

Project Administration Manual

Project Number: 48468-002
Loan Number: LXXXX
August 2017

People's Republic of China: Guizhou Rocky Desertification
Area Water Management Project

ABBREVIATIONS

ACG	–	Anlong County Government
ADB	–	Asian Development Bank
CQS	–	consultant qualification selection
DMF	–	design and monitoring framework
EIA	–	environmental impact assessment
EMP	–	environmental management plan
EMSDP	–	ethnic minority and social development plan
FMA	–	financial management assessment
GAP	–	gender action plan
GPFD	–	Guizhou provincial finance department
GPG	–	Guizhou provincial government
GRM	–	grievance redress mechanism
GWIC	–	Guizhou Water Resources Investment Company Limited
ICB	–	international competitive bidding
LAR	–	land acquisition and resettlement
LIBOR	–	London interbank offered rate
NCB	–	national competitive bidding
NCG	–	Nayong County Government
PAM	–	project administration manual
PIU	–	project implementation unit
PMO	–	project management office
PRC	–	People's Republic of China
QCBS	–	quality- and cost-based selection
RP	–	resettlement plan
SOE	–	statement of expenditure
SPS	–	ADB Safeguard Policy Statement (2009)

Contents

I.	PROJECT DESCRIPTION	1
A.	Rationale	1
B.	Impact and Outcome	3
C.	Outputs	3
II.	IMPLEMENTATION PLANS	9
A.	Project Readiness Activities	9
B.	Overall Project Implementation Plan	10
III.	PROJECT MANAGEMENT ARRANGEMENTS	14
A.	Project Implementation Organizations—Roles and Responsibilities	14
B.	Key Persons Involved in Implementation	16
C.	Project Organization Structure	17
IV.	COSTS AND FINANCING	18
A.	Cost Estimates Preparation and Revisions	18
B.	Key Assumptions	18
C.	Detailed Cost Estimates by Expenditure Category	19
D.	Allocation and Withdrawal of Loan Proceeds	20
E.	Detailed Cost Estimates by Financier	21
F.	Detailed Cost Estimates by Outputs	22
G.	Detailed Cost Estimates by Year	23
H.	Contract Awards and Disbursement S-Curve	24
I.	Funds Flow Diagram	25
V.	FINANCIAL MANAGEMENT	26
A.	Financial Management Assessment	26
B.	Disbursement	26
C.	Accounting	28
D.	Auditing and Public Disclosure	28
VI.	PROCUREMENT AND CONSULTING SERVICES	30
A.	Advance Contracting and Retroactive Financing	30
B.	Procurement of Works, Goods, and Consulting Services	30
C.	Procurement Plan	31
VII.	SAFEGUARDS	41
A.	Environment	41
B.	Involuntary Resettlement	42
C.	Indigenous Peoples/Ethnic Minorities	48
VIII.	GENDER AND SOCIAL DIMENSIONS	51
A.	Poverty Reduction and Social Strategy	51
B.	Gender	51
IX.	PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION	55
A.	Project Design and Monitoring Framework	55
B.	Monitoring	57
C.	Evaluation	59
D.	Reporting	59
E.	Stakeholder Communication Strategy	59
X.	ANTICORRUPTION POLICY	62
XI.	ACCOUNTABILITY MECHANISM	62
XII.	RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL	62

Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the government and Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Guizhou Provincial Government (GPG), the executing agency, and Guizhou Water Resources Investment Company Limited (GWIC), Anlong county government (ACG), and Nayong county government (NCG), the implementing agencies, are wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by the GPG, ACG, and NCG of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the loan and project agreements. Such agreements shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction between the PAM and the loan and project agreements, the provisions of the loan and project agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval, they will be subsequently incorporated in the PAM.

I. PROJECT DESCRIPTION

A. Rationale

1. Rocky desertification is characterized by vegetation degradation, soil erosion, and bedrock exposure. It occurs in various countries and regions, including the Mediterranean and Dinaric karst regions of the Balkan Peninsula as well as the southwest region of the People's Republic of China (PRC) on a large scale.¹ In the PRC, rocky desertification is one of the most serious land degradation problems in karst areas spreading in the southwest, which has a population of 220 million and overlaps the Yangtze River Economic Belt. Karst area is susceptible to rocky desertification because of the low soil formation rate and high permeability of limestone. Where arable flat land and water are limited, originally vegetated karst areas are cultivated by removing vegetation and planting rain-fed crops which are less effective for soil conservation. Soil erosion control is not conducted in most cultivation areas. Such repeated unsustainable cultivation has increased the rocky desertification areas. Climate change is expected to increase temperatures and the frequency and intensity of extreme climatic events, including storms. This could exacerbate rocky desertification by exposing the soil surface to warming and evaporation, and by causing physical damage such as erosion. Rocky desertification reduces vegetation, soil, land productivity, and arable lands; increases natural disasters such as landslides and debris flows; and deteriorates ecology, increasing vulnerability to climate change and deteriorating people's livelihoods.

2. Guizhou is in the southwest PRC and has a population of 35 million, of which 36.1% is ethnic minority. Agriculture, forestry, and fishery account for 16.3% of Guizhou's gross domestic product (GDP)²—much higher than the PRC average of 9.2%. Crop production is the most important agricultural activity (10.4% of Guizhou's GDP and 64.0% of its agricultural, forestry, and fishery products). Guizhou's total area is 176,167 square kilometers (km²), of which 92.5% is mountain or hilly area. It has 112,240 km² of karst areas (63.7% of its total area). Guizhou is in the Yangtze River Economic Belt and is an important province to develop the southwest and far west regions. It has the biggest rocky desertification area in the PRC, at 30,237 km² (17.2% of its total area and 25.2% of the total rocky desertification area in the PRC).³

3. Water is necessary to change unsustainable land use and restore vegetation in rocky desertification areas. In the southwest PRC, including Guizhou, rainfall concentrates during the rainy season and becomes floodwater that cannot be used.⁴ Porous limestone formations cannot capture and store much rainfall. Much of the water drains into rivers quickly through numerous short creeks and streams that run deep in valleys, or through deep aquifers (groundwater rivers) in limestone layers.⁵ Although annual precipitation in Guizhou (1,273 millimeters) is much higher than the PRC average (622 millimeters), the amount of annual water supply per person (272 cubic meters [m³]/person) is about 60% of the PRC average (447 m³/person). To capture sufficient

¹ Karst topography is a landscape formed from the dissolution of soluble rocks such as limestone.

² Guizhou's GDP is CNY1,050.3 billion. The biggest contributor to Guizhou's GDP is industry, but its contribution rate of 31.6% is lower than the PRC average of 34.3%.

³ In Anlong and Nayong counties where the project will be implemented, the ratio of rocky desertification areas is 32.4% in Anlong and 25.4% in Nayong, which are much higher than the provincial ratio of 17.2%.

⁴ Uneven seasonal rainfall in Anlong and Nayong is more remarkable than in the whole province. In 2014, annual precipitation concentrated during May–September was 84.0% in Anlong and 74.0% in Nayong.

⁵ ADB's flagship publication (ADB. 2012. *Drying Up—What to Do about Droughts in the People's Republic of China: With a Case Study from Guiyang Municipality, Guizhou Province*. Manila) also indicated that only 33% of rainfall and runoff in Guiyang (capital city of Guizhou) can be captured and stored or kept in river flows because of its mountain terrain, karst deposits, high evaporation from stone desertification, and rapid drainage out of Guiyang through underground channels.

water and distribute it to users in karst areas, and to change unsustainable land use and restore vegetation in rocky desertification areas, water storage facilities are essential.⁶

4. Guizhou has the lowest GDP in the PRC at CNY26,444, which is 56.7% of the PRC average. The rural poverty ratio in Guizhou (18.0%) is much higher than the national rate (7.2%).⁷ The poor population in rocky desertification areas accounts for 50.2% of Guizhou's total poor population. Rocky desertification is a main cause of the deterioration of livelihoods in Guizhou.

5. **Governments' past activities.** The central government issued the Planning Framework for Integrated Rocky Desertification Management in Karst Areas in 2008.⁸ Based on this framework, different levels of government prepared more detailed plans to address rocky desertification, including the Guizhou Provincial Master Plan for Water Resources Development, Ecological Improvement, and Rocky Desertification Management.⁹ Activities under this master plan include the construction and rehabilitation of water storage and transfer facilities; integrated control of slope land farming; improvement of irrigation area and vegetation; and farmland development, to increase water supply, irrigation area, and forestry, and control the rocky desertification area. The main challenges that have emerged through past rocky desertification management are: (i) since unsustainable land use by local people is the main cause of rocky desertification, local people need to be involved in rocky desertification management to reduce the driving force for rocky desertification and ensure the sustainability of rocky desertification management; (ii) monitoring of rocky desertification should be conducted adequately, following methods and frequency set in advance, to provide an accurate baseline and assess the effectiveness of rocky desertification management; and (iii) local governments' finances and capacities for rocky desertification management need to be strengthened.

6. **Strategic fit.** The project will protect the ecological environment, improve water security, increase resilience to climate change, and improve people's livelihoods. It is consistent with (i) the Thirteenth Five-Year Plan of the PRC, 2016–2020, which aims to realize "ecological civilization";¹⁰ (ii) the Asian Development Bank (ADB) country partnership strategy for the PRC, 2016–2020, which aims to improve the environment and manage climate change by realizing ecological civilization;¹¹ (iii) ADB's Strategy 2020 and the midterm review of the strategy, which focus on environmentally sustainable growth and the environment, including climate change;¹² and (iv) ADB's Water Operational Plan, 2011–2020, which aims to increase efficiency and productivity in the delivery of water services.¹³

⁶ The amounts of annual water supply per person from water storage facilities in Anlong (86 m³/person) and Nayong (52 m³/person) are much smaller than the amount in the province as a whole (159 m³/person). This is because Anlong and Nayong have insufficient water storage facilities (water storage capacities per person are 42 m³/person in Anlong and 39 m³/person in Nayong against 462 m³/person in the whole province). Some 70%–80% of water supply in Anlong and Nayong relies on unstable resources such as rainfall, stream, and groundwater.

⁷ Anlong and Nayong are national poverty counties located in a national pilot area for poverty reduction. The poverty ratio in the project areas is 20.7% in Anlong and 20.6% in Nayong.

⁸ State Council of the PRC. 2008. *Planning Framework for Integrated Rocky Desertification Management in Karst Areas*. Beijing.

⁹ Guizhou Provincial Government. 2011. *Guizhou Provincial Master Plan for Water Resources Development, Ecological Improvement, and Rocky Desertification Management*. Guiyang.

¹⁰ Government of the PRC. 2016. *Thirteenth Five-Year Plan on National Economic and Social Development*. Beijing. Ecological civilization refers to a civilization which is harmonious among growth, people, and nature.

¹¹ ADB. 2016. *Country Partnership Strategy: Transforming Partnership—People's Republic of China and Asian Development Bank, 2016–2020*. Manila.

¹² ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila; and ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.

¹³ ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

7. **Lessons.** Lessons from international institutes such as the United Nations Convention to Combat Desertification¹⁴ and ADB's previous projects have been incorporated in the project design, including (i) the necessity of economic incentives for land users, for sustainable land management; (ii) the effectiveness of market-based approaches to scale up sustainable land management, such as payment for ecosystem services based on cost-benefit analysis; (iii) technologies to avoid water leakage from reservoirs in karst areas; (iv) the effectiveness of revegetation with community participation; (v) the need for a neutral third party with knowledge of eco-compensation to coordinate between affected people and beneficiaries to establish an eco-compensation mechanism;¹⁵ and (vi) effective measures to disseminate demonstrated initiatives (e.g., workshops, publications, use of website, and cooperation with academic societies).

B. Impact and Outcome

8. The project is aligned with the following impact: (i) livelihoods of people living in rocky desertification areas improved (footnote 9). The project will have the following outcome: rocky desertification area reduced.¹⁶

C. Outputs

9. **Output 1: Water resources conserved.** This output will include (i) construction of two reservoirs in Anlong and Nayong counties in Guizhou (with maximum water storage capacities of 78.98 million m³ in Anlong and 14.69 million m³ in Nayong) and related water transfer facilities (canals, pipes, a pump station, a regulation pond, and terminal tanks);¹⁷ and (ii) establishment of water user associations for the reservoirs.¹⁸ Innovative technologies will be used to prevent water leakage and slope collapse of the reservoirs and to increase the efficiency of water transfer. The design maximum flood occurrence is 1 in 2,000 years for the dam and spillway in Anlong and 1 in 1,000 years in Nayong.¹⁹ The two reservoirs will provide water for irrigation (46,980,000 m³/year, 4,263 m³/hectare [ha]/year) and domestic use (44,710,000 m³/year, 493 m³/household/year).

10. **Output 2: Environment, ecology, and land productivity restored.** This output will include (i) revegetation; (ii) promotion of sustainable farming; and (iii) monitoring, policy reform, capacity development, and knowledge dissemination.

11. Revegetation will reduce existing and potential rocky desertification by planting native trees (including fruit trees) effective for ecological restoration, soil conservation, and climate resilience. Local people with land use rights on rocky desertification area where no farming is being conducted will conduct revegetation in the area based on agreements with the Guizhou Water Resources Investment Company Limited (GWIC) using materials, trees, and equipment

¹⁴ United Nations Convention to Combat Desertification. <http://www2.unccd.int/>.

¹⁵ To protect the water quality in a reservoir, people's activities that pollute the reservoir are restricted and pollution reduction activities are promoted near the reservoir. People affected by such pollution reduction measures can be adequately compensated by establishing an eco-compensation mechanism.

¹⁶ The design and monitoring framework is in Table IX-1.

¹⁷ Includes the construction of a 74.5-meter high rock-fill dam in Anlong and a 94.0-meter high concrete face rock-fill dam in Nayong.

¹⁸ Water user associations contribute to efficient water use by operating irrigation facilities, allocating water to members, and providing instructions on water saving and advanced farming to members.

¹⁹ The design maximum flood occurrence is the flood level under which the reservoir can withhold without causing damage to the main structures.

provided by the GWIC.²⁰ The planted trees and income from the trees will belong to the local people, which will increase their motivation for revegetation. Consultants will train local people, supervise revegetation activities, and conduct monitoring.

12. To change unsustainable farming (i.e., cultivation of low-value rain-fed crops without soil control)—which is the main cause of rocky desertification—to sustainable farming, the project will provide local farmers with incentives to adopt sustainable farming. Sustainable farming pilot projects will include the construction of irrigation facilities, demonstration of water-saving technologies, soil erosion control, and cultivation of high-value crops. Local farmers who have land use rights on the pilot project areas will conduct sustainable farming based on agreements with the county government. The county government will construct irrigation facilities and soil erosion control structures and purchase necessary materials, equipment, and seedlings. Income from sustainable farming will belong to the local farmers. Consultants will train the local farmers, supervise the pilot projects, conduct monitoring, and promote sustainable farming (e.g., through onsite workshops, market surveys, and guidance to local farmers on sustainable farming).

13. Other activities will include (i) monitoring of rocky desertification and the impact of climate change, (ii) establishment of eco-compensation mechanisms for the two reservoirs constructed under the project (footnote 15), (iii) protection of important revegetated areas; (iv) improvement of governments' existing policies and regulations, (v) improvement of existing microfinancing systems to promote sustainable farming, and (vi) dissemination of the project's initiatives.

14. **Value added by ADB assistance.** ADB will add value by introducing new technologies and good practices in project design and implementation, including community involvement. Specifically, the project will (i) introduce water-saving technologies; (ii) involve and benefit local people, especially women; (iii) introduce climate change adaptation measures; and (iv) disseminate project initiatives. Innovative technologies to prevent water leakage and increase water transfer efficiency will be used for the reservoirs and water transfer facilities, and a demand-based remote water allocation system will be demonstrated in the sustainable farming pilot projects. Revegetation and sustainable farming pilot projects will be conducted, involving local people, to reduce unsustainable land use and ensure the sustainability of rocky desertification management activities. Revegetation, promotion of sustainable farming, and monitoring of rocky desertification areas and climate change impact will improve climate resilience; and the project design has considered anticipated climate change impacts (adequate reservoir and spillway capacities, frost-resistant material, and selection of drought-resistant tree species for revegetation). Consulting services will help disseminate project initiatives.

15. A summary of project outputs is given in **Table I-1** below:

²⁰ An implementing agency that is a 100% GPG-owned company established to invest and administer projects included in the Guizhou Provincial Master Plan for Water Resources Development, Ecological Improvement, and Rocky Desertification Management (footnote 9).

Table I-1: Project Outputs and Sub-Components

Output	Quantity/Activity	Key Responsible Agency
Output 1: Water Resources Conservation		
1-1. Construction of Pingqiao and Pingshan reservoirs and water transfer facilities		
1-1-1. Construction of Pingqiao reservoir and water transfer facilities	<p>One rock-fill dam (height: 74.5 m; maximum water storage capacity: 78,980,000 m³; flood control capacity: 7,570,000 m³; reservoir area: 2.98 km²; catchment area: 193.4 km²)</p> <p>Water transfer facilities (canals and pipes: 57.0 km; pump station: 1)</p> <p>Water supply (35,720,000 m³/year for irrigation for 5,656.7 ha new and 1,408.0 ha existing irrigation areas; and 39,970,000 m³/year for domestic use for 73,100 households)</p>	Pingqiao Reservoir Company Limited
1-1-2. Construction of Pingshan reservoir and water transfer facilities	<p>One concrete face rock-fill dam (height: 94.0 m; maximum water storage capacity: 14,690,000 m³; flood control capacity: 980,000 m³; reservoir area: 0.46 km²; catchment area: 34.30 km²)</p> <p>Water transfer facilities (canals and pipes: 40.5 km; regulation pond: 1; terminal tanks: 13)</p> <p>Water supply (11,260,000 m³/year for irrigation for 3,594.7 ha new and 360.6 ha existing irrigation areas; and 4,740,000 m³/year for domestic use for 17,600 households)</p>	Pingshan Reservoir Management Office
1-2. Establishment of water user associations	Establishment of a water user association, with consultants' support	Pingqiao Reservoir Company Limited Pingshan Reservoir Management Office
Output 2: Restoration of Environment, Ecology, and Land Productivity		
2-1. Re-vegetation		Guizhou Water Resources Investment Company Limited
In Along County	Fruit trees in 930.0 ha areas and non-fruit trees in 669.0 ha areas	
In Nayong County	Fruit trees in 614.9 ha areas and non-fruit trees in 413.6 ha areas	
2-2. Promotion of sustainable farming to reduce rocky desertification areas		
2-2-1. Pilot projects		
In Anlong County	Total pilot area: 70.6 ha	Pingqiao Reservoir Company
Sustainable farming measures for irrigated areas	67.3 ha pilot area including 2 parallel systems	
	Each system: (Pingqiao reservoir and water transfer systems) - 3.0 km pipe - remote control gate - water storage tank - electronic magnetism bulb for remote control – 0.75 km pipe - integrated “fertigation” (fertilization and irrigation) system - 4.0 km pipes for field irrigation – farmlands	
	Demand-based remote water allocation system	

Output		Quantity/Activity	Key Responsible Agency
		remotely controls the gates and bulbs.	Limited
	Sustainable farming measures for un-irrigated areas	3.3 ha pilot area including 5 small water storage tanks, 1.0 km canals, and farmlands	
	In Nayong County	Total pilot area: 72.4 ha	Pingshan Reservoir Management Office
	Sustainable farming measures for irrigated areas	69.1 ha pilot area including 2 parallel systems Each system: (Pingshan Reservoir and water transfer systems) - 1.0 km pipe - high efficiency solar pump (for one system only) – remote control gate - water storage tank - electronic magnetism bulb for remote control – 0.75 km pipe - integrated “fertigation” (fertilization and irrigation) system - 4.0 km pipes for field irrigation - farmlands Demand-based remote water allocation system remotely controls the gates and bulbs.	
	Sustainable farming measures for un-irrigated areas	3.3 ha pilot area including 5 small water storage tanks, 1.0 km canals, and farmlands	
2-2-2. Publicity and promotion of sustainable farming		On-site workshops in the pilot project sites inviting local farmers from other areas, with consultants’ support	Guizhou Water Resources Investment Company Limited
		Market surveys, and guidance to local famers on how to select, grow, and sell crops; by consultants	Pingqiao Reservoir Company Limited
		Any other publicity activities, with consultants’ support	Pingshan Reservoir Management Office
2-3. Monitoring, policy reforms, capacity development, and knowledge dissemination		Purchase and installation of climate change monitoring equipment for both Anlong and Nayong counties.	Guizhou Provincial Climate Change Center
		Monitoring of rocky desertification in the project areas and climate change impact on it, including (a) designing of monitoring methodology; (b) collection of initial data to establish baseline for variables regarding rocky desertification; (c) assessment of the extent of climate change on rocky desertification; (d) monitoring of effectiveness of the project on rocky desertification reduction or slowing down; and (e) related capacity development; with consultants’ support	Guizhou Water Resources Investment Company Limited
			Pingqiao Reservoir Company Limited
			Pingshan Reservoir Management Office

Output	Quantity/Activity	Key Responsible Agency
	Establishment of eco-compensation mechanisms for Pingqiao and Pingshan reservoirs with consultants' support	Pingqiao Reservoir Company Limited Pingshan Reservoir Management Office
	Protection of important re-vegetated areas, with consultants' support	Pingqiao Reservoir Company Limited Pingshan Reservoir Management Office Anlong and Nayong County Water Resources and Forestry Bureaus
	Review of policy and regulations and recommendations for improvements, by consultants	Guizhou Water Resources Investment Company Limited
	Review of microfinancing systems and recommendation for improvements, by consultants	Guizhou Water Resources Investment Company Limited
	Overseas and domestic study tours for water and rocky desertification management, with consultants' support	Guizhou Water Resources Investment Company Limited
	Dissemination of project's initiatives, with consultants' support	Guizhou Water Resources Investment Company Limited
Project Management		
Project management activities	Procurement, consultant recruitment, contract management, and financial management	PMO Pingqiao Reservoir Company Limited and Pingshan Reservoir Management Office including PIUs
	Monitoring of project progress and performance (achievement of project impact, outcome, and outputs)	PMO
	Environmental monitoring	PMO PIUs and Anlong and Nayong county environmental protection bureaus
	External M&E for land acquisition and resettlement	PMO External

Output	Quantity/Activity	Key Responsible Agency
		resettlement M&E agency
	Consulting services for project management support	PMO

ha = hectare, km = kilometer, km² = square kilometer, m = meter, M&E = monitoring and evaluation, m³ = cubic meter, PIU = project implementation unit, PMO = project management office.

Source: Asian Development Bank.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table II-1: Project Readiness Activities

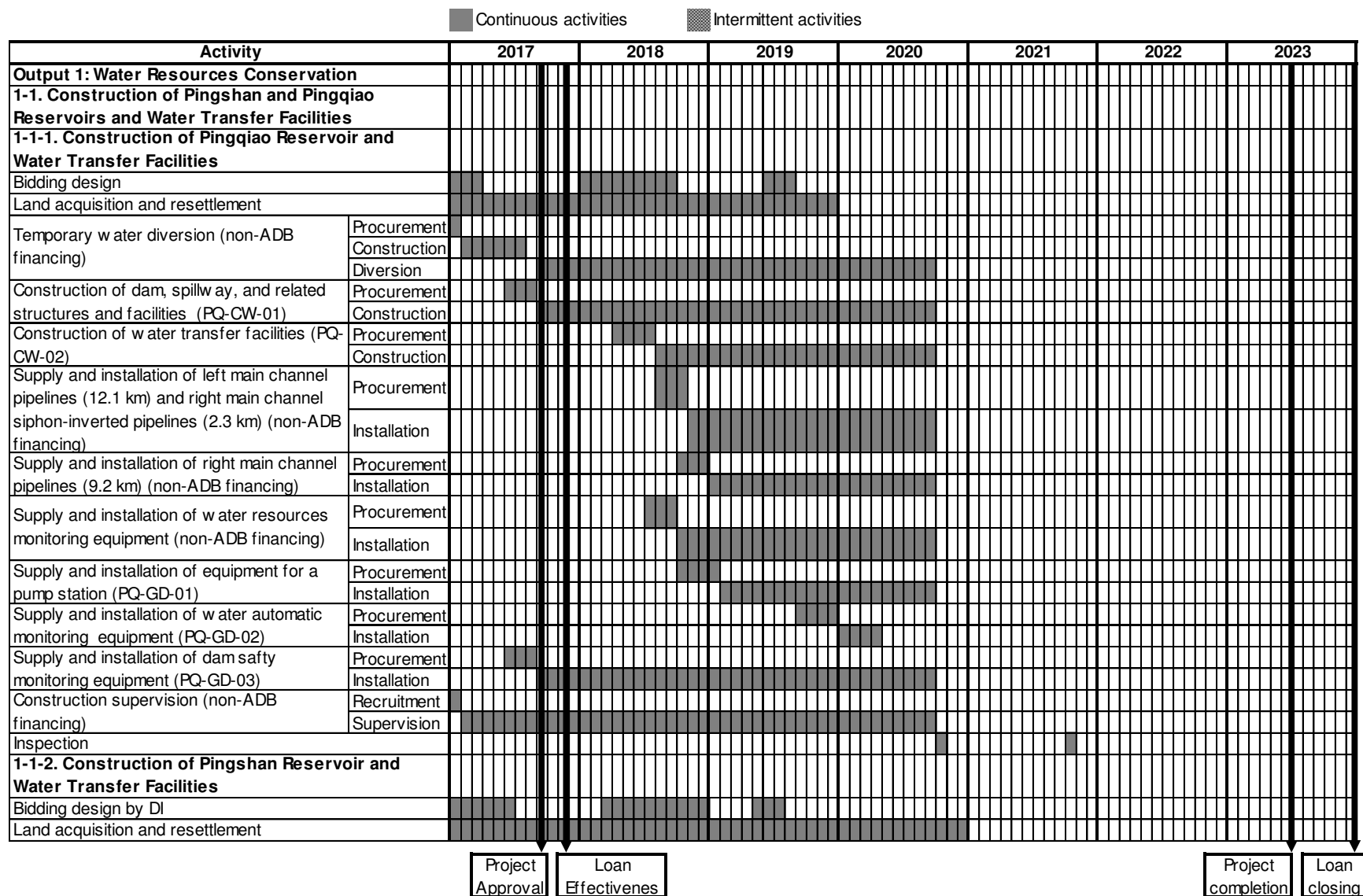
Indicative Activities	2017												Responsibility
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Procurement agent recruited	■	■	■										PMO
Advance contracting actions						■	■	■	■	■	■	■	Executing and implementing agencies
Retroactive financing actions								■	■	■	■	■	Executing and implementing agencies
Domestic FSR approved					■	■							GPDRC
FCUP approved							■						NDRC
EIA, RPs, and EMSDPs approved			■										ADB
ADB management review						■							ADB
Loan negotiations								■	■				ADB, MOF, GPG
ADB Board consideration									■	■			ADB
Loan and project agreements signed										■	■		ADB, MOF, GPG
Government legal opinion provided										■	■		MOF, GPG
Government budget inclusion	■	■											GPG, ACG, NCG
Loan effectiveness											■	■	ADB, MOF

ACG = Anlong county government, ADB = Asian Development Bank, EIA = environmental impact assessment, EMSDP = ethnic minority and social development plan, FCUP = foreign capital utilization plan, FSR = feasibility study report, GPDRC = Guizhou Provincial Development and Reform Committee, GPG = Guizhou provincial government, MOF = Ministry of Finance, NCG = Nayong county government, NDRC = National Development and Reform Commission, PMO = project management office, RP = resettlement plan.

