals (8,900 m²); (iii) a public education hall of 1,389 m² and a 120 m² tourist information center equipped with multimedia systems and interactive courses; (iv) surveillance systems for monitoring animal activities; and (v) infrastructure including 14 km of connecting roads, 1.5 km of water supply pipes, drainage and firefighting pipelines, 22 km of power lines, and 60,000 m² of landscape greening.

14. **Output 3: Improved project management.** At appraisal, the component intended to support strengthening of the project management office (PMO) and project implementing agencies (PIAs), institutional strengthening for biodiversity safeguards, and a conservation replication and dissemination program. This output was mainly funded using the GEF grant. At completion, the capacity of the PMO and PIAs had been strengthened through training for more than 300 staff and study tours (4 international and 24 national); SARC had prepared endangered animal species management plans; (iii) the QNBG had established an ecological baseline database; (iv) SARC had carried out research in 2018 to detect physiological hormones of giant pandas for breeding purposes, and for releasing crested ibis into the wild and monitoring them; and (v) community and public awareness for bird conservation had been strengthened.

15. **Activities funded by the Global Environment Facility grant.** At appraisal, the GEF grant was designated to support biodiversity management in the mountainous area (output 1), including by (i) preparing a habitat and natural forest management plan; (ii) providing ecological research grants to develop the data sets and test silviculture systems for habitat restoration; (iii) delivering technical assistance in conservation forestry to support the habitat restoration programs; and (iv) developing programs for endangered species recovery, including field survey, species recovery management plans and initial implementation. The GEF funding also aimed to support institutional capacity through legal reform studies, landscape conservation planning, field conservation monitoring, species monitoring, ecological baseline research and monitoring, job exchange opportunities for technical conservation staff, and a replication and conservation awareness-raising program.

¹⁵ The cable car was removed from the project scope and was not built because its construction contravened government regulations that prohibited large-scale commercial tourism facilities in order to safeguard the ecological landscape (Xi'an Municipal People's Congress. 2013. *Regulations for Qinling Mountains Ecological and Environmental Protection*. Xi'an). To comply with the regulations, the planned Daoist temples were not constructed.

¹⁶ Because of limitations of available funds, the project financed only the construction of the main structures of the greenhouse and the herbarium and excluded their interior presentation and exhibition from the project scope.

16. At completion, the GEF-funded activities had delivered the following outputs. The Integrated Ecosystem Management (IEM) Strategy and Action Plan for the Qinling Mountains was carried out in 2018, and its policy recommendations for establishing a national park system in the Qinling Mountains were taken up by the central and provincial governments in the same year.¹⁷ A tourism plan was prepared for SARC in 2016 and the ecotourism business plan was implemented across the entire project area in 2018. A species monitoring system (mainly for giant panda, golden monkey, takin, and crested ibis) was established for SARC, including a field-based patrol station. Ecological baseline monitoring was conducted, and a database was established for the QNBG. Three key technical staff received professional on-the-job training of 6 months' duration during 2015–2017: two QNBG staff were trained at the Royal Botanic Gardens, Kew in United Kingdom and the Chicago Botanic Garden in the United States; and one SARC staff was trained at the Durrell Institute of Conservation and Ecology in the United Kingdom. Three awareness-raising programs were developed—two for the QNBG and one for SARC.

17. The project design and monitoring framework (DMF) summarizing project achievements is in Appendix 1.

C. Project Costs and Financing

18. The estimated project cost at appraisal was \$132.64 million. The original financing plan at appraisal included a \$40.00 million loan from ADB (about 30.2% of the project cost), \$4.27 million grant funded by the GEF (3.2%), and \$88.37 million from government counterpart funds (66.6%). The project cost was revised to \$112.59 million in line with a scope change made during the midterm review and approved in January 2015.¹⁸

19. At completion, the total project cost was about \$109.20 million. The actual financing included \$39.51 million (36.2%) from the ADB loan, \$4.09 million (3.7%) from the GEF grant, and \$65.6 million (60.1%) from government counterpart funds.¹⁹ The project cost reduction was associated mainly with (i) reduced space in the herbarium, with associated cost reduction from \$8.17 million to \$3.83 million; (ii) decreased scope of the restoration of the Taoist and cultural (from \$1.44 million to \$0.30 million); (iii) cancellation of the cable car (\$3.03 million) (footnote 15); (iv) lower contract prices for the panda breeding and exhibition grounds (from \$13.68 million to \$9.86 million); and (v) cancellation of \$8.65 million for the service center and Daoist hot spring hotel of SARC.²⁰ Savings about \$2.0 million resulted from competitive bidding.

¹⁷ The national park system was a policy instrument to promote ecological conversation as specified in the State Council's Overall Plan of the Ecological Civilization Institutional Reform (2015). The central government initiated the national park system trials involving 10 ecological regions in 2017, which did not include the Qinling Mountains.

¹⁸ The scope change (i) removed the service center and hot spring hotel for SARC from the project scope, which had been built using domestic funds; (ii) converted the originally planned paleontology museum to a herbarium to improve the presentation of flora and fauna resources of the Qinling Mountains and to strengthen public education functions of the QNBG, reducing the space from 6,000 m² to a 3,000 m²; and (iii) reduced the restoration area of Taoist and cultural sites from 10,119 m² to 4,500 m² in the QNBG.

¹⁹ At appraisal, it was expected that the Chinese Academy of Sciences, the Shaanxi Provincial Government, and the State Forestry Administration each would provide about 28.5% of the counterpart funds and the Xi'an municipal government would provide the remaining 14.5%. Such a plan was proposed because the four parties initiated the QNBG development jointly. However, a formal agreement covering the QNBG development was never fulfilled by the parties. In the end, the provincial government provided all the counterpart funds for the project.

²⁰ The original project scope included the hotel as a major tourist reception center under the SARC component with 100% government funding. In the end, a tourism development company, in which SARC has a shareholding of 49% through ownership of the land, led the construction of the hotel with a total investment about CNY400 million (much higher than the appraisal estimate of CNY56.0 million) in accordance with to the government-approved tourism

20. Appendix 2 presents the detailed project costs and financing plan at appraisal and actual financing sources.

D. Disbursements

21. By the loan closing in October 2018, the total disbursement amount of the loan proceeds was \$39.51 million (98.8% of the approved amount), of which \$23.33 million was for civil works, \$15.09 million was for equipment and materials, \$0.09 million was for training, and \$1.00 million was for interest and commitment during construction. The loan proceeds were disbursed from 21 March 2012 to 16 August 2019. The loan closing date was 31 October 2018. Liquidating the advance account took 10 months (from 31 October 2018 to 16 August 2019) after the loan closing date, and the refund of the outstanding balance took a further 3 months (from 16 August 2019 to 13 November 2019). The initial advance of \$4.0 million was disbursed on 21 March 2012, while the refund of the outstanding balance of the advance account was received on 13 November 2019. In the end, \$492,640.90 of the loan proceeds were cancelled at loan closing. The total disbursement of the grant proceeds was \$4.09 million (95.8% of the approved amount). The grant was disbursed from 29 June 2013 to 29 May 2019 and closed on 30 April 2019. The advance account was liquidated 6 months after the grant closing date. In the end, \$175,168.26 of the grant proceeds were cancelled at grant closing.

22. Disbursements were made using advance fund and reimbursement procedures.²¹ The statement of expenditures documentation procedure was used to simplify submission of documents under both procedures. Shaanxi Province Finance Department established and maintained two advance accounts, one for the loan and one for the grant. The advance accounts proved useful and facilitated the project disbursements effectively. ADB's disbursement process was efficient. Appendix 3 shows the projected and actual disbursements.

E. Project Schedule

23. ADB approved the project on 22 October 2009, including the loan and the administration of the GEF grant. The loan and grant were signed on 2 July 2010 and became effective on 15 October 2010. The original implementation schedule was from April 2010 to April 2015. The original closing date for the loan and the grant was 31 October 2015. The inception mission took place in December 2010. ADB conducted the midterm review in August 2014. The loan closing date was extended twice for a total of 36 months to 31 October 2018 and the account was financially closed on 13 November 2019. The grant closing date was extended for three times for a total of 42 months to 30 April 2019 and the account was financially closed on 18 November 2019. Construction at SARC did not start until 2015, when SARC settled the land acquisition for its breeding and enclosure facilities. Appendix 4 presents a chronology of the main events.

F. Implementation Arrangements

24. The Shaanxi Provincial Government was the executing agency acting through the Shaanxi Development and Reform Commission (SDRC). A project leading group was established during project processing, and remained in place for overall policy guidance and institutional coordination during implementation.²² The QNBG and SARC were the PIAs, handling procurement and daily

development plan. As SARC is not involved in the hotel operation and had no investment input, the project excluded it from the scope as per the midterm review conducted in August 2014.

²¹ All references to advance fund and advance account refer to formerly termed imprest fund and imprest account.

²² The leading group was chaired by a vice-governor and comprised representatives from the provincial agencies and Xi'an municipal government.

administration related to their respective project activities.²³ A project executing office (PEO) under the SDRC oversaw overall project management, including external monitoring and communications with ADB, on behalf of the executing agency. The PMO was established under the Shaanxi Forestry Department (SFD) in 2014.²⁴ Both the QNBG and SARC are under the SFD's administration. The implementation arrangements were adequate. The participating agencies played their designated roles in managing or coordinating the project effectively.

G. Consultant Recruitment and Procurement

25. During appraisal, it was proposed to engage 84 person-months of consulting services, comprising 15 person-months of international experts and 69 person-months of national experts. The proposed consulting services were to be funded under the GEF grant and would include two packages: package A for SARC to engage six individual consultants for 1 month each—one international and one national expert for each of the giant panda, crested ibis, and golden monkey habitats and plans for effective conservation; and package B for a consulting firm to be selected using quality- and cost-based selection (12 person-months of international and 66 person-months of national consulting services) to provide expertise in biodiversity conservation, species recovery management and survey, ecotourism planning, village development, animal exposition and breeding, wildlife veterinary services, conservation forestry, and geographic information systems.

26. At completion, total inputs comprised 29.7 person-months of international and 260.2 person-months of national consulting services. During implementation, the proposed consulting services were regrouped to meet the actual demand for project implementation and institutional capacity development. The regrouped packages included (i) 5 individual consultants to support project implementation (a total of 8.0 person-months of international and 74.5 person-months of national consulting services); (ii) 3 individual consultants to support the carrying out of the Qinling IEM study (a total of 10.0 person-months of international and 3.0 person-months of national consulting services); (iii) single source selection of a firm for the Qinling IEM study (48.0 person-months of national inputs); (iv) 3 individual consultants to help SARC review and improve the engineering design of enclosure, exhibition, and public education facilities (11.7 person-months of international and 5.0 person-months of national consulting services); and (v) 5 firms engaged using the consultants' qualifications selection method to support institutional capacity building of the QNBG and SARC.²⁵

27. In general, the PEO and PIAs managed procurement and administered contracts well. During implementation, ADB awarded 46 contracts amounting to \$39.95 million equivalent under the loan and 42 contract packages amounting to \$4.18 million equivalent under the GEF grant. The contract packages were procured following ADB's Procurement Guidelines (2010, as

²³ At appraisal, the QNBG was designated as the sole PIA, under which three divisions would sit: the botanical garden division, the animal rescue center division, and the Qinling biological conservation and demonstration area division. However, such organizational divisions are not yet in place because the QNBG and SARC are independent legal entities under the administration of the Shaanxi Forestry Department (SFD). During implementation, the QNBG and SARC undertook their respective roles separately.

²⁴ The PMO under the SDRC coordinated project administration in the early stage of the project implementation. However, as it lacked connections with the two PIAs (the QNBG and SARC) either funding allocation or administrative mandates, the PMO had difficulty securing counterpart funds and coordinating government programs for ecological restoration and biodiversity conservation that were shared across the project area. Thus, a new PMO was established under the SFD to coordinate sector matters between the two PIAs, while the one under the SDRC was transformed into the project executing office to oversee the overall project management.

²⁵ Three packages of national consultants were recruited for the QNBG (90 person-months) and two packages were recruited for SARC (39.7 person-months).

amended from time to time). Procurement methods included national competitive bidding, shopping, and community participation.²⁶ No international competitive bidding was used.

28. Actualized contract awards were below the projections because implementation progress was slow during 2012–2015 (Appendix 5). After 2015, contract awards were on track. The overall performance of consultants, contractors, and suppliers was *satisfactory*. There were no significant delays in contract implementation despite the loan extension. Equipment suppliers also performed well and provided the necessary training on operation and maintenance of equipment procured.

H. Safeguards

29. **Environment.** ADB classified the project category B for environmental safeguards in accordance with ADB's Environment Policy (2002). In compliance with the environmental management plan (EMP) set out in the summary initial environmental examination (SIEE), contractors undertook mitigation measures effectively during construction, including scheduling construction activities to minimize noise impacts on animals in SARC. The QNBG and SARC engaged external monitors and conducted environmental monitoring adequately. The monitoring reports indicated no outstanding complaints or issues of noncompliance with relevant standards and regulations. Appendix 6 presents a detailed environmental analysis.

30. **Resettlement.** The project involved resettlement impacts from interventions planned for the QNBG and SARC. These institutions prepared their respective resettlement plans during appraisal in accordance with ADB's Involuntary Resettlement Policy (1995) and updated them in April 2015 in line with the approved scope changes and ADB's Safeguard Policy Statement (2009). The QNBG and SARC implemented the resettlement plans adequately. At completion, actual land acquisition matched that originally planned for the QNBG. A total of 132 affected households were relocated and 47,730 m² of housing was demolished from the ex-situ area; 112 households were relocated to the new Dianzhen Village and 20 resettled themselves with cash compensation. For SARC, the acquisition of 122.03 *mu*²⁷ of sloping farmland for the construction of the Panda Breeding Center affected 10 households. Construction land of 273 *mu* for the project facilities was obtained under a willing buyer–willing seller land exchange arrangement with the Qujiang New Development District Administration Committee. The QNBG, SARC, and the local government executed adequately all mitigation and compensation measures in accordance with the resettlement plans. Appendix 7 provides details of the land acquisition and resettlement plan implementation.

I. Monitoring and Reporting

31. The loan and grant covenants were considered adequate, and all major covenants were complied with (Appendix 8). During implementation, the provincial government put in place an appropriate institutional setup, including a leading group, a PEO under the SDRC, and a PMO under the SFD (para. 24), ensuring effective management of the project implementation. The provincial government also allocated adequate counterpart funds to deliver the project activities. The PIAs planned, designed, constructed, and managed the project facilities adhering strictly to the national regulations and considering international good practices. The PIAs undertook adequate measures in relation to the SIEE and resettlement plans and maintained compliance with safeguard requirements.

²⁶ The QNBG applied community participation in procurement for ecological reforestation and in the development of community infrastructure and facilities involving villagers in the mountainous project area.

²⁷ A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 m²).

32. With assistance of the consultant, the PEO established a project performance monitoring system in 2013, which was used as a monitoring and reporting mechanism to track the project progress and performance. Working with the PIAs, the PEO fulfilled the requirements for semiannual progress reports and semiannual safeguard monitoring reports to ADB adequately. ADB monitored activities funded under the GEF grant semiannually through project implementation reports throughout the implementation period. The PEO prepared and submitted a project completion report for the loan and grant in August 2019 after the loan and grant closing.

33. In general, the PEO and PIAs maintained the project accounts in a satisfactory manner. The China National Audit Office performed annual audits of the project accounts for the loan and the grant in accordance with auditing standards acceptable to ADB. The PEO submitted nine audit reports, all of them on time. No significant issues were found in the reports submitted in compliance with financial covenants regarding the use of the loan and grant proceeds.²⁸

III. EVALUATION OF PERFORMANCE

A. Relevance

34. The project is rated *highly relevant* overall, as it was relevant both at appraisal and at completion. It fit precisely into the Shaanxi provincial development plan to develop the QNGB (para. 6). The project contributed to the central and provincial government agenda of ecological civilization by demonstrating improved biodiversity conservation in one of most critical ecosystems in the PRC through addressing fundamental causes of ecosystem degradation, such as poverty and limited awareness.²⁹ Moreover, the provincial government has taken the IEM study's policy recommendation to establish a national park system in the Qinling Mountains (para. 16) and initiated scoping and internal review procedures with the central government.³⁰ The scope changes reflected the finalized engineering design and the locations for buildings in the QNGB and SARC and made no substantial modifications to the project DMF (para. 12 and footnote 16). Therefore, the project design remains relevant and appropriate. The project was aligned with ADB's country and sector strategies (para. 5). The project loan modality was appropriate for financing the interventions planned under the project. The GEF grant covered expenses for institutional capacity building of the two PIAs and consulting services to support the loan implementation (para. 16), which added incremental benefits to the project.

²⁸ A Management letter for Fiscal Year (FY)2018 indicates that one recommendation made concerning a problem of accounting for ineligible bills in FY2017 was not rectified, while the FY2018 e-Operations record indicates that there were no unresolved issues from previous years.

²⁹ Ecological civilization is a term that describes the final goal of social and environmental reform within a given society. It implies that the changes required in response to global climate disruption and social injustices are so extensive as to require another form of human civilization, one based on ecological principles. Broadly construed, ecological civilization involves a synthesis of economic, educational, political, agricultural, and other societal reforms toward sustainability. Although the term was first coined in the 1980s, it did not see widespread use until 2013, when ecological civilization became an explicit goal of the Government of the PRC.

³⁰ The State Council Research Center (a top think tank advising the central government), which the project engaged as the consultant, undertook the study during 2016–2018. The center prepared a policy note on promoting IEM in the Qinling Mountains, particularly through a national park system, and presented it to the central government's top policy makers—the general offices of the State Council and the Central Committee of the Communist Party of China. The project executing office also presented the policy note to the provincial government for consideration. Based on the study results, the executing agency produced a knowledge product publication, *The Integrated Ecosystem Management of the Qinling Mountains* (Shaanxi Development and Reform Commission and Shaanxi Finance Department. 2018. *The Integrated Ecosystem Management of the Qinling Mountains*. Beijing: China Development Press).

B. Effectiveness

35. The project is rated *effective* in achieving its intended outcome of improved and integrated biodiversity management that provides sustainable livelihoods for the population in the project area. The project adequately attained its outcome targets, exceeding the target for small business jobs created. The management of the four globally threatened animal species has been mainstreamed into government conservation programs since 2014. During 2010–2019, the number of giant pandas increased by 27%, golden monkeys by 71%, golden takin by 150%, and crested ibis by 52%.³¹ About 1.1 million ecotourists visited the project area in 2019.³² Project-related activities generated more than 1,500 jobs. More than 300 of these relate directly to the operations of the QNBG and SARC and the rest pertain to the operation of small ecotourism business in the local communities.

36. The project largely achieved its planned output targets. The achieved outputs contributed to the project outcome effectively and directly. Interventions under output 1 significantly improved biodiversity conservation in the mountainous area through forest restoration and conservation and species management. Output 1 also contributed directly to improved livelihoods of local communities by supporting the community and village infrastructures necessary for home-based ecotourism business. Under output 2, the project supported the establishment of the QNBG and rehabilitation of SARC, which were designed and developed following international standards and good practices for botanical gardens and wildlife conservation.³³ In addition to their conservation functions, the QNBG and SARC provide state-of-the-art ecotourism products and services, the revenues from which are reinvested in conservation in the broader mountainous area and the local communities. However, the project has yet to achieve the revenue targets specified in the design and monitoring framework (DMF) because of the delayed project completion and reduced cash streams from the QNBG and SARC. Activities for institutional capacity development under output 3 added significant value to the project outcome and long-term impact. The ecological baseline monitoring and species management plans provide the fundamental basis for biodiversity conservation in the project area. The participatory education programs and courses are proving very useful for raising public awareness of biodiversity conservation, particularly among young people. The policy recommendation for establishing a national park system in the Qinling Mountains (paras. 16 and 34; footnote 28) is expected to enhance the project outcome considerably in the long term.

37. During implementation, the PIAs implemented all safeguard measures effectively in accordance with the EMP and resettlement plans. The project design and construction considered animal welfare and adopted nature-based methods such as eco buildings with rammed earth walls and rainfall harvesting. Participation of the community at the procurement stage ensured that the infrastructure developed yielded very positive social benefits for local communities, especially the poor households. The project complied fully with all safeguard requirements.

³¹ As the project area is not a typical or officially designated protected area for giant salamander, no baseline data or species monitoring were available (footnote 13). The numbers of giant panda and golden monkey are for captive individuals, while numbers of takin and crested ibis include captive and wild animals.

³² This estimate by the QNBG and SARC includes overall visitors to the project area, including adjacent valleys and villages where there are no entry fees. The number of tourists paying entry fees to visit the QNBG was about 380,000 in 2019 and 300,000 in 2018.

³³ The project engaged a team of consultants that advises the operation and management of Singapore Zoo, one of the world's best zoos, to advise and review the design of SARC facilities. Experts from Shanghai Botanical Garden and Germany provided advice for the overall plan and landscape design.

C. Efficiency

38. The project is rated *efficient*. The reevaluated economic internal rates of return (EIRR) are 10.8% for the whole project, 10.7% for the QNBG, and 11.1% for SARC—all above the economic viability threshold of 9%. The reevaluated EIRRs for SARC and the whole project are lower than the appraisal evaluation, mainly because of the delayed project completion and reduced revenue streams of the QNBG and SARC (para. 36).³⁴ At appraisal, project implementation was planned for April 2010 to April 2015, with the revenues and the economic benefits starting from 2010 for SARC and from 2011 for the QNBG. However, the QNBG was not opened to the public until October 2017, while the opening of SARC is planned for 2021. In addition, the QNBG's revenues were limited to entry fees to the garden because the Daoist temples and the cable car were cancelled from the project scope and were not built, thus removing these revenue sources (para. 12). Furthermore, the entry fee to SARC is set at CNY50.0 per person, which is only 38% of the appraisal estimation of CNY130.0 per person. Sensitivity analysis indicated that the QNBG, SARC, and the entire project remain economically and financially viable in the scenarios tested, while QNBG and the whole project are sensitive to the revenues. Appendix 9 presented details of the economic and financial reevaluation.

D. Sustainability

39. The project outcome is likely to be financially sustainable. The project generates revenues from the operations of the QNBG and SARC. The financial reevaluation yielded financial internal rates of return of 8.1% for QNBG, 11.1% for SARC, and 9.1% for the whole project, which are higher than their weighted average costs of capital of 4.5% for the QNBG, 4.3% for SARC, and 4.4% for the whole project. The financial reevaluation showed that the project is financially viable, albeit with reevaluation results that are lower than the appraisal evaluations (Appendix 9).

40. The QNBG receives annual funding of CNY14.5 million from the provincial government to cover its administrative and operational expenses related to staff, research and development, and garden maintenance. Expenditures for forestry management and nurturing the in-situ area are funded through the provincial government's ecological management programs. A company owned by the QNBG runs its ecotourism business operations. The company has 83 employees, annual operation costs of about CNY11.0 million, and revenues of about CNY12.0 million. It also receives an annual income of CNY0.5 million from a franchise operation of electric cars in the garden. The QNBG will contract the greenhouse out to a company to complete the interior presentation and installation and its operation. More than 10 institutes and universities have established links with the QNBG for botanical and ecological research. The completion review confirmed that the QNBG's current staff capacity is adequate for normal administration and ecotourism operations but needs to be strengthened for research and development and public education in the long run.

41. SARC receives about CNY12.0 million from the provincial government to fund its operations. This allocation covers staff expenses, animal breeding, health care, and research. The center has 28 permanent and 60 contractual staff, including adequate expertise in animal conservation, breeding, and research. It also receives 20 to 30 wildlife conservation volunteers annually from various countries. SARC has been a major research and rescue center for wild animal conservation in Shaanxi Province since 1980, and in 2019 was designated as the

³⁴ At appraisal, the EIRRs were 13.7% for the whole project, 10.9% for the QNBG, and 17.9% for SARC.

provincial research base under a pilot national park for giant panda conservation.³⁵ Its permanent staff will be increased to more than 40 and its operational budget allocation is expected to rise accordingly. Once it opens to the public, SARC will see a significant increase in revenues from ecotourism operations, which SARC will engage an expert tourism company to operate. The staff and financial resources are adequate to operate and maintain the center sustainably.

42. The project is likely to be institutionally sustainable. The QNMG and SARC are both under the administration of the SFD, which is the key line agency for coordinating the management of biodiversity conservation, protected areas, and the national park system, and therefore has a clear advantage in managing the two entities in an integrated manner. The provincial government has attached increasing attention to the ecological conservation of the Qinling Mountains in recent years, and prioritizes support to the QNMG and SARC programs. Both entities were designed and developed following international standards and good practices for botanical gardens and wildlife conservation and are capable of providing state-of-the-art ecotourism services (para. 36 and footnote 33). The project also supported the development of highly professional education courses targeting school children and the general public which have been very well received. Therefore, the project is also technically sustainable.

43. The project is therefore rated *likely sustainable* financially, institutionally, and technically, as discussed in paras. 39–42.

E. Development Impact

44. The development impact of the project is rated *highly satisfactory*. The project exceeded the impact indicators specified in the DMF. During 2010–2019, the extent of land degradation and soil erosion in the mountainous area decreased by 65% compared with the target of 15%; the number of nature reserves increased by 32% from 25 to 33 (19 national and 14 provincial); the populations of four major animal species increased significantly (the giant panda by 26%, the crested ibis by 330%, the golden monkey by 97%, and the takin by 148%); per capita rural incomes increased by 140% compared with the target of 15%, from CNY5,000 to CNY12,000; and the rural poverty incidence halved in line with the national poverty alleviation agenda.

45. **Social and poverty reduction impact.** The project created very positive social and economic benefits for the local communities. In addition to its direct support for constructing village infrastructure, including roads, paths, water supply, and energy facilities in the mountainous area, the project benefited local farmers by (i) providing annual subsidies of CNY7.0 per *mu* to restore forests on sloping farmland; (ii) creating direct employment opportunities in seedling propagation, tree conservation, forest garden management and maintenance, sanitation maintenance, check point supervision, and customer service;³⁶ and (iii) creating opportunities for home-stay ecotourism and small-scale ecotourism business, such as the sale of local honey, walnuts, and kiwifruit. Per capita annual income in the project area increased by 224% from CNY3,700 in 2010 to CNY12,000 in 2019—about 15% higher than the average rate of increase in Zhouzhi County, where the project is located.

46. **Environmental benefits.** The project has provided positive environmental impacts, such as improvements to long-term biodiversity conservation and sustainability in the Qinling

³⁵ The pilot is included in the national park system regime (footnote 18) and covers Gansu, Shaanxi, and Sichuan provinces.

³⁶ For example, the QNMG employs 200 people from the local area, 30% of them women, with an average salary of CNY1,800 per month.

Mountains. It has achieved the expected global environmental benefits, such as conservation and/or protection of four globally threatened species (the giant panda, the crested ibis, the golden monkey, and the golden takin) and 2,000 ha of their habitats, and sustainable land management in 5,000 ha. Major environmental benefits include (i) improving the welfare of animals in SARC and the mountainous area; (ii) advancing scientific knowledge on endangered species recovery at SARC; (iii) establishing the genetic collection at the QNBG and enhancing overall conservation of biodiversity; (iv) increasing public awareness and education regarding the Qinling Mountains and biodiversity conservation; (v) improving the ecological functions of the Qinling Mountains by creating more forest and higher-quality tree cover; and (vi) enhancing environmental quality by providing better sanitation and wastewater management systems. The GEF terminal evaluation report prepared by the consultant following ADB's Guidance Note for GEF-Cofinanced Projects presents details on the achievements of the GEF-funded activities (Appendix 10).

47. **Institutional impacts.** The capacity development and technical assistance (TA) provided, which was funded mainly by the GEF grant, has brought significant institutional impacts (para. 16). The Qinling IEM strategy proposed important policy recommendations to promote IEM in the Qinling Mountains through the national park system. The provincial government has taken these up and initiated a concept for submission to the central government for consideration (footnotes 16 and 28). Staff exchange programs to the United Kingdom and the United States strengthened the professional experience and capacity of key technical staff of the QNBG and SARC. The ecotourism business plan provided the QNBG and SARC with a rigorous market analysis and a clear road map to promote sustainable ecotourism. The ecological baseline monitoring and database provided the QNBG with the capacity and basis for habitat management. The research programs for SARC enhanced its scientific research ability in the wildlife breeding and conservation fields. The education courses and programs improved the two PIAs' capacity to deliver quality public education.

F. Performance of the Borrower and the Executing Agency

48. The overall performance of the borrower and the executing agency is rated *satisfactory*. The borrower and the executing agency had strong ownership of the project and are highly committed to continuously promoting biodiversity conservation and improving people's livelihoods in the Qinling Mountains in line with their development agenda. They provided adequate support for project preparation and fulfilled their obligations to make the loan and grant effective in a timely manner. Their institutional arrangements were adequate to ensure effective project implementation (para. 24). Although there was a delay in obtaining sufficient counterpart funds in the early stage of project implementation, the provincial government as the executing agency provided adequate funds to the PIAs and ensured they carried out the planned project activities effectively. The executing agency coordinated effectively with the PIAs to fulfill the compliance requirements as set out in the loan, project, and grant agreements, including safeguards, audit, and financial management.

G. Performance of the Asian Development Bank

49. ADB's performance is rated *satisfactory*. During implementation, ADB conducted 14 review missions, including the midterm review in September 2016, the completion review in December 2019, and four special administration reviews. A special administration review in March 2014, which involved a senior official of the National Development and Reform Commission, resolved outstanding issues in relation to inadequate counterpart funds and SARC's unsettled land acquisition that had impeded the project progress since the project's inception. The midterm review mission was carried out successfully in August 2014. ADB responded to the inquiries and

requests of the executing agency and the PIAs promptly and gave approval for the necessary changes in a timely manner. ADB provided a great deal of support to the executing agency and PIAs' institutional capacity development, such as scoping the study on IEM of the Qinling Mountains, planning the staff exchange programs, and conceptualizing the ecotourism business plan and public education courses (para. 16). ADB provided extensive training for the PEO and PIA staff on procurement, disbursement, and financial management, as well as occasional external training opportunities. As the implementing agency of the GEF grant, ADB administered the grant effectively, including providing semiannual reports on implementation progress and engaging staff consultants to update the biodiversity tracking tool and prepare the terminal evaluation report.

H. Overall Assessment

50. The project is rated *successful*. It was *highly relevant* to the government development plans and ADB's country strategies (paras. 5, 6, and 34); *effective* in achieving its outcome and outputs (paras. 35–37); *efficient* in achieving its outcome and outputs (para. 38); and *likely sustainable* (paras. 39–43). The project was implemented successfully and delivered its planned outputs effectively. It achieved its outcome of improved and integrated biodiversity management providing sustainable livelihoods for the population of the project area and exceeded its planned impacts.

Overall Ratings

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

Source: Asian Development Bank.

IV. ISSUES, LESSONS, AND RECOMMENDATIONS

A. Issues and Lessons

51. **Issues.** The completeness of the QNBG's herbarium and greenhouse requires further monitoring and reporting. The herbarium is a critical building for storing and presenting flora specimens to support botanical research, while the greenhouse is designed to present tropical and special plant species for research and public education. Both buildings are functional modules of the QNBG. However, because available funds were limited, the original project plan included only the construction of the main structures of these two buildings and excluded their interior presentation and exhibition—including plants—from the project scope (footnote 15). The QNBG estimated that additional investment of about CNY70.0 million would be needed to complete the interior works and make the buildings functionally complete. During the project completion review, the QNBG indicated that it expected to secure a loan of CNY300.0 million from the Agricultural Development Bank of China to finance the additional construction costs of these two buildings and cover expenses for expanding the garden areas. Further monitoring and reporting are required to track progress. In addition, QNBG was closed for three months and was reopened in late April, and the number of visitors decreased by about 60% due to coronavirus disease (COVID-19) in 2020.

52. **Lessons.** Well-designed interventions for institutional capacity development contributed greatly to the project's success. The IEM strategy and action plan for the Qinling Mountains has served as a critical scientific basis for government policy making to improve ecosystem management of the Qinling Mountains through promoting a national park system. The project promoted staff exchange to world-recognized botanical gardens and conservation entities, and supported extensive training and study tours for the project staff (para. 16). Public education programs were also developed by professional consultants and integrated with the operations of the QNBG and SARC (para. 36). In addition, the project engaged highly experienced experts to review and improve the design of SARC facilities for wildlife enclosure and exhibition. These designs adequately considered international standards and good practices (para. 36). The QNBG also involved high-profile expertise from Shanghai and Germany to ensure its plans for the landscape and garden were of high quality. All these interventions added great value to the whole project and will help ensure its long-term impact. The lessons of value addition through high-quality capacity development can be replicated by future projects.

B. Recommendations

53. **Future monitoring.** As the QNBG has yet to complete the herbarium and the greenhouse fully (para. 51), ADB needs to monitor the progress of their interior facilities and works to ensure they are completed and fully functional. SARC plans to open in 2021, so ADB will need to monitor the number of visitors and the operation and maintenance of the enclosures and breeding facilities. The provincial government is establishing a national park system in the Qinling Mountains, so there is also a need for ADB to continue to track of the progress of this initiative.

54. **Timing of the project performance evaluation report.** It is recommended that ADB's Independent Evaluation Department conducts the project performance evaluation in 2022. By then, the QNBG and SARC will have been fully operational, and their operational performance, particularly revenue income and sustained impacts on local livelihoods, can be evaluated and verified with more comprehensive data and information from their operations.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and/or Indicators	Achievements
<p>Impact Sustainable biodiversity conservation protected for globally significant species and increased economic growth</p>	<p>Land degradation and soil erosion reduced by 15% by 2020 in the mountainous area, QBCDA</p> <p>Natural habitat and species recovery increased by 15% in all nature reserves in the Qinling Mountains by 2020</p> <p>Rural incomes increased by 15% and rural poverty halved by 2020</p>	<p>Land degradation and soil erosion area in the mountains area reduced by 65% during 2010 to 2019.</p> <p>The number of nature reserves increased by 32% from 25 in 2010 to 33 in 2019 (19 national and 14 provincial). The population of four major animal species increased significantly from 2010 to 2019 (giant panda by 26%, crested ibis by 330%, golden monkey by 97%, takin by 148%).</p> <p>Per capita rural incomes increased by 224% from CNY3,700 in 2010 to CNY12,000 in 2019 and rural poverty was halved in 2019 with the national poverty alleviation program.</p>
<p>Outcome Improved and integrated biodiversity management providing sustainable livelihoods for the population of the project area</p>	<p>Five globally threatened species management supported through habitat regeneration and management by 2016</p> <p>Endangered and threatened species monitored, with numbers increasing by 2019</p> <p>Ecotourism visitors increased from current 400,000 per year to about 800,000 by 2014, and about 1.2 million by 2020</p> <p>New small businesses created and about 1,200 jobs generated by local communities and project-related activities by 2015</p>	<p>Management of five globally threatened animal species including giant panda, golden monkey, golden takin, crested ibis, and salamander have been mainstreamed into the government conservation programs since 2014.</p> <p>Numbers of monitored species increased significantly from 2010 to 2019, such as giant panda (27%), golden monkey (71%), golden takin (150%), and crested ibis (52%).</p> <p>Ecotourism visitors to the project area were about 850,000 in 2015 and about 1.1 million in 2019.</p> <p>Over 1,500 jobs were provided annually through project-related activities, over 300 jobs generated directly by QNBG and SARC operations and the rest for local communities by small business of eco-tourisms.</p>
<p>Outputs Component 1: Participatory Biodiversity Management in the Mountainous Area</p> <p>1. Demonstrating conservation of biodiversity</p>	<p>Long-term plan for the project area developed by 2012</p> <p>About 7,000 ha of forest successfully managed by 2014</p>	<p>A comprehensive development plan was prepared covering the whole project area of 639 square kilometers.</p> <p>Over 10,000 ha of forests have been under well management, including 4,000 ha of state forestry lands under QNBG management and over 6,000 ha of collective forests with certificates awarded to individual households.</p>

Design Summary	Performance Targets and/or Indicators	Achievements
2. Improved village and forest-based livelihoods	<p>Habitat restoration plan prepared by 2015</p> <p>QBCDA poverty households, decline by 50% by 2014</p> <p>Small businesses providing jobs to local poor by 2014</p> <p>About 10 home-stay ecotourism enterprises, half in QBCDA, started by 2016</p> <p>Up to 17.5 km of roads improved by 2012</p> <p>About 100 km of mountain pathways upgraded by 2014</p> <p>Land use and forest management practices specified by 2015 for forest restoration and conservation</p> <p>Sustainable financing plan for biodiversity conservation by December 2015</p> <p>Endangered animal baseline data collected, and management plans prepared by December 2015</p> <p>Endangered animal research contracts and monitoring systems in place by March 2015</p>	<p>Habitat restoration plan was prepared by the provincial government in 2015 in addition to ecological forestry restoration plans.</p> <p>All households in QBCDA were lifted from poverty in 2019. Social welfare and village infrastructures were built for three villages covering 160 households or 620 people.</p> <p>Jobs of small business were created for local poor people (about 200 people, 40% women) since the project implementation in 2012 such as small shops selling local goods and foods.</p> <p>Twenty home-stay ecotourism enterprises have been in operation since 2016.</p> <p>About 18 km of roads were improved and construction was completed in 2016.</p> <p>About 120 km of mountain pathways upgraded in 22 valleys by 2015.</p> <p>Conservation agriculture about 35 ha and ecological forestry rehabilitation about 70 ha were implemented through community participation.</p> <p>QNBG allocates 10% of its revenues for habitat restoration and monitoring for biodiversity conservation.</p> <p>Endangered animal species management plan prepared by SARC in 2016 including baseline data. Ecological baseline monitoring was conducted by QNBG in 2015 and database was established accordingly, which also contributed to the biodiversity monitoring system set up under the project.</p> <p>Two research studies were carried out in 2018, one for giant panda breeding and the other for crested ibis wilding and monitoring. A monitoring system was established in 2018.</p>
Component 2: Enhanced Biodiversity Conservation in the Plains Area	<p>QNBG and SARC provide technical and financial support for biodiversity conservation in QBCDA by 2015</p> <p>About 269 ha botanical gardens established and</p>	<p>Biodiversity conservation in QBCDA is major function and responsibility of QNBG and SARC, which also allocate certain portion of its revenues for conservation of in-situ areas.</p> <p>About 263.6 ha of botanical gardens were established, including 22 specialized gardens.</p>