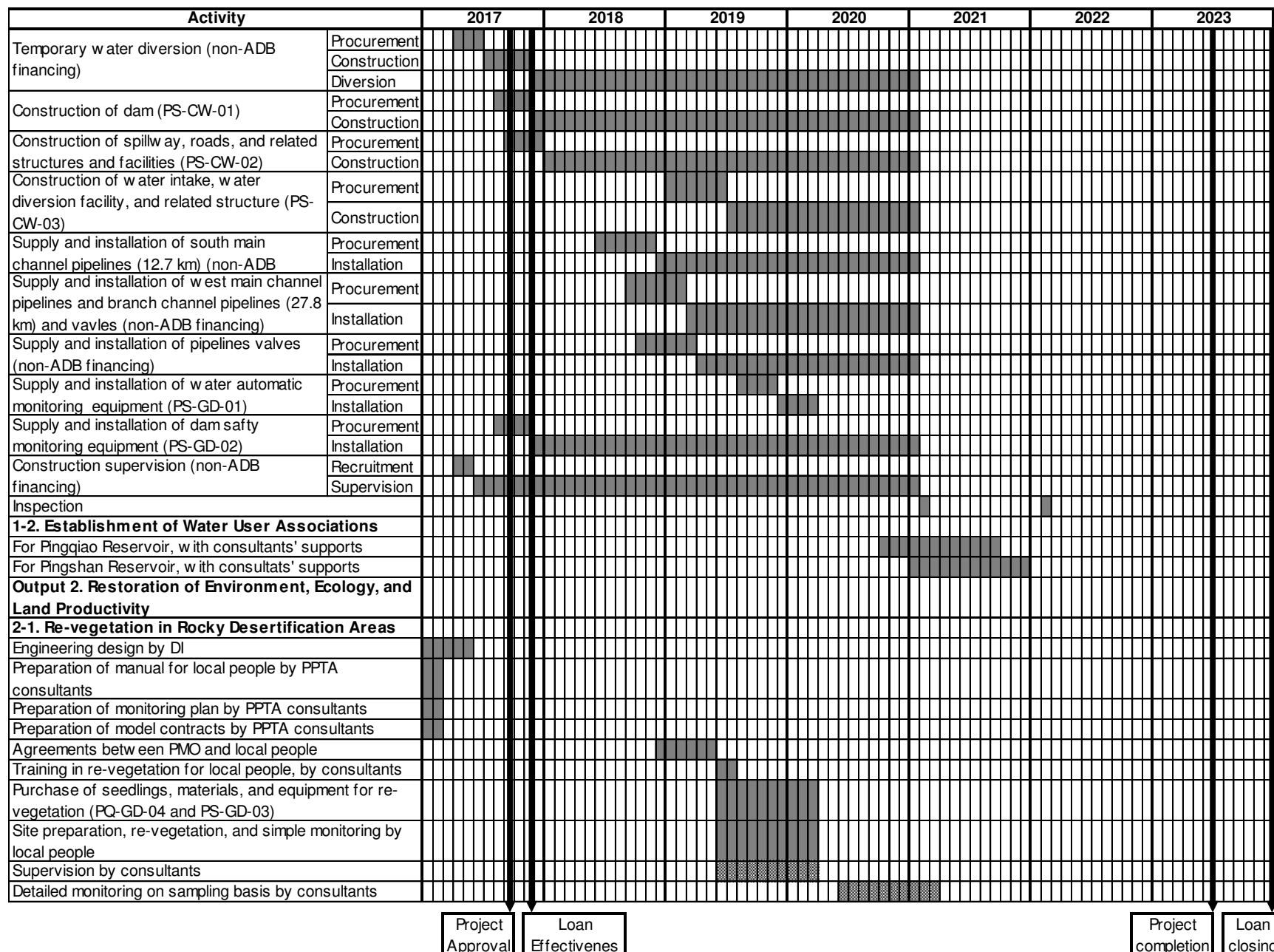
Source: Asian Development Bank.

B. Overall Project Implementation Plan

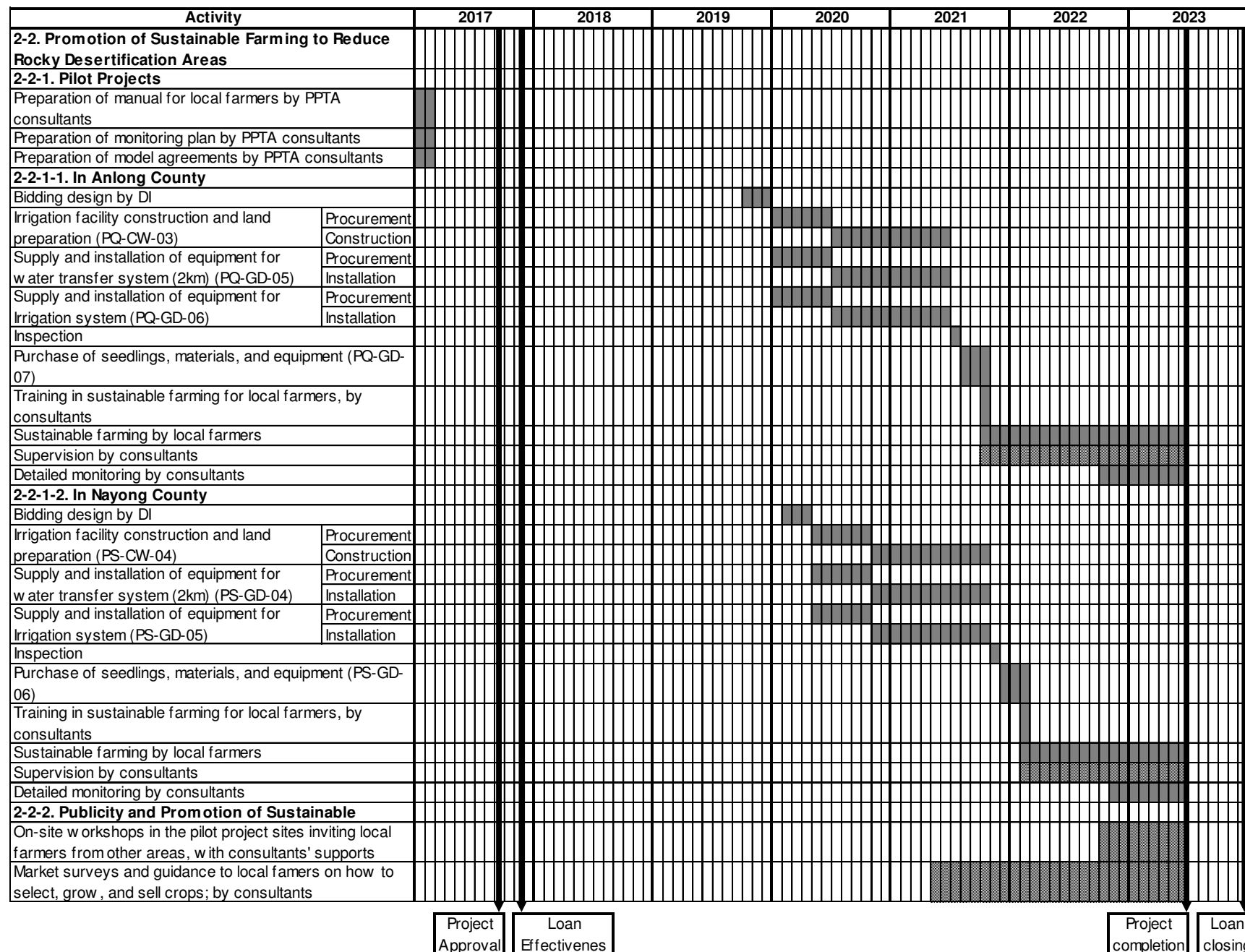
Table II-2: Project Implementation Plan



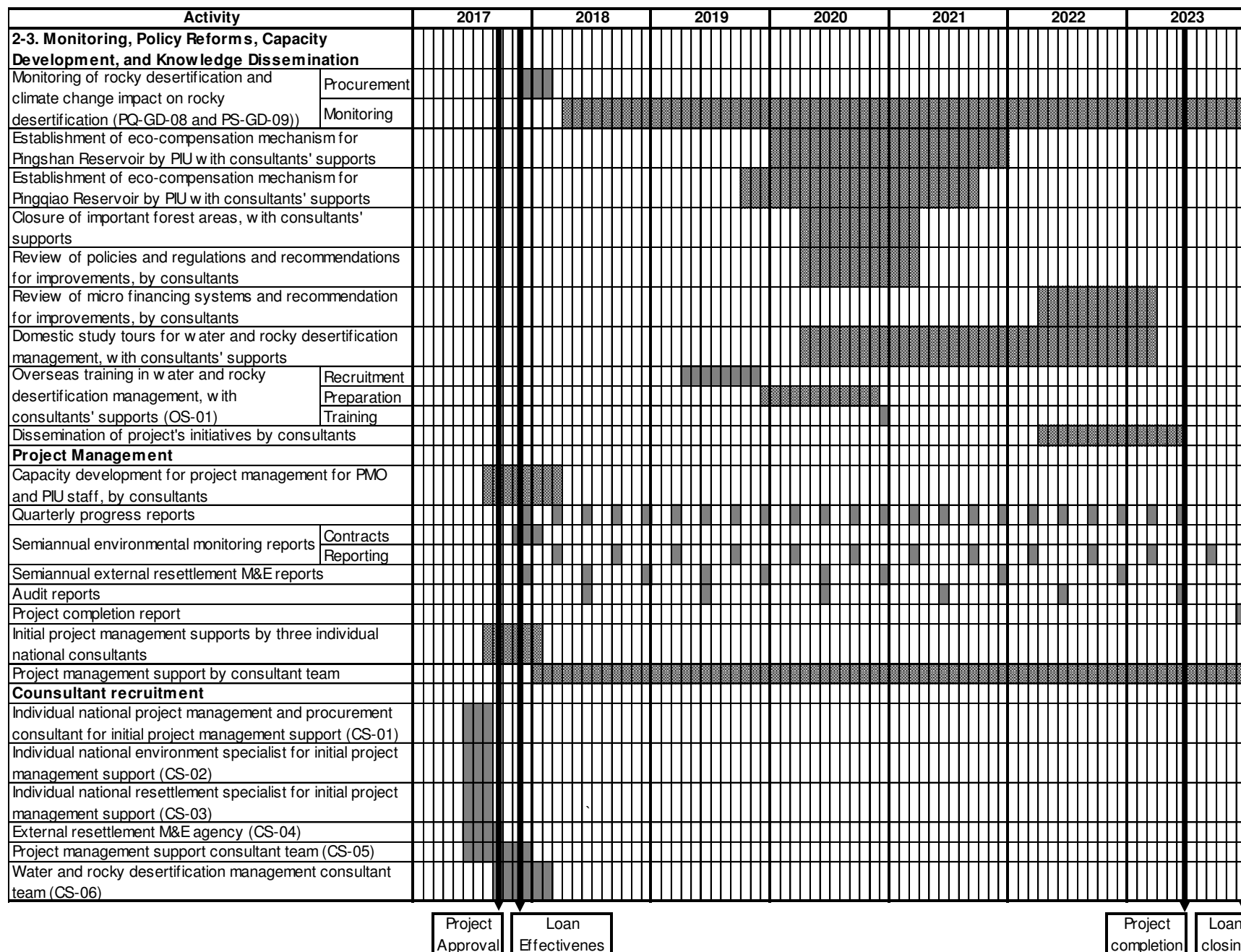
Continuous activities Intermittent activities



Continuous activities Intermittent activities



Continuous activities Intermittent activities



ADB = Asian Development Bank, DI = design institute, M&E = monitoring and evaluation, PIU = project implementation unit, PMO = project management office, PPTA = project preparatory technical assistance, RP = resettlement plan

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations—Roles and Responsibilities

16. The Guizhou Provincial Government (GPG) will be the executing agency. A project leading group has been established in GPG. The project leading group is headed by Director General of Guizhou provincial Water Resources Department (GPWRD) and consists of representatives from relevant GPG agencies, including Development and Reform Committee (GPDRD), Finance Department (GPFD), GPWRD, Guizhou Provincial Agriculture Committee, and Guizhou Provincial Forestry Department. A PMO has been established under the project leading group in the GPG. The PMO staff includes staff of GPWRD, Guizhou Provincial Agriculture Committee, Guizhou Provincial Forestry Department, and Guizhou Water Resources Investment Company Limited (GWIC). The PMO staff includes one full-time environmental officer, one full-time resettlement officer, and one full-time interpreter. The GWIC is under GPWRD's jurisdiction and is a 100% GPG-owned company established in 2011 to invest and administer projects included in the Guizhou Provincial Master Plan for Water Resources Development, Ecological Improvement, and Rocky Desertification Management.²¹

17. Implementing agencies will be GWIC, Anlong County Government (ACG), and Nayong County Government (NCG). In each of ACG and NCG, (i) a county project leading group, which is headed by the vice governor of the county government and consists of representatives from relevant county government agencies including the county development and reform committee, finance bureau, water resources bureau, agriculture bureau, and forestry bureau, has been established; and (ii) a project implementation unit (PIU) has been also established under the county project leading group in the county government. In ACG, the PIU staff includes staff of the County Water Resources Bureau, county agriculture bureau, county forestry bureau, and Pingqiao Reservoir Company Limited that is under the county water resources bureau's jurisdiction and is a 100% ACG-owned company. In NCG, the PIU staff includes staff of the county water resources bureau, county agriculture bureau, county forestry bureau, and Pingshan Reservoir Management Office that belongs to the county water resources bureau. Staff of each PIU includes one full-time environment officer and one full-time resettlement and social officer.

Table III-1: Project Implementation Organization

Project Implementation Organizations	Management Roles and Responsibilities
Executing agency— Guizhou Provincial Government	<ul style="list-style-type: none"> • Conduct overall project preparation and management
Project leading group	<ul style="list-style-type: none"> • Oversee the preparation and implementation of the overall project and provide overall guidance
PMO	<ul style="list-style-type: none"> • Recruit individual consultants, consulting firms, an external resettlement M&E agency, and an agency to plan, organize, and implement an overseas study tour • Prepare semiannual environmental monitoring reports and submit them to ADB • Ensure submission of semiannual external resettlement M&E reports to ADB • Monitor project progress and performance, and report to ADB through quarterly project progress reports

²¹ Guizhou Provincial Government. 2011. *Guizhou Provincial Master Plan for Water Resources Development, Ecological Improvement, and Rocky Desertification Management*. Guiyang.

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> • Prepare and submit to ADB a project completion report • Conduct any other overall project management activities
Implementing agency 1— Guizhou Water Resources Investment Company Limited	<ul style="list-style-type: none"> • Implement re-vegetation component including procurement • Conduct publicity and promotion of sustainable farming • Conduct monitoring (including procurement of monitoring equipment), policy reforms, capacity development, and knowledge dissemination for rocky desertification management
Implementing agency 2— Anlong County Government	<ul style="list-style-type: none"> • Conduct procurement for and construction of Pingqiao Reservoir and related water transfer facilities, and establish water users' associations • Implement sustainable farming pilot project including procurement • Establish eco-compensation mechanism for Pingqiao Reservoir • Protect important re-vegetated areas
Implementing agency 3— Nayong County Government	<ul style="list-style-type: none"> • Conduct procurement for and construction of Pingshan Reservoir and related water transfer facilities, and establish water users' associations • Implement sustainable farming pilot project including procurement • Establish eco-compensation mechanism for Pingsan Reservoir • Protect important re-vegetated areas
County project leading groups	<ul style="list-style-type: none"> • Oversee the implementation of project components in the county
PIUs	<ul style="list-style-type: none"> • Ensure the implementation of the EMP and environmental monitoring, and provide information and data to the PMO for the preparation of semiannual environmental monitoring reports • Ensure semiannual external resettlement M&E by the external resettlement M&E monitor • Monitor project progress and performance, and provide information and data to the PMO for preparation of quarterly project progress reports and a project completion report • Conduct any other activities for the implementation of project components in the county
ADB	<ul style="list-style-type: none"> • Conduct overall project preparation and administration, including (i) provision of orientation to the GPG including the PMO, GWIC, and the ACG and NCG, including the PIUs; (ii) review of project progress and performance and implementation of remedial measures, through daily communication and missions; (iii) review and approval of documents for procurement; (iv) review and approval of withdrawal applications, and disbursement of loan proceeds; (v) changes in project scope and/or implementation arrangements, as necessary; and (vi) preparation of ADB-version project completion report.

ACG = Anlong County Government, ADB = Asian Development Bank, EMP = environment management plan, GPG = Guizhou Provincial Government, GWIC = Guizhou Water Resources Investment Company Limited, M&E = monitoring and evaluation, NCG = Nayong County Government, PIU = project implementation unit, PMO = project management office.

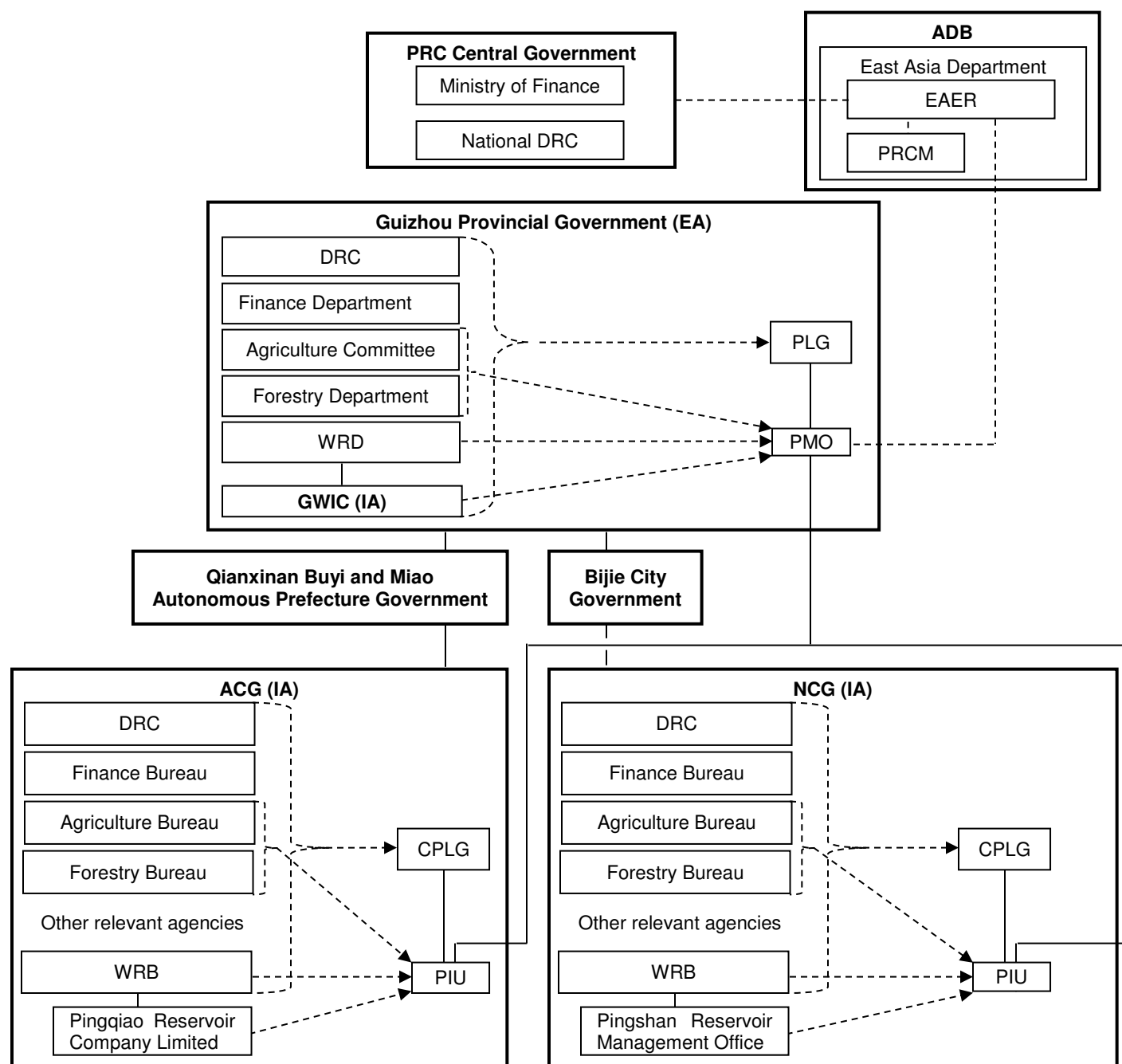
Source: Asian Development Bank.

B. Key Persons Involved in Implementation

Executing Agency	
Guizhou Provincial Government (GPG)	Officer's Name: Mr. Hongwei Lu Position: Director General, Guizhou Provincial Water Resources Department (GPWRD) Telephone No.: 0851-85936610 Email address: 909693587@qq.com Office address: No. 29, Xihu Lane, Nanming District, Guiyang Municipality, Guizhou Province
Project Implementation Units	
1. Project Management Office	
	Officer's Name: Mr. Du Feng Position: Deputy Director, PMO; Director, Guizhou Water Resources Investment Company Limited Telephone No.: 13985121987 Email address: guizhoupmo@163.com Office address: No. 187, Shilin Road West, Guanshanhu District, Guiyang Municipality, Guizhou Province
2. Anlong County Project Implementation Unit	
	Officer's Name: Mr. Xingda Wei Position: General manager Telephone No.: 13985953299 Email address: 1344341277@qq.com Office address: Temporary office area, Xiqu, Anlong County, Guizhou Province
3. Nayong County Project Implementation Unit	
	Officer's Name: Mr. Xi Li Position: Director Telephone No.: 18748540099 Email address: 124603255@qq.com Office address: Xiaoshizi, Zhonghua Road, Yongxi Street, Nayong County, Guizhou Province
Asian Development Bank	
East Asia Department Environment, Natural Resources, and Agriculture Division	Staff Name: Mr. Qingfeng Zhang Position: Director Telephone No.: +63 2 632 6769 Fax No.: +63 2 636 2534/2444 Email address: qingfengzhang@adb.org
Mission Leader	Staff Name: Yoshi Kobayashi Position: Principal Water Resources Specialist Telephone No.: +63 2 632 5584 Fax No.: +63 2 636 2534 Email address: yoshikobayashi@adb.org

Source: Asian Development Bank.

C. Project Organization Structure



ACG = Anlong County Government, ADB = Asian Development Bank, CPLG = county project leading group, DRC = development and reform committee, EA = executing agency, EAER = Environment, Natural Resources, and Agriculture Division of East Asia Department, GWIC = Guizhou Water Resources Investment Company Limited, IA = implementing agency, NCG = Nayong County Government, PLG = project leading group, PIU = project implementation unit, PMO = project management office, PRC = People's Republic of China, PRCM = People's Republic of China Resident Mission, WRB = water resources bureau, WRD = water resources department.

Source: Asian Development Bank.

IV. COSTS AND FINANCING

18. The project is estimated to cost \$338.81 million. The major expenditure items that constitute the project are civil works and land acquisition and resettlement.

19. The government has requested a regular loan of \$150 million from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years; an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; a commitment charge of 0.15% per year (\$0.57 million to be capitalized in the loan); and such other terms and conditions set forth in the draft loan and project agreements. Based on the straight-line method, the average maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per year.

20. ADB will finance the expenditures in relation to civil works, goods, consulting services, capacity development activities, interest during construction, and commitment charge. The government will finance designing, procurement activities, and construction supervision; land acquisition and resettlement; civil works; environmental protection; and contingencies.

21. Climate mitigation is estimated to cost \$8.21 million and climate adaptation is estimated to cost \$8.63 million. ADB will finance 88.9% of mitigation costs and 89.2% of adaptation costs.

A. Cost Estimates Preparation and Revisions

22. The cost estimates were prepared based on the feasibility study in accordance with ADB's Guidelines on Preparing and Presenting Cost Estimates for Projects and Programs Financed by ADB.