Design Summary	Performance Targets and/or Indicators	Achievements
<p>1. Develop the national botanical garden</p> <p>2. Improve the animal rescue center</p>	<p>supporting public education facilities by 2014</p> <p>About 18 Taoist sites restored by 2014</p> <p>One cable car constructed by 2014</p> <p>QNBG revenue increased from CNY30 million to CNY65 million by 2015</p> <p>QNBG invested about 15% of its profits into QBCDA by 2015</p> <p>About 90% of wastewater generated is properly treated and disposed of by 2015</p> <p>SARC establish facilities for Golden Monkey and Crested Ibis and animal exhibition on new site by December 2016</p>	<p>Public education facilities included a public education center, an herbarium, two outdoor education camps.</p> <p>Twenty Taoist sites were restored or reconstructed such as pavilions or resting grounds by 2016.</p> <p>The originally planned cable car was removed from the project scope as approved in 2015.</p> <p>QNBG was opened to the public officially in October 2017. Revenue from entrance fee was about CNY11 million in 2019. SARC is planned to be opened to the public in 2021.</p> <p>QNBG allocates about 10% of its revenue into QBCDA for conservation and restoration.</p> <p>Wastewater in QNBG are mainly from office buildings and tourist toilets and are all collected and piped to the township wastewater sewer systems. Wastewater from SARC are piped to the township wastewater networks after treating initially through its treatment plant.</p> <p>Enclosure breeding and exhibition facilities were established, which include 9 breeding and rest grounds for giant panda with a total space of 28,000 m²; 1 breeding ground of 13,000 m² with fencing network for crested ibis; breeding and exhibition area of 1,900 m² for golden monkey; rooms and exhibition ground of 2,560 m² for takin; and exhibition space of 8,900 m² for other animals. Facilities were established including research center, laboratory, animal hospital, expert apartments, public education center, and service center.</p>
<p>Component 3: Improved Project Management</p> <p>1. Strengthened PMO and IA</p> <p>2. Strengthened biodiversity safeguards</p>	<p>Policy and legal studies completed and proposed actions and/or reforms submitted to the provincial peoples committee by 2017</p> <p>Sustainable financing program for QNBG operating by 2016</p>	<p>The provincial regulations for Qinling Ecological and Environmental Management was revised in 2017 and further updated in 2019. Recommendations from the study on the Qinling integrated ecosystem management funded under the project were submitted to the provincial government in 2018.</p> <p>QNBG was opened to the public officially in October 2017. Revenues are mainly from entrance fees and ecological conservation funds from the government.</p>

Design Summary	Performance Targets and/or Indicators	Achievements
3. Conservation dissemination program	<p>Ecotourism master plan completed as part of the habitat management plan by 2015</p> <p>Conservation monitoring data available and used by 2015</p> <p>Public awareness on QNBG raised with increasing numbers of school classes visiting from 2015 onwards</p> <p>Endangered species research contracts awarded and completed by 2015</p> <p>Integrated landscape habitat management plan completed with action planning and capacity building by 2016</p> <p>Professional job exchanges conducted by 2015</p>	<p>A tourism plan was prepared for SARC in 2016. The ecotourism master plan was completed for the whole project area in 2018.</p> <p>Conservation monitoring is carried out annually and data has been available since 2017.</p> <p>QNBG has been designated as a national and provincial nature education base. Over 80,000 school students came to QNBG for classes and school research programs during 2017–2019.</p> <p>Two research studies were carried out in 2018, one for giant panda breeding and the other for crested ibis wilding and monitoring.</p> <p>The Qinling IEM Strategy and Action Plan was developed in 2018, which includes habitat management and action plans based on landscape. Training and study tours were conducted to strengthen staff capacity for conservation and habitat management.</p> <p>Three technical staff participated professional job exchanges programs during 2015-2017, including: (i) two QNBG staff to Kew Royal Botanical Garden in United Kingdom and Chicago Botanical Garden in the United States, respectively for 6 months; and (ii) one SARC staff to Durrell Institute of Conservation and Ecology in United Kingdom for 6 months.</p>

ha = hectare, IEM = integrated ecosystem management, km = kilometer, m² = square meter, PRC = People's Republic of China, QBCDA = Qinling Biological Conservation and Demonstration Area, QNBG = Qinling National Botanical Garden, SARC = Shaanxi Animal Rescue Center

Sources: Asian Development Bank, executing agency's completion report.

PROJECT COST AND FINANCING PLAN

TableA2.1: Project Cost
(\$ million)

Item	Appraisal Estimate				Actual			
	ADB	GEF	Gov't	Total	ADB	GEF	Gov't	Total
I. Investment Costs								
1. Civil Works	23.3	0.9	41.7	65.9	23.3	0.5	43.4	67.1
2. Equipment	11.9	0.1	5.1	17.0	15.1	0.9	0.0	16.0
3. Training and Communication	0.2	0.6	0.1	1.0	0.1	0.2	0.0	0.4
4. Survey, Design and Monitoring	0.0	1.1	5.5	6.6	0.0	0.4	4.4	4.8
5. Planning and Institutional Strengthening	0.0	0.7	0.1	0.7	0.0	1.6	10.0	11.5
6. Consulting Services	0.0	0.6	0.0	0.6	0.0	0.5	0.0	0.5
7. Dissemination	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
8. Compensation	0.0	0.0	5.6	5.6	0.0	0.0	6.9	6.9
9. Staff Costs	0.0	0.0	0.4	0.4	0.0	0.0	0.2	0.2
10. Contingency	0.0	0.1	13.9	13.9	0.0	0.0	0.0	0.0
Subtotal (I)	35.3	4.3	72.3	111.9	38.5	4.1	64.8	107.4
II. Recurrent Costs								
Operation and Maintenance	0.0	0.0	16.1	16.1	0.0	0.0	0.8	0.8
Subtotal (II)	0.0	0.0	16.1	16.1	0.0	0.0	0.8	0.8
Total Project Costs (I+II)	35.3	4.3	88.4	128.0	38.5	4.1	65.6	108.2
III. IDC and Commitment Charge	4.7	0.0	0.0	4.7	1.0	0.0	0.0	1.0
Total (I+II+III)	40.0	4.3	88.4	132.6	39.5	4.1	65.6	109.2

Note: Numbers may not sum precisely because of rounding.

ADB = Asian Development Bank; GEF = Global Environment Facility administered by ADB.

Sources: Asian Development Bank and Shaanxi Provincial Project Management Office.

Table A2.2: Financing Plan
(\$ million)

Source	Appraisal		Completion	
	Amount	(%)	Amount	(%)
Asian Development Bank	40.0	30.2	39.5	36.2
Global Environment Facility	4.3	3.2	4.1	3.7
Government	88.4	66.6	65.6	60.1
Qinling National Botanical Garden	63.4	47.8	48.6	44.5
Shaanxi Animal Rescue Center	25.0	18.8	17.0	15.6
Total	132.6	100.0	109.2	100.0

Note: Numbers may not sum precisely because of rounding.

Sources: Asian Development Bank and Shaanxi Provincial Project Management Office.

DISBURSEMENT OF LOAN AND GRANT PROCEEDS

Table A3.1: Annual and Cumulative Disbursement of ADB Loan Proceeds ^a
(\$ million)

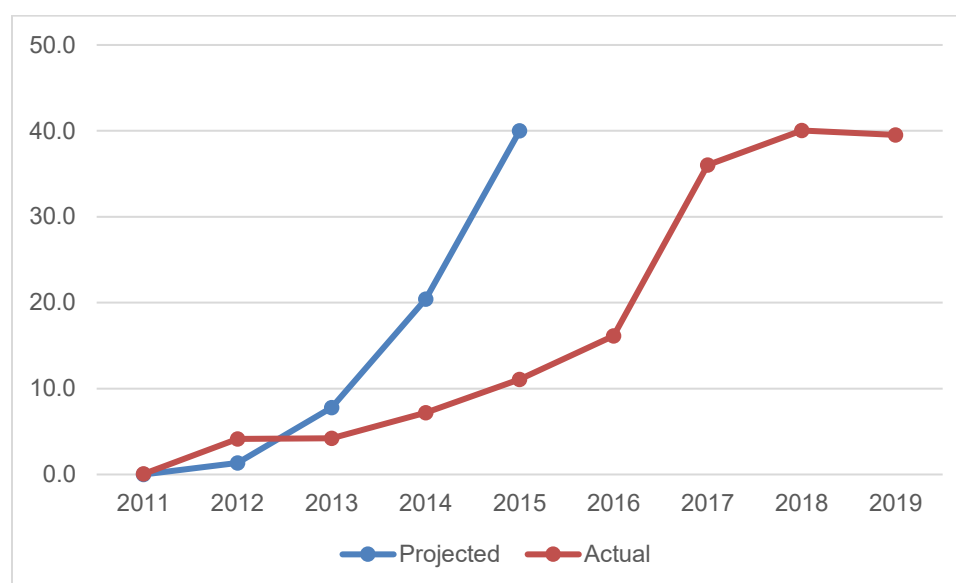
Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2011	0.1	0.2	0.1	0.2
2012	4.1	10.3	4.1	10.5
2013	0.1	0.2	4.2	10.7
2014	3.0	7.5	7.2	18.2
2015	3.9	9.8	11.1	28.0
2016	5.0	12.8	16.1	40.8
2017	19.9	50.4	36.0	91.1
2018	4.0	10.1	40.0	101.3
2019	-0.5	-1.3	39.5	100.0
Total	39.5	100.0	39.5	100.0

Note: Numbers may not sum precisely because of rounding.

^a Includes disbursements to advance accounts.

Sources: Asian Development Bank's Loan Financial Information System and eOperations.

Figure A3.1: Projection and Cumulative Disbursement of ADB Loan Proceeds
(\$ million)



Sources: Asian Development Bank's Loan Financial Information System and eOperations.

Table A3.2: Annual and Cumulative Disbursement of GEF Grant Proceeds^a
(\$ million)

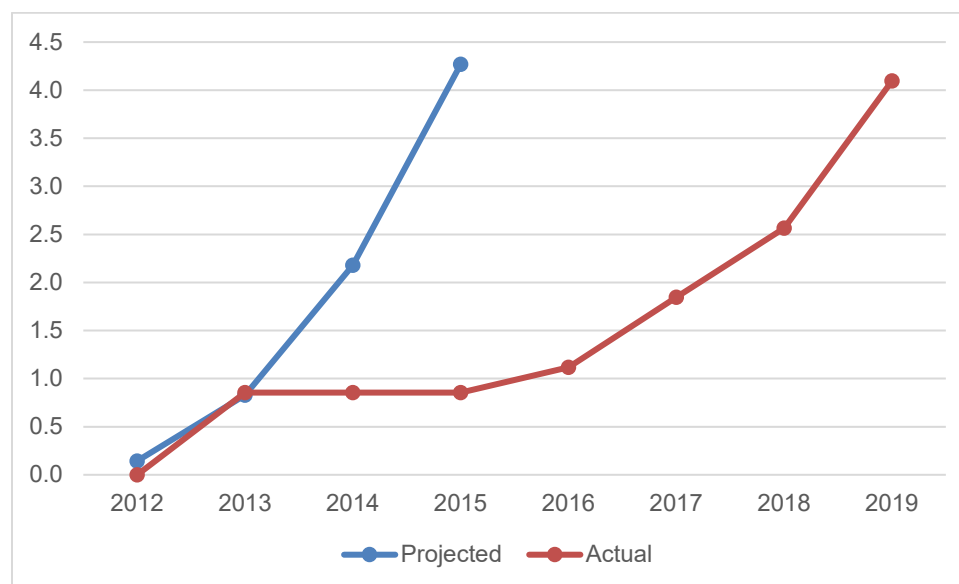
Year	Annual Disbursement		Cumulative Disbursement	
	Amount	%	Amount	%
2012	0.0	0.0	0.0	0.0
2013	0.9	20.9	0.9	20.9
2014	0.0	0.0	0.9	20.9
2015	0.0	0.0	0.9	20.9
2016	0.3	6.5	1.1	27.3
2017	0.7	17.7	1.8	45.1
2018	0.7	17.6	2.6	62.7
2019	1.5	37.3	4.1	100.0
Total	4.1	100.0	4.1	100.0

Note: Numbers may not sum precisely because of rounding.

^a Includes disbursements to advance accounts.

Sources: Asian Development Bank's Grant Financial Information System and eOperations.

Figure A3.2: Projection and Cumulative Disbursement of GEF Grant Proceeds
(\$ million)



Sources: Asian Development Bank's Grant Financial Information System and eOperations.

CHRONOLOGY OF MAIN EVENTS

Date	Milestone Event
10 August 2007	Concept paper approved
13-25 August 2007	Loan Fact-finding mission fielded
21 May 2008	Management review meeting held
29 May-10 June 2008	Loan appraisal mission fielded
17 October 2008	Staff review meeting held
22 October 2009	Grant approval
26-28 August 2009	Loan Negotiation
1 October 2009	Board Circulation
22 October 2009	Loan approval
2 July 2010	Loan, project, grant agreements signed
15 October 2010	Loan/grant effectiveness
15-22 December 2010	Inception mission fielded
21 March 2012	Initial disbursement of loan
19-25 March 2012	Special review mission fielded
20-25 January 2013	Loan review mission fielded
1 February 2013	Project administration transferred to PRCM
19 March 2013	First NCB works contract approved
29 June 2013	Initial disbursement of grant
9 September 2013	Implementation consulting service contract approved
11-16 November 2013	Loan review mission fielded
29 November 2013	First NCB goods contract approved
26-28 March 2014	Special review mission fielded
25-30 August 2014	Mid-term review mission fielded
13 April 2015	Approval of the loan/grant extension by 24 months and a minor change in project scope
26-30 October 2015	Loan review mission fielded
31 July-4 August 2016	Special review mission fielded
4-11 November 2016	Loan review mission fielded
17-19 April 2017	Special review mission fielded
9 June 2017	Approval of loan/grant extension by 12 months
5-8 December 2017	Loan review mission fielded
14-18 May 2018	Loan review mission fielded
24 August 2018	Approval of grant extension by 6 months
23 October 2018	Final disbursement of loan
3-7 December 2018	Loan review mission fielded
13 November 2019	Financial closing date of loan account and partial cancellation of loan proceeds
18 November 2019	Final disbursement of grant, financial closing date of grant account and partial cancellation of grant proceeds
16-19 December 2019	Project completion review mission fielded

NCB = national competitive bidding, PRCM = ADB Resident Mission in the People's Republic of China

Sources: Asian Development Bank and Shaanxi Provincial Project Management Office.

CONTRACT AWARDS OF LOAN AND GRANT PROCEEDS

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

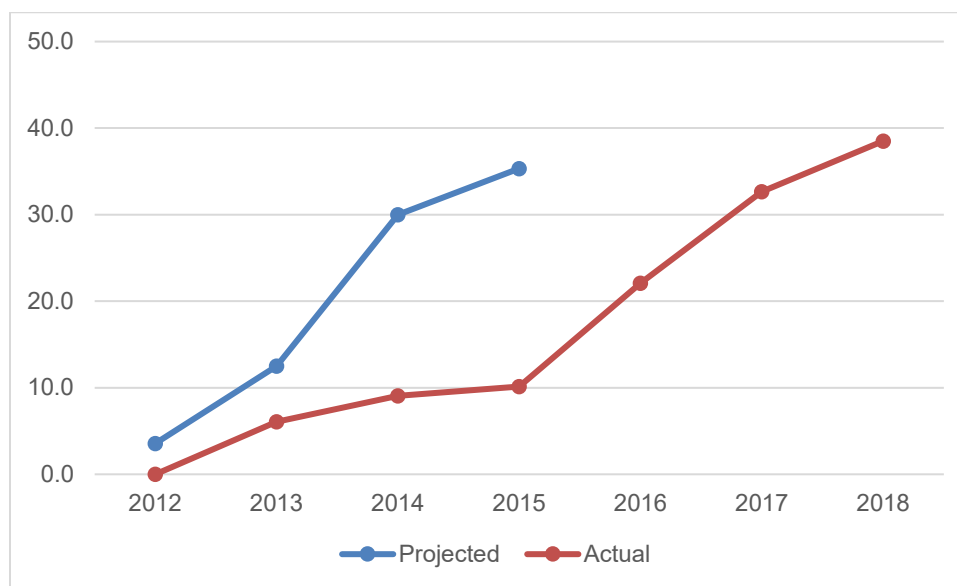
Year ^a	Annual Contract Awards		Cumulative Contract Awards	
	Amount	%	Amount	%
2012	0.0	0.0	0.0	0.0
2013	6.1	15.8	6.1	15.8
2014	3.0	7.8	9.1	23.6
2015	1.1	2.8	10.2	26.3
2016	11.9	31.0	22.1	57.3
2017	10.6	27.5	32.7	84.8
2018	5.8	15.2	38.5	100.0
Total	38.5	100.0	38.5	100.0

Note: Numbers may not sum precisely because of rounding.

^a Classified by procurement contract summary sheet. date.

Sources: Asian Development Bank's Loan Financial Information System and eOperations.

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



Sources: Asian Development Bank's Loan Financial Information System and eOperations.

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

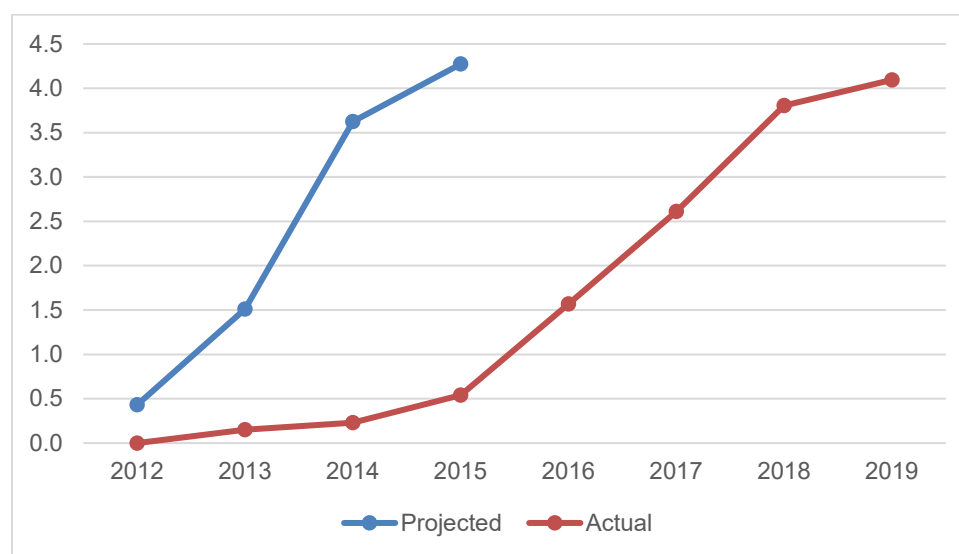
Year ^a	Annual Contract Awards		Cumulative Contract Awards	
	Amount	%	Amount	%
2012	0.0	0.0	0.0	0.0
2013	0.1	3.6	0.1	3.6
2014	0.1	2.0	0.2	5.7
2015	0.3	7.5	0.5	13.2
2016	1.0	25.1	1.6	38.3
2017	1.0	25.5	2.6	63.7
2018	1.2	29.2	3.8	92.9
2019	0.3	7.1	4.1	100.0
Total	4.1	100.0	4.1	100.0

Note: Numbers may not sum precisely because of rounding.

^a Classified by procurement contract summary sheet. date.

Sources: Asian Development Bank's Grant Financial Information System and eOperations.

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



Sources: Asian Development Bank's Grant Financial Information System and eOperations.

ENVIRONMENTAL ANALYSIS

A. Introduction

1. The project delivered mainly three outputs, which involved environmental impacts from construction activities: (i) the Qinling National Botanical Garden (QNBG), covering 22 specialized gardens, public education structures/facilities, exhibition hall, and infrastructures; (ii) Shaanxi Animal Rescue Center (SARC), including conservation and research facilities, enclosure breeding and exhibition spaces/grounds, public education facilities, and infrastructures; and (iii) community development facilities and conservation infrastructures in the mountainous area.

2. At appraisal, the project was classified as environment category B according to Asian Development Bank's (ADB) Environment Policy (2002). A summary initial environment examination (SIEE), including an environmental management plan (EMP), was prepared based on the domestic environmental impact assessment carried out in accordance with PRC's regulations. The SIEE indicated that the majority of the project's impacts would be environmentally beneficial and have a large and positive impact on securing long-term biodiversity conservation and sustainability in the Qinling Mountains. Some minor adverse impacts mainly related to construction activities could be mitigated by appropriate measures.

3. The SIEE was updated to reflect changes involved in a scope change approved in April 2015. The domestic environmental review and acceptance will be conducted for the applicable components by end of 2020 as a part of the overall project completion acceptance.

B. Institutional Arrangement

4. Shaanxi Provincial Government was the executing agency, acting through Provincial Development and Reform Commission (PDRC). A project executive office (PEO) established under PDRC took the overall responsibility for ensuring that all environmental standards and procedures were followed and for reporting to ADB. The project management office (PMO) under the Provincial Forestry Department coordinated the EMP implementation including monitoring programs. Project implementation agencies (PIAs) including QNBG and SARC were responsible for implementation of all corresponding environmental mitigation measures and monitoring programs. During implementation, environmental management responsibilities of the contractors had been clearly incorporated in both the bidding documents and the construction contracts. The construction contractors designated environmental representatives, who were responsible for the environmental management of construction activities during project construction. Local environment protection bureau was involved in the project environmental monitoring and ensured the project compliance with government environmental requirements. An environment expert recruited under the project worked as an external monitor and assisted PEO and PMO in overseeing the environment management.

C. Implementation of Mitigation Measures

5. **QNBG.** Minor adverse impacts were associated mainly with construction activities and operation and were limited on sites. During construction, mitigation measures against soil erosion included appropriate engineering design (better slopes, compaction levels, installation of culverts, etc.), planting of vegetation, construction of appropriate stormwater drainage, and limiting off-corridor vehicle movements. Mitigation against loss of agricultural land included: (i) construction camps and material storage areas were not located on agricultural land and pre-existing hardstand storage areas were used, (ii) agricultural land was rehabilitated after completion of

construction and removal of the construction camps and material storage areas, and (iii) construction traffic was confined to the existing road corridor. Mitigation measures against soil contamination included (i) appropriate storage of hazardous materials (including hydrocarbons) and hazardous/non-hazardous wastes, (ii) oil interceptor was provided for all vehicle wash-down activities, and (iii) all hazardous wastes and non-hazardous wastes were disposed at local municipal waste disposal facilities, and no site-specific landfill was developed for the project.

6. During operation, water supplies for QNBG were from two sources: (i) surface water from the Tianyu River (about 1,405 ton/day; less than 1% of the river's total flow) for irrigation in west part, and (ii) groundwater from a well near the Tianyu River (about 252 ton/day). Given the relative sufficient precipitation and surface water recharge in the project area, the demand was not a significant volume and potential impacts were minimized by site selection, water saving, and a monitoring program. About 201 tons of wastewater and 1.51 tons of solid wastes were produced daily during operation. Wastewater (about 200 tons/day) from QNBG was drained to a nearby secondary wastewater treatment plant (i.e. Jixian Industrial Park Wastewater Treatment Plant). Solid wastes were collected by a contracted cleaning company and transported to Zhouzhi county landfill site.

7. **SARC.** During implementation, temporary impacts such as soil erosion or dust, noise, wastewater leakage were caused by construction activities, which were mitigated effectively by sound planning, good engineering, and integrated management as per the EMP. No heavy machine was used during construction. Construction sites were over 1,000 meters away from the existing animal breeding districts. Therefore, construction activities had little **noise** impacts on animals. During operation, wastewater (about 200 cubic meters per day) was discharged into the local wastewater pipelines of after pre-treatment using a sedimentation and treatment tank. The treated effluent was used for landscape irrigation and no direct discharge to the surface water took place. Solid wastes were managed in the similar way applied by QNBG. Disease control and reporting systems have been in place for all species kept in the center according to national standards and regulations. Animal medical wastes were appropriately collected, temporarily stored then disposed by outsourced government accredited professional hazardous waste disposal company.

8. **Mountainous area** was managed for the primary purpose of biodiversity conservation. The reforestation and silviculture development on a large scale was not expected to have any negative effects and was managed through the habitat and forest management plan for the area prepared under the project. Small business development including home-stay tourism and forest-product processing was screened by the PMO and QNBG. The provision of social infrastructure was linked to water and solar energy, and eco-tourism activities. These were mitigated by the following environmental considerations: (i) design was consistent with the landscape and included sustainable practices to reduce environmental impact; (ii) low energy consumption technologies for lighting were utilized; (iii) solid waste – converted biodegradable waste to compost that can be used on site. Non-biodegradable waste was collected and removed for disposal in the municipal landfill or recycled; (iv) water supply was from a local spring source (quality tested); (v) sewage and wastewater – septic tanks combining with onsite small biological treatment was applied; (vi) walking trails – existing footpaths were used; and most users required no upgrading or surfacing of paths; and (vii) the ecology, home stay, and other micro-scale resource-based tourism activities were managed under an environmental monitoring plan. Some road and mountain pathway improvement were also conducted. Mitigation measures included (i) careful site (alignment) design to avoid encroachment into the sensitive wildlife area, (ii) controlled attendance numbers at the QNBG entrance and implementation of an access management plan, (iii) no construction between dusk and dawn or avoiding excessive noise, and (iv) replanting and

afforestation along the road and river banks to minimize soil erosion and protect habitat. Construction mitigation measures for the component were the same as described for the QNBG.

D. Environment Monitoring

9. Contractors and supervision companies carried out daily on-site monitoring. The PMO engaged qualified environmental monitor in accordance with monitoring program specified in the EMP and an individual environmental specialist to supervise fulfillment of the mitigation measures in the EMP and prepare the environmental progress reports. Seven environmental monitoring reports through 2013-2018 were disclosed on ADB project website.

E. Environmental Benefits

10. Majority of the project impacts are environmentally beneficial, including improvements to long-term biodiversity conservation and sustainability in the Qinling Mountains. The major environmental benefits include: (i) improvement in the welfare of animals in SARC and the project area by adding more advanced animal shelters; (ii) advancement of science on endangered species recovery from SARC by the new scientific research center and animal hospital equipped with more than 400 sets of research equipment and instruments; (iii) more than 4,200 plant species genetic collection established at QNBG; (iv) public awareness and education regarding the Qinling Mountains and biodiversity conservation, which attracted approximately 100,000 primary and secondary school students from September 2017 to June 2019 and serves as a provincial and national research/education base to cooperate with 10 universities and research institutions; (v) improvement in ecological functions in the project area from more and higher-quality forest cover by more than 8,000 hectares of vegetation restored and forest tended; and (vi) better environmental quality through improved management systems for sanitation, wastewater, and solid wastes.

F. Conclusion

11. The project met the initial objectives and gained certain environmental benefits through reduction in degraded land and soil erosion, increase in the area that protects endangered species, and improvement and integration of biodiversity conservation management practices in the project area. Both components were implemented in line with the EMP and complied with applicable government environmental requirements. Environmental management and associated mitigation measures were properly implemented during construction and operation. Environment monitoring was carried out by PMO and PIAs adequately. No accidents, incidents, or complaints were reported by nearby residents.

LAND ACQUISITION AND RESETTLEMENT

A. Background

1. The project had resettlement impacts from improvement of the Qinling National Botanical Garden (QNBG) and the Shaanxi Animal Rescue Center (SARC). Two resettlement plans were prepared and approved by the Asian Development Bank (ADB) during project preparation in August 2008. A scope change was approved in April 2015, which involved location changes of several project facilities of QNBG and SARC. Accordingly, a due diligence report was carried out for SARC to document changes in land acquisition. The resettlement plan of QNBG was updated to reflect changes in building locations and resettlement status and disclosed in March 2015.

B. Qinling National Botanical Garden

1. Land Acquisition and Resettlement Impacts

2. According to the resettlement plan, the project would utilize 3,963.4 *mu* land, of which 218.4 *mu* farmland would be acquired during the construction of the project.¹ As for remaining land of 3,745 *mu*, the right of use was to be obtained by means of land leasing. In total, 100 households and 414 persons would be affected by land acquisition, and 122 households and 515 persons would be affected by housing demolition of 32,550 square meters (m²) buildings, among which there were five persons of one poor family. The leasing of land would affect 11 groups, 948 households and 3,780 persons in Dianzhen Village and two villager groups from Jinfeng Village, among which 25 households and 84 villagers were poor families.

3. At completion, the actual land acquisition remained same as originally planned. In total 132 affected households were relocated with house demolition of 47,730 m² from ex-situ area, including 112 affected households to new Dianzhen Village and 20 affected households of self-resettlement with cash compensation. The main reason for the increase of demolition area was that some demolition impacts were not calculated before and other impacts caused by the vibration because of the project being in close distance from the construction area.

2. Compensation and Resettlement

4. The standard for land compensation and subsidy of the project was in line with the PRC's Land Administration Law and provincial regulations on land acquisition and compensation. Meanwhile, the project took compensation standard of other projects at the same kind of area for reference. The compensation for farmland was 21 times of the average output value of the land within the project area. The young crops compensation was calculated based on the maximum of 40% to 90% of the average output value of the land. The total land compensation was CNY26,000/*mu* for farmland, same as planned in the resettlement plan. After discussions with affected persons and villager representatives, the land compensation had been paid directly to the affected persons in full amount via the bank by Zhouzhi County Project Office.

5. The compensation of house and the attachment was formulated according to the replacement price, which was agreed between the professional real estate assessment agency and affected households. The compensation of ground attachment such as housing and trees, transition fee and relocation subsidy were directly paid to the affected persons. In order to relocate the villagers affected by house demolition, the New Dianzhen village was developed, which is

¹ A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 m²).

located to the south of provincial road S107 away 300 meters with a land occupation of 344.2 *mu*. The first stage resettlement apartments for 160 households were completed and put into use in April 2017. For 112 affected households resettled in the new resettlement site in Dianzhen Village, the new houses were sold at CNY930/m² with a flat area of 236 m² for each unit. All the affected households moved to the new site by 31 December 2017. Cash compensation was paid to the other 20 affected households for self-resettlement.

3. Livelihood Restoration

6. Totally, 6,556.7 *mu* land of Dianzhen, Jinfeng and Liuhe Village were leased based on land transfer to QNBG as share of the project in ex-situ area. The benefit sharing agreement, including fixed and floated benefit based on ticket revenue, was signed in 2007. The fixed share benefit was updated in 2013 and 2016, respectively. The agreement included: (i) ticket benefits paid to the affected village with revenue rate of CNY2.5 (CNY1.0 in in-situ area) for each full price ticket sold once a year, and then the village collective committee paid to each farmer based on the land lease area; and (ii) the land lease standard of CNY1,100/*mu* in 2016 was paid to the village collective committee on annual basis and then the committee paid each farmer according to the number of land leases. The lease standard increased by 6% every three years. The above scheme has been implemented since January 2018, and a total of CNY285,600.0 ticket revenue shares has been paid to Dianzhen, Jinfeng and Liuhe villages in 2018. The land leasing fixed share totals CNY57.3 million within 12 years from 2008 to 2019.

7. The project acquired 218.4 *mu* land permanently with 414 affected people from 100 households. Land loss was 0.5 *mu*/person on average, accounting for 30% of the original land entitled per capita. According to the monitoring reports, the land loss of 0.5 *mu* resulted in annual income loss of CNY500.0 accounting for 3.9% of the net income CNY12,970/person in 2018. However, since the implementation of the project, 900 local labors have received salary of CNY4.5 million through providing service to the project, including tree planting and nursing, garden cleaning, safeguarding, project construction. About 500 workers were from households affected by land acquisition, and 100 land acquisition affected households participated in the project labor service. Therefore, land acquisition households received about CNY2.8 million from the project and CNY1,602 annually during eight years of the implementation of the project. Moreover, in 2018 more than 3,100 persons were engaged in part-time jobs mainly in Zhouzhi and Xi'an. About 45 families undertook transportation for passengers and logistics for agricultural products. Some housewives undertook family-based animal breeding such as chicken, pig, and cow. In 2018, per capita income of the two villages was CNY12,970, higher than the Zhouzhi County average of CNY11,954, compared to their lower level in 2010 than the Zhouzhi County average.

4. Institutional set-up, Public Participation and Information Disclosure

8. As one of implementing agencies, QNBG established a coordinating committee to organize and coordinate land acquisition and resettlement. Zhouzhi County, the affected area, set up Zhouzhi County Land Acquisition and Resettlement Coordinating Group responsible for detailed measurement survey, compensation standard formulation and compensation payment.

9. As per requirements of the resettlement plan and ADB's resettlement policy, all stages of the project implementation involved public participation of the affected persons. All the project-affected villages also established the project coordination groups, which functioned effectively. The project coordinating groups included 3-5 members of local persons such as village leaders, women representatives, and representatives of the vulnerable group. The duties of the group

were to organize the villagers to join in the construction of the project, support the monitoring in their own community and put forward suggestion for the compensation and resettlement of the project. Aside from the policies of land compensation, other important issues were also decided after discussion between the project coordination groups and the villagers, which proved helpful for the implementation of the project.

5. Resettlement Cost

10. The total resettlement cost in this project was CNY53.59 million, including CNY10.35 million for land acquisition compensation, CNY39.23 million for housing demolition compensation, CNY3.25 million for ground attachment compensation, and CNY760,000 for compensation of special-purpose facilities. All compensation was allocated appropriately and paid to affected entities before the end of 2018.

C. Shaanxi Animal Rescue Center

11. The infrastructure construction of SARC included animal rescue area, rare animal exhibition area, breeding grounds/spaces for the crested ibis, golden monkey, and giant panda. All the buildings were located at the south of the existing center, which will be demolished after the full operation of the new facilities. Land for the crested ibis and golden monkey breeding centers, animal rescue center, animal exhibition area and other SARC installations was acquired under a land exchange arrangement with the Qujiang Administrative Committee, a provincial tourism development company. There were no residential houses in the land except for some seedlings and several abandoned management buildings. Therefore, there were no land acquisition impacts triggered for this component. In total, 273 *mu* land was exchanged, and land usage rights was allocated by Zhouzhi County Government in March 2016. Land-use certificate was issued in April 2016. The detailed land occupation and sources are shown in Table A7.1.

Table A7.1: Land Uses Sources for the SARC Subproject Sites

Facilities	Land Sources	Area (<i>mu</i>)	Land use Classification	Time of Permitted	Land Approval Status
Animal Rescue Centre	Land replacement	25	nursery	May 2015	completed
Rare Animal Science Demonstration Area	Land replacement	55	nursery	May 2015	completed
The Crested Ibis Breeding Base	Land replacement	45	nursery	May 2015	completed
Golden Monkey Breeding Base	Land replacement	31.3	nursery	May 2015	completed
Panda Base (Breeding and Research Area)	Land replacement	116.3	nursery	May 2015	completed
Panda Base (Breeding Area)	Land acquisition (2011)	122.3	slope farmland	November 2011	Approved in 2011
Panda Base (Breeding Area)	Own land resources	31	construction land	February 2010	Approved in 2010
Total		425.9			

Source: resettlement monitoring and evaluation reports.

12. For the panda breeding center constructed with counterpart funds, 122.03 *mu* village slope farmland was acquired with compensation rate of CNY23,192/*mu* and 1,390 m² houses with 10

affected households was demolished. The total land acquisition and resettlement expenses of CNY3.69 million were paid to affected people in June 2014. All affected households by house demolition relocated to the new Louguan Township before October 2014. The due diligence report was prepared and disclosed on ADB's website as an amendment to the original resettlement plan in March 2015 for all land acquired for all project components under the project scope.

D. Monitoring and Evaluation

13. QNBG established a coordinating committee office for coordinating land acquisition and resettlement. The office consisted of three staff. The duty of the office was to guarantee all the land acquisition and resettlement officers can fulfill their tasks, carry out the terms in land acquisition, relocation and resettlement plan, and guarantee all the affected persons can get their rights and interests. The internal monitoring was reported through project progress report. External resettlement monitoring was conducted by Evaluation Center of Shaanxi Academy of Social Sciences engaged by the project executing office, which started in August 2013. By the project completion, six M&E reports were submitted and disclosed on the ADB website.

14. A grievance redress mechanism was in place during implementation, which involved QNBC, project executing agency, project management office, Zhouzhi county government, Dianzhen township government, village committees, and representatives of contractors. Such arrangements provided the venue for the affected people to lodge their complaint and appeal to project offices at corresponding levels. During the project implementation, affected households resettled in the new resettlement site in Dianzhen Village complained the operation problem of some public facilities including wastewater and storm water discharge and power supply in the new site in May 2018. The problem was then resolved before the end of 2018, which was well recorded in the 6th M&E report.

E. Social Impacts

15. The villagers living in in-situ area of QNBG receives benefits from the project construction in aspects of: (i) land conversion support of CNY7.0/*mu* from converting farmland to forest planting; (ii) direct employment opportunities offered by the project, including seedling, trees conservation, forest garden management and maintenance, cleaning, security check and customer service. About 200 people were employed with average salary of CNY1,800/month, among which 30% were women; (iii) more than 10 free shopping stands were provided by QNBG at the site of Jinniuping and Chatouya in 2017. Villagers sell the local special products, such as native honey, walnuts, kiwifruit to increase their income during tourist season. The tourism development also expanded the small businesses around QNBG, such as rise of farm-house resorts and accommodations. According to monitoring reports, the income per household was CNY34,800 and the per capita income was CNY9,943 in 2018, accounting for 83.18% of the average income of the whole Zhouzhi County, which was CNY11,954. However, the residents who lived in the local conservation area always had a lower living condition than the average living condition among rural population in Zhouzhi County due to higher mountains, deeper valleys, inconvenient traffic and low production of land in the past. The per capita income in 2010 was only CNY3,700/year, while the per capita income of rural population in Zhouzhi County was CNY5,238, the income of the residents in the local conservation area only accounted for 70.1% of the average of Zhouzhi County. The monitoring data showed that the income growth rate in the local conservation area was higher by 12% than other regions of Zhouzhi County. The project contributed significantly to the improvement of the residents' livelihoods and income growth in the mountainous conservation area.