23. The cost estimates may be updated during the implementation of the project.

B. Key Assumptions

24. The following key assumptions underpin the cost estimates and financing plan:

- (i) Exchange rate: CNY 6.8654 = \$1.0 (as of 1 March 2017)
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table IV-1: Escalation Rates for Price Contingency Calculation

Item	2016	2017	2018	2019	2020	2021	Average
Foreign rate of price inflation ^a	1.5%	1.4%	1.5%	1.5%	1.5%	1.5%	1.5%
Domestic rate of price inflation ^b	1.7%	2.0%	2.1%	2.1%	2.1%	2.1%	2.0%

Sources: ^a World Bank Group. 2014. *Manufactures Unit Value Index*. Washington.

^b ADB. 2016. *Asian Development Outlook 2016: Asia's Potential Growth*. Manila.

C. Detailed Cost Estimates by Expenditure Category

Table IV-2: Detailed Cost Estimates by Expenditure Category

Item	(CNY million)			(\$ million)			% of Total Base Cost
	Foreign Exchange	Local Exchange	Total Cost	Foreign Exchange	Local Exchange	Total Cost	
A. Investment Costs							
1. Civil works	259.30	777.89	1,037.19	37.77	113.31	151.07	49.3%
a. ADB financing	250.34	751.01	1,001.35	36.46	109.39	145.85	47.6%
b. Non-ADB financing	8.96	26.88	35.84	1.30	3.91	5.22	1.7%
2. Goods	64.84	151.30	216.14	9.44	22.04	31.48	10.3%
a. ADB financing	38.51	89.85	128.35	5.61	13.09	18.70	6.1%
b. Non-ADB financing	26.33	61.45	87.78	3.84	8.95	12.79	4.2%
3. Design, procurement, and supervision	-	213.73	213.73	-	31.13	31.13	10.2%
4. Land acquisition and resettlement	-	611.08	611.08	-	89.01	89.01	29.1%
5. Environmental protection ^a	-	9.87	9.87	-	1.44	1.44	0.5%
6. Consulting services	2.79	8.36	11.15	0.41	1.22	1.62	0.5%
a. Project management	1.74	5.23	6.98	0.25	0.76	1.02	0.3%
b. Water and soil management	1.04	3.13	4.17	0.15	0.46	0.61	0.2%
7. Study tours, workshops, and other capacity development activities	0.69	2.06	2.75	0.10	0.30	0.40	0.1%
Subtotal (A)	651.75	1,774.28	2,101.89	47.72	258.44	306.16	100.0%
Total Base Cost	651.75	1,774.28	2,101.89	47.72	258.44	306.16	100.0%
B. Contingencies							
1. Physical	-	63.05	63.05	-	9.18	9.18	3.0%
2. Price	-	111.83	111.83	-	16.29	16.29	5.3%
Subtotal (B)	-	174.89	174.89	-	25.47	25.47	8.3%
C. Financial Charges During Implementation							0.0%
1. Interest during construction	45.40	-	45.40	6.61	-	6.61	2.2%
2. Commitment charges	3.90	-	3.90	0.57	-	0.57	0.2%
Subtotal (C)	49.30	-	49.30	7.18	-	7.18	2.3%
Total Project Cost (A+B+C)	701.05	1,949.16	2,326.08	54.90	283.91	338.81	110.7%

ADB = Asian Development Bank.

^a Excluding CNY56.80 million or \$8.27 million included in other items.

Source: Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan Proceeds**Table IV-3 Allocation and Withdrawal of Loan Proceeds**

Number	Item	Total Amount Allocated for ADB Financing (\$)	Basis for Withdrawal from the Loan Account
1	Works	122,098,555	83.7% of total expenditure claimed
2	Goods; Consulting Services; and Study Tours, Workshops, and Other Capacity Development Activities	20,719,786	100.0% of total expenditure claimed
3	Interest during Construction and Commitment Charge	7,181,659	100.0% of amount due
	Total	150,000,000	

Source: Asian Development Bank estimates.

E. Detailed Cost Estimates by Financier

Table IV-4: Detailed Cost Estimates by Financier
(\$ million)

Item	ADB		Government		Total Cost
	Amount	% of Cost Category	Amount	% of Cost Category	
A. Investment Costs					
1. Civil works	122.10	80.8%	28.98	19.2%	151.07
a. ADB financing	122.10	83.7%	23.76	16.3%	145.85
b. Non-ADB financing	-	0.0%	5.22	100.0%	5.22
2. Goods	18.70	59.4%	12.79	40.6%	31.48
a. ADB financing	18.70	100.0%	-	0.0%	18.70
b. Non-ADB financing	-	0.0%	12.79	100.0%	12.79
3. Design, procurement, and supervision	-	0.0%	31.13	100.0%	31.13
4. Land acquisition and resettlement	-	0.0%	89.01	100.0%	89.01
5. Environmental protection ^a	-	0.0%	1.44	100.0%	1.44
6. Consulting services	1.62	100.0%	-	0.0%	1.62
a. Project management	1.02	100.0%	-	0.0%	1.02
b. Water and soil management	0.61	100.0%	-	0.0%	0.61
7. Study tours, workshops, and other capacity development activities	0.40	100.0%	-	0.0%	0.40
Subtotal (A)	142.82	46.6%	163.34	53.4%	306.16
Total Base Cost	142.82	46.6%	163.34	53.4%	306.16
B. Contingencies					
1. Physical	-	0.0%	9.18	100.0%	9.18
2. Price	-	0.0%	16.29	100.0%	16.29
Subtotal (B)	-	0.0%	25.47	100.0%	25.47
C. Financial Charges During Implementation					
1. Interest during construction	6.61	100.0%	-	0.0%	6.61
2. Commitment charges	0.57	100.0%	-	0.0%	0.57
Subtotal (C)	7.18	100.0%	-	0.0%	7.18
Total Project Cost (A+B+C)	150.00	44.3%	188.81	55.7%	338.81
Taxes and duties included ^b	2.80	44.4%	3.50	55.6%	6.30

ADB = Asian Development Bank.

^a Excluding CNY56.80 million or \$8.27 million included in other items.

^b The government will finance the taxes and duties by cash.

Source: Asian Development Bank estimates.

F. Detailed Cost Estimates by Outputs

Table IV-5: Detailed Cost Estimates by Output
(\$ million)

Item	Total Cost	Output 1: Water Resources Development		Output 2: Restoration of Environment, Ecology, and Land Productivity		Project Management	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment Costs							
1. Civil works	151.07	149.91	99.2%	1.17	0.8%	-	0.0%
a. ADB financing	145.85	144.69	99.2%	1.17	0.8%	-	0.0%
b. Non-ADB financing	5.22	5.22	100.0%	-	0.0%	-	0.0%
2. Goods	31.48	18.81	59.7%	12.68	40.3%	-	0.0%
a. ADB financing	18.70	6.02	32.2%	12.68	67.8%	-	0.0%
b. Non-ADB financing	12.79	12.79	100.0%	-	0.0%	-	0.0%
3. Design, procurement, and supervision	31.13	28.85	92.7%	2.28	7.3%	-	0.0%
4. Land acquisition and resettlement	89.01	89.01	100.0%	-	0.0%	-	0.0%
5. Environmental protection ^a	1.44	1.44	100.0%	-	0.0%	-	0.0%
6. Consulting services	1.62	-	0.0%	0.61	37.4%	1.02	62.6%
a. Project management	1.02	-	0.0%	-	0.0%	1.02	100.0%
b. Water and soil management	0.61	-	0.0%	0.61	100.0%	-	0.0%
7. Study tours, workshops, and other capacity development activities	0.40	-	0.0%	0.40	100.0%	-	0.0%
Subtotal (A)	306.16	288.01	94.1% 	17.13	5.6% 	1.02	0.3%
Total Base Cost	306.16	288.01	94.1% 	17.13	5.6% 	1.02	0.3%
B. Contingencies							
1. Physical	9.18	8.64	94.1%	0.51	5.6%	0.03	0.3%
2. Price	16.29	14.79	90.8%	1.43	8.8%	0.07	0.4%
Subtotal (B)	25.47	23.43	92.0% 	1.94	7.6% 	0.10	0.4%
C. Financial Charges During Implementation							
1. Interest during construction	6.61	6.18	93.5%	0.38	5.7%	0.05	0.8%
2. Commitment charges	0.57	0.49	86.4%	0.07	13.1%	0.00	0.5%
Subtotal (C)	7.18	6.67	92.9% 	0.45	6.3% 	0.05	0.7%
Total Project Cost (A+B+C)	338.81	318.12	93.9% 	19.53	5.8% 	1.17	0.3%

ADB = Asian Development Bank.

^a Excluding CNY56.80 million or \$8.27 million included in other items.

Source: Asian Development Bank estimates.

G. Detailed Cost Estimates by Year

Table IV-6: Detailed Cost Estimates by Year
(\$ million)

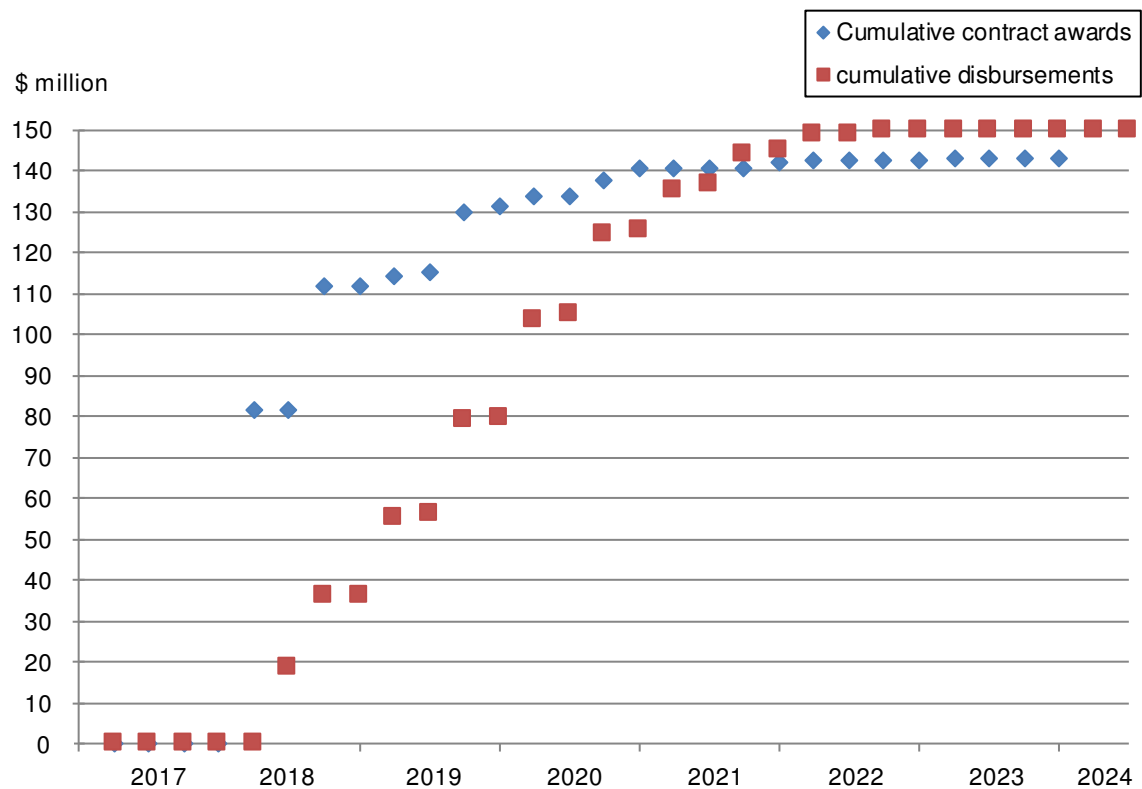
Item	Total Cost (\$ million)	2016	2017	2018	2019	2020	2021	2022	2023
A. Investment Costs									
1. Civil works	151.07	-	13.48	33.06	45.60	44.52	10.70	3.72	-
a. ADB financing	145.85	-	9.53	31.91	45.48	44.52	10.70	3.72	-
b. Non-ADB financing	5.22	-	3.95	1.15	0.12	-	-	-	-
2. Goods	31.48	-	0.23	0.71	4.44	10.48	13.79	1.82	0.01
a. ADB financing	18.70	-	0.23	0.11	3.76	5.69	7.74	1.14	0.01
b. Non-ADB financing	12.79	-	-	0.60	0.68	4.78	6.04	0.68	-
3. Design, procurement, and supervision	31.13	2.59	6.27	7.57	6.70	5.40	1.95	0.65	-
4. Land acquisition and resettlement	89.01	9.80	56.66	15.36	4.68	2.51	-	-	-
5. Environmental protection ^a	1.44	-	0.32	0.39	0.39	0.33	0.01	-	-
6. Consulting services	1.62	-	0.20	0.20	0.31	0.24	0.26	0.27	0.15
a. Project management	1.02	-	0.20	0.18	0.18	0.15	0.15	0.11	0.06
b. Water and soil management	0.61	-	-	0.02	0.13	0.09	0.11	0.16	0.09
7. Study tours, workshops, and other capacity development activities	0.40	-	0.02	0.01	-	0.30	0.03	0.03	0.02
Subtotal (A)	306.16	12.40	77.17	57.29	62.12	63.77	26.73	6.49	0.18
Total Base Cost	306.16	12.40	77.17	57.29	62.12	63.77	26.73	6.49	0.18
B. Contingencies									
1. Physical	9.18	0.37	2.32	1.72	1.86	1.91	0.80	0.19	0.01
2. Price	16.29	0.22	1.46	2.23	3.70	5.14	2.71	0.81	0.03
Subtotal (B)	25.47	0.59	3.77	3.95	5.56	7.05	3.51	1.00	0.03
C. Financial Charges During Implementation									
1. Interest during construction	6.61	-	0.09	0.46	1.18	2.07	2.72	0.09	0.00
2. Commitment charges	0.57	-	0.20	0.17	0.12	0.06	0.01	-	-
Subtotal (C)	7.18	-	0.29	0.63	1.30	2.13	2.73	0.09	0.00
Total Project Cost (A+B+C)	338.81	12.99	81.23	61.87	68.98	72.96	32.97	7.59	0.21

ADB = Asian Development Bank.

^a Excluding CNY56.80 million or \$8.27 million included in other items.

Source: Asian Development Bank estimates.

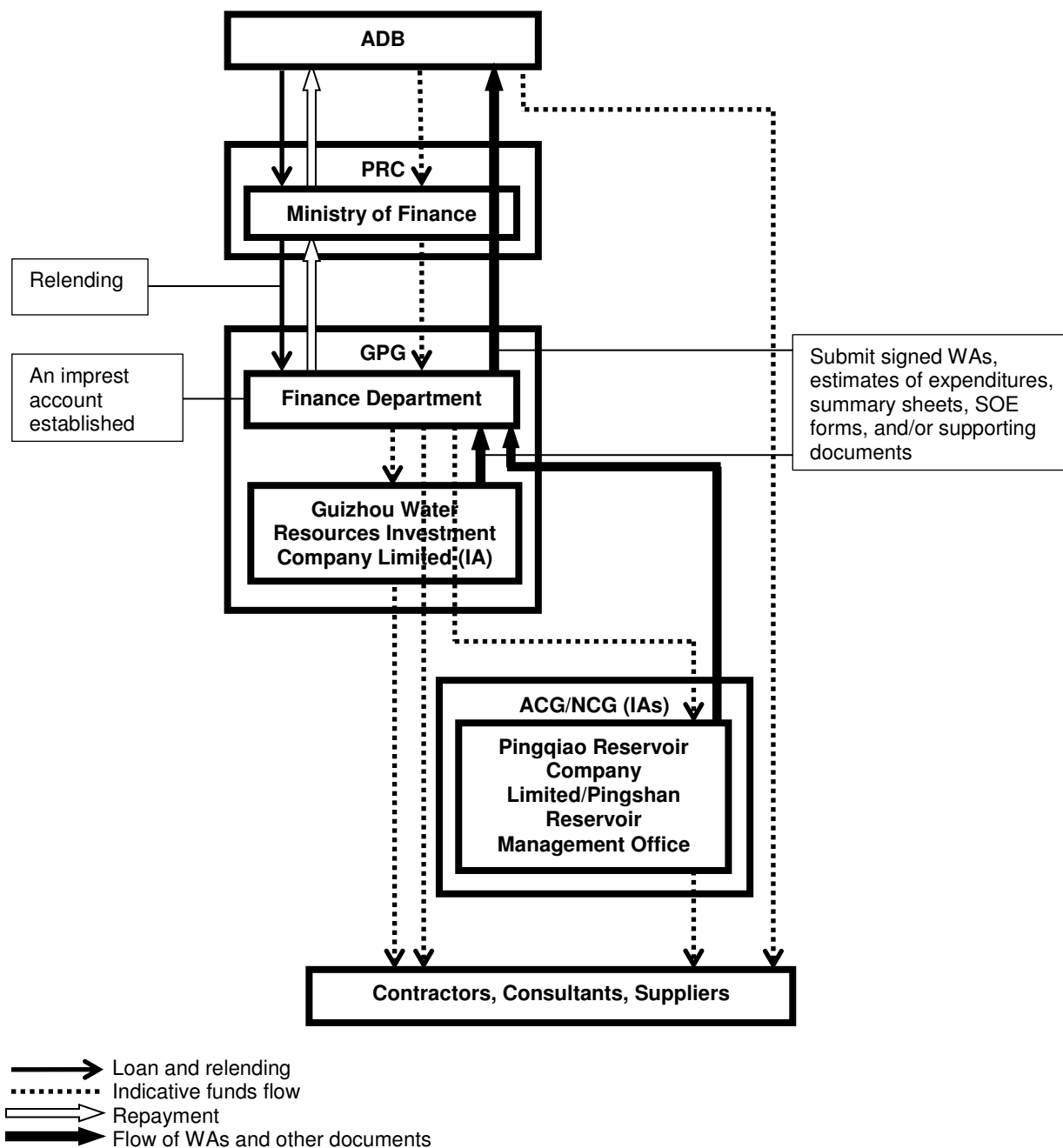
H. Contract Awards and Disbursement S-Curve



(\$ million)

Year	Contract Awards ^a					Disbursements				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2017	-	-	-	-	0.00	-	-	-	-	0.00
2018	81.58	0.02	30.36	-	111.96	-	18.62	17.35	0.40	36.37
2019	2.35	1.16	14.31	1.65	19.46	19.09	0.59	23.05	0.71	43.44
2020	2.45	0.01	3.90	2.73	9.09	23.82	1.17	19.68	0.96	45.63
2021	0.03	0.01	0.01	1.32	1.36	9.73	1.57	7.25	1.17	19.72
2022	0.89	0.01	0.01	0.01	0.92	3.86	0.08	0.70	0.01	4.65
2023	0.02	0.01	-	-	0.03	0.18	0.00	-	-	0.18
2024						-	-			0.00
Total					142.82					150.00

I. Funds Flow Diagram



ACG = Anlong County Government, ADB = Asian Development Bank, GPG = Guizhou Provincial government, IA = implementing agency, NCG = Nayong County Government, PRC = People's Republic of China, SOE = statement of expenditure, WA = withdrawal application.
Source: Asian Development Bank.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

25. The financial management assessment was conducted in 2016 in accordance with ADB's Guidelines for the Financial Management and Analysis of Projects, the Financial Due Diligence: A Methodology Note, and the Technical Guidance Note: Financial Management Assessment. The financial management assessment considered the capacity of the GPG, ACG, and NCG, including funds-flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements. Based on the assessment, the financial management risk before considering mitigation measures is moderate mainly because of moderate inherent risk (low country-specific risks and moderate entity-specific risks); moderate control risk (low risks for implementing agencies, funds flow, external audit, reporting and monitoring, and information systems; and moderate risks for staffing and internal audit); and comparatively high level of financial management capacities (high capacities for financial accounting, entry treasury, statutory reporting, budgeting, and project budgeting and costing; and medium capacities for management accounting and reporting, financial modeling and project evaluation techniques, and internal control and audit). The GPG, ACG, and NCG have agreed to implement an action plan as key measures to address the deficiencies. The financial management action plan is provided in Table V-1.

Table V-1: Financial Management Action Plan

Action	Responsibility	Timeline
1. Training on ADB disbursement procedures and requirements	GPFD, PMO, PIUs, consultants	1 month before the first disbursement
2. Training on ADB financial management requirements, including accounting and auditing and foreign exchange and interest rate risk management	GPFD, PMO, PIUs, Guizhou Provincial Audit Office, consultants	1 month before loan effectiveness
3. Recruitment of experienced consultants and skilled accountants to enhance the operational capacities	PMO, ADB	1 month before loan effectiveness
4. Development of financial management manuals	GPFD, PMO, PIUs, consultants	1 month before loan effectiveness
5. Close monitoring to timely identify potential issues in counterpart funding.	GPFD, PMO, PIUs, consultants, ADB	Throughout project implementation

ADB = Asian Development Bank, GPFD = Guizhou Provincial Finance Department, PIU = project implementation unit, PMO = project management office.

Source: Asian Development Bank.

B. Disbursement

1. Disbursement Arrangements for ADB

26. The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.²² Project staff is encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

27. The GWIC will be responsible for all disbursement arrangements for expenditures related to re-vegetation, climate change monitoring equipment, study tours, workshops, and other

²² Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning

capacity development activities. The ACG and NCG will be responsible for all disbursement arrangements for expenditures related to construction of Pingqiao or Pingshan reservoirs and related water transfer facilities and sustainable farming pilot projects.

28. The GWIC, ACG, and NCG will prepare withdrawal applications and submit them to ADB through GPFD. At the end of each year, the PMO will prepare realistic projections of contract awards and disbursements for the following year and submit them to ADB.

29. **Advance fund procedure.** To facilitate project implementation through timely release of loan proceeds, the GPFD will establish an advance account promptly after loan effectiveness at a commercial bank. The advance account is to be used exclusively for the ADB's share of eligible expenditures. The currency of the advance account will be US dollar. The GPFD, who established the advance account in its name, is accountable and responsible for proper use of advances to the advance account.

30. The total outstanding advance to the advance account should not exceed the estimate of ADB's share of expenditures to be paid through the advance account for the forthcoming 6 months. The GPFD may request for initial and additional advances to the advance account based on an Estimate of Expenditure Sheet setting out the estimated expenditures to be financed through the account for the forthcoming 6 months.²³ Supporting documents should be submitted to ADB or retained by the GPFD, GWIC, ACG or NCG in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time),²⁴ and other detailed arrangements agreed by ADB and the government. The Loan Disbursement Handbook describes which supporting documents should be submitted to ADB and which should be retained by the government, for liquidation and replenishment of the advance account.

31. **Statement of Expenditure (SOE) procedure.** The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance account.²⁵ Supporting documents and records for the expenditures claimed under the SOE should be maintained and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit. Reimbursement and liquidation of individual payments in excess of the SOE ceiling should be supported by full documentation when submitting the withdrawal application to ADB.

32. Before the submission of the first withdrawal application, the GPG, through GPFD, should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of GPG, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is US\$100,000 equivalent. Individual payments below this amount should be paid (i) by GWIC, ACG, and NCG, and subsequently claimed to ADB through reimbursement, or (ii) through the advance fund procedure, unless otherwise accepted by ADB.

2. Disbursement Arrangements for Counterpart Fund

33. GWIC, ACG, and NCG will timely provide counterpart funds for civil works; goods; design, procurement and supervision; land acquisition and resettlement; environmental protection; and

²³ Estimate of Expenditure Sheet is available in Appendix 8A of the Loan Disbursement Handbook (footnote 25).

²⁴ Loan Disbursement Handbook: <http://www.adb.org/documents/loan-disbursement-handbook>

²⁵ SOE forms are available in Appendix 7B of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

contingencies as specified in the loan and project agreements. The GWIC, ACG, and NCG will disburse counterpart funds to contractors, suppliers, service providers, and people affected by land acquisition and resettlement.

C. Accounting

34. GPG will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following Accounting Methods for Projects Financed by the World Bank (reference No. 2000 [13]).²⁶ GPG will prepare consolidated project financial statements in accordance with the government's accounting laws and regulations, which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

35. GPG will cause the detailed consolidated project financial statements to be audited in accordance with international standards on auditing and the PRC auditing standards (where these are consistent with international standards on auditing), by an independent auditor acceptable to ADB. The audited project financial statements together with the auditors' opinion will be submitted in the English language to ADB within 6 months of the end of the fiscal year by GPG.

36. The audit report for the project accounts will include a management letter and audit opinions, which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loan were used only for the purposes of the project; and (iii) whether the borrower or GPG was in compliance with the financial covenants contained in the legal agreements.

37. Compliance with financial reporting and auditing requirements will be monitored by ADB review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

38. GPG, ACG, and NCG have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.²⁷ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

²⁶ Accounting regulations issued by the Ministry of Finance for all foreign aid-funded projects.

²⁷ ADB's approach and procedures regarding delayed submission of audited project financial statements:

- (i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- (ii) When audited project financial statements are not received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (a) inform the executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months.
- (iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

39. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Public Communications Policy (2011).²⁸ After review, ADB will disclose the audited project financial statements for the opinion of the auditors on their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited entity financial statements will not be disclosed.²⁹

²⁸ Public Communications Policy: <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>

²⁹ This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

40. **Advance contracting.** Advance contracting will apply to the recruitment of consultants and civil works and goods for reservoir construction. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Guidelines (2015, as amended from time to time),³⁰ and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time),³¹ and will require ADB's prior review and approval of each step.

41. Retroactive financing will apply to the recruitment of consultants and civil works and goods for reservoir construction. Retroactive financing will be subject to a maximum amount equivalent to 20% of the loan amount for eligible expenditures incurred prior to loan effectiveness, but not earlier than 12 months before the loan agreement is signed.

B. Procurement of Works, Goods, and Consulting Services

42. All procurement of works and goods will be undertaken in accordance with ADB's Procurement Guidelines.

43. Before the start of any procurement, ADB and the government will review the public procurement laws of the central and state governments to ensure consistency with ADB's Procurement Guidelines.