STATUS OF COMPLIANCE WITH LOAN AND GRANT COVENANTS

Covenants	Reference	Status
<p>(a) The Borrower shall make available the proceeds of the Loan to SPG upon terms and conditions satisfactory to ADB. Except as ADB may otherwise agree, the terms of making available to SPG the proceeds of the Loan shall include (i) commitment charge and interest at the rates identical to those applied to the Loan; (ii) a repayment period including a grace period identical to those applied to the Loan; and (iii) SPG bearing the foreign exchange and interest rate variation risks of the proceeds of the Loan made available thereto.</p> <p>(b) The Borrower shall cause SPG through Shaanxi Provincial Finance Department, to make available the proceeds of the Loan to SFB upon terms and conditions acceptable to ADB, which shall include (i) commitment charge and interest at the rates identical to those applied to the Loan; (ii) a repayment period including a grace period identical to those applied to the Loan; and (iii) SFB bearing the foreign exchange and interest rate variation risks of the proceeds of the Loan made available thereto; then SFB shall make the proceeds of the Loan available to the IA under an Onlending Agreement upon terms and conditions acceptable to ADB. Except as ADB may otherwise agree, the terms for the proceeds of the Loan made available to the IA shall include (i) commitment charge and interest at the rates identical to those applied to the Loan; (ii) a repayment period including a grace period identical to those applied to the Loan; and (iii) the IA bearing the foreign exchange and interest rate variation risks of the proceeds of the Loan made available thereto.</p> <p>(c) The Borrower shall cause SPG and the IA to apply the proceeds of the Loan to the financing of expenditures on the Project in accordance with the provisions of this Loan Agreement and the Project Agreement.</p>	Section 3.01, Article III, LA	<p>Complied with. Onlending to SPG was made as per the LA with terms and conditions satisfactory to ADB.</p> <p>Complied with. The SPG allocated the loan proceeds to SFB upon terms and conditions acceptable to ADB.</p> <p>Complied with. The loan proceeds were applied accordingly.</p>
The Goods, Works, consulting services and other items of expenditure to be financed out of the proceeds of the Loan and the allocation of amounts of the Loan among different categories of such Goods, Works, consulting services and other items of expenditure shall be in accordance with the provisions of Schedule 3 to this Loan Agreement, as such Schedule may be amended from time to time by agreement between the Borrower and ADB.	Section 3.02, Article III, LA	Complied with. The expenditure was financed out of loan proceeds following allocated amounts per categories.
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 this 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.	Section 3.03, Article III, LA	Complied with. All contracts were procured in accordance with provisions of Schedule 4 of LA.
Except as ADB may otherwise agree, the Borrower shall cause all Goods, Works and consulting services financed out of the proceeds of the Loan to be used exclusively in the carrying out of the Project.	Section 3.04, Article III, LA	Complied with.
The closing date for withdrawals from the Loan Account for the purposes of Section 9.02 of the Loan Regulations shall be 31 October 2015 or such other date as may from time to time be agreed between the Borrower and ADB.	Section 3.05, Article III, LA	The loan closing was extended to 31 October 2018.

Covenants	Reference	Status
<p>(a) The Borrower shall cause SPG and the IA to carry out the Project with due diligence and efficiency and in conformity with sound administrative, financial, engineering, environmental and biodiversity conservation practices. (LA)(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)</p> <p>a) SPG shall, and shall cause the IA to, carry out the Project with due diligence and efficiency, and in conformity with sound administrative, financial, engineering, environmental and biodiversity conservation practices. (PA)</p> <p>(b) In the carrying out of the Project and operation of the Project facilities, SPG shall, and shall cause the IA to, perform all obligations set forth in the Loan Agreement to the extent that they are applicable to SPG and all obligations set forth in the Schedule to this Project Agreement. (PA)</p>	Section 4.01, Article IV, LA Section 2.01, Article II, PA	Complied with. The project was carried out with due diligence and efficiency and obligations were performed as per the LA and PA.
<p>The Borrower shall cause SPG to make available to the IA, 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)</p> <p>SPG shall 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)</p>	Section 4.02, Article IV, LA Section 2.02, Article II, PA	Complied with. SPG provided adequate counterpart funds and necessary support to implement the project.
<p>The Borrower shall cause SPG to 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.</p>	Section 4.03, Article IV, LA	Complied with. Coordination with relevant agencies or departments were done effectively.
<p>The Borrower shall take all action which shall be necessary on its part to enable SPG 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.</p>	Section 4.04, Article IV, LA	Complied with. SPG performed its obligations satisfactorily.
<p>(a) The Borrower shall cause SPG to exercise its rights under the Onlending Agreement in such a manner as to protect the interests of the Borrower and ADB and to accomplish the purposes of the Loan.</p> <p>(b) No rights or obligations under the Onlending Agreement shall be assigned, amended, abrogated or waived without the prior concurrence of ADB.</p>	Section 4.05, Article IV, LA	Complied with. SPG has executed the Onlending Agreement appropriately.
<p>(a) In the carrying out of the Project, SPG shall, and shall cause the IA to, employ competent and qualified consultants and contractors, acceptable to ADB, to an extent and upon terms and conditions satisfactory to ADB.</p> <p>(b) 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.</p>	Section 2.03, Article II, PA	Complied with. Qualified consultants and contractors were employed. Goods, works and consulting service contracts were procured and financed in accordance with Schedule 4 of LA.

Covenants	Reference	Status
<p>PG shall, and shall cause the IA to, carry out the Project in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to ADB. SPG shall furnish, or cause to be furnished, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.</p>	<p>Section 2.04, Article II, PA</p>	<p>Complied with. The project was carried out following plans, design standards, specifications, work schedules and construction methods acceptable to ADB.</p>
<p>(a) SPG shall, and shall cause the IA to, take out and maintain with responsible insurers, or make other arrangements satisfactory to ADB for, insurance of Project facilities to such extent and against such risks and in such amounts as shall be consistent with sound practice.</p> <p>(b) Without limiting the generality of the foregoing, SPG shall cause the IA to insure, 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.</p>	<p>Section 2.05, Article II, PA</p>	<p>Complied with.</p>
<p>SPG shall 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.</p>	<p>Section 2.06, Article II, PA</p>	<p>Complied with. Records and accounts were maintained and audited on an annual basis.</p>
<p>(a) ADB and SPG shall cooperate fully to ensure that the purposes of the Loan will be accomplished.</p> <p>(b) SPG shall promptly inform ADB of any condition which interferes with, or threatens to interfere with, the progress of the Project, the performance of its obligations under this Project Agreement or the Onlending Agreement, or the accomplishment of the purposes of the Loan.</p> <p>(c) ADB and SPG shall from time to time, at the request of either party, exchange views through their representatives with regard to any matters relating to the Project, SPG and the Loan.</p>	<p>Section 2.07, Article II, PA</p>	<p>Complied with. The purpose of the loan was accomplished.</p>
<p>(a) SPG shall 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 PMO and the IA to the extent relevant to the Project; and (v) any other matters relating to the purposes of the Loan.</p>	<p>Section 2.08, Article II, PA</p>	<p>Complied with. Project progress reports were submitted to ADB on a regular basis. The executing agency prepared a completion report and submitted to ADB in August 2019.</p>
<p>(b) Without limiting the generality of the foregoing, during Project implementation period, SPG shall furnish to ADB semi-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 proposed program of activities and expected progress for the following 6 months. In</p>		

Covenants	Reference	Status
<p>addition, SPG shall furnish to ADB a brief report 3 months prior to each semi-annual report summarizing contract awards, disbursements and physical progress to cover the three months under the review.</p> <p>(c) Promptly after physical completion of the Project, but in any event not later than 3 months thereafter or such later date as ADB may agree for this purpose, SPG 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 SPG of its obligations under this Project Agreement and the accomplishment of the purposes of the Loan.</p>		
<p>(a) SPG shall, and shall cause the IA to, (i) maintain separate accounts for the Project and for its overall operations; (ii) have such accounts and related financial statements (balance sheet, statement of income and expenses, and related statements) audited annually, in accordance with appropriate auditing standards consistently applied, by auditors externally appointed according to the relevant regulations of the Borrower whose qualifications and experience 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 on the use of the procedures for imprest account/statement of expenditures), all in the English language. SPG shall 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.</p> <p>(b) SPG shall enable ADB, upon ADB's request, to discuss SPG's financial statements and its financial affairs from time to time with the auditors appointed by SPG pursuant to Section 2.09(a) hereabove, 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 SPG unless SPG shall otherwise agree.</p>	Section 2.09, Article II, PA	Complied with. The provincial finance department established an advance account to facilitate disbursement from the loan proceeds. Each IA also setup its separate account for the project expenditures. All accounts were audited annually by the officially designated auditing office.
<p>SPG shall 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 SPG and the IA and any relevant records and documents.</p>	Section 2.10, Article II, PA	Complied with. Loan review missions were conducted regularly.
<p>(a) SPG shall, promptly as required, take all action within its powers to maintain its corporate existence, to carry on its operations, and to acquire, maintain and renew all rights, properties, powers, privileges and franchises which are necessary in the carrying out of the Project or in the conduct of its business.</p> <p>(b) SPG shall at all times conduct its business in accordance with sound administrative, financial, environmental and biodiversity conservation practices, and under the supervision of competent and experienced management and personnel.</p> <p>(c) SPG shall at all times operate and maintain its plants, equipment and other property, and from time to time, promptly as needed, make all necessary repairs and renewals thereof, all</p>	Section 2.11, Article II, PA	Complied with. The project was implemented effectively as per the plan and the project facilities are adequately maintained and managed in accordance with sound standards.

Covenants	Reference	Status
in accordance with sound administrative, financial, engineering, environmental, biodiversity conservation, and maintenance and operational practices.		
Except as ADB may otherwise agree, SPG shall not sell, lease or otherwise dispose of any of its assets which shall be required for the efficient carrying on of its operations or the disposal of which may prejudice its ability to perform satisfactorily any of its obligations under this Project Agreement.	Section 2.12, Article II, PA	Complied with.
Except as ADB may otherwise agree, SPG shall apply the proceeds of the Loan to the financing of expenditures on the Project in accordance with the provisions of the Loan Agreement and this Project Agreement, 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.	Section 2.13, Article II, PA	Complied with. Loan proceeds were applied to financing expenditures on the project.
Except as ADB may otherwise agree, SPG shall, and shall cause the IA to, duly perform all its obligations under the Onlending Agreement, and shall not take, or concur in, any action which would have the effect of assigning, amending, abrogating or waiving any rights or obligations of the parties under the Onlending Agreement.	Section 2.14, Article II, PA	Complied with. Obligations under the onlending agreement were performed.
SPG shall cause the IA to promptly notify ADB of any proposal to amend, suspend or repeal any provision of its Charter and shall afford ADB an adequate opportunity to comment on such proposal prior to taking any action thereon.	Section 2.15, Article II, PA	Complied with.
<p>Implementation Arrangement</p> <p>SPG shall be the EA, and shall, through the Project Leading Group set up in SPG, provide overall guidance and coordination, and through the PMO set up with Shaanxi Provincial Development and Reform Commission, carry out direct implementation of the Project. QNBG shall be the IA, responsible for day-to-day implementation of the Project.</p> <p>The PLG shall be chaired by a Vice-Governor, comprise representatives from Shaanxi Provincial Development and Reform Commission, Shaanxi Provincial Finance Department, SFB, Shaanxi Provincial Audit Department, Shaanxi Tourism Bureau, and Xi'an Municipal Government.</p> <p>The PMO shall support the EA and shall be responsible for (a) overseeing all implementation matters; (b) preparing annual work plans and budgets in consultation with the EA and IA; (c) supervising procurement according to ADB policies and guidelines; (d) maintaining Project accounts; (e) preparing and submitting to ADB applications for withdrawals; (f) monitoring physical and financial progress including benefits and costs to beneficiaries; and (g) ensuring adequate and timely counterpart financing.</p>	<p>Paras. 1-3, Schedule 5, LA</p> <p>Paras. 1-3, Schedule, PA</p>	<p>Complied with. The PLG was established in 2008 and has been providing guidance on project administration. A PEO was established under PDRC and coordinated overall project management while the PMO was setup under SFD for overseeing project implementation matters.</p>
<p>Counterpart Financing</p>		
<p>The Borrower shall cause SPG 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)</p> <p>SPG shall 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. (PA)</p>	<p>Para. 4, Schedule 5, LA</p> <p>Para. 4, Schedule, PA</p>	<p>Complied with. SPG has provided sufficient counterpart funding to implement the project.</p>

Covenants	Reference	Status
Change of Ownership		
In the event that any change in ownership of the project facilities; or any sale, transfer, or assignment of the shares of the IA is anticipated, the Borrower shall cause SPG and the IA to consult with ADB at least six (6) months prior to the implementation of such change. The Borrower shall cause SPG and the IA to ensure that such change be carried out in a lawful and transparent manner.	Para. 5, Schedule 5, LA Para. 5, Schedule, PA	Complied with.
Midterm Review		
SPG and ADB shall undertake a midterm review prior to the end of the third year of the Project to assess implementation status and take measures including modification of scope and implementation arrangements, and reallocation of proceeds, as appropriate to achieve the project impact and outcomes.	Para. 6, Schedule 5, LA	Complied with. Midterm review mission was fielded in August 2014.
Land Acquisition and Resettlement		
SPG and IA shall ensure that (i) the RPs are implemented in accordance with their terms; (ii) all land and rights-of-way required for the Project are made available in a timely manner; (iii) the provisions of the RPs including compensation and other entitlements for APs shall be implemented in accordance with applicable laws and regulations of the Borrower and ADB's Involuntary Resettlement Policy; (iv) compensation and resettlement assistance are given to the APs prior to dispossession and displacement; (v) timely provision of counterpart funds for land acquisition and resettlement activities; (vi) any obligations in excess of the RP budget estimates are met; and (vii) the APs shall be at least as well off as they would have been in the absence of the project.	Para. 6, Schedule, PA	Complied with. Two RPs were prepared for QNBG and SARC components separately and were approved by ADB in August 2008. The due diligence was carried out for SARC and the RP was updated for QNBG in March 2015 to respond the location changes.
SPG and IA shall ensure that the inhabitants of QBCDA are (i) provided support to improve the environmental sustainability of their livelihood practices without adversely affecting their income and living standards; and (ii) unsustainable practices shall only be stopped when they have been replaced with beneficial livelihood alternatives. If any resettlement impacts should occur to the inhabitants of QBCDA. SPG and IA shall ensure that the RP is submitted and approved by ADB in accordance with ADB's <i>Involuntary Resettlement Policy</i> .	Para. 7, Schedule, PA	Complied with. All agricultural farming was stopped on slope lands. Alternative livelihoods or employment opportunities were provided for inhabitants in the area.
SPG and the IA shall also ensure that (i) adequate staff and resources are committed to supervising and monitoring the implementation of the RPs, providing to ADB quarterly progress reports on the implementation, and a resettlement completion report; (ii) an independent agency acceptable to ADB is engaged to carry out investigations to monitor progress annually and to evaluate results through annual survey updates for two years after completion of resettlement, and forward reports to ADB and SPG simultaneously; and (iii) data are disaggregated by gender, and monitoring includes gender impacts and vulnerable groups.	Para. 8, Schedule, PA	Complied with. The PEO engaged an external monitor for RP monitoring from August 2013. Six resettlement M&E reports were submitted by the project completion.
Poverty Reduction		
SPG and the IA shall cause the contractors involved in project implementation to maximize the employment of local poor people including APs who meet the job and efficiency requirements for construction and maintenance of the project roads. Such workers shall be provided with adequate on-the-job training. SPG shall monitor the project impact on poverty and submit annual monitoring reports to ADB during implementation.	Para. 9, Schedule, PA	Complied with. Local people or APs took part in the project through procurement for small works of village development. Jobs were also provided for local people under the project either during construction or operation.

Covenants	Reference	Status
<p>Environment</p> <p>SPG shall cause the IA to construct, maintain, and operate the Project facilities in strict conformity to (a) all applicable national and local environmental laws, regulations, and procedures of the Borrower; (b) ADB's Environmental Policy (2002); and (c) environmental mitigation and monitoring measures set out in the EIAs for the Project. SPG shall ensure that the IA (i) allocates sufficient resources to implement the environmental monitoring plan; and (ii) provides monitoring reports to the PMO, which shall coordinate the preparation of the semi-annual environmental report on implementation of the environment monitoring plan in a format acceptable to ADB for the duration of the Project.</p>	<p>Paras. 10-11, Schedule, PA</p>	<p>Complied with. The project EMP has been implemented effectively. In total, 7 EMRs were prepared and disclosed on ADB's website.</p>
<p>Labor Standards</p> <p>The Borrower shall cause SPG and the IA to ensure that all the employment and labor standards provided in the applicable laws and regulations of the Borrower are complied with, and in particular, that all Works contractors engaged under the Project (i) provide timely payment of wages on at least a monthly basis and safe working conditions to all workers including male and female workers, with such requirements being included in the civil works contracts and monitored by the construction supervision consultants; (ii) provide employment opportunity to women and ethnic minorities, where appropriate, and pay equal wages to the male and female employees for equivalent work; and (iii) not employ child labor in the Project works.</p>	<p>Para. 12, Schedule, PA</p>	<p>Complied with. Relevant requirements and regulations were followed during construction.</p>
<p>Gender and Development</p> <p>SPG shall cause the IA to (a) take necessary steps to ensure timely and effective implementation of the Project-specific participatory gender and sustainable livelihood plans; (b) carry out awareness raising campaigns to encourage women in the Project area to participate in the planning and implementation of the Project; and (c) monitor the Projects impacts on women during project implementation by collecting and analyzing gender-disaggregated data and information.</p>	<p>Para. 13, Schedule, PA</p>	<p>Complied with.</p>
<p>Land Tenure and Eco-Tourism Guidelines</p> <p>SPG shall ensure that not later than 31 December 2010, the IA (i) completes the review of the policy and regulatory framework on collective forest land tenure; and (ii) makes recommendations to the Borrower on collective forest land tenure and management. SPG shall cause the IA to (i) develop and approve eco-tourism guidelines and standards not later than 31 December 2010; and (ii) ensure implementation of the eco-tourism guidelines.</p>	<p>Para. 14, Schedule, PA</p>	<p>Complied with delay. Forestry management policies and regulations were released by the provincial forestry department in 2013. The ecotourism plan and guidelines were in place in 2017.</p>
<p>Anticorruption</p> <p>SPG shall, and shall cause the IA to, comply with ADB's Anticorruption Policy (1998, as amended to date). SPG agrees that consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. In particular, SPG shall ensure that 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 SPG, the IA, and all contractors, suppliers, consultants, and other service providers as they relate to the Project.</p>	<p>Para. 15, Schedule, PA</p>	<p>Complied with. Allegations of integrity violations on this Project were investigated by OAI. In December 2019, the parties who had committed these integrity violations were debarred.</p>
<p>SPG shall, and shall cause the IA to, ensure (a) engaging an international consultant and national consultant to advise and</p>	<p>Para. 16, Schedule, PA</p>	<p>Complied with. Two procurement agencies were</p>

Covenants	Reference	Status
assist in the procurement of Goods and Works, and the engagement of other consultants; (b) introducing a dual signing system in which the Works contractor awarded the contract shall also sign an anticorruption contract with the employer; and (c) periodical inspection by the PMO of the contractors' activities related to withdrawals of the Loan proceeds and settlements.		engaged to assist in complying with items (a) and (b).
PPMS SPG shall ensure that the PMO establish and maintain a PPMS which shall be designed to permit adequate flexibility to adopt remedial action regarding Project design, schedules, activities and development impacts. The PPMS shall adopt the following agreed indicators: (i) Project progress, (ii) enabling framework improvements (policies legal harmonization and clear institutional mandates); (iii) results of capacity development; (iv) progress towards demonstration and pilot targets using participatory procedures; (v) beneficiary impacts; (vi) related improvement to the sustainable financing of field conservation; and (vii) compliance with ADB safeguard requirements.	Para. 17, Schedule, PA	Complied with. The PMO established a PPMS with the consultant's assistance and updated and reported annually to ADB.
SPG and ADB shall undertake a midterm review prior to the end of the third year to assess implementation status and take appropriate measures including modification of scope and implementation arrangements, and reallocation of Loan proceeds, as appropriate, to achieve the Project's impact and outcomes.	Para. 18, Schedule, PA	Complied with. Midterm review mission was fielded in August 2014.
The GEF Grant		
(a) ADB shall administer the GEF Grant in an amount equivalent to \$4,270,000. (b) The proceeds of the GEF Grant shall be disbursed to the imprest account established and maintained by SPG through Shaanxi Provincial Finance Department in accordance with paragraph 5 of Schedule 2 to this Financing Agreement.	Section 2.01, Article II, FA	Complied with. The advance account was established and maintained by the provincial finance department.
The Government shall cause SPG to ensure that the proceeds of the GEF Grant are applied to the financing of expenditures on the Project in accordance with this Financing Agreement.	Section 2.02, Article II, FA	Complied with.
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.	Section 2.03, Article II, FA	Complied with. The expenditures were in accordance with provisions of Schedule 2 of FA.
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.	Section 2.04, Article II, FA	Complied with. Procurement was conducted in accordance with Schedule 4 of LA.
Except as ADB may otherwise agree, the Government shall cause SPG 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 Grant financed components of the Project.	Section 2.05, Article II, FA	Complied with. The contracts financed under the project were exclusively used to carry out the project.