44. A procurement plan indicating threshold and review procedures; works, goods, and consulting service contract packages; and national competitive bidding guidelines are in Section C.

1. International Competitive Bidding (ICB) and National Competitive Bidding (NCB)

45. ICB will be used for contracts estimated to cost \$40 million equivalent or above for civil works, and \$3 million equivalent or above for goods. The latest ADB standard ICB document which can be downloaded from ADB website will be used for ICB. NCB will be used for contracts estimated to cost over \$100,000 equivalent and less than \$40 million equivalent for civil works, and over \$100,000 equivalent and less than \$3 million equivalent for goods. For procurement under NCB, the following provisions will be applied: (i) the advertisement will be limited to the national press, an official gazette, or an open access website; (ii) standard bidding documents issued by the Ministry of Finance will be used; and (iii) bidding documents will only be in the Chinese (except for the first NCB contracts for civil works and goods for Anlong, the first NCB contracts for civil works and goods for Nayong [four contracts in total] which require ADB's prior review and approval), and the currency for bidding and payment will be in Chinese yuan. Invitations for bids for all ICB contracts and NCB contracts which are estimated to cost \$500,000 equivalent or above for goods or \$1,000,000 equivalent or above for civil works need to be submitted to ADB at latest one week before the advertisement for parallel advertisement in Business Opportunities of ADB's website. Unless otherwise agreed between the GPG and ADB and set forth in the procurement plan, procurements under ICB and NCB will use the single-stage one-envelope procedure.

³⁰ Available at: <https://www.adb.org/documents/procurement-guidelines>

³¹ Available at: <http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf>

2. Shopping and Direct Contracting

46. Shopping will be used for contracts estimated to cost \$100,000 equivalent or below. Direct contracting will be used for contracts for maintenance of climate change monitoring equipment to be conducted by the supplier, which is estimated to cost \$10,000 equivalent or below.

3. Consulting Services

47. All individual consultants, consulting firms, and an independent agency for semiannual external resettlement monitoring and evaluation (M&E) will be recruited according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).³² An estimated 182.0 person-months of national consulting services are required for (i) startup support for project implementation; (ii) project management support; (iii) water and rocky desertification management; and (iv) semiannual external resettlement M&E. The indicative terms of reference for consulting services are in Appendix 2.

4. Thresholds for ADB Review

48. For (i) all ICB and NCB contracts for advance contracting, (ii) the first NCB contracts for civil works and goods for Anlong the first NCB contracts for civil works and goods for Nayong [four contracts in total]; (iii) all the other ICB and NCB contracts for works and goods estimated to cost \$10 million equivalent or above, and (iv) direct contracting estimated to cost over \$10,000 equivalent, ADB's prior review and approval of the following documents (if applicable) will be required for: invitation for bids, bidding documents, bid evaluation report, draft negotiated contract, signed contract, and contract variations.

49. The other contracts for civil works and goods will be subject to post review, and for each contract, (i) ADB's approval of the invitation for bids and bidding document for NCB (if applicable) will not be necessary as long as the first NCB document approved by ADB is used as a model without substantial modification; (ii) procurement process can be conducted without ADB's prior approval (advertisement of invitations for bids for all ICB contracts and NCB contracts which is estimated to cost \$500,000 equivalent or above for goods or \$1,000,000 equivalent or above for civil works needs to be submitted to ADB at latest one week before the advertisement for parallel advertisement in Business Opportunities of ADB's website); and (iii) after the contract is signed, the bid evaluation report (if applicable) and signed contract needs to be submitted to ADB for ADB's post-facto review and approval.

50. For all consultant recruitments (including the recruitments of an independent agency for semiannual external resettlement M&E), ADB's prior review and approval of each step will be required.

C. Procurement Plan

51. The procurement plan shall be updated as needed throughout the duration of the project.

³² Checklists for actions required to contract consultants by method available in e-Handbook on Project Implementation at: <http://www.adb.org/documents/handbooks/project-implementation/>

Basic Data

Project Name: Guizhou Rocky Desertification Area Water Management Project	
Project Number: 48468	Approval Number:
Country: People's Republic of China	Executing Agency: Guizhou Provincial Government
Project Procurement Classification: B	Implementing Agency: Guizhou Water Resources Investment Company Limited, Anlong county government, and Nayong county government
Project Procurement Risk: Moderate	
Project Financing Amount: ADB Financing: \$ 150.0 million Non-ADB Financing: US\$ 189.5 million	Project Closing Date: 31 December 2023
Date of First Procurement Plan: 27 April 2017	Date of this Procurement Plan: 27 April 2017

1. Methods, Thresholds, Review, and Procurement Plan

a. Procurement, Consulting Methods, and Thresholds

52. Except as ADB may otherwise agree, the following process thresholds shall apply to procurement of works and goods:

Procurement of Works and Goods		
Methods	Threshold	Comments
International competitive bidding for works	=> \$40,000,000	
International competitive bidding for goods	=> \$3,000,000	
National competitive bidding for works	> \$100,000 and < \$40,000,000	
National competitive bidding for goods	> \$100,000 and < \$3,000,000	
Shopping for works	=< \$100,000	
Shopping for goods	=< \$100,000	
Direct contracting for goods	=< \$10,000	For contracts for maintenance of climate change monitoring equipment to be conducted by the supplier.

Consulting Services	
Methods	Comments
Quality- and cost-based selection	For two contracts for (i) project management support, and (ii) water and rocky desertification management. Six submissions required for ADB's prior review and approval: Submission 0 (budget, terms of reference, etc.); Submission 1 (short-list, draft request for proposal, etc.); Submission 2 (evaluation of technical proposals, etc.); Submission 3 (evaluation of financial proposals, overall ranking, etc.); Submission 4 (draft negotiated contract, etc.); and Submission 5 (signed contract, etc.).
Consultants qualifications selection	Five submissions required for ADB's prior review and approval: Submission 0 (budget, terms of reference, etc.), Submission 1 (evaluation of expressions of interest, draft request for proposal, etc.), Submission 2 (evaluation of technical and financial proposals, etc.), Submission 3 (draft negotiated contract, etc.), and Submission 4 (signed contract, etc.).
Individual consultant selection	For contracts with three individual consultants for startup supports for project implementation (for project management and procurement, environment, and land acquisition and resettlement) Two submissions required for ADB's prior review and approval: Submission 1 (proposal for engagement of consultant including short-list, etc.); and Submission 2 (signed contract, etc.).

b. Goods and Works Contracts Estimated to Cost \$1 Million or More

53. The following table lists goods and works contracts over the life of the project to cost more than \$1 million:

Package Number	General Description	Estimated Value (\$ million)	Procurement Method	Review (prior /post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
Output 1: Water Resources Conservation							
1-1. Construction of Pingqiao Reservoir and Water Transfer Facilities							
Civil Works							
PQ-CW-01	Construction of dam, spillway, and related structures and facilities for Pingqiao Reservoir	35.22	NCB	Prior	1S1E	Q3 2017	First civil works contract for Anlong County. For advance contracting and retroactive financing. First NCB document for works.
PQ-CW-02	Construction of water transfer facilities including water diversion tunnel and metal structures (57.3 km) for water transfer from Pingqiao Reservoir	36.27	NCB	Prior	1S1E	Q1 2018	.
Goods							
PQ-GD-01	Supply and installation of equipment for a pump station for water transfer from Pingqiao Reservoir	2.32	NCB	Post	1S1E	Q3 2018	.
PQ-GD-02	Supply and installation of water automatic monitoring equipment for Pingqiao Reservoir	1.27	NCB	Post	1S1E	Q2 2019	
1-2. Construction of Pingshan Reservoir and Water Transfer Facilities							
Civil Works							
PS-CW-01	Construction of dam for Pingshan Reservoir	35.16	NCB	Prior	1S1E	Q3 2017	First civil works contract for Nayong County. For advance contracting and retroactive financing. First NCB document for works.
PS-CW-02	Construction of spillway, roads, and related structures and facilities for Pingshan Reservoir	22.32	NCB	Prior	1S1E	Q3 2017	For advance contracting.
PS-CW-03	Construction of water intake, water diversion facility, and related structure for Pingshan Reservoir	15.71	NCB	Prior	1S1E	Q4 2018	
Goods							
PS-GD-02	Supply and installation of dam safety monitoring	1.24	NCB	Prior	1S1E	Q3 2017	First goods contract for Nayong County.

	equipment for Pingshan Reservoir.						For advance contracting and retroactive financing. First NCB document for goods.
Output 2. Restoration of Environment, Ecology, and Land Productivity							
2-1. Re-vegetation in Rocky Desertification Areas							
Goods							
PQ-GD-04	Purchase of seedlings, materials, and equipment for re-vegetation in Anlong County	1.93	NCB	Post	1S1E	Q1 2019	
PS-GD-03	Purchase of seedlings, materials, and equipment for re-vegetation in Nayong County	2.70	NCB	Post	1S1E	Q1 2019	
2-2. Promotion of Sustainable Farming to Reduce Rocky Desertification Areas							
2-2-1. Pilot Project in Anlong County							
Goods							
PQ-GD-05	Supply and installation of equipment for water transfer system (2km) for pilot project in Anlong County (2km)	1.75	NCB	Post	1S1E	Q4 2019	
PQ-GD-06	Supply and installation of equipment for Irrigation system for pilot project in Anlong County	1.65	NCB	Post	1S1E	Q4 2019	
PQ-GD-07	Purchase of seedlings, materials, and equipment for pilot project in Anlong County	1.31	NCB	Post	1S1E	Q2 2021	
2-2-2. Pilot Project in Nayong County							
Goods							
PS-GD-05	Supply and installation of equipment for Irrigation system for pilot project in Nayong County	1.65	NCB	Post	1S1E	Q1 2020	

CW = civil works, GD = goods, NCB = national competitive bidding, PQ =Pingqiao, PRC = People's Republic of China, PS = Pingshan, Q = quarter, 1S1E = one stage one envelope.

c. Consulting Services Contracts Estimated to Cost \$100,000 or More

54. The following table lists consulting services contracts over the life of the project to cost more than \$100,000.

Package Number	General Description	Estimated Value (\$ million)	Recruitment Method	Review (prior /post)	Advertisement Date (month/year)	Type of Proposal	Comments
CS-04	External resettlement monitoring and evaluation agency	0.24	CQS	Prior	Q2 2017	BTP	For advance contracting and retroactive financing. Assignment: national.

PQ-CW-03	Irrigation facility construction and land preparation for pilot project in Anlong County	0.58	NCB	Post	1S1E	Q4 2019	.
2-2-2. Pilot Project in Nayong County							
Works							
PS-CW-04	Irrigation facility construction and land preparation for pilot project in Nayong County	0.58	NCB	Post	1S1E	Q1 2020	
Goods							
PS-GD-04	Supply and installation of equipment for water transfer system (2km) for pilot project in Nayong County	0.59	NCB	Post	1S1E	Q1 2020	
PS-GD-06	Purchase of seedlings, materials, and equipment for pilot project in Nayong County	0.86	NCB	Post	1S1E	Q3 2021	
2-3. Monitoring							
2-3.1. In Anlong County							
Goods							
PQ-GD-08	Supply and installation of climate change monitoring equipment for Anlong County	0.06	Shopping	Post	-	Q4 2017	ADB model shopping document for goods.
PQ-GD-09	Maintenance of climate change monitoring equipment in Anlong County	0.06	Shopping/ Direct Contracting	Prior/Post	-	2019-2023	Multiple packages. ADB model shopping document for goods/PRC document for direct contracting for goods.
2-3-2. In Nayong County							
Goods							
PS-GD-07	Supply and installation of climate change monitoring equipment for Nayong County	0.06	Shopping	Post	-	Q4 2017	ADB model shopping document for goods.
PS-GD-08	Maintenance of climate change monitoring equipment in Nayong County	0.06	Shopping/ Direct Contracting	Prior/Post	-	2019-2023	Multiple packages. ADB model shopping document for goods/ PRC document for direct contracting for goods.

CW = civil works, GD = goods, NCB = national competitive bidding, PQ = Pingqiao, PRC = People's Republic of China, PS = Pingshan, Q = quarter, 1S1E = one stage one envelope

Package Number	General Description	Estimated Value (\$ million)	Recruitment Method	Review (prior /post)	Advertisement Date (month/year)	Type of Proposal	Comments
CS-01	Individual national project management and procurement consultant for initial project management support	0.03	IS	Prior	Q2 2017	NA	For advance contracting and retroactive financing. Assignment: national.
CS-02	Individual national environment specialist for initial project management support	0.03	IS	Prior	Q2 2017	NA	For advance contracting and retroactive financing. Assignment: national.
CS-03	Individual national resettlement specialist for initial project management support	0.03	IS	Prior	Q2 2017	NA	For advance contracting and retroactive financing. Assignment: national.

CS = consulting service, IS = individual consultant selection, NA = not applicable.

2. Non-ADB Financing

56. The following table list works and, goods, works and consulting services contracts over the life of the project, financed by non-ADB sources.

Works and Goods				
General Description	Estimated Value (Cumulative, \$ million)	Estimated Number of Contracts	Procurement Method	Comment
Water diversion works for Pingqiao Reservoir construction - PQ-CW-(1)	2.84	1	Domestic method	Advertisement in Q3 2016
Supply and installation of left main channel pipelines (12.1 km) and right main channel siphon-inverted pipelines (2.3 km) for water transfer from Pingqiao Reservoir - PQ-GD-(1)	2.50	1	Domestic method	Advertisement in Q2 2018
Supply and installation of right main channel pipelines (9.2 km) for water transfer from Pingqiao Reservoir - PQ-GD-(2)	2.77	1	Domestic method	Advertisement in Q3 2018
Supply and installation of water resources monitoring equipment for Pingqiao Reservoir - PQ-GD-(3)	0.71	1	Domestic method	Advertisement in Q2 2018
Water diversion works for Pingshan Reservoir construction - PS-CW-(1)	2.38	1	Domestic method	Advertisement in Q2 2017
Supply and installation of south main channel pipelines (12.7 km) for water transfer from Pingshan Reservoir (12.717km) - PS-GD-(1)	2.75	1	Domestic method	Advertisement in Q1 2018
Supply and installation of west main channel pipelines and branch channel pipelines (27.8 km) and valves for water transfer from Pingshan reservoir (27.823km) - PS-GD-(2)	2.41	1	Domestic method	Advertisement in Q2 2018
Supply and installation of pipelines valves for water transfer from Pingshan Reservoir - PS-GD-(3)	1.65	1	Domestic method	Advertisement in Q3 2018

CW = civil works, GD = goods PQ = Pingqiao, PS = Pingshan, Q = quarter.

Services				
General Description	Estimated Value (Cumulative, \$ million)	Estimated Number of Contracts	Procurement Method	Comment
Design institutes, procurement agencies, and construction supervision consultants	19.01	24	Domestic method	
Environmental monitoring	0.80	2	Domestic method	

3. National Competitive Bidding

a. Regulation and Reference Documents

57. The procedures to be followed for national competitive bidding shall be those set forth in *The Government Procurement Law of People's Republic of China* approved on 29 June 2002 and *Law of the People's Republic of China on Bid Invitation and Bidding of the People's Republic of China* promulgated on August 30, 1999 with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the *ADB Procurement Guidelines*.

b. Procurement Procedures

(i) Competitive Bidding Procedure (Procurement Law Art. 26 and Law on Bidding Art. 10).

58. Public tendering is the acceptable method of government procurement, and public invitation is the accepted bid invitation mode.

(ii) Eligibility

59. The eligibility of bidders shall be as defined under section I of the Procurement Guidelines; accordingly, no bidder or potential bidder should be declared ineligible for reasons other than those provided in section I of the Guidelines, as amended from time to time.

(iii) Advertising

60. All invitations to prequalify or to bid shall be advertised in the national press (China Daily Newspaper) or a free and open access website (www.chinabidding.com). Such advertisement shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. In any event, a minimum preparation period of twenty-eight (28) days shall be given. The preparation period shall count (a) from the date of advertisement, or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.

(iv) Bidding Period

61. The minimum bidding period is 28 days prior to the deadline for the submission of bids.

(v) Participation by Government-Owned Enterprises

62. Government owned enterprises in the Borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law and (c) are not a dependent agency of the Borrower/Project Executing Agency.

(vi) Rebidding

63. Re-bidding shall not be allowed solely because the number of bids is less than three (3).

c. Bidding Documents

(vii) Qualification requirements

64. Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents, and in the prequalification documents if the bidding is preceded by a prequalification process.

(viii) Bid Submission and Opening

65. Bidders shall be allowed to submit bids by mail or by hand.

10. All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.

(ix) Bid Evaluation and Award

66. No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the Borrower/Project Executing Agency.

67. Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources and whose bid has been determined (a) to be substantially responsive to the bidding documents and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.

(x) ADB Policy Clauses

68. Each contract financed with the proceeds of the Loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.

69. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that the Borrower shall reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question.

70. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that ADB will declare a firm or individual ineligible, either indefinitely or for a stated period, to be awarded a contract financed by ADB, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices or any integrity violation in competing for, or in executing, ADB-financed contract.

VII. SAFEGUARDS

A. Environment

71. **Environment due diligence.** The project is classified by ADB as category A for environment. An environmental impact assessment (EIA), including an environmental management plan (EMP), was prepared and disclosed on the ADB website.³³ The EIA complies with ADB's policies and requirements including ADB's Safeguard Policy Statement (2009) (SPS).³⁴ The EIA concludes that the anticipated environmental impacts of the project can be addressed through mitigation measures prescribed in the EMP. The EMP includes mitigation and monitoring requirements and institutional responsibilities to ensure proper environmental management throughout construction and operation. The EMP is in Appendix 1 of the PAM.

72. **Updating the EMP and inclusion in bidding documents.** For preliminary and detailed designs, the PMO will forward the EMP to the design institutes for incorporating the mitigation measures into the designs. If any changes are made to the project design approved by ADB, the EMP needs to be updated as necessary. To ensure that bidders respond to the EMP provisions, the PMO and PIUs ensure that Pingqiao Reservoir Company Limited and Pingshan Reservoir Management Office will prepare and provide the procurement agency with the following specification clauses for incorporation into the bidding documents: (i) a list of environmental management requirements to be budgeted by the bidders in their proposals, (ii) environmental clauses for contractual terms and conditions, and (iii) the updated EIA and EMP, and, the domestic EIAs.

73. **EMP implementation.** The GPG, ACG, and NCG will be responsible for ensuring that the project will be designed, constructed, decommissioned, and operated in accordance with (i) the national and local government environmental, health, and safety laws, regulations, procedures, and guidelines; (ii) the SPS, and (iii) the EIA including the EMP. The GPG holds final responsibility for the implementation and compliance with the EMP. The GPG has assigned one full-time and qualified PMO environment officer who leads the coordination and implementation of the EMP. The ACG and NCG has each assigned one full-time and qualified PIU environment officer who supports the PMO environment officer and be responsible for the implementation of the EMP and related daily coordination at the site level. Contractors will be responsible for internal environmental monitoring, and construction supervision consultants will be responsible for supervision during construction. Environmental impact monitoring will be conducted by the local environment monitoring agencies, contracted by the ACG and NCG. Roles and responsibilities to implement the EMP are defined in the EMP.

74. An individual consultant for environment will be recruited for project implementation startup support. A project implementation management support consulting team including an environment specialist will be also recruited. These consultants will support the contractors in implementing the EMP and the PMO and PIUs in monitoring the implementation of the EMP.

75. **Budget requirements for the EMP.** The GPG, ACG, and NCG shall make available necessary budgetary and human resources to fully implement the EMP. If any unanticipated

³³ ADB. People's Republic of China: Guizhou Rocky Desertification Area Water Management Project. <https://www.adb.org/projects/48468-002/main>.

³⁴ The SPS is available both in English and Chinese language at <http://www.adb.org/Documents/Policies/Safeguards/Safeguard-Policy-Statement-June2009.pdf> and <http://www.adb.org/Documents/Translations/Chinese/Safeguard-Policy-Statement-cn.pdf>.

environmental risks and impacts arise during construction and/or operation that were not considered in the EIA, the GPG, ACG, and/or NCG, through the PMO, shall promptly inform ADB in writing of the occurrence of such risks or impacts, with detailed description and an action plan for incorporation in the EMP.

76. **Capacity building.** The GWIC, AGC, and NCG have no previous experience with ADB-funded projects or ADB's safeguard requirements. To ensure effective implementation of the EMP, a capacity building program will be implemented on EMP implementation, supervision, reporting, and the grievance redress mechanism (GRM). Training will be provided by the individual consultant for environment for project implementation startup support, the environment specialist in the project management support consultant team, and other consultants in the team. Trainees will include the staff of the PMO, GWIC, ACG, and NCG; contractors; and construction supervision consultants. Training programs will cover adjustment and implementation of the EMP, GRM, and environmental risks of the project, mitigation measures, monitoring, and reporting.

B. Involuntary Resettlement

77. **Land acquisition and resettlement.** The project is classified by ADB as category A for involuntary resettlement. Resettlement plans (RPs) were prepared following the SPS. In order to avoid or minimize land acquisition and resettlement, there was close consultation with the officials of the ACG and NCG and affected communities during project preparation including the feasibility study and preliminary design stages for optimal and proper engineering schemes of the project. Based on the impact survey among four construction components, there are two components which will involve significant amount of land acquisition and resettlement. One is the construction of Pingqiao Reservoir and related water transfer facilities in Anlong, and the other is the construction of Pingshan Reservoir and related water transfer facilities in Nayong.

78. According to the physical index survey, a total of 2,261 households with 7,980 persons will be affected by permanent land acquisition, out of which 3,190 persons in 678 households will be physically relocated and resettled. A total of 8,014.69 mu (534.31 ha) land will be affected permanently, including 194.85 mu (12.99 ha) state land and 7,819.84 mu (521.32 ha) of collective land; 113,285.6 m² of residential structures will be demolished; and 1,737.09 mu (115.81 ha) of collective land will be occupied temporarily.

79. Due diligence has been conducted for the component for the restoration of environment, ecology, and land productivity in both counties, and it was identified that no land acquisition and resettlement will be involved.

80. For the construction of Pingqiao Reservoir and related water transfer facilities, a total of 6,208.29 mu (413.89 ha) of land areas will be acquired or occupied permanently (138.14 mu [9.21 ha] state land and 6,070.15 mu [404.68 ha] collective land) from 17 villages in Getang, Puping, Sayu, and Haizi Townships and Xifeng Street Administration Office. A total of 1,979 households with 6,334 persons will be affected by permanent acquisition of collective land; out of which 2,743 persons in 583 rural households will be physically displaced and require relocation. A total of 101,836.1 m² of residential structures will be demolished. A total of 1,036.47 mu (69.10 ha) of collective land will be temporarily occupied.

81. For the construction of Pingshan Reservoir and related water transfer facilities, a total of 1,806.40 mu (120.43 ha) of land areas will be required, which include 56.71 mu (3.78 ha) of stated owned land and 1,749.69 mu (116.65 ha) of rural collective land, affecting 25 villages in Zongling, Yongxi, Shuguang, and Yangchang Townships. A total of 282 households with 901 persons will

be affected by permanent acquisition of collective land, and out of them 95 households with 447 persons will also be affected by house demolition. A total of 11,449.5 m² of residential structures will be demolished. QA total of 700.62 mu (46.71 ha) of collective land will be temporarily occupied.

82. **Laws and resettlement policies.** Compensation for permanent land acquisition is based on the Land Administration Law of the PRC, amended in 2004; Rural Land Contract Law of the PRC (1 March 2003); State Council's Decision to Deepen Reform and Strictly Enforce Land Administration (21 October 2004); Instruction on Updating Land Acquisition Compensation and Resettlement Policy (3 November 2004); Regulation on Land Acquisition Compensation and Resettlement for the Construction of Large- and Medium-Size Hydropower Works (2006); and Opinions of the State Council on Improvement of Post-Resettlement Support Policies for Reservoir-Induced Resettlement (2006). Meanwhile, the project will also adopt relevant policies on land acquisition and resettlement of the local governments including the ACG and NCG. The RPs were prepared to comply with the SPS.

83. Based on the consultations with local governments and affected persons (APs), and general practice in Anlong and Nayong, resettlement principles established for the project are (i) land acquisition and involuntary resettlement should be avoided or minimized where feasible by developing and comparing a series of design alternatives; (ii) compensation and entitlements provided must be adequate to allow the APs to at least maintain their pre-project standard of living, with the prospect of improvement; (iii) land temporarily occupied and the period for disruption are to be kept to a minimum; (iv) all the APs, legal and illegal, are to be taken into consideration and accounted for; (v) RPs should be prepared and implemented in accordance with state land rehabilitation policy, national economic and social development plans, and the SPS; (vi) all the APs will be adequately informed about eligibility, compensation rates and standards, livelihood and income restoration plans, and project timing; (vii) RPs should be coordinated with such things as regional development, economic development, and environmental protection; (viii) practical and feasible measures should be formulated to restore the affected items; (ix) a preferential policy and assistance will be provided to vulnerable groups in such things as employment; and (x) close monitoring and timely actions will be carried out to identify and resolve any problems.

84. **Resettlement Plans and Update.** RPs were prepared following the SPS, and related laws and regulations of the PRC. The RPs include compensation, resettlement, and rehabilitation measures to restore living standards of the APS. The RP for Anlong is based on a detailed resettlement implementation plan and is deemed final. The RP for Nayong needs updating after a detailed resettlement implementation plan is prepared; and the final RP will need to be re-submitted to ADB for approval. The GPG and NCG will re-endorse the final RP and re-disclose it to affected villages. Any civil works involving resettlement impacts in Nayong will not start until the updated RP is approved by ADB.

85. **Resettlement and livelihood restoration.** The resettlement strategy encompasses (i) cash or cash plus house plot in host communities, and (ii) the restoration of livelihoods and income. For people losing land, various livelihood rehabilitation strategies will be implemented to recover the livelihood and income of land loss farmers, including replacement land, cash compensation, pension and social insurance, employment opportunity generation, development of cultivation and livestock breeding, development of private-operated businesses, skill training, etc. A post-resettlement support fund will be provided to the relocated people at CNY 600 per resettler per year for 20 years. For people losing housing, they will receive cash compensation or cash plus house plot in the resettlement sites. With cash compensation, the resettled residents

could re-construct their houses in the resettlement sites or purchase houses in other places they prefer. All the relocated households will also receive a relocation allowance. The county resettlement offices and local governments will provide necessary assistance for relocation during resettlement implementation.

86. For vulnerable groups, attention and assistance will be given to their special needs and expectations. The PIUs will supervise the implementation of the land acquisition and resettlement to ensure that these vulnerable persons receive adequate compensation, livelihood and income restoration, housing arrangement, special fund, minimum living guarantee, and assistance to restore their living conditions and incomes.

87. **Information disclosure, public participation, and grievance redress.** The APs have been and will be further notified about the key elements of the RPs, which is based on the measurement survey. On various occasions during measurement, social economic survey, meetings organized by village committee and resident committees, and other consultations between June 2010 and August 2016; the APs have participated in the planning and their concerns have been integrated into the RPs. Through the village and residents committees' meetings, and visits to the affected households, the compensation rates and resettlement issues have been consulted, their feedback and comments have been addressed, and the common opinions have been reached. All of their concerned issues and comments have been integrated into the RPs. More consultation meetings will be held in future. The resettlement information booklets have been distributed to the affected communities and households. The RPs have been redistributed to village committees and resident committees. The PIUs will be responsible for supervising implementation, continuing public consultation, monitoring progress, and responding to grievances. The GRM is well established and explanations are included in the RPs and resettlement information booklets.

88. The GRM has been established to solve resettlement issues that may arise. It consists of four stages. The four stages channels include (i) affected village or residential committees; (ii) affected township government offices or street committee offices; (iii) the PIUs, ACG, and NCG; and (iv) county resettlement offices. The stages of the GRM are elaborated below:

- (i) Stage 1: AP(s) makes a verbal or written dissatisfaction to the village committee/resident committee. If it is verbal discontent, the village committee/resident committee must make a written record. The village committee/resident committee makes a clear answer within two weeks.
- (ii) Stage 2: If the AP(s) is not satisfied with the response of the stage 1, they can complain to the township government office or street committee office. The township government office or street committee office must make a clear answer within two weeks.
- (iii) Stage 3: The AP(s) can appeal to the PIU, ACG, or NCG within one month after receiving the decision from stage 2. The PIU, ACG, or NCG makes a decision to deal with the appeal within three weeks.
- (iv) Stage 4: If the AP(s) is still dissatisfied for the reply from the PIU, ACG, or NCG, they can appeal to the county resettlement office within one month after they received the reply. The county resettlement office makes a reply within four weeks. If the AP(s) is still dissatisfied with the reply, they can appeal to the administrative arbitration.

89. Alternatively and at any time, the AP(s) can appeal to the civil division of the people's court according to the civil procedural law after receiving the reply from the county resettlement office.

The AP(s) is informed of the result via written notice.

90. The APs also can express dissatisfaction to the external resettlement M&E agency, and the external resettlement M&E agency reports to the PIU. The AP(s) also can submit a complaint application to ADB to solve the problem. If the problem is still not resolved, and the AP(s) thinks that ADB has not performed according to corresponding policies and has caused harm, they can submit an appeal according to the ADB accountability mechanism.³⁵

91. **Institutional arrangements.** Each of the ACG and NCG will arrange over 40 staff to be responsible for the land acquisition and resettlement, drawing staff from relevant agencies directly under the county government. The county resettlement office is mainly responsible for coordination for planning, implementation, financial account, and supervision of land acquisition and resettlement, and will work closely with village committees and/or resident committees, township governments, land and resources administration bureau, and the design institute that prepared the RP. The external resettlement M&E agency will train staff of the PIU, ACG, NCG, county resettlement offices, and other relevant agencies.

92. **Cost estimates and implementation schedule.** The cost estimate for land acquisition and resettlement is CNY 611.08 million or \$ 89.01 million, including costs for compensation for permanent land acquisition, residential house demolition, ground attachments, relocation allowances, construction of resettlement sites, relevant land taxes, other costs, and contingency. All land acquisition and resettlement activities will be completed by 31 December 2020. Construction will not take place before the APs are fully compensated and relocated, and all arrangements are made to commence the livelihood rehabilitation activities and the APs are registered for these.

93. **Monitoring and evaluation.** Internal and external monitoring of the RP implementation will be conducted to ensure successful implementation of the RP. The internal supervision and monitoring will be conducted semiannually by the PMO and PIUs to ensure the resettlement activities are implemented according to the RPs. The external M&E will be conducted semiannually during the implementation of land acquisition and resettlement and annually for two years after the completion of land acquisition and resettlement, by an external resettlement M&E agency, and it is responsible for the submission of M&E reports to the PMO, PIUs, and ADB.

94. The detailed institutional arrangements, budgets, and implementation schedule are included in the RPs.

³⁵ ADB. Accountability Mechanism. <http://www.adb.org/site/accountability-mechanism/main>

Table VII-1: Summary Land Acquisition and Resettlement Impacts

Name of Project Component	Affected Townships/ Street Committee	Type of Land (mu)			Temporary Occupation of Collective-Land (mu) ^a	House Demolition (m ²)	Affected Population (No.)							
		Collective-owned	State-owned	Subtotal			Permanent Land Acquisition		House Demolition		Permanent Land Acquisition and House Demolition		Subtotal	
							HHs	APs	HHs	APs	HHs	APs	HHs	APs
Pingqiao Reservoir and related water transfer facilities	Getang, Haizi, Puping, Sayu Township Committees and Xifeng Street Committee	6,070.15	138.14	6,208.29	1,036.47	101,836.1	1,979	7,079	583	2,743	583	2,743	1,979	7,079
Pingshan Reservoir and related water transfer facilities	Zongling, Yongxi, Shuguang and Yangchang Township Committees	1,749.69	56.71	1,806.40	700.62	11,449.50	282	901	95	447	95	447	282	901
TOTAL		7,819.84	194.85	8,014.69	1,737.09	113,285.60	2,261	7,980	678	3,190	678	3,190	2,261	7,980

^a A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 square meters).

AP = affected person, HH = household, m² = square meter.

Source: Asian Development Bank.

Table VII-2: Resettlement Implementation Milestones

Resettlement Tasks	Target	Responsible Agency	Timeline	Status
1. Disclosure				
1.1 Information booklet	2,261 households, 7,980 people	ACG and NCG including PIUs	By October 2016	Completed
1.2 RP approval	42 villages, 8 townships, and 1 street committee	ACG and NCG including resettlement offices, township governments, and street committee office	By October 2016	Completed
1.3 RP posted on ADB website		PMO, ADB	By October 2016	Completed
2. Approval of RP and Budget				
	CNY611.1 million	ACG and NCG including resettlement offices, township governments, and street committee office	By October 2016	Completed
3. Agreements				
3.1 Compensation rates	42 villages, 8 townships, and 1 street committee	ACG and NCG including land resources administration bureaus and resettlement offices, township governments, and street committee office	October 2016–December 2018	Ongoing
3.2 Households	678 households, 3,190	ACG and NCG including land resources administration bureaus and resettlement offices, village committees, and/or resident committees	October 2016–December 2018	Ongoing
4. Detailed Plans				
4.1 Village rehabilitation plans	42 villages	ACG and NCG including PIUs and resettlement offices, and design institutes	December 2016–March 2021	Ongoing
4.2 Plan for vulnerable group	234 households	ACG and NCG including PIUs, resettlement offices, civil affairs bureaus, and labor and social security bureaus	December 2016–March 2021	Ongoing
4.3 Training plans for affected people	7,980 people	ACG and NCG including PIUs and resettlement offices, and institutions for training	June 2017–March 2021	Planned
5. Establishment of implementation capacity				
		GPG including project leading group and PMO; and ACG and NCG including county project leading groups, PIUs, resettlement offices, and land resources administration bureaus	Jun 2016–December 2018	Ongoing
6. Monitoring & Evaluation				
6.1 Baseline survey	2,261 households, 7,980 people	ACG and NCG including PIUs, resettlement offices, and land resources administration bureaus; design institutes; and external resettlement M&E agency	July–December 2017	Planned
6.2 Set-up internal supervision		PMO; and ACG and NCG including PIUs, resettlement offices, and land resources administration bureaus	October 2016–June 2017	Ongoing
6.3 Hiring external monitor		PMO	April–June 2017	Planned
6.4 Internal monitoring reports (as a part of quarterly project progress reports)	2,261 households, 7,980 people	PMO; ACG and NCG including PIUs, resettlement offices, and land resources administration bureaus; and consultants	December 2017–December 2022	Planned

Resettlement Tasks	Target	Responsible Agency	Timeline	Status
6.5 External M&E reports	2,261 households, 7,980 people	External resettlement M&E agency	December 2017–December 2020 (semiannually) December 2021–December 2022 (annually)	Planned
6.6 Resettlement completion report (as a part of project completion report)	2,261 households, 7,980 people	PMO; ACG and NCG including PIUs, resettlement offices, and land resources administration bureaus; consultants; and external resettlement M&E agency	By December 2023	Planned
7. Documentation of Consultation		ACG and NCG including PIUs, resettlement offices, and land resources administration bureaus; village committees and/or resident committees	December 2020	Ongoing
8. Documentation of Grievances		ADB; ACG and NCG including PIUs, and resettlement offices; township governments; street committee office; village committees and/or resident committees; and external resettlement M&E agency	October 2016–December 2022	Ongoing
9. Flow of Funds / Compensation				
9.1 To county resettlement offices		ACG and NCG	December 2016	Ongoing
9.2 To affected village committees and/or villages		ACG and NCG including resettlement offices and land resources administration bureaus	December 2016–December 2020 and after	Ongoing
9.3 To affected households		ACG and NCG including resettlement offices and land resources administration bureaus	December 2016–December 2020 and after	Ongoing

ACG = Anlong County Government, ADB = Asian Development Bank, GPG = Guizhou Provincial Government, M&E = monitoring and evaluation, NCG = Nayong County Government, PIU = project implementation unit, PMO = project management office, RO = resettlement office, RP = resettlement plan.

Source: Asian Development Bank.

C. Indigenous Peoples/Ethnic Minorities

95. The project is classified by ADB as Category B on indigenous peoples according to the SPS. The project area includes ethnic minority population, which constitutes 52% of project beneficiaries in Anlong and Nayong. While adverse impacts of land acquisition, resettlement, and civil works on ethnic minorities (as well as other population) have been addressed by RPs and EMP, other impacts will be mostly positive. Ethnic minority and social development plans (EMSDPs) have been prepared in line with the SPS and disclosed locally as well as posted on ADB website (footnote 33). EMSDPs include measures to ensure that ethnic minorities participate in and benefit from project activities, and adverse impacts to them are avoided or mitigated. EMSDP Section 6 requires that continued consultation, participation and monitoring will take place during the project implementation; and EMSDP action plan Table 10-6 specifies relevant actions and targets including on consultation and participation. Further, PAM Section E on Stakeholder Communication Strategy includes information disclosure and communication measures including for EMSDPs. The measures in Table VII-3 are consultation and participation activities for project implementation stage and methods of consultation and communications with project stakeholders, including ethnic minorities. These measures are based on the EMSDP actions, etc. and will be implemented and monitored closely during the project implementation.

Table VII-3: Consultation and Communication Measures

Project Implementation Stage/Activity	Consultation and Communication Measures	Methods
Planning, detailed design, and updating plans	Information disclosure and consultations	Posting on websites, public posting in villages, and consultation meetings. Target audience or participants are affected people, beneficiaries and local stakeholders, including ethnic minorities.
Regular information updates on EMSDPs and other safeguard documents	Update regularly affected people and other stakeholders about the EMSDPs and other safeguard plans	Websites, public notice boards, and meetings. The target audience and participants as above.
Implementation of EMSDPs	Inform about project components and activities and how they will be implemented. Seek questions, suggestions, and/or concerns. Special attention will be paid to the participation of women, ethnic minorities, and other vulnerable groups	Information disclosure and consultation meetings. Target audience and participants as above.
Water tariff proposals	Public hearings will be held for any proposed adjustments in water supply tariff with attendance of adequate representation of poor, women, and ethnic minorities	Public meetings. Target audience and participants as above.
Monitoring reports	Disclose information from monitoring reports to affected persons and stakeholders	Websites, notice boards, and meetings. Target audience/participants as above.
Participation of local people in project employment	Provide information and training before the construction so that local people participate and benefit	Notices and training. Target audience and participants as above, with at least 40% ethnic minorities and 30–40% women.
Participation of local people in sanitation-related activities	Ensure public participation of and consultation with local villages and communities	Meetings and dissemination activities. Target audience and participants as above.
Participation of local people in irrigation and drinking water	Prepare and implement public participation and awareness raising	Meetings and dissemination activities. Target audience and participants as above.
Community participation in reforestation and sustainable farming	Prepare and implement public participation and training programs	Meetings and training. Target audience and participants as above.
Implementation of resettlement and other safeguard plans	Implement compensation and restoration measures, including special assistance for EMs, the poor and vulnerable	In compliance with relevant plans, with special emphasis to ensure that EMs and vulnerable groups participate and receive benefits adequately and in culturally-appropriate manners.
Mitigation of risks during construction	Adequately disseminate information to local people about environmental and social mitigation measures during construction	In compliance with relevant plans, ensuring that information is provided in local languages. Target audience as above.
Participation of poor and vulnerable peoples in overall project activities	Ensure local poor people, including poor women and poor ethnic minorities participate in the overall project activities	Meetings and dissemination activities. Target audience are poor and vulnerable people, including ethnic minorities.
Project management	Include bilingual ethnic minority staff in the project management team, including Buyi or Miao speaking staff at the local level.	Bilingual staff ensure communication and participation in local language with ethnic minorities.

EM = ethnic minority, EMSDP = ethnic minority and social development plan.

96. The GPG, ACG, and NCG will implement the EMSDPs with help of consultants. ADB loan will finance the costs for the consultants. The project will further strengthen the capacity of the GPG, ACG, and NCG through training and consultancy supports to implement the EMSDPs in line with ADB's social safeguard requirements.

97. **Grievance Redress Mechanism.** A GRM has been developed in compliance with the SPS's requirements to address environmental, health, safety, and social concerns associated with construction, operation, and land acquisition arrangements under the project. The details of the GRM, including a time-bound flow chart of procedures, are included in the EMP and RPs. The complaint channels are slightly different for environmental and resettlement issues, but the PMO will maintain an integrated system to document, follow-up, and report on all cases.

98. **Prohibited investment activities.** Pursuant to the SPS, ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS. This includes the production of, or trade in, tobacco (a crop widely grown in Anlong and Nayong).

VIII. GENDER AND SOCIAL DIMENSIONS

A. Poverty Reduction and Social Strategy

99. Poverty, social, and gender analyses were undertaken and adequate measures have been included in the project design to ensure that local people, including the poor, women, and ethnic minorities, benefit from the project. The project will provide significant poverty reduction and socio-economic development benefits for local farmers and residents. A total of 718,950 people will benefit directly from improved irrigation, water supply, fruit tree plantation, and sustainable farming. Significant portions of the beneficiaries comprise the poor (21%) and ethnic minorities (52%). Availability of water supply and irrigation after the project is expected to increase their income and living standards through increased agricultural productivity and other livelihood opportunities. In addition, the project will create local employment opportunities during construction and operation. Consultations have been undertaken with local communities during project preparation, and consultations will be continued during project implementation. Households in the project area are not expected to have affordability issues since the share of their income spent for water services is expected to be below the benchmark of 5%. Key measures to address possible exclusion of the poor and vulnerable groups include: (i) representation of vulnerable groups, including women, ethnic minorities, and the poor in public hearings on tariff; and (ii) assessment of tariff proposals on their impact on the poor. The details are included in the Summary Poverty Reduction and Social Strategy.³⁶

B. Gender

100. The project is categorized by ADB as effective gender mainstreaming. The project will provide significant benefits for women. Availability of water will save women's time for collecting water and provide them with opportunities to participate in profitable economic activities such as cash crop cultivation and businesses. A gender action plan (GAP) has been prepared addressing gender issues identified during the social analysis; and it comprises specific measures for women, including: (i) their involvement in design and implementation of project activities; (ii) targeted employment and benefits for them during construction and operation; (iii) training and capacity building for women beneficiaries; and (iv) monitoring of the GAP including collection of sex-disaggregated data. The GPG, ACG, and NCG will implement and monitor the GAP and report the progress to ADB. The GAP is presented in the table below.

³⁶ Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2 of the RRP).

Table VIII-1: Gender Action Plan

Activity	Targets and Indicators	Responsible Agencies	Budget	Timing (Year)
A. Generating Job Opportunities to Increase Residents' Income (All Outputs)				
Construction Phase: A total of 12,590 employment and training opportunities 1. Ensure women's employment opportunities in the project construction phase 2. Identify the needs of women's employment in the construction contracts 3. Ensure work environment and conditions in construction sites are responsive to women's needs 4. Provide STI and HIV/AIDS knowledge and awareness to the construction workers and village/community residents 5. Hold village/residents information dissemination events before starting the project construction and publish information including starting dates and completion dates, safety, and others. 6. Ensure equal pay for equal work 7. Ensure training provision (e.g. labor law, working skills, safety, hygiene) to women workers by the contractors	Targets: ➤ 30% of job and training positions in the project construction are provided to women ➤ All working sites have specific facilities (e.g. specific toilet) designed for women workers ➤ All women workers receive awareness training on STI and HIV/AIDS, employment rights, and equal pay for equal work Baseline: 0	PMO, PIU, contractors, ACWF, EMRAO, LSSB, CDC	Project construction budget	2017–2021
Operational Phase: A total of 2,740 employment and training opportunities (110 in reservoir operation and the remaining in the agriculture sector) 1. Ensure women's employment opportunities in project operation phase 2. Ensure equal pay for equal work 3. Ensure training provision (e.g. labor law, working skills, safety, hygiene) to women workers by the IAs 4. Protect the rights and interests of women workers	Targets: ➤ 30% of employment and training opportunities are received by women ➤ All women workers receive training on rights and receive equal pay for equal work Baseline: 0	PIU, ACWF, EMRAO, LSSB	PIU's operating budget	After 2021
B. Water Resources Conservation (Output 1)				
1. Participation in the consultation and decision-making process of reservoir and water transfer facility design 2. Implementation of garbage collection, sanitation management, and 3R promotion in the reservoir areas 3. Introduction of water-saving agriculture 4. Implementation of public awareness on water-saving and drinking water safety in villages/communities and schools 5. Implementation of public hearings on water tariff 6. Implementation and training of water-saving measures 7. Training on operation and maintenance of irrigation and water supply systems	Targets: ➤ 50% of participants are local women in the consultation and decision-making process of reservoir and water transfer facility design ➤ 40% of participants are women to receive public education and training on garbage collection, sanitation management, and 3R promotion in schools and households, water-saving agriculture, awareness of drinking water safety, introduction of high efficiency irrigation and water supply	PMO, PIU, WCB, VO/CO, ACWF, SD, AB, EB, RCU, PIC social and gender specialist	Project budget	2017–2021

Activity	Targets and Indicators	Responsible Agencies	Budget	Timing (Year)
8. Establishment of water users association 9. Information materials dissemination	system, respectively (i.e. 40% are women for each activity) ➤ 40% of participants are women in public hearings on water tariff ➤ 40% women's representation in water-users association Baseline: 0			
C. Restoration of Environment, Ecology, and Land Productivity in Rocky Desertification Areas (Output 2)				
1. Participation of local residents in consultation and decision-making process of each subproject component design 2. Tree selection, planting, and maintenance 3. Introduction and promotion of sustainable agriculture and productive agriculture 4. Soil erosion prevention to farmers 5. Information materials dissemination	Targets: ➤ 50% of participants are local women in the consultation and decision-making process of each subproject component design of re-vegetation, water supply and irrigation, and sustainable agriculture (i.e. 50% are women for each activity) ➤ 40% of participants are women in tree selection, planting and maintenance, sustainable agriculture, soil erosion protection, and eco-compensation programs respectively (i.e. 40% are women for each activity) Baseline: 0	PMO, PIU, WCB, VO/CO, ACWF, FB, AB, EB, RCU, PIC social and gender specialist	Project budget	2017–2022
D. Capacity Building				
1. Provide training for PMO and PIU on: (i) ADB gender policy and the project's GAP; (ii) how to implement and monitor GAP; and (iii) gender issues on water, forestry, and agriculture and the importance of gender mainstreaming in all project components 2. Provide guidance on GAP to village/community office staff in order to implement and monitor GAP more effectively	Targets: ➤ All staff in the PMO and PIU receive training on GAP, relevant gender issues, and how to implement and monitor GAP ➤ Women staff in all training account for at least 30% Baseline: 0	GPMO, PMO, PIU, relevant local government organizations, PIC social and gender specialist	Project budget	2017–2021
E. Project Management				
1. Social and gender specialist is included in the project management support consultant team to guide the implementation of GAP and provide training to the PMO and PIU 2. PMO, PIU, and VC/RC each assign at least one staff to undertake the GAP activities 3. Nominate at least one women in village office or community office, to act as the contact person between the local residents and PMO, and attend all project related public meetings and consultations to facilitate	Targets: ➤ Social and gender specialist is recruited to guide and assists in implementing GAP activities ➤ At least one staff of each PMO, PIU, and VO/CO is appointed to undertake the GAP activities. Baseline: 0	PMO, PIU, VO/CO	Project budget	2017–2022

Activity	Targets and Indicators	Responsible Agencies	Budget	Timing (Year)
effective participation of all participants, including women				

AB = agriculture bureau, ACWF = All China Women's Federation, AIDS = acquired immune deficiency syndrome, CDC = center for disease control, CO = community office, EMRAO = ethnic minority and religion affairs office, EMSDAP = ethnic minority and social development plan, EB = education bureau, FB = forest bureau, GAP = gender action plan, GPMO = Guizhou project management office, HIV = human immunodeficiency virus, IA = implementing agency, LSSB = labor and social security bureau, PIC = project implementation consultant, PIU = project implementation unit, PMO = project management office, RC = resident committee, RCU = rural credit union, SD = sanitation department, STI = sexually-transmitted infections, VC = village committee, VO = village office, WCB = water conservation bureau.

Source: Asian Development Bank.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

Table IX-1: Design and Monitoring Framework

Impact the Project is Aligned with			
Livelihoods of people living in rocky desertification areas improved (Guizhou Provincial Master Plan for Water Resources Development, Ecological Improvement, and Rocky Desertification Management) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Rocky desertification area reduced	By 2025 a. Rocky desertification areas decreased to 685 km ² in Anlong and 601 km ² in Nayong (2014 baselines: 724 km ² in Anlong and 622 km ² in Nayong)	a. Reports and/or records of Anlong and Nayong forestry bureaus on rocky desertification	Forest fires may decrease vegetation and promote rocky desertification.
Outputs 1. Water resources conserved	1a. By 2021, water storage capacity of reservoirs increased to 78,980,000 m ³ in Anlong and 14,690,000 m ³ in Nayong (2016 baseline: 0 m ³ in both Anlong and Nayong) 1b. By 2021, number of water user associations with at least 40% of women's representation in the executive committee increased to 3 in Anlong and 2 in Nayong project area (2016 baseline: 0 in both Anlong and Nayong) 1c. By 2023, 30% of jobs in civil works and 40% of opportunities in other activities (e.g., water saving, sanitation) provided to women (2016 baseline: 0)	1a. Reports and/or records of Anlong and Nayong water resources bureaus on water resources 1b.–1c. ADB mission reports, quarterly project progress reports, and project completion report	Counterpart fund provision may be delayed.
2. Environment, ecology, and land productivity restored	2a. By 2020, lands categorized as forest or orchard increased to 1,599 ha in Anlong project area and 1,029 ha in Nayong (2016 baselines: 620 ha in Anlong and 273 ha in Nayong) 2b. By 2023, sustainable farming pilot tested with production of CNY40 against 1 m ³ of irrigation water in both Anlong and Nayong (2016 baseline: Not applicable)	2a.–2h. ADB mission reports, quarterly project progress reports, and project completion report	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
	<p>2c. From 2018 to 2023, rocky desertification and climate change impact on rocky desertification in Anlong and Nayong monitored annually (2016 baseline: Not applicable)</p> <p>2d. By 2021, number of reservoirs in Anlong and Nayong to which eco-compensation mechanism is established increased to 2 (2016 baseline: 0)</p> <p>2e. By 2021, protected revegetated areas increased to 669 ha in Anlong and 414 ha in Nayong (2016 baselines: 0 ha in both Anlong and Nayong)</p> <p>2f. By 2021, institutional arrangements established, including funding mechanisms, to sustain the restoration of environment, ecology, and land productivity after the project (2016 baseline: Not applicable)</p> <p>2g. By 2023, 30% of jobs in civil works and 40% of opportunities in other activities (e.g., tree planting, soil protection) provided to women (2016 baseline: 0)</p> <p>2h. By 2023, 1,100 people trained in the restoration of environment, ecology, and land productivity, of which at least 40% are women (2016 baseline: Not applicable)</p>		

Key Activities with Milestones

Output 1: Water resources conserved

- 1.1 Conduct procurement (Q4 2016–Q4 2019, intermittently)
- 1.2 Implement land acquisition and resettlement (Q4 2016–Q4 2020, intermittently)
- 1.3 Construct Pingqiao and Pingshan reservoirs and water transfer facilities (Q1 2017–Q1 2021)
- 1.4 Implement the EMP (Q1 2017–Q1 2021)
- 1.5 Establish water user associations (Q4 2020–Q4 2021)

Output 2: Environment, ecology, and land productivity restored

- 2.1 Prepare engineering design for revegetation (Q1–Q2 2017); agreements between the PMO and local people for revegetation (Q4 2018–Q2 2019); training in revegetation for local people (Q2–Q3 2019); purchase of materials and trees by the PMO (Q3 2019–Q1 2020); site preparation, revegetation, and simple monitoring by local people (Q3 2019–Q1 2020); and detailed monitoring of the revegetation on sampling basis by consultants (Q2 2020–Q1 2021, intermittently)
- 2.2 Conduct procurement for sustainable farming pilot projects (Q4 2019–Q1 2022, intermittently); construction of irrigation facilities and land preparation for the pilot projects (Q1 2020–Q4 2021); training in sustainable farming for local farmers (Q4 2021–Q1 2022); sustainable farming by local farmers (Q3 2021–Q2 2023); and detailed monitoring on the sustainable farming by consultants (Q4 2022–Q2 2023)

2.3 Monitor climate change impact on rocky desertification (Q1 2018–Q4 2023, intermittently); establishment of eco-compensation mechanisms for Pingqiao and Pingshan reservoirs (Q4 2019–Q4 2021); protection of important revegetated areas (Q2 2020–Q1 2021); review of policies, regulations, and recommendations for improvements (Q2 2020–Q1 2021); review of microfinancing systems, and recommendations for improvements (Q2 2022–Q1 2023); domestic and overseas study tours for water and rocky desertification management (Q2 2020–Q1 2023, intermittently); and dissemination of project initiatives (Q2 2022–Q2 2023)

2.4 Recruit a consultant team for water and rocky desertification management (Q4 2018–Q2 2019); and overall consulting services for water and rocky desertification management (Q2 2019–Q2 2023)

2.5 Implement the EMP (Q3 2019–Q2 2023)

Project Management Activities

Recruit individual consultants for initial project management support (Q1–Q2 2017)

Provide initial project management support through individual consultants (Q2–Q4 2017)

Recruit a consultant team for project management support (Q1–Q3 2017)

Provide project management support through a consultant team (Q4 2017–Q4 2023)

Prepare contracts with local environmental protection bureaus for environmental monitoring (Q4 2017–Q1 2018)

Submit semiannual environmental monitoring reports to ADB (Q1 2018–Q3 2023)

Recruit an independent agency for external resettlement monitoring and evaluation (Q1–Q2 2017)

Submit semiannual external resettlement monitoring and evaluation reports to ADB (Q4 2017–Q4 2021)

Implement ethnic minority and social development, gender action, and consultation and participation plans; and monitor implementation and submit semiannual social monitoring reports to ADB (Q4 2017–Q4 2023)

Monitor and evaluate project impact, outcome, and outputs using the project performance management system; and submit quarterly project progress reports (Q4 2017–Q2 2023)

Submit project completion report (Q4 2023)

Inputs

ADB: \$150.0 million (loan)

Government: \$188.8 million

Assumptions for Partner Financing

Not applicable

ADB = Asian Development Bank, EMP = environmental management plan, ha = hectare, km² = square kilometer, m³ = cubic meter, PMO = project management office, Q = quarter.