Covenants	Reference	Status
Disbursements from the GEF Grant Account 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.	Section 2.06, Article II, FA	Complied with. Disbursement under the project was made following ADB's policies and guidelines.
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 Grant financed components of the Project described in Schedule 1 to this Financing Agreement upon application by SPG in such form and supported by such documents as ADB shall reasonably request.	Section 2.07, Article II, FA	Complied with. Disbursements were made timely.
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 October 2015, or such other date as may from time to time agreed between ADB and the Government.	Section 2.08, Article II, FA	Complied with. The grant closing was extended to 30 April 2019.
In the carrying out of the Project 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 and the Schedule to the Project Agreement.	Section 2.09, Article II, FA	Complied with. Obligations set forth in relevant agreements were performed.
The Government shall cause SPG to maintain separate records and accounts in respect of the GEF Grant funds received from ADB, and have such records and accounts appropriately audited. The reports of such auditors shall be furnished to ADB as soon as available, but in any event not later than 6 months after the completion of said audit. Within 6 months after the closing of the Grant Account the Government shall submit to ADB the audited financial statement on the GEF Grant.	Section 2.10, Article II, FA	Complied with. Separate records and accounts for GEF Grant funds were maintained and audited accordingly.
<p>Project Executing Agency SPG shall, through PMO, be responsible for implementation of GEF Grant financed components of the Project. The Government shall cause SPG to adopt the following approach in using the GEF Grant funds:</p> <ul style="list-style-type: none"> (i) wider participation in conservation planning and decision making; (ii) demonstration of new management systems related to landscape-wide planning; (iii) development of species management plans in the QM; (iv) adoption of new technologies, including monitoring and information systems; (v) use of analog forestry models; and (vi) development of ecologically defined habitat restoration programs. 	Para. 1-2, Schedule 3, FA	Complied with. GEF Grant financed components of the project was implemented accordingly.
<p>Financial Management Arrangements, Accounting, Auditing and Reporting (a) The Government shall cause through SPG the IA to, (i) maintain separate accounts for the GEF Grant financed components of the Project and for its overall operations; (ii) have such accounts and related financial statements (balance sheet, statement of income and expenses, and related statements) audited annually, in accordance with appropriate auditing</p>	Para. 3, Schedule 3, FA	Complied with. Separate account for GEF Grant financed components was maintained, utilized, and audited as required. Financial management arrangements,

Covenants	Reference	Status
<p>standards consistently 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 GEF Grant proceeds and compliance with the covenants of the Financing Agreement as well as on the use of the procedures for imprest account/statement of expenditures), all in the English language. SPG shall 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.</p> <p>(b) The Government shall cause SPG to enable ADB, upon ADB's request, to discuss SPG's financial statements and its financial affairs from time to time with the auditors appointed by SPG pursuant to paragraph 3(a) hereabove, 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 SPG unless SPG shall otherwise agree.</p>		accounting, auditing and reporting issues were discussed during missions.
<p>Anticorruption</p> <p>The Government shall ensure that SPG, shall, and shall cause the IA to, comply with ADB's Anticorruption Policy (1998, as amended to date). SPG agrees that consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the GEF Grant financed components of the Project. In particular, SPG shall ensure that all contracts financed by ADB in connection with the GEF Grant financed components of the Project include provisions specifying the right of ADB to audit and examine the records and accounts of SPG, the IA, and all contractors, suppliers, consultants, and other service providers as they relate to the GEF Grant financed components of the Project.</p> <p>The Government shall ensure that SPG shall, and shall cause the IA to, ensure (a) engaging an international consultant and national consultant to advise and assist in the procurement of Goods and Works, and the engagement of other consultants; (b) introducing a dual signing system in which the Works contractor awarded the contract shall also sign an anticorruption contract with the employer; and (c) periodical inspection by the PMO of the contractor's activities related to withdrawals of the GEF Grant proceeds and settlements.</p>	Para. 4-5, Schedule 3, FA	Complied with. ADB's Anticorruption Policy was complied. Relevant consultants were recruited to assist in procurement of Goods and Works, and the engagement of other consultants.

ADB = Asian Development Bank, AP = affected people, EA = executing agency, EIA = environment impact assessment, EMP = environmental management plan, FA = financing agreement, GEF = Global Environment Facility, IA = implementing agency, LA = loan agreement, PA = project agreement, PDRC = Provincial Development and Reform Commission, PEO = project executing office, PLG = Project Leading Group, PMO = project management office, QBCDA = Qinling Botanical Conservation Development Area, QNBG = Qinling National Botanical Garden, RP = resettlement plan, SARC = Shaanxi Animal Rescue Center, SFB = Shaanxi Forest Bureau, SPG = Shaanxi Provincial Government.
Sources: Asian Development Bank, executing agency's project progress reports.

FINANCIAL AND ECONOMIC REEVALUATION

A. Introduction

1. The project's outcome was to improve and integrate biodiversity management providing sustainable livelihoods for the population in the project area. Three outputs were: (i) participatory biodiversity management in the mountainous area, (ii) enhanced biodiversity conservation in the plains area, including development of Qinling National Botanical Gardens (QNBG) and expansion and modernization of Shaanxi Animal Rescue Center (SARC), and (iii) improved project management. Consistent with the approaches adopted at appraisal, the financial and economic reevaluation were conducted for QNBG and SARC. Hot spring hotel was not covered in the reevaluation since it was developed using domestic funds and was removed from the project scope as approved in 2014. Although output 1 provided livelihood improvement, poverty reduction and biodiversity conservation in the project area, its benefits were not quantified at appraisal and thus was not included in the reevaluation. The financial and economic reevaluation were carried out following Asian Development Bank (ADB) Guidelines for the Financial Management and Analysis of Projects (2005) and Guidelines for the Economic Analysis of Projects (2019).

B. Assumptions and Methodologies

2. Benefit estimates are based on the actual situation during implementation. With and without-project scenarios were identified for each component to quantify the incremental output volume. The quantifiable benefits are visitor numbers and visitors' receipts. The project generated economic benefits accruing from carbon sequestration and biomass carbon sink, water resource and soil conservation, purification of environment and biodiversity protection. These benefits were quantified in the reevaluation of the economic benefits.

3. The financial reevaluation is based on each component's financial internal rate of return (FIRR). The FIRR is compared with their weighted average cost of capital (WACC) to assess the financial viability. Financial sustainability of the project is assessed through the sensitivity analysis.

4. The main assumptions used in the financial and economic reevaluation are the following:

- (i) Following the methodology applied for the appraisal, the lifespan of the reevaluation is 28 years until 2038, including the actual implementation period of 9 years from 2010 to 2019, after which the residual value is zero.
- (ii) All financial revenues and expenses are expressed in constant 2018 prices. The economic costs and benefits were valued using the domestic numeraire and expressed in constant 2018 prices. The actual capital costs have been converted to economic values by applying relevant conversion factors and by deducting taxes, interest, and subsidies.
- (iii) Capital costs were the actual expenditures incurred by the implementing agencies for the project activities which included construction materials, equipment, land acquisition and resettlement, labor, training and other related costs. Sources of capital included ADB loan proceeds, government financing and Global Environment Facility (GEF) grant.

- (iv) The value added tax (VAT) on construction, equipment and general business are 9%, 13% and 6% respectively. Given the characteristics of being for public good, QNBG and SARC were offered favorable tax policies by the local government. The sale tax is 1% and the income tax is zero.
- (v) Following the same conversion factors used at appraisal, a shadow exchange rate of 1 is applied in the reevaluation and a shadow wage rate factor of 0.8 were applied to the price of unskilled labor. Subsidies, tax, and other transfer payments were deleted in the economic analysis.
- (vi) The real opportunity cost of capital is assumed to be 9% per year.

C. Financial and Economic Benefits and Costs

5. **Qinling National Botanical Gardens (QNBG).** The development of QNBG was implemented from 2011 to 2019 with the trial operation starting from 2017. The actual operation data were provided by the implementing agency. The operating costs, including expenditures for labor cost, production materials, management, and maintenance, were estimated based on the actual performance of the implementing agency. During the trial operation from October 2017 to 2019, the QNBG provided a variety of activities to attract the visitors. The number of tourists increased from 64,289 in 2017 to 380,580 in 2019 at an average annual rate of 22%. The average preferential entry fee was around CNY34.0 per visitor. At project completion, the facilities are well established, and the gardens become mature gradually, the number of visitors is expected to keep increasing at an annual average rate of 25% from 2020 to 2025 and 10% from 2026 to 2030, when the maximum capacity of 2,400,000 visitors per year is reached.¹ The entrance fee will be CNY50.0, same as the appraisal estimate. Besides the ticketing income, the QNBG contracted a tourism company to operate tourism electric cars in the garden and received an annual income of CNY0.5 million for the franchise business. It is also estimated that around 20% of the visitors will spend on beverage and food in the garden at CNY20.0 per person which provided the QNBG additional revenue.

6. At completion, around 263.6 hectares (ha) of the garden was constructed, including 219.3 ha of forest, 40 ha of woods and 4.3 ha of water surface. The incremental ecological service value was reevaluated based on their effects on carbon fixation and oxygen release, regulation of climate, water resource conservation, soil conservation, environment purification and biodiversity protection.² For carbon fixation and oxygen release, based on the reevaluation, 259.3 ha of forest and woods in the garden will fix carbon dioxide of 1,148.8 tons and release oxygen of 838.7 tons. The current trade price of carbon dioxide is €25, equivalent to CNY193.11 per ton, and the current price of industrial oxygen production is around CNY400.0 per ton. For water resource conservation, an average economic price of CNY3.34 per cubic meter is applied for water in the reevaluation. For the purification of environment, the benefits of absorption of sulfur dioxide and dust suppression were calculated. For the regulation of climate and the biodiversity, the economic benefits of CNY2,389.1 per ha and CNY2,884.6 per ha were applied respectively. The total incremental benefits under QNBG will increase gradually from CNY6.47 million in 2017 to CNY10.78 million in 2038.

¹ According to the market analysis conducted by a consulting firm recruited by the implementing agency, it is estimated that the number of visitors will reach the maximum capacity of 2.44 million in 2030.

² WANG Changhai, et al. *Research on Measurement of Ecological Benefit in Qinling Nature Reserve Group Based on Connotation Analyses*[J]. China Population, Resources and Environment, 2011, 21(06): 125-134.

7. **Shaanxi Animal Rescue Center (SARC).** The SARC rehabilitation was implemented from 2010 to 2019. The animals will be moved to the well-constructed enclosure facilities in 2020 and the center is planned to be opened to the public in 2021. The expected visitors during the first year is expected to be 50,000 and increase at a growth rate of 50% until 2029, when the maximum capacity of 1,300,000 visitors per year is reached. Around 10% of visitors will be nonpaying or guest visitors. The remaining will be charged at full entry fee of CNY50 per person, significantly lower than the appraisal estimate of CNY130 per person. Except for the ticketing income, it is estimated that around 30% of visitors will spend on souvenirs and beverage/food at CNY100.0 per person.

8. At completion, the incremental forest and woods area in SARC is around 11.5 ha. Similar to the assumptions and methodologies applied for QNBG, the incremental ecological service value was reevaluated based on their effects on carbon fixation and oxygen release, regulation of climate, water resource conservation, soil conservation, environment purification and biodiversity protection. For carbon fixation and oxygen release, based on the reevaluation, 11.5 ha of forest and woods under the component will fix carbon dioxide of 50.9 tons and release oxygen of 37.2 tons. The total incremental benefits of SARC will increase gradually from CNY0.28 million in 2018 to CNY0.48 million in 2038.

D. Financial and Economic Rates of Return

9. The financial reevaluation yields FIRRs of 8.1% for QNBG, 11.1% for SARC and 9.1% for the whole project (Table A9.1), which are higher than their respective WACC. The economic reevaluation indicated the economic internal rate of return (EIRR) of 10.7% for QNBG, 11.1% for SARC and 10.8% for the whole project, which are slightly lower than the threshold rate of 12% applied at appraisal but higher than the discount rate of 9.0% adopted by ADB in the Guidelines for the Economic Analysis (2019). The reasons for lower than the threshold rate of 12% are provided in para. 10. The two components and the whole project are considered to be financially and economically viable.

Table A9.1: Reevaluated Financial and Economic Indicators

Component	WACC (%)		FIRR (%)		EIRR (%)	
	Appraisal	Completion	Appraisal	Completion	Appraisal	Completion
QNBG	5.6	4.5	8.0	8.1	10.9	10.7
SARC	5.6	4.3	13.5	11.1	17.9	11.1
Whole Project	5.6	4.4	10.2	9.1	13.7	10.8

EIRR = economic internal rate of return, FIRR = financial internal rate of return, QNBG = Qinling National Botanical Garden, SARC = Shaanxi Animal Rescue Center, WACC = weighted average cost of capital
Source: Asian Development Bank.

10. Comparing with the appraisal estimates, the reevaluated FIRRs and EIRRs of QNBG stayed at the same level, while the FIRR and EIRR of SARC and the whole project are lower because of two reasons: (i) prolonged project implementation period, and (ii) reduced revenue streams. At appraisal, the project was envisaged to be invested from 2008 to 2011 with the financial revenues and the economic benefits starting from 2010 under SARC and from 2011 under QNBG.³ On the project completion, implementation period was from 2010 to 2019 with the financial revenues and the economic benefits starting from 2017 under QNBG and from 2021 under SARC. The prolonged implementation period and the delayed operation had significant

³ At appraisal, the financial and economic analysis assumed that the project investment period was from 2008 to 2011.

effects on the FIRR and EIRR reevaluation results. Besides, the revenue streams of QNBG and SARC were lower than the appraisal estimates.

11. For QNBG, it was estimated at appraisal that the financial cash inflows would include the ticket income from the garden and the temple, and the income of visitors' taking cableway. However, during the implementation, the scope changes were approved, under which the restoration area of the temple was reduced without charging entry fee and the cable car was cancelled to comply with the government regulations. The two estimated income resources were irrecoverable. However, the total number of tourists by the peak year (i.e. 2038) would be 68% higher than the appraisal. As a result, its reevaluated FIRR (8.1%) and EIRR (10.7%) are close to the appraisal estimates.

12. For SARC, it was estimated that the financial cash inflows would come from the entry fees to panda, crested ibis and golden monkey exhibition sites in a total of CNY130 per person, while at completion the entry fee to the SARC is set at CNY50 per person, 38% of the appraisal estimate.⁴ As a result, the cash inflows of SARC were significantly affected and decreased by 57%, even though 30% of visitors are expected to buy the well-designed souvenirs and the fast food at CNY100 per person. Its reevaluated FIRR and EIRR are both 11.1% which are lower than the appraisal estimates.

13. Sensitivity analysis was carried out for QNBG and SARC to test the impacts of (i) increased operation and maintenance costs, (ii) decreased benefits, and (iii) a combination of the first two scenarios. According to the analysis, the QNBG, the SARC and the whole project will remain financially and economically viable in all tested scenarios. The SARC is economically viable in the tested scenarios, while the QNBG and the whole project are sensitive to the revenues. The results of the sensitivity analysis are provided in Table A9.2.

Table A9.2: Sensitivity Analysis for Each Subproject

Subprojects	FIRR (%)				EIRR (%)		
	Base	O&M +10%	Benefits -10%	Combined	O&M +10%	Benefits -10%	Combined
QNBG	8.1	8.0	7.2	7.1	10.6	9.6	9.5
SARC	11.1	10.9	10.2	10.1	11.0	10.2	10.0
Whole Project	9.1	9.0	8.2	8.1	10.7	9.8	9.7

EIRR = economic internal rate of return, FIRR = financial internal rate of return, O&M = operation and maintenance, QNBG = Qinling National Botanical Garden, SARC = Shaanxi Animal Rescue Center
Source: Asian Development Bank.

⁴ SARC is planned to be opened to the public in 2021 and proposed the entry fee price according to the provincial and local pricing regulations for public parks.

GRANT TERMINAL EVALUATION REPORT

A. Background

1. The Asian Development Bank (ADB) submitted a Request for CEO Endorsement to Global Environment Facility (GEF)¹ for a grant in the amount of \$4.27 million for the Shaanxi Qinling Biodiversity Conservation Demonstration Project. The GEF approved the grant on 17 July 2009, and ADB approved a loan for the project in the amount of \$40 million on 22 October 2009. The loan and the GEF grant became effective on 15 October 2010. The loan and the grant were closed on 31 October 2018 and on 30 April 2019, respectively while the loan and grant accounts were financially closed on 13 November 2019 and 18 November 2019, respectively.

2. The project impact will be sustainable biodiversity conservation protected for globally-significant species and increased economic growth. The project outcome will be improved and integrated biodiversity management providing sustainable livelihoods for the population in the project area. The project outcome will also be shared and demonstrated to the rest of the Qinling Mountains. The project outputs included: (i) participatory biodiversity management in the mountainous area, (ii) enhancement of biodiversity conservation in the plains area, and (iii) project management.

3. Cost details and project phasing information are presented in the Data Annex (Annex A).

1. Project Rationale

4. The Qinling Mountains of Shaanxi Province in the People's Republic of China (PRC) are an internationally important biodiversity hotspot and represent about 70% of the PRC's biodiversity, including an estimated population of about 300 Giant pandas (*Ailuropoda melanoleuca*). In addition to the panda, other rare and highly threatened species, such as the Golden monkey (*Rhinopithecus roxellana*), Golden takin (*Budorcas taxicolor bedfordi*), and Crested ibis (*Nipponia nippon*), are found here.² The area is also home to many rare and threatened species of flora.

5. The geography is dominated by mountains, rivers, streams, and forests, and plays a critical role in the regulation of soil and water resources in the Yangtze and Yellow river watersheds.