^a Guizhou Provincial Government. 2011. *Guizhou Provincial Master Plan for Water Resources Development, Ecological Improvement, and Rocky Desertification Management*. Guiyang.

Source: Asian Development Bank.

B. Monitoring

1. Project Performance Monitoring

101. By loan effectiveness, the PMO will prepare a format of quarterly project progress reports acceptable to ADB; and make necessary arrangements for preparation of the reports, including a flow of data and information collection, responsibility definition of each of relevant agencies (PMO, PIU, GWIC, Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, etc.), and reporting formats (from contractors to the PIUs, from consultants to the PMO, from the PIUs to the PMO, etc.). Quarterly project progress reports will include progress of the overall project and each component; status of consulting services and activities performed by each consultant; information on training, workshops, and study tours conducted; status of land acquisition and resettlement based on internal monitoring; status of the implementation of the EMSDPs and GAP; records of grievance and complaints; project performance (achievement of each performance indicator against the target); and particular issues.

102. Promptly after physical completion of the project, but in any event not later than 6 months thereafter or such later date as ADB may agree for this purpose, the PMO will prepare and submit to ADB a project completion report, in such form and in such detail as ADB shall reasonably request, on the implementation and evaluation of the project, including project description, evaluation of design and implementation, evaluation of performance, and overall assessment and recommendations.

2. Compliance Monitoring

103. The GPG including the GWIC, ACG, NCG, and consultants for project management support will closely monitor the compliance of all the covenants included in the loan and project agreements. The compliance status of the covenants will be reported through quarterly progress reports. ADB will verify the compliance by reviewing quarterly project progress reports, communicating with the PMO, and/or conducting review missions.

3. Safeguards, Gender, and Social Dimension Monitoring

104. **Environment.** Three types of monitoring will be conducted in accordance with the EMP: (i) internal monitoring, to be conducted by the PIUs and construction supervision consultants; (ii) external monitoring of air, water, noise and soil standards, to be conducted by local environment monitoring agencies contracted by the ACG or NCG; and (iii) compliance monitoring, to be conducted by consultants (environment specialists) for project management support, to ensure the EMP is being implemented. The environmental monitoring program is in the EMP. Monitoring shall comply with the PRC standards for environmental monitoring. ADB will oversee the compliance on the basis of semiannual environmental monitoring reports provided by the PMO and review missions.

105. **Environmental acceptance reporting.** Following the PRC Regulation on Project Completion Environmental Audit (Ministry of Environmental Protection, 2001), within three months after the completion of major components, an environmental acceptance report for each shall be prepared by a licensed environmental monitoring institute. The report will be reviewed and approved by the Guizhou Provincial Environmental Protection Department and Anlong and Nayong County Environment Protection Bureaus, and reported by the PMO to ADB. The environmental acceptance reports of the component completions will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the needs for additional mitigation measures and monitoring during operations.

106. **Resettlement.** Internal and external monitoring of RP implementation will be conducted. Monitoring methodologies are specified in the RPs. The PMO/PIUs assisted by the project management consulting service will carry out internal supervision and monitoring and reporting to ensure compliance with the provisions of the RPs. The, PMO, PIUs, and consultants for project management support will develop a set of supervision milestones in accordance with the RPs, to ensure timely and effective implementation of resettlement activities. An external resettlement M&E agency will implement external M&E semiannually during the implementation of land acquisition and resettlement and annually for two years after the completion of land acquisition and resettlement. The cost of the external resettlement M&E will be funded from ADB loan. External resettlement M&E reports will be forwarded directly to ADB.

107. **Ethnic Minority and Social Development Plans.** Monitoring of the EMSDPs will be conducted in accordance to monitoring and reporting methodologies that are specified in the EMSDPs. The PMO and PIUs will carry out internal supervision and monitoring to ensure

compliance with the provisions of the EMSDPs. The GPG including the PMO and the ACG and NCG including the PIUs have agreed to ensure timely and effective implementation of the EMSDPs. The social and gender specialist in the project management support consultant team will support EMSDP implementation and monitoring, and the results will be included in semiannual social monitoring reports, which will be disclosed publicly, until the project completion. The PMOs will ensure that civil works contractors comply with applicable labor laws and core labor standards and provide relevant training to their workers. The PMO will prepare and submit to ADB an EMSDP completion report as a part of the project completion report.

108. **Gender Action Plan.** For monitoring of the GAP, clear targets and indicators have been established in the GAP and some indicators are also included in the design and monitoring framework. The social and gender specialist in the project management support consultant team will assist the PMO and PIUs in setting up effective monitoring systems, by working with the resettlement and social officers of the PMO and PIUs, to ensure implementation of the GAP. The GAP will be monitored semiannually and reported through quarterly project progress reports and during ADB review missions.

C. Evaluation

109. In addition to regular monitoring, project progress and performance will be monitored at least once a year jointly by ADB and GPG during ADB review mission. ADB and GPG will undertake a midterm review in the mid-year of the project implementation period, to conduct a detailed evaluation of the project scope, implementation arrangements, progress of the overall project and each component, and status of achieving the performance targets, recommend appropriate measures including changes in the project scope and/or implementation arrangements, reallocation of loan proceeds, changes in ADB financing ratios, and extension of the loan closing date. Promptly after physical completion of the project, but in any event not later than 6 months thereafter or such later date as ADB may agree for this purpose, the PMO will prepare and submit to ADB a project completion report, in such form and in such detail as ADB shall reasonably request, on the implementation and evaluation of the project.

D. Reporting

110. The GPG will provide ADB with (i) quarterly project progress reports in a format agreed by ADB; (ii) semiannual environmental monitoring reports; and (iii) a project completion report promptly after physical completion of the project, but in any event not later than 6 months thereafter or such later date as ADB may agree for this purpose. The GPG will also ensure that an external resettlement M&E agency will submit M&E reports to ADB (semiannually during the implementation of land acquisition and resettlement and annually for two years after the completion of land acquisition and resettlement). To ensure that project will continue to be both viable and sustainable, project accounts and the GPG's audited financial statement together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

111. Project information will be disclosed through ADB's and government's websites, meetings, interviews, focus group discussions, and community consultation meetings, in accordance with requirements of ADB's information disclosure policy. Main stakeholders are the different agencies of the GPG, ACG, and NCG, beneficiaries, APs, and participants in the project implementation. Stakeholder communication is also part of the EMSDPs and the GAP, and will be monitored accordingly.

112. **Environment.** Meaningful consultation, participation, and information disclosure were conducted for environmental impact assessment during project preparation, including information disclosure, questionnaire surveys, informal visits to villages and households in the project areas, and stakeholder meetings attended by representatives of the affected public and other concerned stakeholders. Dialogue will be maintained with communities in the project areas throughout project implementation. Future consultations will be undertaken by the ACG and NCG, particularly environment officers of the PMO and PIUs, via questionnaire surveys, household visits, workshops, and public hearings during construction.

113. **Involuntary resettlement.** All of the affected households were involved in the project impact and socioeconomic survey. Through meetings, interviews, focus group discussions, public consultation workshops, and community consultation meetings; local representatives participated in the planning, and their concerns have been integrated into the RPs. Before project implementation, the ACG including the PIU and Pingqiao Reservoir Company Limited and the NCG including the PIU and Pingshan Reservoir Management Office will further consult with the APs' representatives about the impacts on local communities and the detailed compensation plans, to ensure APs' interests are protected and to provide employment opportunities for the APs' livelihoods as a result of project implementation. Both the ACG and NCG disclosed the RPs in their offices and the community offices, to the APs in the local languages. The RPs has also been posted on the ADB website (footnote 33). Resettlement information booklets were distributed to affected households. The booklets contain information such as the affected project areas, implementation progress of and procedures for land acquisition and relocation, compensation standards for land acquisition and house demolition, relocation assistance, livelihood restoration strategy, and post-resettlement support. Each PIU includes a full-time resettlement and social officer for supervision of implementation, continued public consultation, monitoring of progress, and response to grievances. The grievance redress procedures have been established and explanations have been included in the resettlement information booklets.

114. **Ethnic minority and social development plans, and gender action plan.** Consultations with communities were conducted and will be continued during the implementation of the EMSDPs and GAP, not only to inform people about project components or activities, but also to enable people to ask questions, make suggestions, state preferences, and/or express concerns. Special attention will be paid to the participation of women, ethnic minorities, and other vulnerable groups, such as the poor. The EMSDPs for Anlong and Nayong have been disclosed on ADB website (footnote 33). The implementation of the EMSDPs and GAP will be monitored, verified by the social and gender specialist in the project management support consultant team, and reported to ADB through quarterly project progress reports. Public hearings will be held for any proposed adjustments in water supply tariff with attendance of adequate representation of poor, women, and ethnic minorities.

115. **Public Disclosure.** ADB, the GPG including the PMO, and ACG and NCG including the PIUs will disclose relevant project information to the public and interested parties. This includes particularly the information regarding the overall project and environment and social safeguards. The information disclosure measures for different stakeholders are described in Table IX-2.

Table IX-2: Public Disclosure Measures

Information	Means of Communication	Responsibility	Audience	Frequency
Report and Recommendation of the President with links to relevant documents	ADB Website	ADB	Public	Once
Project information during design and construction phase	Stakeholder consultations and public notice boards	GPG including PMO, and ACG and NCG including PIUs	Project beneficiaries and affected people	Regular intervals during design and construction phase
Environmental monitoring reports	ADB and GPG websites, and public notice boards	GPG including PMO, and ACG and NCG including PIUs	Affected people and other interested stakeholders	Semiannually
Information on RPs, EMSDPs, and GAP activities	Stakeholder consultation, ADB and GPG websites, and public notice boards	GPG including PMO, and ACG and NCG including PIUs	Affected people and other interested stakeholders	Regularly
External resettlement M&E reports	ADB and GPG websites, and public notice boards	GPG including PMO, and ACG and NCG including PIUs	Affected people and other interested stakeholders	Semiannually during LAR implementation and annually for two years after LAR completion
Project Information Documents	ADB Website	ADB	Public	Quarterly
Project Completion Report	ADB Website	ADB	Public	Once

ACG = Anlong County Government, ADB = Asian Development Bank, EMSDP = ethnic minority and social development plan, GAP = gender action plan, GPG = Guizhou Provincial Government, LAR = land acquisition and resettlement, M&E = monitoring and evaluation, NCG = Nayong County Government, PIU = project implementation unit, PMO = project management office.

Source: Asian Development Bank.

116. Detailed consultation, participation, and information disclosure related to social and environmental safeguards are included in EMP, RPs, and EMSDPs.

X. ANTICORRUPTION POLICY

117. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.³⁷ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.³⁸

118. To support these efforts, relevant provisions are included in the loan and project agreements and the bidding documents for the project.

XI. ACCOUNTABILITY MECHANISM

119. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.³⁹

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

120. All revisions and/or updates during the course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the PAM, including revision to contract awards and disbursement s-curves.

³⁷ Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

³⁸ ADB's Integrity Office web site is available at: <http://www.adb.org/integrity/unit.asp>

³⁹ Accountability Mechanism. Available at: <http://www.adb.org/Accountability-Mechanism/default.asp>.

ENVIRONMENT MANAGEMENT PLAN FOR THE GUIZHOU ROCKY DESERTIFICATION AREA WATER MANAGEMENT PROJECT

People's Republic of China

Prepared by the Guizhou Provincial Government for the Asian Development Bank

This Environmental Management Plan is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. Your attention is directed to the "terms of use" section of the ADB website in which the full Initial Environmental Examination is given.

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TABLE OF CONTENTS

A.	OBJECTIVES	1
B.	ORGANIZATIONS AND THEIR RESPONSIBILITIES FOR EMP IMPLEMENTATION	1
C.	POTENTIAL IMPACTS AND MITIGATION MEASURES	4
D.	ENVIRONMENTAL MONITORING, INSPECTION AND REPORTING	10
E.	TRAINING AND CAPACITY BUILDING	133
F.	GRIEVANCE REDRESS MECHANISM	144
G.	PUBLIC CONSULTATION AND AWARENESS RAISING	177
H.	COST ESTIMATES	177
I.	MECHANISMS FOR FEEDBACK AND ADJUSTMENT	188

A. Objectives

1. This Environmental Management Plan (EMP) is for the Guizhou Rocky Desertification Area Water Management Project. The EMP is to be implemented in all phases of the project – design, pre-construction, construction, and operation. The EMP is to ensure project compliance with People's Republic of China (PRC) environmental laws and Asian Development Bank (ADB)'s Safeguard Policy Statement (SPS 2009). The EMP describes: roles and responsibilities of all project agencies to implement this EMP; mitigation measures; inspection, monitoring, and reporting arrangements; training and institutional strengthening; grievance redress mechanism (GRM); and future public consultation.

2. The EMP describes: roles and responsibilities of all project agencies to implement this EMP; mitigation measures; inspection, monitoring, and reporting arrangements; training and institutional strengthening; grievance redress mechanism (GRM); and future public consultation.

3. In the design stage the Guizhou Project Management Office (PMO) will pass this EMP to the design institutes for incorporating mitigation measures into the detailed designs. The EMP will be updated at the end of the detailed design, as needed. To ensure that bidders will respond to the EMP's provisions, the PMO and county project implementation units (PIUs) will prepare and provide the following specification clauses for incorporation into the bidding documents: (i) a list of environmental management requirements to be budgeted by the bidders in their proposals, (ii) environmental clauses for contractual terms and conditions, and (iii) component domestic Environmental Impact Assessments (DEIAs), and project Environmental Impact Assessment (EIA) including updated EMP for compliance.

B. Organizations and Their Responsibilities for EMP Implementation

4. The Guizhou Provincial Government (GPG) will be the executing agency. A project leading group has been established in the GPG. The project leading group is headed by Director General of Guizhou Provincial Water Resources Department (GPWRD) and consists of representatives from relevant GPG agencies, including Guizhou Provincial Development and Reform Commission (GPDRD), (Guizhou Provincial Finance Department (GPDF), GPWRD, Guizhou Provincial Agriculture Committee, and Guizhou Provincial Forestry Department. The PMO has been established under the project leading group in the GPG. The PMO staff includes staff of GPWRD, Guizhou Provincial Agriculture Committee, Guizhou Provincial Forestry Department, and Guizhou Water Investment Company Limited (GWIC). The PMO staff includes one full-time environmental officer, one full-time resettlement officer, and one full-time interpreter. The GWIC is under GPWRD's jurisdiction and 100% GPG-owned company established in 2011 to invest and administer projects in Guizhou Provincial Master Plan for Water Resources Development, Ecological Development, and Rocky Desertification Management (June 2011).

5. Implementing agencies will be the Anlong County Government (ACG) and Nayong County Government (NCG). In each of the ACG and NCG, (i) a county project leading group, which is headed by Vice Governor of the county government and consists of representatives from relevant county government agencies including the County Development and Reform Committee, Finance Bureau, Water Resources Bureau, Agriculture Bureau, and Forestry Bureau, has been established; and (ii) a PIU has been also established under the county project leading group in the county government. In the ACG, the PIU staff includes staff of the County Water Resources Bureau, County Agriculture Bureau, County Forestry Bureau, and Pingqiao Dam Company Limited that is under County Water Resources Bureau's jurisdiction and 100% ACG-owned company. In the NCG, the PIU staff includes staff of the County Water Resources Bureau, County

Agriculture Bureau, County Forestry Bureau, and Pingshan Reservoir Management Office that belongs to the County Water Resources Bureau. Each PIU includes one full-time Environment Officer and one full-time Resettlement and Social Officer.

6. The EMP implementation arrangements and responsibilities of governmental organizations are summarized in **Table EMP-1**.

Table EMP-1: Institutional Responsibilities for EMP Implementation

Phase	Agency	Environmental Responsibilities
Detailed Design	Design institute	<ul style="list-style-type: none"> Pending any design changes, update the EMP if needed, in cooperation with EIA institute. Incorporate mitigation measures in engineering detail designs and contracts; Formulate contractual environmental clauses
	PMO	<ul style="list-style-type: none"> Recruit loan implementation consultants, including loan implementation environmental consultant (LIEC)
	PMO, PIUs	<ul style="list-style-type: none"> Appoint environment officers
	PIUs	<ul style="list-style-type: none"> Engage external environmental monitor
Tendering; Contracting	PMO, PIUs	<ul style="list-style-type: none"> Incorporate EMP clauses in RFPs and contracts
Construction	PIUs	<ul style="list-style-type: none"> Ensure implementation of mitigation measures, and public consultations Coordinate Grievance Redress Mechanism Organize the establishment of water source protection zones
	County WRBs	<ul style="list-style-type: none"> Review, approve and supervise the establishment of water source protection zones
	Contractor	<ul style="list-style-type: none"> Appoint onsite environmental engineer Implement all mitigation measures, including those on community and occupational health and safety
	On-site environmental engineer	<ul style="list-style-type: none"> Conduct environmental inspection and prepare inspection report
	PMO, County EPB	<ul style="list-style-type: none"> Advise and supervise implementation of mitigation measures
	LIEC	<ul style="list-style-type: none"> Conduct environmental monitoring and supervision (including public consultations) on behalf of PMO Prepare semi-annual environmental monitoring report to ADB and EA
	Independent Environmental Monitoring Agency (IEMA)	<ul style="list-style-type: none"> Conduct compliance monitoring Conduct ambient monitoring in case of construction related environmental emergency
	Licensed environmental institute contracted by PIUs	<ul style="list-style-type: none"> Conduct project completion environmental audit, including sampling and lab tests Prepare project completion environmental audit report
	County EPBs	<ul style="list-style-type: none"> Review and approve project completion environmental audit report, and order corrective actions if necessary
Operation	OPFs	<ul style="list-style-type: none"> Ensure proper operation of subcomponent facilities according to design standards Implement mitigation measures and public consultations Redress grievances
	OPFs	<ul style="list-style-type: none"> Conduct and coordinate environmental monitoring and inspections
	County EMSs on behalf of County EPBs	<ul style="list-style-type: none"> Conduct regular and unannounced environmental compliance monitoring and inspection of waste transfer station

Phase	Agency	Environmental Responsibilities
	County EMSs on behalf of County EPBs	Conduct ambient monitoring of water, air and noise levels along project roads
	County WRBs	Monitor compliance with water source protection zoning requirements

ACG = Anlong County government, ADB = Asian Development Bank, EMS = environmental monitoring station, EIA = environmental impact assessment, EMP = environmental management plan, EMS = environmental monitoring station, EPB = environmental protection bureau, GEPA = Guizhou provincial environmental protection department, IEMA = independent environmental monitoring agency, LIC = loan implementation consultancy, LIEC = loan implementation environment consultant, NCG = Nayong County government, OPF = operator of project facilities, PIU = project implementation unit, PMO = (Guizhou) project management office, PPTA = project preparatory technical assistance, PRC = People's Republic of China, RFP = request for proposal, WRB = water resources bureau.

7. **Environment staff within PMO and the implementing agencies.** The PMO will have main EMP coordination responsibility. The PMO has designated two full time PMO environmental officers responsible for EMP implementation. The officers will: (i) coordinate the implementation of mitigation measures during project design, construction, and operation; (ii) ensure that environmental management, monitoring, and mitigation measures are incorporated into bidding documents, construction contracts, and operation management plans; (iii) submit semiannual EMP monitoring and progress reports to ADB; (iv) implement the GRM; and (v) respond to any unforeseen adverse impacts beyond those mentioned in the EMP. The officers will be technically supported by the national individual loan implementation environment consultant (LIEC). At the county level, the PIU of each implementing agency will include one environment officer. This officer will be responsible for daily implementation of the EMP, working closely with the PMO environment officer, and LIEC. TORs for PMO and PIU environment officers are in **Appendix EMP-1**.

8. **Loan implementation environment consultant.** A LIEC will be hired as national individual consultant under the loan implementation consultant services. The LIEC will advise the PMO, PIUs, contractors, and construction supervision companies (CSC) on all aspects of environmental management and monitoring for the project. The LIEC will (i) assist in updating the EMP and environmental monitoring program, as needed; (ii) supervise the implementation of the mitigation measures specified in the EMP; (iii) on behalf of the PIUs and PMO, prepare the annual EMP monitoring and progress reports in English and Chinese and submit it to ADB; (iv) provide training to the PMO, local PIUs, and construction supervision companies (CSCs) on the PRC's environmental laws, regulations and policies, ADB's SPS (2009), EMP implementation, and GRM in accordance with the training plan (**Table EMP-5**); (v) identify any environment-related implementation issues, and propose necessary corrective actions; and (vi) undertake site visits for EMP inspection as required. The terms of reference (TOR) for the LIEC can be found in **Appendix EMP-1**.

9. **Construction contractors and construction supervision companies (CSCs).** Construction contractors will be responsible for implementing relevant EMP mitigation measures during construction, under the supervision of the CSCs and PIUs. Contractors will develop site-specific EMPs on the basis of this project EMP. The CSCs will be selected through the PRC bidding procedure by the PIUs. The CSCs will be responsible for supervising construction progress and quality, and EMP implementation on construction sites. Each CSC shall have at least one environmental engineer on each construction site to: (i) supervise the contractor's EMP implementation performance, and (ii) prepare the contractor's environmental management performance section in monthly project progress reports submitted to the PIUs and PMO.

10. **Independent Environmental Monitoring Agency (IEMA).** The PIUs will contract an IEMA to conduct periodic environmental impact monitoring during construction and operation in accordance with the monitoring plan (**Table EMP-4**).

C. Potential Impacts and Mitigation Measures

11. **Table EMP-2** lists the potential impacts of the project components during project preparation, implementation and operation, and mitigation measures. The mitigation measures will be incorporated into detailed design, bidding documents, construction contracts and operational management manuals, by the design institutes (during detailed design) and contractors (during construction), under the supervision of CSCs and PIUs, with technical support from the LIECs. The effectiveness of these measures will be evaluated based on environmental inspections and monitoring to determine whether they should be continued, improved or adjusted.

Table EMP-2: Potential Impacts and Mitigation Measures during Pre-construction, Construction, and Operation Phases

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
A. DESIGN PHASE				
Detailed design stage	Institutional strengthening for EMP Implementation and supervision	<ul style="list-style-type: none"> Within at least 60 days of project effectiveness: (i) appoint PMO Environment Officer to coordinate EMP implementation; (ii) appoint at least 1 Environment Officer in each of the two PIUs; (iii) engage LIEC. The draft terms of reference for these positions are in Appendix 1. Train PMO and PIU staff for EMP implementation. 	PMO, PIUs, LIEC	EA
	Updating EMP	<ul style="list-style-type: none"> Update mitigation measures defined in this EMP based on final detailed design. In the event of any changes to the EMP, submit the updated EMP to ADB for review. In case of major changes of project location and/or additional physical component, form an EIA team to conduct additional EIA and public consultation. The revised EIA should be submitted to EPD and ADB for approval and disclosure. To determine whether the change is minor or major under assistance of LIEC, PMO and PIUs should consult with ADB. 	PMO, LIEC	EPD, LEPBs,
	Pre-inundation management	<ul style="list-style-type: none"> Prepare pre-inundation management plan for each reservoir site. Inundation zone of each reservoir site to be cleared of floating debris, structures, and trees prior to inundation. Management plan and actions to conform to requirements of PRC Standard <i>SL644-2014 Design Specification on Reservoir Basin Cleanup for Hydropower Projects</i> 	Contractors	PMO, LIEC, EPD, LEPBs
Construction Preparation	Environmental monitoring plan	<ul style="list-style-type: none"> Prior to construction, each PIU hires an IEMA to conduct environment monitoring in accordance with the monitoring plan defined in this EMP. Prepare detailed monitoring plan in accordance with the monitoring plan in this EMP. 	PIUs, EMSs	PMO
	Bidding and contract documents	<ul style="list-style-type: none"> Mitigation measures in the EMP are incorporated in all bidding documents. Bidding documents are sent to ADB for review. Prepare environmental contract clauses for contractors. 	Dis, PMO, PIUs	LIEC, EPD, LEPBs
	EMP training	<ul style="list-style-type: none"> LIEC, or invited environment specialists and/or officials from EPD and EPBs, provide EMP training to contractors and CSCs, in accordance with the training plan in this EMP 	LIEC, PMO	EPD
	Establish GRM	<ul style="list-style-type: none"> Responsibility for GRM implementation is assigned to the PMO and PIU environmental officers and resettlement and social officers (Appendix 1). PMO and PIU personnel trained in the GRM and support the environmental and social officers when necessary. Contact details for the GRM (phone number, fax, address, email) will be provided on the PMO, PIU and/or EPB public websites and information boards at construction sites. 	PIUs	PMO, LIEC
	Dam safety	<ul style="list-style-type: none"> Identify and consult with populations at the risk of dam failure. 	EIA institute / PIUs	PMO, LIEC
B. CONSTRUCTION PHASE				
Ambient Air	Dust generated by construction activities, gaseous air pollution (SO ₂ , CO, NO _x) from	<ul style="list-style-type: none"> Equip material stockpiles and concrete mixing equipment with dust shrouds. Spray water on construction sites and earth/material handling routes. Cover materials during truck transport. Purchase pre-mixed asphalt for road surface paving; if asphalt is heated and mixed onsite, 	Contractor CSCs	PIUs, LIEC

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
	construction machinery and asphalt pavement after pipeline laying	<ul style="list-style-type: none"> asphalt mixers must be located ≥ 200 m from villages and other sensitive receptors. Store petroleum or other harmful materials in appropriate places. Ensure emissions from vehicle and machinery comply with PRC standards of GB18352-2005, GB17691-2005, GB11340-2005, GB2847-2005, and GB18285-2005. Provide high-horsepower equipment with tail gas purifiers. 		
Noise	Noise generated from construction activities	<ul style="list-style-type: none"> Ensure construction machinery conform to PRC standard of GB12523-90. Properly maintain vehicles and machineries to minimize noise. Apply noise reduction devices or methods where piling equipment is operating, such as construction of bridges and other hydraulic structures, within 300 m of sensitive sites. Locate sites for rock crushing and concrete-mixing ≥ 500 m from sensitive spots. Prohibit operation of machinery generating high levels of noise, such as piling, and movement of heavy vehicles along urban and village roads between 20:00 and 06:00. Place temporary hoardings or noise barriers around noise sources during construction. Monitor noise at sensitive receptors (see monitoring plan in this EMP). If noise standards are exceeded, equipment and construction conditions shall be checked, and mitigation measures shall be implemented to rectify the situation. Conduct interviews with residents adjacent to construction sites to identify and resolve issues, including adjustment of work hours of noise-generating machinery. 	Contractor CSCs	PIUs, LIEC
Water pollution	Impact of wastewater pollution	<ul style="list-style-type: none"> Construction wastewater collected in retention ponds and filter tanks to remove silts and oil. Machine wash-down sites are equipped with water collection basins and sediment traps. Locate storage / cleaning areas for fuel, machinery and vehicles ≥ 500 m from waterways. Storage facilities for fuels, oil, and other hazardous materials will be within secured areas on impermeable surfaces, and provided with bunds and cleanup installations. Contractors' fuel suppliers must be licensed and follow protocol for fuel transfer and PRC JT3145-88 (Transportation, Loading and Unloading of Dangerous or Harmful Goods). All earthworks along waterways will be accompanied by measures to minimize sediment runoff, including sediment traps. Labor camps will be located ≥ 500 m from rivers. Portable toilets and on-site wastewater pre-treatment systems will be installed at construction camps along with proper maintenance protocols. Water quality (for pollutants such as SS, COD_{cr}, NH₃-N and petroleum) in the project waterways will be monitored by local EMS during construction (8 Table EMP-4). 	Contractor CSCs	PIUs, LIEC
Solid Waste	Solid waste generated by construction activities and from workers' camps	<ul style="list-style-type: none"> Provide waste collection and storage containers at locations away from surface water or sensitive receivers. Solid wastes will be transported to local landfills on a regular basis by the construction contractors. Properly remove and dispose residual materials, wastes and contaminated soils. Paving or vegetating shall be done as soon as the materials are removed to stabilize the soil. Burning of waste is strictly prohibited. Provide sufficient garbage bins at strategic locations and ensure that they are protected from birds and vermin, and emptied regularly by the municipal waste collection systems. 	Contractor, CSCs	PIUs, LIEC

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
Habitat protection and restoration	Clearance of vegetation	<ul style="list-style-type: none"> Avoid clearance of vegetation as far as possible: 1 – do not clear any vegetation until construction site boundaries are clearly demarcated; 2 – ensure contractors are aware of which sites are to be cleared and which are not; 3 – demarcate clear access routes in/out of construction sites. Prohibit off-road vehicle and worker access to minimize damage to vegetation that will not be cleared; After completion of construction, immediately re-vegetate exposed surfaces. Utilize only native species – seedlings and saplings. For rapid stabilization of bare surfaces, if exotic species (e.g. fast-growing grasses) are to be used, only use sterilized seedlings which cannot propagate elsewhere. 	Contractor, CSCs	PIUs, LIEC
Socio-economic resources	Physical cultural resources	<ul style="list-style-type: none"> For the 7 existing sites: tombs and tombstones will be relocated by the owners, with assistance of cultural relic bureaus; for the remaining sites, these will be fully documented by the bureau prior to inundation; If new sites are unearthed during construction, work shall be stopped immediately and Anlong and Nayong cultural relics bureaus (CRBs) and the PIUs promptly notified. 	Contractor, CSCs	PIUs, LIEC, Anlong Cultural Relic Bureau
	Temporary interruption to water supply from pipeline construction	<ul style="list-style-type: none"> Use coffer dams and temporary diversion channels to maintain continued water flow while works are conducted; Prior to works, re-confirm the planned construction schedule and site EMP actions; Inform residents at least two days before any planned water interruptions; Assist residents if requested with community water storage during the interruption period; Interruptions to water supply should not be longer than one (1) day; In case of accidental interruption (e.g. damage of a pipeline), immediately inform affected communities and assist with water supply until the issue is resolved. 	Contractor, CSCs,	PIUs, county EPBs
	Community health and safety	<ul style="list-style-type: none"> Prepare and implement a traffic control plan, for approval by the county traffic management administration before construction. To include scheduling or diverting construction traffic to avoid peak hours, regulating traffic at road crossings, selecting routes to reduce disturbance, reinstating roads, and opening them to traffic when construction is completed; Plan pipeline construction to minimize disturbances to utility services. Three-dimensional detection of underground facilities will be conducted before construction where appropriate. Residents and businesses will be informed in advance through media and information boards of the construction activities, dates and duration of expected disruption; Signs will be placed at construction sites informing people of the project GRM, potential dangers (e.g. moving vehicles, hazardous materials, excavations) and safety issues; Communities will be notified in advance of blasting (see below – “Explosives”); Heavy machinery will not be used at night; and, All sites will be secured from unauthorized public access. 	Contractor, CSCs	PIUs LIEC, labor bureaus
	Occupational health and safety	<ul style="list-style-type: none"> Prepare environmental, health and safety plan, which will include: Clean and sufficient supply of fresh water for construction sites, camps, offices; Sufficient latrines and garage receptacles at construction sites and work camps; Provide safety clothing to workers as necessary (e.g. boots, helmets, gloves, goggles, ear protection) in accordance with health and safety regulations for workers; Emergency preparedness and response plan for accidents. Establish emergency phone links with township hospitals and maintain a first-aid base in each construction camp; 	Contractors	CSCs, PIUs, LBs, EPBs, LIEC

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		<ul style="list-style-type: none"> Establish a records management system for occupational accidents, diseases, incidents. The records will be reviewed during compliance monitoring and audits; Safety communication. Ensure that occupational health and safety matters are given a high degree of publicity to all persons on-site. Display posters prominently; Explosives. All handling, storage and use of explosives will comply with PRC regulations. These include: (i) handling of explosives will only by qualified personnel; (ii) storage and maintenance of explosives will be in specific and approved sites; (iii) procedures will be prepared for the applied use of explosives, including the planning, pre-site clearance, and post-site inspection before and after the use of explosives; Train workers in basic sanitation, health, safety, and work hazards. Implement awareness and prevention program for HIV/AIDS and other diseases – target community and workers; To reduce the risk of water-borne diseases, including from mosquitos, equipment will be regularly checked to prevent stagnant, standing water. Water storage equipment will be covered. Sediment catchment ponds and other temporary, exposed water bodies for construction will be maintained with minimal vegetation in and around the sites, and will be drained immediately upon completion, to minimize the risk of mosquito breeding. 		
	Dam safety	<ul style="list-style-type: none"> An independent expert panel was established by the Guizhou PMO in July 2016. The panel comprises three national dam safety engineers, whom are independent from the GPG, ACG, NCG, and design institutes. The panel will review the detailed engineering designs of the two dams, and during the project construction and operation phases, will convene at least twice a year to assess project progress and any issues. As per PRC regulatory requirements, the preparation of the "flood emergency response plan" will begin upon the start of construction, and will be completed within one year; then the plan will be updated on an annual basis before the start of the flood season (May-October). 	IAS	PMO / LIEC
C. OPERATION PHASE				
Dam safety	Monitoring, preparedness and response	<ul style="list-style-type: none"> Implement the automated 24-hr dam safety monitoring system. If signs of fault or failure are discovered, implement a repair program immediately. Update the flood emergency response plan on an annual basis before the start of the flood season (May-October). Conduct visual inspections on a weekly basis, and prepare weekly dam safety inspection report. Convene dam safety panel twice a year and review the automated 24-hr dam safety monitoring system report and weekly dam safety inspection reports, and based on the review, the dam safety panel will recommend necessary corrective measures. Inspect the safety of the check dams and sediment traps on a monthly basis during the raining season (May-October). Repair any faults of the check dams and sediment traps when necessary, and remove sediments if and when the sediment traps are full. Implement the emergency preparedness and response plan for downstream communities. 	Reservoir management authorities	WRBs, WRD
Dam maintenance and repair	Routine maintenance and repair	<ul style="list-style-type: none"> Integrate routine maintenance activities into existing work program of the county WRB teams. Monthly maintenance (at least in summer) of re-vegetated banks – pruning, weeding and replacement of dead or dying plants. Inspect for signs of plant disease and/or pests and implement control measures as 	Reservoir management authorities	WRBs, WRD

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		necessary. • At least once a year in May-June (i.e. before the rainy season) remove solid waste and debris – dispose in municipal landfill. • Prohibit or remove any illegal structures which are found, to maintain free water flow.		
Dams-flow management	Water allocations and ecological flows	• Comply with the ecological flow requirements for Pingqiao river (0.37 m ³ /s) (from Pingqiao Dam) and Gantian river (0.077 m ³ /s) (from Pingshan Dam). • Control flush spills. • Maintain safe and sustainable dam levels during dry and wet seasons.	Reservoir management authorities	WRBs, WRD
Noise	From operation of pumping stations	• Maintain acoustic barriers and sound absorbing materials. • Consult nearby residents in first 3 months of operation and assess any noise impacts.	EMSs	EPBs
EMP implementation	Insufficient capacity for EMP	• Conduct comprehensive training for EMP implementation.	EPBs	EPD

CSC = construction supervision company, EA = executing agency, EPB = environment protection bureau, EMS = Environmental Monitoring Station (of the two project counties), EPD = environment protection department (of Guizhou Province), IA = implementing agency, IEMA = independent environmental monitoring agency, LARP = Land acquisition and resettlement plan, LARO = Land Acquisition and Resettlement Office (in each of the project counties), LIEC = loan implementation environment consultant, PIU = project implementation unit, PMO = project management unit, WRB = water resource bureau (of project county), WRD = water resources department (of Guizhou Province).

D. Environmental Monitoring, Inspection and Reporting

12. Three types of project monitoring will be conducted under the EMP: (i) internal monitoring and supervision and reporting by CSCs; (ii) EMP implementation monitoring and progress reporting; and (iii) environmental compliance monitoring by local EMS.

13. The project monitoring program focuses on the environment in the project areas of influence in the two counties (**Table EMP-4**). The program covers the scope of monitoring, monitoring parameters, time and frequency, implementing and supervising agencies, and estimated costs. The monitoring shall comply with the methodology provided in the relevant national environmental monitoring standards. Other associated standards to be followed are the national environmental quality standards of air, surface water, groundwater and noise, and the pollutant discharge standards.

14. **Internal monitoring and supervision and reporting by CSCs.** During construction, the CSCs will be responsible for conducting internal environmental monitoring in accordance with the monitoring plan (**Table EMP-4**). Supervision results will be reported through the CSC reports to the PIUs.

15. **EMP implementation monitoring and progress reporting.** The LIEC will review project progress and compliance with the EMP based on field visits, and the review of the environmental monitoring conducted by the IEMA. The findings of the LIEC will be reported to ADB through the semiannual EMP monitoring and progress reports. The reports will include (i) progress made in EMP implementation, (ii) overall effectiveness of the EMP implementation (including public and occupational health and safety), (iii) environmental monitoring and compliance, (iv) institutional strengthening and training, (v) public consultation (including GRM), and (vi) any problems encountered during construction and operation, and the relevant corrective actions undertaken. The LIEC will help PMO prepare the reports and submit the English report to ADB for appraisal and disclosure.

16. **Environmental compliance monitoring by IEMAs.** The PIUs in each county will contract an IEMA to conduct environmental monitoring in accordance with the monitoring program (**Tables EMP-4**). A detailed cost breakdown will be finalized when the environmental monitoring program is updated at the start of each component implementation. Monitoring will be conducted during construction and operation period, until a PCR is issued. Semiannual monitoring reports will be prepared by the IEMAs and submitted to PMO and the PIUs.

17. **Project completion environmental audits.** Upon completion of each subproject, environmental acceptance monitoring and audit reports shall be (i) prepared by a licensed environmental monitoring institute in accordance with the PRC's Guideline on Project Completion Environmental Audit (2001), (ii) reviewed for approval of the official commencement of individual subproject operation by environmental authorities, and (iii) finally reported to ADB through the semiannual EMP monitoring and progress reporting process. These subproject completion reports shall be finalized within 3 months after each subproject completion, or no later than 1 year with permission of the local environment protection bureaus.

18. **Quality assurance (QA) /quality control (QC) for compliance monitoring.** To ensure accuracy of the monitoring, QA/QC procedures will be conducted in accordance with the following regulations:

- i) Regulations of QA/AC Management for Environmental Monitoring issued by the

- State Environmental Protection Administration in July 2006.
- ii) QA/QC Manual for Environmental Water Monitoring (Second edition), published by the State Environmental Monitoring Centre in 2001.
 - iii) QA/QC Manual for Environmental Air Monitoring published by the State Environmental Monitoring Centre in 2001.

Table EMP-3: Environmental Reporting Plan

Report	From	To	Frequency of Reporting
A. Construction Phase			
Internal progress reports	CSCs	PIUs	Monthly
External reports	Local EMSs	PMO, PIUs	Semi-annual
Environmental acceptance monitoring and audit reports	Licensed institute	EPBs, PMO, PIUs	Within three months after component completion
Compliance monitoring with EMP – progress reports	PMO	ADB	Semi-annual (through semi-annual project progress reports)
B. Operation Phase			
EMP progress reports	PMO	ADB	Semi-annual

Table EMP-4: Environmental Monitoring Program

Subject	Parameter	Location	Frequency	Implement	Supervise
1. Pre-construction					
Environmental audit of the Circular-Economic-Ecological Park, including monitoring of the water quality of the Gantian river	i) COD _{Cr} , BOD ₅ , SS, NH ₃ -N, TN, TP, fecal coliforms; ii) Compliance with conditions for EIA approval by Nayong EPB	(i) Immediately downstream of the Park; and, (ii) 500 m downstream from the Park (i.e. upstream of Pingshan Dam)	Three times before construction (March, April and May 2017)	IEMA contracted by PIU	PMO
2. Construction					
Internal monitoring (contractors, CSCs, PIU environmental officer)					
Ambient air quality	Dust mitigation measures in EMP; equipment maintenance	Visual inspection at all construction sites	1 time / week	Contractor, CSC	PMO, PIU, LIEC, EPB
Solid waste	Garbage and construction waste	Visual inspection at all construction sites and work-camps	Daily	Contractor, CSC	PMO, PIU, EPB, sanitation bureau
Wastewater	Provision and operation of domestic and construction wastewater	Visual inspection at all construction sites and work-camps	Daily	Contractor, CSC	PMO, PIU, EPB
Soil erosion and re-vegetation	Soil erosion intensity	Visual inspection at spoil sites and all construction sites, especially roadsides, water pipelines, banks of rivers, wetlands	1 time / week; and immediately after heavy rainfall	Contractor, CSC	PMO, PIU, LIEC, WRB
	Re-vegetation of borrow and spoil disposal sites, construction sites	Visual inspection at all sites	At least 4 times / year	Contractor, CSC	PIU, WRB
Occupational health and safety	Camp hygiene, safety, availability of clean water, emergency	Inspection at all construction sites and work-camps	1 time / month	Contractor, CSC	PMO, PIU

	preparedness and response plans				
External monitoring (Independent environment monitoring agency, IEMA)					
Circular-Economic-Ecological Park, including monitoring of the water quality of the Gantian river	i) COD _{Cr} , BOD ₅ , SS, NH ₃ -N, TN, TP, fecal coliforms ii) Compliance with conditions for EIA approval by Nayong EPB	(i) Immediately downstream of the Park; and, (ii) 500 m downstream from the Park (i.e. upstream of Pingshan Dam)	Twice per year	IEMA	PIU, PMO
Quality of sewage and discharge channels at work camps	pH, SS, NH ₃ -N, COD _{Cr} , BOD ₅ oil, fecal coliforms	Domestic wastewater discharge at work-camps	4 times /year during construction	IEMA	PMO, EPB, PIU
Construction wastewater	SS, oil, pH	at wastewater discharge points of all construction sites	4 times /year during construction	IEMA	PMO, EPB, PIU
Surface water quality	pH, SS, NH ₃ -N, COD _{Cr} , oil, As, Cd	200 m upstream and 500 m downstream of the construction site of the two rivers;	2 times / year during construction	IEMA	PMO, EPB, PIU
Ambient air quality	TSP, PM ₁₀ , NO _x	All construction sites (at least 1 point upwind, 1 point downwind) and nearby sensitive receivers (Section IV of EIA)	4 times / year during construction	IEMA	PMO, EPB, PIU , LIEC
Noise	LA _{eq}	Boundaries of all construction sites and sensitive receivers (described in Section IV of EIA)	2 times / year (twice a day: once in day time and once at night time, for 2 consecutive days)	IEMA	EPB, PIU, LIEC
Solid waste (garbage, construction waste)	Work camps and construction waste at construction sites	Visual inspection at all construction sites and work-camps	Once a year	LIEC	EPB, PIU, PMO
Soil erosion and re-vegetation	Soil erosion intensity	Visual inspection at borrow and spoil sites and construction sites	Twice a year, and 1 after completion of construction	LIEC	EPB, PIU, PMO
	Re-vegetation of borrow and spoil disposal sites and construction sites	Visual inspection at sites, and temporary occupied lands	Compliance monitoring: Twice a year, and 1 after completion of construction	LIEC	EPB, PIU, PMO
Occupational health and safety	Work camp hygiene, safety, availability of clean water, emergency	Inspection at all construction sites and work-camps	Twice a year, and once after completion	LIEC	Sanitation, labor bureaus, PIU, PMO

	preparedness and response plans		of construction		
3. Operation Phase					
Circular-Economic-Ecological Park, including monitoring of the water quality of the Gantian river	i) CODcr, BOD ₅ , SS, NH ₃ -N, TN, TP, fecal coliforms; ii) Compliance with conditions for EIA approval by Nayong EPB	(i) Immediately downstream of the Park; and, (ii) 500 m downstream from the Park (i.e. upstream of Pingshan Dam)	Twice per year	IEMA	PIU, PMO
Wastewater discharge from reservoir management station	pH, SS, NH ₃ -N, oil, CODcr, BOD ₅ , TN, TP, fecal coliforms	Outlets of septic tanks / wastewater treatment facilities	4 times during the first year of operation	IEMA	EPB, reservoir management authorities, GWRIC
Surface water quality	COD, BOD, DO, NH ₃ -N, TN, TP, SS	Head, center, tail of inflowing and outflowing river(s)	4 times during the first year of operation	IEMA	EPB, reservoir management authorities, GWRIC
Noise	LAeq	Nearby sensitive receivers along access roads	4 times during the first year of operation	IEMA	EPB, reservoir management authorities, GWRIC
Soil and vegetation	Plant survival and coverage	All re-vegetated sites	Spot check, twice a year	OPF	WRB, reservoir management authorities, GWRIC
Dam safety	Safety monitoring	Dam	Continuous through the automated system	OPF	WRB, reservoir management authorities, GWRIC

BOD₅ = 5-day biochemical oxygen demand; CODcr = chemical oxygen demand; CSC = construction supervision company; EMS = environmental monitoring station; EPB = environmental protection bureau; FB = county forestry bureau, GWRIC = Guizhou Water Resources Investment Company Limited., IA = implementation agency; IEMA = independent environmental monitoring agency; LAeq = equivalent continuous A-weighted sound pressure level; NH₃-N = ammonia nitrogen; NO_x = nitrogen oxides; OPF = operators of project facilities; PIU = project implementation unit, PM₁₀ = particles measuring $\leq 10\mu\text{m}$; PMO = Project Management Office; SO₂ = sulfur dioxide; SS = suspended solids; TSP = total suspended particle, WRB = water resources bureau,

E. Training and Capacity Building

19. The two project counties have no previous experience with ADB-funded projects or safeguard requirements. To ensure effective implementation of the EMP, a capacity building program will be implemented on: (i) the EMP, including the mitigation measures, monitoring, and reporting; (ii) dam safety and climate change; (iii) sustainable agriculture; and (iv) sustainable integrated watershed management. Training will be conducted by the LIEC, Guizhou EPD, Guizhou Agriculture Department and county EPBs. Trainees will include the PMO, IAs, PIUs, contractors, CSCs, county water resource bureaus and county agriculture committees. The PMO will arrange and support the training programs, supported by the loan implementation consultants.

Table EMP-5: Project Environment Training Program

Training program	Scope of Training	Trainer	Trainee	Time	Days	Persons
Procurement and contract management (emphasize EMP implementation)	<ul style="list-style-type: none"> • ADB procurement guidelines • Bidding document and contract preparation, including EMP clauses • Risk of improper procurement and mitigation measures, and handling variation orders and contract management 	LIC	PMO, PIUs, FBs, contractors, CSCs	2	2	50
Implementation of EMP	<ul style="list-style-type: none"> • Roles, responsibilities, monitoring, inspection, reporting • Environment monitoring program • Public consultation and participation; • GRM – implementation, coordination, reporting, working with the general public; • Environment, health and safety during project construction and operation for workers and the community; • Prevention and control of transmissible diseases and HIV/AIDS 	LIC	PMO, PIUs, EPBs, CABs, IEMAs, other local agencies	2	2	50
Integrated water resources management	<ul style="list-style-type: none"> • Principles of IWRM; • Surface water management and water conservation; • Point source and non-point source pollution control; • International and national best practices 	LIC	PMO, PIUs, EPBs, CABs, other local agencies	1	1	50
Sustainable agriculture	<ul style="list-style-type: none"> • Ecological farming; • Water saving irrigation; • Integrated pest management 	EPD	PIUs, OPFs, WRBs	1	1	50
Dam safety and climate change resilience	<ul style="list-style-type: none"> • Climate change, risks and vulnerability; • International and national best practices in dam and reservoir operations for dam safety; • Energy saving and GHG emission reduction in water, agriculture and forestry sectors 	LIC, Guizhou climate change center	PIUs, OPFs, WRBs, reservoir management authorities	1	1	50
Emergency preparedness and response planning	<ul style="list-style-type: none"> • Response mechanism e.g. for spills; • Mitigation measures for hydraulic sectors; • Emergency response team, procedure and actions 	PIC	PIUs, OPFs, other bureaus	1	1	50
Total	1.			8	8	300

ADB = Asian Development Bank, CAB = civil affairs bureau, EMP = environment management plan, EPB = environment protection bureau, FB = finance bureau, GHG = greenhouse gas, GRM = grievance redress mechanism, LIC = loan implementation consultant, OPF = operator of project facilities, PIU = project implementing unit, PMO = project management office, WRB = water resource bureau.

F. Grievance Redress Mechanism

20. The PMO and PIU environment officers and social officers will be the lead coordinators for GRM implementation. All project agencies and staff will be trained in the GRM and will take an active role in supporting these staff as and when necessary.