6. About 71 million tourists visit Shaanxi province annually, but of these, only about 1 million visit the Qinling Mountains.³ It is the goal of the Shaanxi Provincial Government to diversify the tourism product mix into two major categories: (i) cultural/historical and (ii) nature/ecotourism. This strategy stresses the need to increase the value of each visitor, as opposed to simply increasing the number of visitors. The Province has identified 10 priority tourism developments, including selected sites in the Qinling Mountains, as part of this strategy.

7. Historically, the underlying threats to ecosystems and biodiversity in the Qinling Mountains have included (i) land degradation, (ii) non-sustainable natural resource and land use, (iii) poverty and poor quality of life for residents, (iv) out-migration of young people, (v) rising population

¹ Administered by ADB.

² Further details about the conservation status of these four keystone wildlife species are found in Annex B.

³ Most visitors, both domestic and international, come to the province to visit the world-renowned archaeological excavation site of the Terracotta Warriors, and related historical and cultural attractions. As the statistics suggest, relatively few visitors venture far beyond those destinations.

pressure within and on the fringe of ecologically-sensitive areas, and (vi) increasing pressures on fragile ecosystems related to a growing tourism industry. Past environmental degradation has occurred as consequence of intensive forestry, agriculture, and other resource use activities. Specifically, the past deterioration of the natural environment can be attributed in large part to: (i) fuelwood cutting; (ii) unsustainable agriculture on sloping lands; (iii) poaching of endangered and vulnerable animal species; (iv) lack of clearly defined user rights on forest lands; (v) poor enforcement of regulations governing biodiversity conservation; (vi) poor planning and coordination among agencies involved; (vii) lack of financing for biodiversity conservation, and poor linkage to eco-tourism revenues; and (viii) lack of profitable and sustainable income-generating activities and jobs for poor residents. While a nationwide ban on commercial logging was enacted in 1998 through the Natural Forest Protection Program, households have continued to use timber for construction, cooking, and heating. Population pressure in the area has pushed farmers further into the mountains in search of arable lands; farming on steep slopes has in turn caused soil erosion and choked waterways. Estimates are that 50% of the sediment entering the Yellow river above Henan province and 12% of the total sediment in the Yangtze river originate from Shaanxi. Excessive use of agricultural chemicals (herbicides, pesticides, and fertilizers) has polluted surface and ground water. Other new pressures to use land and other natural resources for recreation, housing, and industrial development, have also emerged.

8. The loss of biological resources, disruption of animal and plant gene pools, reduced functionality of natural ecosystems, acceleration of soil erosion, more frequent occurrence of floods and droughts, and fragmentation and destruction of habitats for rare and endangered species, are strongly correlated with land degradation. Accordingly, the Shaanxi Provincial Government (SPG) has recognized that interventions which respond to land degradation and its underlying causes, and efforts to strengthen biodiversity conservation and habitat restoration in the Qinling Mountains, are matters of the highest priority and utmost urgency.

9. To address these concerns, the ADB, at the request of the central government of the PRC, and the SPG, through the Shaanxi Development and Reform Commission (SDRC), has provided support for the Shaanxi Qinling Biodiversity Conservation Demonstration Project. The project is included under the GEF's umbrella program for PRC, the China Biodiversity Partnership Framework (CBPF).

10. The project area, which covers some 458 square kilometers (km²), is located about 45 km southwest of Xi'an, the capital of Shaanxi, and is identified as the birthplace of the Taoist religion. The area is home to about 20,400 people and is divided into a plains area for ecotourism and agricultural development, and a mountainous area for biodiversity conservation. The plains have about 15,800 residents (77% of the total) who live on about 58 km² (13%) bordering the northern end of the project area. The poverty incidence is about 23%. The project area includes the township of Louguantai; several Taoist temples; the Qinling National Botanical Garden (QNBG) and nursery; the Shaanxi Animal Rescue Center (SARC); and the Louguantai Forest Farm.

11. The larger surrounding mountainous area, designated as the Qinling Biological Conservation and Demonstration Area (QBCDA), is more sparsely populated. The management objective for the QBCDA is low-impact development that supports the conservation of biodiversity and provides sustainable livelihoods for about 4,600 residents (23% of the total) on about 400 km² (87% of the project area).

12. Previous donor- and government-funded projects intended to address land degradation and related issues have not led to sustainable environmental and human resource benefits once funding for those projects ceased. Previous policies have created perverse incentives that have

encouraged the overuse of natural resources, e.g., through the underpricing of water, pasture lands, and forest products, inefficient allocations of scarce land resources, and limited incentive to promote higher-value uses.

13. It has been the hope of the government that the subject project could provide significant environmental, economic, and social benefits throughout the project area, by addressing the underlying causes and effects of resource degradation. It has been the intent of the project that such benefits could be brought about by catalyzing change, including (i) improved biodiversity conservation and management through the restoration of forest habitat and improvement of endangered species management; (ii) provision of sustainable livelihoods for the population of the project area; and (iii) demonstration of these benefits for replication and scaling up in the wider Qinling Mountains area and other similar sites in the PRC and beyond.

2. Project Framework

14. The activities funded under the GEF grant closely complemented those that were funded through the ADB loan. The objective of the GEF project was to improve sustainable biodiversity conservation to protect globally significant species and to sustain economic growth. The expected outcome of the project was improved and integrated biodiversity management providing sustainable livelihoods for the population of the project area demonstrated to the rest of the Qinling Mountains. The framework for the project included three components:⁴

- (i) Component 1: Participatory Biodiversity Management in the Mountainous Area, to include: Demonstrating conservation of biodiversity; Improved village and forest-based livelihoods
- (ii) Component 2: Enhanced Biodiversity Conservation in the Plains Area, to include: Develop the national botanical garden; Improve the animal rescue center
- (iii) Component 3: Improved Project Management, to include: Strengthened PMO and IA; Strengthened biodiversity safeguards; Conservation dissemination program.

B. Terms of Reference (TOR) for PCR

15. The GEF grant was integrated with the baseline investment project, and thus the terminal evaluation (TE) has been carried out as an integral part of the whole project completion process. Preparation of this terminal evaluation report (TER) has followed the same methodology applied for preparation of the project completion report (PCR), which included field investigation, stakeholder consultations, and desk review of the executing agency's project completion report and project performance monitoring system (PPMS) reports regarding the project targets and indicators as set in the design and monitoring framework (DMF). Actual project costs and financing plan were re-evaluated and updated. In addition, the TER incorporates findings from a review of the GEF tracking tools, which included (i) management effectiveness tracking tool (METT), and (ii) financial sustainability scorecard (a component of the METT). ADB fielded two missions in December 2017 and April 2018 and had meetings and interviews with local

⁴ The outputs presented here are as per the ADB design and monitoring framework (DMF) at project appraisal and accepted and approved in the ADB Report and Recommendation to the President (RRP). These differed somewhat from the components in the project framework of the original GEF CEO Endorsement Request, which were as follows: (i) Participatory Biodiversity Management in the Mountainous Area; (ii) Enhanced Biodiversity Conservation in the Plains Area; (iii) Biodiversity Conservation Support; and (iv) Project Management. In the ADB DMF, the component for Biodiversity Conservation Support and the component for Project Management were merged into a single component for Improved Project Management.

stakeholders and project implementing agencies. The GEF focal point (i.e. Ministry of Finance) was engaged through regular reporting/consultation and commenting the draft final PCR report.

C. Implementation

16. The SPG was the executing agency (EA) for the GEF project through the SDRC. A project leading group was established for overall policy guidance and institutional coordination. The Project Implementation Agencies (PIAs) include QNBG and SARC. The project executing office (PEO) under SDRC coordinated the project management and related communication with ADB. The project management office (PMO) was established in 2014 under Shaanxi Forestry Department and looked after daily administration. The EA submitted its PCR in August 2019.

D. Relevance, Effectiveness and Impact

1. Relevance

17. The project pursued a market-based approach to biodiversity conservation, featuring sustainable revenue generation and use, land management, and conservation management. With its focus on biodiversity conservation, the project has been consistent with Government priorities as reflected in the 11th Five-Year Plan, the State Environmental Protection Agency's biodiversity strategy, and the Qinling Mountains Ecosystem Function Conservation Plan. The Project has sought to strengthen the management of nature reserve areas in the Qinling Mountains through integrated approaches including market-oriented measures to sustain environmental and biodiversity objectives while increasing rural incomes and reducing poverty. Through the project, biodiversity-based attractions have been developed that can generate funds which in turn can be applied for strengthening the effectiveness of biodiversity management in the QBCDA. Commercial activities supported through the project include a botanical garden (the QNBG); wildlife breeding and research center (the SARC; which includes a Giant panda center, second only to Sichuan province's Wolong Nature Reserve); and related ecotourism development. Thus, through support for the development of these facilities, the project has sought to address a major weakness of many past biodiversity conservation initiatives, by ensuring sustainable financing using a portion of anticipated revenue generated through ecotourism.

18. With its strong focus on biodiversity conservation and recovery of rare, threatened and endangered species, the project is also well in line with the GEF's biodiversity focal area program, which has as its goal the conservation and sustainable use of biodiversity, the maintenance of the ecosystem goods and services that biodiversity provides to society, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Specifically, the project supports several strategic programs (SPs) within two of the strategic objectives (SOs) for biodiversity, as described for the GEF Fourth Replenishment (GEF-4).⁵

19. The first strategic objective, BD-SO1, is "To Catalyze Sustainability of Protected Area Systems," and focuses on improving the sustainability of the protected area system. Support in GEF-4 was characterized by a sharper focus on improving financial sustainability and enhancing ecosystem representation. The project supports the following SPs under this SO:

⁵ GEF. 2007. *Focal area strategies and strategic programming for GEF-4*. GEF/C.31/10/Revised. GEF Council June 12-15, 2007, Agenda Item 16.

- (i) **BD-SP1: Sustainable Financing of Protected Area Systems at the National Level:** Financial sustainability is achieved when a protected area system is able to secure sufficient and predictable levels of resources over the long term to meet its total costs. Revenue generation through the operation of the QNBG and the SARC have been the mechanisms identified to achieve sustainable financing for management of biodiversity resources within the protected area network located within the QBCDA.
- (ii) **BD-SP3: Strengthening Terrestrial Protected Area Networks:** Under this SP, GEF supports targeted research to improve understanding of the effectiveness of different forms of protected areas and mechanisms for their management. Several research initiatives related to these purposes (e.g., biodiversity conservation monitoring, Giant panda captive breeding program, Crested ibis reintroduction) were undertaken as part of the project.

20. The second Biodiversity Strategic Objective (BD-SO2) is to “Mainstream Biodiversity Conservation in Production Landscapes/Seascapes and Sectors.” Within this SO the project has supported two additional SPs:

- (i) **BD-SP4: Strengthening the Policy and Regulatory Framework for Mainstreaming Biodiversity:** The main purpose of this SP is to promote incorporation of biodiversity management into broader policy and regulatory frameworks by supporting projects that remove critical knowledge barriers, develop institutional capacities, and establish the policies, and the legislative and regulatory frameworks required to integrate biodiversity conservation and sustainable use objectives into the actions of the production sectors (agriculture, fisheries, forestry, extractive industries-oil and gas, mining, etc.). Under the project, the provincial regulations for Qinling Ecological and Environmental Management were revised in 2017 and further updated in 2019. Recommendations from the study on Qinling integrated ecosystem management which was funded under the project were submitted to the provincial government in 2018.
- (ii) **BD-SP5: Fostering Markets for Biodiversity Goods and Services:** The purpose of this SP is to support programs that demonstrate cost-effective, market-based instruments for conservation and sustainable use of biodiversity that complement policy and regulatory measures. The project focus on creating revenue streams based on appreciation of biodiversity, and ecotourism, is well-aligned with this SP.

21. Taken collectively, the factors described above indicate that the project is highly relevant and fully consistent with GEF, PRC national government, and SPG strategies.

2. Effectiveness

22. The project was effective in achieving its intended outcome to improve and integrate biodiversity management and provide sustainable livelihood opportunities for the population of the project area. The following were achieved with respect to the outcome indicators:

- (i) Management of five globally threatened animal species including Giant panda, Golden monkey, Golden takin, Crested ibis, and Giant salamander has been

mainstreamed into government conservation programs since 2014, with habitat regeneration and management being undertaken for 4 of the 5 species;⁶

- (ii) The populations of monitored species increased significantly from 2010 to 2019: Giant panda (27%), Golden monkey (71%), Golden takin (148%), and Crested ibis (52%);
- (iii) Ecotourism visitors to the project area were about 850,000 in 2015 and about 1.1 million in 2019; and
- (iv) Over 1,500 jobs are provided annually through project-related activities; over 300 jobs are generated directly by QNBG and SARC operations, the remainder are jobs created within local communities by small ecotourism enterprises.

3. Impact

23. It is recognized that at project completion it is often too early for long-term impacts of the project to become evident. Nevertheless, the GEF guidelines require that evidence of progress towards these impacts should be assessed, and thus require that intermediate attainments should be assessed. The analysis must show clearly how outputs are expected to lead to the anticipated outcomes and impacts as set out in the program framework.

24. For the current project, a number of impact indicators have already been at least partially fulfilled. These include:

- (i) Reductions in land degradation and soil erosion in the Qinling mountain area;
- (ii) Improved natural habitat and recovery of endangered species; and
- (iii) Increases in per capita rural incomes, and alleviation of poverty in the project area.

25. In addition, several other conditions have been put in place, that create an enabling environment which should allow beneficial impacts to continue. These include, for example:

- (i) Adoption of regulations at the provincial level for ecological and environmental management in the Qinling Mountains;
- (ii) Strengthened capacity and competency of technical personnel at the project facilities (QNBG and SARC);
- (iii) Improved knowledge and appreciation of community members, regarding the importance of preserving the unique biodiversity resources of the Qinling Mountains; and
- (iv) Establishment of novel mechanisms and sources for sustainable financing of conservation efforts in the Qinling Mountains.

26. The elements enumerated represent “intermediate states” along the pathway from outputs to impact. The fact that these intermediate states have already been established makes it more likely that further beneficial impacts can flow from the project over time.

⁶ The project area is not a typical and/or an officially designated protected area for giant salamander. Conservation of giant salamander in the Qinling Mountains is mainly covered by 3 national nature reserves (NNRs), namely Taibai Giant Salamander NNR, Lueyang Rare Aquatic Animal NNR, Zhouzhi Hehei River Rare Aquatic Animal NNR (close to the project area), and Luonan Provincial Giant Salamander Nature Reserve.

E. Global Environmental Benefits and Catalytic Role

27. The global environmental benefits (GEBs) that were expected to be produced by the project included the conservation and/or protection of globally-threatened “keystone” species, including the Giant panda, Crested ibis, Golden monkey, and Golden takin and their habitats, covering 2,000 hectares (ha), and sustainable land management in 5,000 ha.⁷ The major environmental benefits include (i) improved welfare of animals; (ii) the advancement of science related to endangered species recovery; (iii) genetic species collection; (iv) public awareness and education with respect to the Qinling Mountains and biodiversity conservation; (v) overall conservation of biodiversity; (vi) improved ecological functions from increased forest cover and the quality of forest cover; (vii) intangible benefits arising from the conservation of Daoist religious sites; and (viii) improved environmental quality through the provision of improved sanitation, wastewater, and management systems.

28. The project was successful in realizing many aspects of the GEBs which were anticipated during the design of the project. This was especially true in the case of (i) strengthening of endangered species recovery efforts; (ii) instituting improvements for management of natural forest areas; (iii) increasing capacity of managers of the QNBG and SARC to more effectively guide conservation efforts; and (iv) raising awareness of local residents and visitors, regarding the critical importance of protecting the unique biodiversity values in the project area.

29. In addition to these, the project offers significant potential for continued impact, by playing a catalytic role and offering opportunities for replication across a wider landscape—specifically, within the QBCDA. The QBCDA encompasses a mixed-use landscape of some 400 km², containing forest lands, protected areas, and human settlements. A number of the ex situ activities that were implemented under the project (e.g., providing support for wildlife captive breeding program, biological and ecological research, establishment of public education facilities) could be supportive of, complementary to, and synergistic with expanded in situ biodiversity conservation efforts within the QBCDA.

F. GEF Tracking Tools

30. As prescribed for all full-size GEF projects that offer support under the biodiversity focal area, the Management Effectiveness Tracking Tool (METT) was used to monitor project progress toward improved protection and conservation of biodiversity resources. The METT for the project was conducted at the project midterm in 2014, and at the project conclusion in 2018. The METT was also reviewed and updated once more in 2019.

31. The METT comprises sections which assess performance in several areas that contribute to improved biodiversity management and preservation. These are: (i) management effectiveness assessment; (ii) threats assessment; and (iii) financial sustainability scorecard.⁸ The scores for these three elements, as compared between 2014, 2018, and 2019, are shown in the following table.

⁷ In the original proposal, the Giant salamander (*Andrias davidianus*) was also targeted for species recovery and protection. However, the SARC has focused its efforts on the 4 species mentioned.

⁸ A fourth section devoted to “Mainstreaming Biodiversity Conservation in Production Landscapes/Seascapes and Sectors” is included in the METT. Some information regarding the performance of the project for mainstreaming of biodiversity is presented in the METT analyses. However, the mainstreaming section does not include a numeric scoring system and has therefore not been included in Table 1.

METT Scores (2014-2019)

Component	2014	2018	2019
Management Effectiveness	59	74	76
Threats Assessment	50	29	32
Financial Sustainability	40 (18%)	58 (26%)	62 (28%)

Source: consultant reports.

32. The differences in scores between the 2018 and 2019 evaluations are quite small and are largely the result of minor adjustments in the scoring of individual parameters. Because the time interval between the 2018 and 2019 evaluations was so short, and the differences in scoring between these two years were relatively small, the changes recorded are not considered to be statistically significant. More important are the differences between the 2014 scores and the 2018-2019 scores. In all cases, these figures show a significant trend of improvement, with management effectiveness strengthened; biodiversity vulnerability to threats reduced; and financial resources to support biodiversity conservation made more secure over time.

G. Sustainability

33. Analysis of sustainability is predicated on consideration of the risks which form barriers to achieving the intended project result—the lower the risks, the higher the probability that project benefits will be sustained. If one or more of the risk factors is too great, they can threaten the chances for the sustainability of project benefits. As prescribed by ADB and GEF, in this analysis, the following risks were taken into account: (i) financial risks; (ii) sociopolitical risks; (iii) institutional and governance risks; and (iv) environmental risks. This section discusses the strengths and weaknesses of the project with respect to its sustainability in light of these different risk factors.

1. Financial

34. There is some concern that available funds may not be sufficient to meet the ongoing and expanded operational expenses of the QNBG and the SARC, and to follow through with intended allocates of a portion of these facilities' revenues (derived from tourism receipts, and from government funds for conservation) to support conservation efforts in the wider Qinling Mountain area.⁹ However, this concern is mitigated to some extent by the efforts undertaken through the project (e.g., development of tourism master plans) to put in place a comprehensive program for sustainable financing, which defines how funds will be generated and utilized.

35. In addition, recent trends in the growing tourism sector in Shaanxi Province, and the commitment of the government to further promote this growth in a sustainable manner, suggest that tourism-based revenues will likely continue to increase in the future.

36. Finally, the SPG also has demonstrated its commitment to biodiversity conservation efforts. It is believed that key government decision-makers recognize the close linkage between preservation of the unique and globally important biodiversity resources of the Qinling Mountains, and continued potential for economic development within the tourism sector. Government conservation funding is currently being used to provide part of the support needed for QNBG operations. These factors suggest that the government will continue to provide budget support for

⁹ Collection of tourism receipts has been initiated at QNBG, and this facility has committed 10% of its revenue for biodiversity conservation monitoring and habitat restoration in the QBCDA.

sustained conservation efforts within the province, as required. Taken collectively, the above-mentioned considerations suggest that the financial risks to project sustainability are low.

2. Sociopolitical

37. The commitment of the SPG to support biodiversity conservation has been mentioned in connection with sustainable financing, and this commitment also reduces sociopolitical risk. In addition, through the engagement of the project within local communities (especially in promoting sustainable alternative livelihood options), the level of understanding and local ownership regarding the biodiversity resources in the project area has been raised. These findings indicate that sociopolitical risks to project sustainability are low.

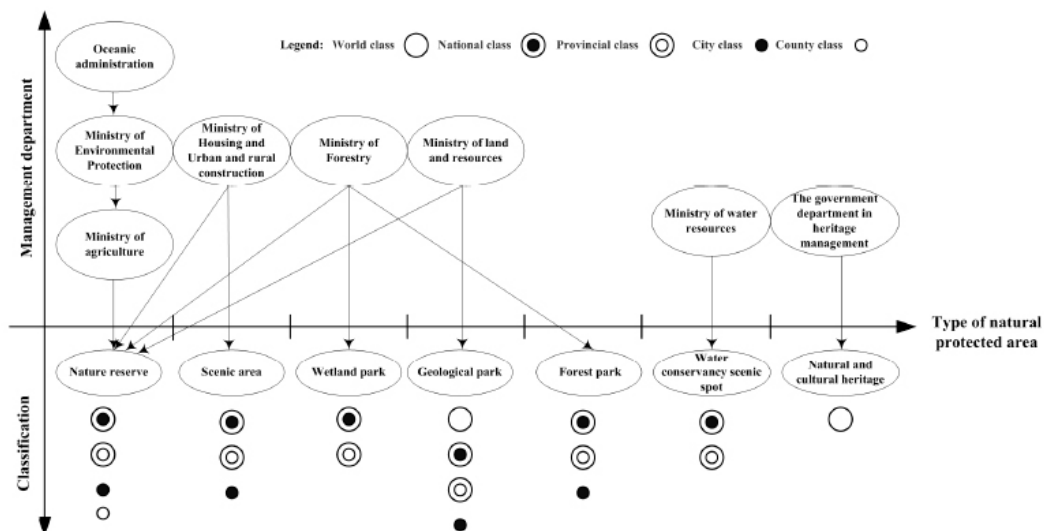
3. Institutional Framework and Governance

38. The project has implemented or helped to support several activities for the improvement of the institutional framework for biodiversity conservation in the Qinling Mountains project area. These have included (i) promulgation of an integrated ecosystem management and action plan which has been taken up by the provincial government; (ii) revision of provincial regulations for Qinling Ecological and Environmental Management in 2017; and (iii) training and study tours to strengthen staff capacity, as well as international study and exchange programs for QNMG and SARC personnel.

39. Governance risks appear to be well controlled. For example, historically, wildlife poaching has been a major issue of concern both throughout PRC, and within the project area. More recently, however, it was reported that illegal poaching activities have been significantly reduced.

40. However, the overarching institutional framework for protected area management in PRC is extremely complex, and often results in unclear division of labor, conflicting mandates among different government entities, and inefficiencies—such weaknesses could adversely affect future management efforts in the protected areas within the Qinling Mountains. The following schematic diagram illustrates this complexity. In order to reduce institutional risk, this framework needs to be simplified and harmonized.

Types of Protected Areas and Management Systems in PRC



Source: Mengtian Cao, Li Peng, and Shaoquan Liu. 2015. Analysis of the Network of Protected Areas in China Based on a Geographic Perspective: Current Status, Issues and Integration. *Sustainability (7)*: 15617-15631.

41. In light of the factors described above, the institutional and governance risks affecting project sustainability are considered to be moderate.

4. Environmental

42. Two potential environmental risk factors must be considered when evaluating project sustainability. These are (i) the inherent vulnerability of the key species which is the main focus of the project's conservation efforts, and (ii) potential adverse effects of a growing tourism presence in the project area. The project has undertaken efforts to address both risks.

43. In the case of protecting vulnerable species, this is indeed the main focus of the project, and the steps which have been taken to address this include (among others): a captive breeding program; reintroduction and reestablishment of vulnerable species into natural habitats; and education programs to strengthen public awareness and minimize practices that are destructive to the species concerned or to their habitats.

44. Regarding the potential adverse impacts of the growth of tourism in the project area, the steps which have been taken to manage possible impacts include the preparation of a tourism plan for SARC, and an ecotourism plan for the whole project area; and improvements in treatment and disposal of wastewater from SARC and QNBG.

45. Overall, the environmental risks to project sustainability are considered to be low.

46. The analysis of the four key risk factors discussed here leads to the conclusion that the collective risks to project sustainability are generally low to moderate. With care taken to address the issues which have been identified here, it is believed that the benefits of the project can be sustained over the long term.

H. M&E Framework

47. Monitoring and evaluation (M&E) for the project conformed to both GEF and ADB guidelines for project implementation and M&E. The Project followed the standard M&E procedures, reporting, and supervisory arrangements prescribed by ADB. To monitor the progress of the Project in achieving the planned outcome and outputs, at project inception, the PMO established and maintained a project performance monitoring system (PPMS), which was structured to permit adequate flexibility to adopt remedial action regarding project design, schedules, activities, and development impacts. PPMS procedures were used to systematically generate data on inputs and outputs of the project activities, and the socioeconomic, health, and environmental indicators to measure project impacts. Baseline data were acquired and updates to the baseline were obtained at requisite time intervals, e.g., for monitoring of results of project actions, resettlement, and reporting on any environmental management requirements.

48. The key parameters that were monitored under the PPMS included (i) project progress, (ii) enabling framework improvements (policies legal/regulations harmonization and clear institutional mandates), (iii) results of capacity development, (iv) viability status for revenue-generating enterprises, (v) progress towards demonstration and pilot targets using participatory procedures, (vi) beneficiary impacts, (vii) related improvement to the sustainable financing of field conservation, and (viii) ADB safeguards compliance.

49. The PMO was responsible for analyzing and consolidating the M&E data, and for reporting the outcome to ADB through quarterly progress reports and annual project implementation reviews (PIRs).

50. In addition to regular monitoring, project performance was periodically reviewed jointly by ADB and the Government, to assess implementation performance and achievement of progress towards project outcomes and outputs, financial progress, and to identify issues and constraints affecting implementation. ADB and the Government conducted a midterm review of the project in 2014 to assess implementation status and take appropriate measures to optimize project performance and ensure achievement of the Project's expected impact and outcomes. The current terminal evaluation represents the concluding step in the required M&E activities.

I. Rating

51. The GEF project is given an overall rating of Satisfactory (S). This rating is a composite of ratings for the key evaluation criteria of relevance, effectiveness, efficiency, and sustainability.

J. Conclusion

52. The GEF project was generally successful in achieving its intended targets, which have helped to establish enabling conditions that are believed to set the stage for realizing the stated impact objective of the project, namely, to improve sustainable biodiversity conservation to protect globally-significant species and to sustain economic growth. In fact, some aspects of this objective have already started to become evident.

53. The project has demonstrated its relevance, effectiveness, and impact, and has shown a reasonable likelihood that its benefits will be sustainable over the long term.

54. The project successfully delivered many important results, all of which contributed to the Satisfactory rating. Key project accomplishments contributing to this performance (among others) were the following (grouped according to thematic categories):

- (i) **Biodiversity management and species recovery:** Management of globally threatened animal species mainstreamed into government conservation programs; populations of four species of threatened wildlife increased from 2010 to 2019 (Giant panda: +26%; Crested ibis: +330%; Golden monkey: +97%; Golden takin: +148%); endangered animal species management plan prepared by SARC in 2016 including baseline data; research carried out in 2018 for Giant panda breeding and for Crested ibis reintroduction and monitoring in natural habitat; conservation monitoring carried out annually, with data available since 2017
- (ii) **Land management and habitat restoration:** Habitat restoration plan prepared by the provincial government in 2015; Qinling integrated ecosystem management (IEM) strategy and action plan formulated in 2018, containing habitat management and action plans; provincial regulations for Qinling Ecological and Environmental Management revised in 2017 and further updated in 2019; over 10,000 ha of forest lands under better management; land degradation and soil erosion in Qinling mountains reduced; the number of nature reserves in QBCDA increased from 25 in 2010 to 33 (19 national and 14 provincial) in 2019; ecological baseline monitoring conducted by QNBG in 2015 and database established, contributing to the biodiversity monitoring system set up under the project; some 120 km of

mountain pathways upgraded in 22 valleys by 2015; actions for conservation agriculture (on about 35 ha) and ecological forestry rehabilitation (on about 70 ha) implemented through community participation

- (iii) **Community engagement, livelihood, and benefit-sharing:** Per capita rural incomes increased by 140% from 2010 to 2019; households in QBCDA fully lifted from poverty by 2019; village infrastructure built for 3 villages covering 160 households or 620 people; over 1,500 jobs provided annually through project-related activities, over 300 jobs generated directly by QNBG and SARC operations and the rest through small-scale ecotourism enterprises within local communities (e.g., 20 home-stay ecotourism enterprises in operation since 2016)
- (iv) **Revenue generation and sustainable financing:** QNBG opened to public in 2017--revenues (from entrance fees and government conservation funds) about CNY11 million in 2019; a portion of revenues of QNBG and SARC allocated for in situ conservation activities (e.g., 10% of QNBG revenues allocated for habitat restoration and biodiversity conservation monitoring in QBCDA); tourism plan was prepared for SARC in 2016, and ecotourism master plan completed for the whole project area in 2018
- (v) **Capacity-building:** Training and study tours conducted to strengthen staff capacity for conservation and habitat management QNBG and SARC technical staff participate in 6-month professional job exchange and training programs in UK (Kew Royal Botanical Garden and Durrell Institute of Conservation and Ecology) and US (Chicago Botanical Garden)
- (vi) **Awareness and outreach:** About 260 ha of botanical gardens established at QNBG, including 22 specialized gardens; associated public education facilities (public education center, herbarium, two outdoor education camps) established; research and public awareness facilities established at SARC, including breeding and exhibition areas for Giant panda, Crested ibis, Golden monkey, and Takin, research center, laboratory, animal hospital, researcher accommodations, public education center, and tourist information center; QNBG designated as a national and provincial nature education base; over 80,000 school students visit QNBG for classes and school research programs during 2017–2019.

55. The rating of Satisfactory is warranted in accordance with the results achieved, and as most of the project activities focused on ex-situ conservation (as compared with GEF focus on in-situ conservation). It is nonetheless recognized that the project has made a significant contribution to GEF's strategic objectives, and to GEBs, especially as far as the survivorship of rare endangered species is concerned. Furthermore, the project can continue to yield important benefits, if the successes realized through the implementation of project activities are used to strengthen, complement and catalyze targeted *in situ* efforts for biodiversity conservation in the future, throughout the wider Qinling Mountains multiple-use landscape.

ANNEX A: PROJECT DATA SHEET

I. Project Identification

GEF Project ID: 2787

GEF Agency Project ID: Loan 2572/Grant 169

Country: People's Republic of China

Project Title: Shaanxi Qinling Biodiversity Conservation and Demonstration Project

GEF Agency: Asian Development Bank

II. Dates

Milestone	Expected Date ^a	Actual Date
CEO endorsement	--	17 July 2009
Agency approval date	--	22 October 2009
Implementation start	15 October 2010	21 March 2012 ^b
Midterm review	--	2014
Project completion	--	30 April 2019
Terminal evaluation completion	31 December 2019	15 July 2020
Project closing	--	18 November 2019

^a Expected dates are as per the expectations at the point of CEO endorsement/approval.

^b Date of initial transfer of loan funds to the project (Source: EA PCR).

Source: Asian Development Bank.

III. Project Framework

Project Component ^a	Activity type (TA or INV)	GEF Financing (\$ million)		Cofinancing (\$ million)	
		Appraisal	Actual	Appraisal	Actual
1. Participatory BD management in the mountainous area	TA/INV	2.06		16.86	
2. Enhanced BD in the plain area	INV	0.00	4.09	109.15	105.68
3. BD support	TA/INV	2.21		1.46	
4. Project management	INV	0.00		0.90	
Total		4.27	4.09	128.37	105.68

BD = biodiversity conservation, GEF = Global Environment Fund, INV= investment, TA= technical assistance

^a Components shown here are as per the GEF Project Framework in the CEO Endorsement Request. However, in the ADB Design and Monitoring Framework, outputs of the Biodiversity Conservation Support component and the Project Management component have been combined into a single component, Improved Project Management.

Sources: Asian Development Bank and executing agency's completion report.

IV. Co-financing (\$ million)

Source	Financing Type	Appraisal	Actual
Host government contribution (Shaanxi Provincial Government)	cash	85.72	66.17 ^a
	In-kind	2.65	
Global Environment Fund Agency (ADB)	loan	40.00	39.51
Total		128.37	105.68

^a Excludes government expenditures applied to associated restoration of Taoist cultural sites within the project area.

Source: Asian Development Bank.

ANNEX B: CONSERVATION STATUS OF KEY WILDLIFE SPECIES OF THE QINLING MOUNTAINS

1. The four rare and vulnerable species discussed below, all of which occur naturally in the forested lands of the Qinling Mountains, have been the subject of intensive conservation and recovery efforts by the Shaanxi Provincial Government. In recent years, this effort has been given important additional support under the project.¹⁰

A. Giant Panda

2. The giant panda (*Ailuropoda melanoleuca*; Chinese: 大熊猫; pinyin: dàxióngmāo), also known as the panda bear or simply the panda, is a bear native to south central People's Republic of China (PRC). It is characterized by large, black patches around its eyes, over the ears, and across its round body. A subspecies, the Qinling panda (*A. m. qinlingensis*) is restricted to the Qinling Mountains at elevations of 1,300–3,000 meters. In the subspecies, the typical black and white pattern of Giant pandas is replaced with a light brown and white pattern. The giant panda is a folivore, with bamboo shoots and leaves making up more than 99% of its diet. Giant pandas in the wild will occasionally eat other grasses, wild tubers, and occasionally meat (birds, rodents, or carrion).

3. The giant panda lives in a few mountain ranges in central PRC, mainly in Sichuan, but also in neighboring Shaanxi and Gansu. As a result of farming, deforestation, and other development, the Giant panda has been driven out of the lowland areas where it once lived. As a result, the Giant panda is a vulnerable, conservation-reliant species.

4. The Giant panda is threatened by continued habitat loss and habitat fragmentation, and by a very low birthrate, both in the wild and in captivity. The Giant panda has also been a target of poaching by locals since ancient times and by foreigners since it was introduced to the West.

5. A 2007 report showed 239 pandas living in captivity inside PRC and another 27 outside the country. As of December 2014, 49 giant pandas lived in captivity outside PRC, living in 18 zoos in 13 different countries. Wild population estimates vary; one estimate shows that there are about 1,590 individuals living in the wild, while a 2006 study via DNA analysis estimated that this figure could be as high as 2,000 to 3,000. Some reports also show that the number of Giant pandas in the wild is on the rise. In March 2015, conservation news site Mongabay stated that the wild Giant panda population had increased by 268, or 16.8%, to 1,864. In 2016, the IUCN reclassified the species from "Endangered" to "Vulnerable".

B. Golden Monkey

6. The golden snub-nosed monkey (*Rhinopithecus roxellana*) is an Old World monkey in the subfamily Colobinae. It is endemic to a small area in temperate, mountainous forests of central and southwest PRC. The species inhabits these mountainous forests at elevations of 1,500-3,400 meters above sea level. The distribution of the golden snub-nosed monkey is limited to temperate forests on mountains in four provinces in People's Republic of China: Sichuan, Gansu, Shaanxi, and Hubei. The Chinese name is Sichuan golden hair monkey (四川金丝猴).

¹⁰ Information source and photos (unless otherwise noted): Wikipedia website. The web pages from which information was gathered are extensively referenced and are deemed accurate and reliable.

7. Snow occurs frequently within its range and it can withstand colder average temperatures than any other non-human primates. Its diet varies markedly with the seasons, but it is primarily an herbivore, with lichens being its main food source. It is diurnal and largely arboreal, spending some 97% of its time in the canopy. Population estimates range from 8,000 to 15,000 and it is threatened by habitat loss.

8. Three subspecies of this monkey are recognized. One of these is the Qinling golden snub-nosed monkey (*Rhinopithecus roxellana qinlingensis*). According to an estimate published in 2001, this subspecies included some 3,800-4,000 individuals (about half of them adults) occurring in the Qinling Mountains of southern Shaanxi.

9. The Golden snub-nosed monkey is considered Endangered by IUCN, largely because of habitat loss. For instance, lichens are the main staple of the monkey's diet and dead trees have the greatest lichen coverage. Unfortunately, dead trees are harvested, thus reducing the quality of the habitat and availability of food. The monkey is a highly selective feeder, so damage to its habitat seriously impacts the species.

10. The Golden snub-nosed monkey is listed on Appendix I of the Convention on International Trade in Endangered Species (CITES), which prohibits international trade in this species.

C. Golden Takin

11. The golden takin (*Budorcas taxicolor bedfordi*) is a large, muscular, hooved mammal in the same subfamily as goats, sheep, and similar species. Its short legs are supported by large, two-toed hooves, which each have a highly developed spur. It has a stocky body and a deep chest. Its large head is made more distinctive by its long, arched nose and stout horns, which are ridged at the base.

12. Takin are not naturally a common specie, and their numbers appear to have been reduced considerably, largely due to overhunting and the destruction of their natural habitat. Takin are considered Endangered in People's Republic of China and Vulnerable per the IUCN. Takin horns have been seen as a product trafficked in the illegal wildlife trade.

D. Crested Ibis

13. The crested ibis (*Nipponia nippon*), also known as the Japanese crested ibis, Asian crested ibis or Toki is a large, white-plumaged ibis of pine forests. Its head is partially bare, showing red skin, and it has a dense crest of white plumes on the nape. This species is the only member of the genus *Nipponia*.

14. Crested ibis make their nests at the tops of trees on hills usually overlooking their habitat. They usually eat frogs, small fish, and small animals.

15. At one time, the Crested ibis was widespread in Japan, People's Republic of China, Republic of Korea, and Russia. It has now disappeared from most of its former range, due in large part to habitat loss. The last wild Crested ibis in Japan died in October 2003, with the remaining wild population found only in Shaanxi province of People's Republic of China until reintroduction of captive bred birds back into Japan in 2008. They were previously thought to be extinct in PRC too, until 1981 when only seven ibises were seen in Shaanxi.

16. Extensive captive breeding programs have been developed by Japan and PRC to conserve the species; PRC has been breeding and protecting the species for more than 20 years. Captive breeding programs have had notable success in bringing the species back from the brink of extinction.

17. The Crested ibis is listed as Endangered by International Union for Conservation of Nature and was put on the State Protection List in People's Republic of China. The bird has also been listed in Appendix I of the Convention on International Trade in Endangered Species treaty, and its international trade is prohibited.