21. At the PMO level, the PMO environment officer and social officer will establish a GRM tracking and documentation system, conduct daily coordination with the PIU officers, arrange meetings and conduct site visits as necessary, maintain the overall project GRM database, and prepare the reporting inputs for progress reports to ADB. At the PIU level, the environment officers and social officers will instruct contractors and construction supervision companies (CSCs) on the GRM procedures, and coordinate with the county EPBs and other government divisions as

necessary. PMO and PIU staff will be trained and supported by the LIEC and Loan Implementation Social Consultant (LISC).

22. The contact persons for different GRM entry points, such as the PMO and PIU Environmental and Social Officers, contractors, operators of project facilities, and county EPBs, will be identified prior to construction. The contact details for the entry points (phone numbers, addresses, e-mail addresses) will be publicly disclosed on information boards at construction sites and on the websites of the PMO and county EPBs.

23. Once a complaint is received and filed, the PMO and PIU officers will identify if complaints are eligible. Eligible complaints include those where (i) the complaint pertains to the project; and (ii) the issues arising in the complaint fall within the scope of environmental issues that the GRM is authorized to address. Ineligible complaints include those where: (i) the complaint is clearly not project-related; (ii) the nature of the issue is outside the mandate of the environmental GRM (such as issues related to resettlement, allegations of fraud or corruption); and (iii) other procedures are more appropriate to address the issue. Ineligible complaints will be recorded and passed to the relevant authorities, and the complainant will be informed of the decision and reasons for rejection. The procedure and timeframe for the GRM is as follows, and also summarized in **Figure EMP-1**.

- **Stage 1 (5 working days):** If a concern arises during construction, the affected person may submit a written or oral complaint to the contractor. Whenever possible, the contractor will resolve the issue directly with the affected person. The contractor shall give a clear reply within five (5) working days. The contractor will keep the PIU fully informed at all stages.
- 2.
- **Stage 2 (5 working days):** If the issue cannot be resolved in Stage 1, after five days, the PIU and/or PMO will take over responsibility. Eligibility of the complaint will be assessed and a recommended solution given to the complainant and contractors within five (5) working days. If the solution is agreed by the complainant, the contractors and/or facility operators will implement the solution within seven days. Written records will be made of all stages and outcomes.
- **Stage 3 (10 working days):** If no solution can be identified by the PMO and/or PIU, and/or the complainant is not satisfied with the proposed solution, the PMO and/or PIU will organize, within ten (10) days, a stakeholder meeting (including the complainant, contractor and/or operator of the facility, county EPB, PIU, PMO). A solution acceptable to all shall be identified including clear steps. The contractors (during construction) and facility operators (during operation) will immediately implement the agreed solution. Written records will be made of all stages and outcomes.

24. The GRM does not affect the right of an affected person to submit their complaints to any agency they wish to, for example the local village committee, community leaders, courts, PMO, PIU, and/or Asian Development Bank.

25. The PMO and PIUs shall bear any and all costs of implementing the GRM, including meeting, travel, and/or accommodation costs of the project staff or affected person. The GRM will be implemented throughout project construction and at least the first year of operation for each project facility.

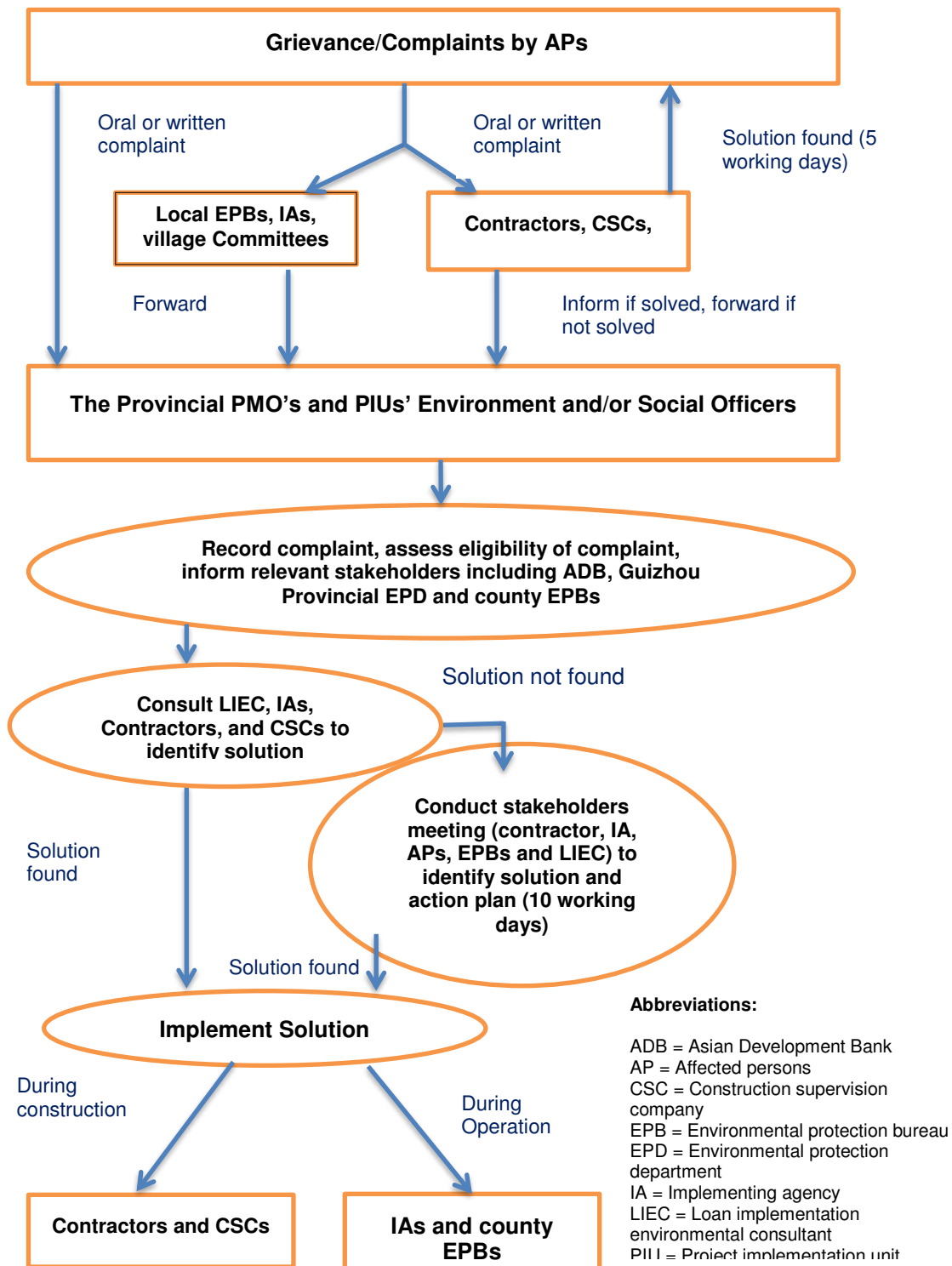


Figure EMP-1: Operation Chart of the GRM

G. Public Consultation and Awareness Raising

26. Two rounds of public consultation were conducted during project preparation (**Section VII of the EIA**). During construction, the project will continue to seek public consultation and raise awareness of project activities, especially those which may impact the public such as noise or dust. A public consultation plan is in **Table EMP-6**, and includes public participation in evaluating environmental benefits and impacts. The PIUs are responsible for public participation during project implementation. They will be supported by the PMO Environment and Social Officers and the LIEC.

Table EMP-6: Public Consultation and Participation Plan

Organizer	Approach	Times/Frequency	Subjects	Participants
Construction				
PMO, PIUs, LIEC	Questionnaire survey, site visits, informal interviews	Once a year during peak construction	Construction impacts; adjusting mitigation measures if necessary; feedback	Workers, residents in construction areas
	Public workshops	At least once during peak construction	EMP implementation progress; construction impacts; adjusting mitigation measures if necessary; feedback	Residents, affected persons, social sectors
Operation				
PMO, PIUs, operators of project facilities	Public consultation and site visits	At least once in first year of operation	Effects of mitigation measures, impacts of operation, feedback	Residents, affected persons adjacent to project facilities
	Public workshop	As needed based on public consultation	Effects of mitigation measures, impacts of operation, feedback	Residents, affected persons, social sectors
	Public satisfaction survey	At least once after one year of operation	Comments and suggestions	Project beneficiaries

EIA = environmental impact assessment, OPF = operator of project facilities, PIU = project implementing unit, LIEC = loan implementation environmental consultant.

H. Cost Estimates

27. This section provides an estimate of the cost of EMP implementation. The cost comprises three categories: mitigation measures (**Tables EMP-2**); monitoring (**Table EMP-4**); and training (**Table EMP-5**). Costs are presented for the construction phase of five years and the first year of operation, i.e. a total of six years. The costs do not include: (i) detailed design revisions and adjustments; (ii) internal monitoring/inspection of solid wastes disposal, soil erosion and re-vegetation, occupational health and safety during construction, as this will be included in the construction supervision contracts; and (iii) salaries of PMO and PIU staff. Costs for mitigation measures and training are based on estimates in the five DEIAs and/or the experience of the PPTA team from other projects. All costs were discussed with the EIA Institute, PMO and IAs.

28. The total estimated cost is CNY66.66 million (\$9.99 million) for five years of construction phase and the first year of operation, including CNY 32.14 million (\$4.82 million) for the Pingqiao subproject and CNY 32.54 million (\$5.18 million) for the Pingshan subproject (**Table EMP-7**). All EMP costs are incorporated into the overall project budget.

Table EMP-7. Estimated Cost for EMP Implementation

	Estimated Cost (CNY 10,000)			Funding Source
	Pingqiao	Pingshan	Total	
Construction				
Water pollution control	231.49	123.46	354.95	Contractors
Air pollution control	48.00	83.25	131.25	Contractors
Noise	25.00	20.50	45.50	Contractors
Solid waste management	96.90	28.58	125.48	Contractors
Ecological flow	330.00	30.00	360.00	Contractors
Protection of flora and fauna	34.00	19.30	53.30	Contractors
Water and soil erosion control	695.76	1,794.58	2,490.34	Contractors
Reservoir bottom clearing	104.10	7.39	111.49	Contractors
Workers' and community health and sanitation	87.20	48.27	135.47	Contractors
Establishment of water supply source protection zones	30.00	20.00	50.00	PIUs
Subtotal	1,682.45	2,175.33	3,857.78	
Operation				
Water pollution control (first year)	24.00	12.00	36.00	OPFs
Solid waste management (first year)	7.10	4.00	11.10	OPFs
Ecological flow (first year)	60.00	30.00	90.00	OPFs
Subtotal	91.10	46.00	137.10	
Environmental Monitoring				
Construction phase-environmental monitoring	322.86	52.80	375.66	PIUs
Construction phase-automated dam safety monitoring system	667.02	850.88	1,517.90	Contractors
Operation phase-environmental monitoring (first year)	96.86	73.50	170.36	PIUs
Operation phase-dam safety monitoring (first year)	67.89	76.58	144.46	PIUs
Project completion acceptance environmental audit	40.00	24.00	64.00	PIUs
Subtotal	1,194.63	1,077.76	2,272.39	
Capacity Building and Public Consultations				
LIEC (20 person-months)	65.01	65.01	130.01	ADB Loan
EMP training costs	25.00	25.00	50.00	ADB Loan
GRM	5.00	5.00	10.00	PIUs/PMO
Public consultations	20.00	15.00	35.00	PIUs/PMO
Regional climate change monitoring equipment (including maintenance)	81.01	81.01	162.02	ADB Loan
Subtotal	196.02	191.02	387.04	
TOTAL (CNY 10,000)	3,164.20	3,490.11	6,654.30	
TOTAL (million \$)	4.61	5.08	9.69	

ADB = Asian Development Bank, CNY = Chinese yuan, EIA = environmental impact assessment, EMP = environmental management plan, GRM = grievance redress mechanism, LIEC = loan implementation environmental consultant, OPF = operator of project facilities, PIU = project implementation unit, PPTA = project preparatory technical assistance.

Note: i) For five-year construction phase and first 2-year operation (in CNY 10,000); ii) costs for construction phase are paid for as part of the construction contracts, except for establishment of the water source protection zones; iii) costs for the operation phases and environmental monitoring and audit for the responsibility of the OPFs; iv) LIEC and EMP training costs are paid for as part of the loan implementation consulting services; v) exchange rate, \$1 = CNY 6.8654. Source: Preliminary design reports, domestic EIAs, domestic water and soil erosion control plan, and PPTA consultant estimates.

I. Mechanisms for Feedback and Adjustment

29. Based on environmental inspection and monitoring reports, the PMO and PIUs shall decide, in consultation with the LIEC, whether (i) further mitigation measures are required as corrective actions, or (ii) some improvements are required for environmental management practices. The effectiveness of mitigation measures and monitoring plans will be evaluated by a feedback reporting system. Adjustment to the EMP will be made, if necessary. The PMO Environmental Officers will play a critical role in the feedback and adjustment mechanism.

30. If during inspection, substantial deviation from the EMP is observed or any changes are made to the project that may cause substantial adverse environmental impacts or increase the number of affected people, then the PMO and PIUs will immediately consult with ADB and form an environmental assessment team to conduct additional environmental assessment. If necessary, further public consultation will be undertaken. The revised domestic EIAs and project EIA, including this EMP, will be submitted to the ADB for review, appraisal, and public disclosure. The revised EMP will be passed to the contractors, CSCs and OPFs for implementation.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-01: PROJECT IMPLEMENTATION STARTUP SUPPORT (PROJECT MANAGEMENT AND PROCUREMENT)

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Guizhou Rocky Desertification Area Water Management Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Guizhou Provincial Water Resources Bureau and physically located in Guizhou Water Resources Investment Company Limited (GWIC) wholly-owned by the Guizhou Provincial Government (executing agency of the project). The consulting services will be also provided to two project implementation units (PIUs). One is physically located in Pingqiao Reservoir Company Limited which belongs to Anlong County Water Resources Bureau; and another PIU is physically located in Pingshan Reservoir Management Office which belongs to Nayong County Water Resources Bureau.

B. Implementation Arrangements

2. The consulting services will be carried out by an individual consultant (national project management and procurement specialist). The consulting services will be financed by Asian Development Bank (ADB) and the consultant will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consultant will be selected using the individual consultant recruitment method. The consulting services are expected to start on 28 August 2017 until on 26 January 2018.

C. Reporting Requirements

3. By the end of the assignment, the consultant will submit a report on his/her activities to ADB and the PMO (a soft copy of the English version to ADB and soft copies of the English and Chinese versions to the PMO).

D. Detailed Scope of Services and Consultants' Inputs

4. The individual national project management and procurement specialist will provide a total of 3.0 person-months of consulting services. The consultant shall have a university degree or higher in management, accounting, or related field. He/she shall be proficient in English and has at least 10 years of experience in project management, procurement, and consultant recruitment for projects funded by ADB or other international funding agencies. Knowledge on ADB's Procurement Guidelines (2015, as amended from time to time), ADB's Guidelines on the Use of Consultants (2013, as amended from time to time), and other ADB procedures for procurement and consultant recruitment are required.

5. The specialist will undertake the following tasks: (i) understand the format of quarterly project progress reports provided by ADB, and provide the PMO with guidance on how to fill-in the format by assisting them in preparing the first report; (ii) improve internal procedures of routine data collection and filling and information exchange among the PMO, PIUs, and other agencies of the Guizhou Provincial Government, Anlong County Government, and Nayong County Government for smooth project implementation and quarterly project progress reporting; (iii) assist the PMO in recruiting a competent independent external monitoring agency for external monitoring and evaluation of and acquisition and resettlement (package number CS-04), a

consultant team for project management support (package number CS-05), and a consultant team for water and rocky desertification management (CS-06); (iv) provide any supports to the GWIC, Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, and a procurement agency engaged by the GWIC for procurement of works and goods, including preparation of bidding documents; (v) develop capacities of GWIC, PMO, Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, and PIUs for project management, procurement, and consultant recruitment; and (vi) perform any other tasks for project management, procurement, and consultant recruitment during the start-up phase of the project.

E. Cost Estimate

Table A2.1: Cost Estimate

Item		Total Cost (\$'000)
1.	Consultant	
a.	Remuneration and per diem	
	National consultant (3.0 person-months)	24.2
b.	Local travel	3.0
c.	Reports and communications	0.1
2.	Miscellaneous administration and support costs	0.3
3.	Contingencies	1.4
	Total	29.0

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-02: PROJECT IMPLEMENTATION STARTUP SUPPORT (ENVIRONMENT)

A. Introduction

1. This document sets out the indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Guizhou Rocky Desertification Area Water Management Project. The direct client of the consulting services is the project management office (PMO). The PMO is under Guizhou Provincial Water Resources Bureau and physically located in Guizhou Water Resources Investment Company Limited, wholly-owned by the Guizhou Provincial Government (executing agency of the project). The consulting services will be also provided to two project implementation units (PIUs). One is physically located in Pingqiao Reservoir Company Limited which belongs to Anlong County Water Resources Bureau; and another PIU is physically located in Pingshan Reservoir Management Office which belongs to Nayong County Water Resources Bureau.

B. Implementation Arrangements

2. The consulting services will be carried out by an individual consultant (national environment specialist). The consulting services will be financed by Asian Development Bank (ADB) and the consultant will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consultant will be selected using the individual consultant recruitment method. The consulting services are expected to start on 11 August 2017 until 26 January 2018.

C. Reporting Requirements

3. By the end of the assignment, the consultant will submit a report on his/her activities to ADB and the PMO (a soft copy of the English version to ADB and soft copies of the English and Chinese versions to the PMO).

D. Detailed Scope of Services and Consultants' Inputs

4. The individual national environment specialist will provide a total of 3.0 person-months of consulting services. The consultant shall have a university degree or higher in environment or related field. He/she shall be proficient in English and have at least 10 years of experience in environmental management in the People's Republic of China on projects funded by ADB or other international funding agencies. Knowledge on ADB's Safeguard Policy Statement (2009) and ADB's or other international funding agencies' requirements for environmental management are required.

5. The specialist will undertake the following tasks: (i) assist the PMO and design institute in updating the environmental impact assessment (EIA) report and environmental management plan (EMP) approved by ADB for the project, in ADB format and based on the detailed designs; and obtain ADB's approval of them;¹; (ii) assist the PMO and PIUs in ensuring adequate environmental management readiness; (iii) assist the PMO and PIUs in establishing effective grievance redress mechanisms, including mechanisms to ensure reporting of complaints, follow-up actions, and results; (iv) provide training to relevant staff of the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office so they will understand ADB's policies and

¹ The EMP is included in the EIA report.

compliance requirements for environmental management; (v) assist the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in establishing an internal environmental monitoring and reporting system; (vi) assist the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in constructing, operating, maintaining, and monitoring the project facilities in strict conformity with all applicable laws and regulations, including national and local regulations and standards for environmental protection, health, labor, and occupational safety; and ADB's Safeguard Policy Statement (2009),² and the EIA report and EMP; (vii) assist the PMO and PIUs in handing over relevant documents and files to the project management support consultant team engaged in package number CS-05 and brief the team, particularly the environment specialist in the team, status and outstanding issues; and (viii) perform any other environmental management related tasks during the start-up phase of the project.

E. Cost Estimate

Table A2.1: Cost Estimate

Item		Total Cost (\$'000)
1.	Consultant	
a.	Remuneration and per diem	
	National consultant (3.0 person-months)	24.2
b.	Local travel	3.0
c.	Reports and communications	0.1
2.	Miscellaneous administration and support costs	0.3
3.	Contingencies	1.4
	Total	29.0

Source: Asian Development Bank estimates.

² Available at: <http://www.adb.org/documents/safeguard-policy-statement>

**INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES
FOR
PACKAGE CS-03: PROJECT IMPLEMENTATION STARTUP SUPPORT (LAND
ACQUISITION AND RESETTLEMENT)**

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Guizhou Rocky Desertification Area Water Management Project. The direct client of the consulting services is the project management office (PMO). The PMO is under Guizhou Provincial Water Resources Bureau and physically located in Guizhou Water Resources Investment Company Limited, wholly-owned by the Guizhou Provincial Government (executing agency of the project). The consulting services will be also provided to two project implementation units (PIUs). One is physically located in Pingqiao Reservoir Company Limited which belongs to Anlong County Water Resources Bureau; and another PIU is physically located in Pingshan Reservoir Management Office which belongs to Nayong County Water Resources Bureau.

B. Implementation Arrangements

2. The consulting services will be carried out by an individual consultant (national resettlement specialist). The consulting services will be financed by Asian Development Bank (ADB) and the consultant will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consultant will be selected using the individual consultant recruitment method. The consulting services are expected to start on 28 August 2017 until 26 January 2018.

C. Reporting Requirements

3. By the end of the assignment, the consultant will submit a report on his/her activities to ADB and the PMO (a soft copy of the English version to ADB and soft copies of the English and Chinese versions to the PMO).

D. Detailed Scope of Services and Consultants' Inputs

4. The individual national resettlement specialist will provide a total of 3.0 person-months of consulting services. The consultant shall have a university degree or above in resettlement, social or related field. He/she shall be proficient in English and have at least 10 years of experience in land acquisition and resettlement (LAR) in the People's Republic of China on projects funded by ADB or other international funding agencies. Knowledge on ADB's Safeguard Policy Statement (2009) and ADB's or other international funding agencies' procedures for LAR are required.

5. The specialist will undertake the following tasks: (i) assist the PIUs, Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, and design institute in updating the resettlement plans approved by ADB, in ADB format and based on the detailed designs, disclosing them to the affected persons prior to ADB's approval, and obtaining ADB's approval of them; (ii) assist the PMO and PIUs in ensuring adequate resettlement readiness prior to LAR; (iii) assist the PMO and PIUs in establishing effective grievance redress mechanisms, including mechanisms to ensure reporting of complaints, follow-up actions, and results; (iv) provide training to relevant staff of the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office so they will understand ADB's policies and compliance requirements for LAR;

(v) assist the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in establishing an internal LAR monitoring and reporting system; (vi) assist the PMO and PIUs in handing over relevant documents and files to the project management support consultant team engaged in package number CS-05 and brief the team, particularly the resettlement specialist in the team, status and outstanding issues; and (vii) perform any other LAR related tasks during the start-up phase of the project.

E. Cost Estimate

Table A2.3: Cost Estimate

Item	Total Cost (\$'000)
1. Consultant	
a. Remuneration and per diem National consultant (3.0 person-months)	24.2
b. Local travel	3.0
c. Reports and communications	0.1
2. Miscellaneous administration and support costs	0.3
3. Contingencies	1.4
Total	29.0

Source: Asian Development Bank estimates.

**INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR
PACKAGE CS-04: EXTERNAL MONITORING AND EVALUATION OF LAND ACQUISITION
AND RESETTLEMENT**

A. Introduction

1. This document sets out the indicative terms of reference for independent external monitoring and evaluation (M&E) of land acquisition and resettlement (LAR) needed to ensure that the Guizhou Rocky Desertification Area Water Management Project will be implemented in conformity with the People's Republic of China (PRC) laws and regulations and the Asian Development Bank's (ADB's) Safeguard Policy Statement (2009), including involuntary resettlement. The direct client is the project management office (PMO). The PMO is under Guizhou Provincial Water Resources Bureau and physically located in Guizhou Water Resources Investment Company Limited, wholly-owned by the Guizhou Provincial Government (executing agency of the project). The external M&E will be conducted for LAR for two subprojects: (i) the construction of Pingqiao Reservoir and connected water transfer facilities in Anlong County (by Pingqiao Reservoir Company Limited); and (ii) the construction of Pingshan Reservoir and connected water transfer facilities in Nayong County (by Pingshan Reservoir Management Office). Pingqiao Reservoir Company Limited belongs to Anlong County Water Resources Bureau and Pingshan Reservoir Management Office belongs to Nayong County Water Resources Bureau. A project implementation unit (PIU) is under Anlong County Water Resources Bureau and physically located in Pingqiao Reservoir Company Limited. Another PIU is under Nayong County Water Resources Bureau and physically located in Pingshan Reservoir Management Office.

B. Implementation Arrangements

2. The external resettlement M&E will be carried out by a team of specialists through a competent independent external monitoring agency (EMA). The M&E will be financed by ADB, and the team of specialists will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) through consultants' qualifications selection. The PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office will provide assistance to the EMA, particularly in the aspects of field survey, staffing, and logistics.

D. Reporting Requirements

3. The EMA will submit to ADB and PMO semiannual external resettlement M&E reports during the implementation of LAR for the project, and annual external resettlement M&E reports for 2 years after the completion of the LAR for the whole project (for each report, a soft copy of the English version to ADB and soft copies of the English and Chinese versions to each of the PMO and PIUs), not later than 30 days after the completion of the field investigations.

4. The EMA will take full responsibility on the content and quality of the reports; and if necessary, must revise reports based on the comments of ADB. Format of the reports will be proposed by the EMA in the technical proposal. The EMA may seek guidance from ADB's Involuntary Resettlement Safeguards: A Planning and Implementation Good Practice Sourcebook (Draft Working Document) and from examples of reports on ADB website.

E. Scope of Services and Consultants' Inputs

5. According to ADB's requirements, the implementation of the resettlement plans should—besides internal monitoring undertaken by the PMO and PIUs—be monitored by the EMA. The EMA to be selected will monitor the implementation of the resettlement plans; and report progress semiannually during the implementation of LAR for the project, and annually for two years after the completion of the LAR for the whole project.

6. The general objective of the external resettlement M&E is to assess the compliance with principles, policies, and requirements mentioned in the resettlement plans, including (i) determining and assessing whether or not the compensation payment, support, and resettlement for the affected persons, as well as the process of community consultation, information disclosure, and resolution of complaints and grievances are being carried out in compliance with principles, requirements, and procedures according to the resettlement plans; (ii) reviewing whether or not the resettlement plans' objectives, especially those that improve or at least restore affected persons' living standards are adequately implemented and achieved; and (iii) reviewing shortcomings in the implementation of the resettlement plans and developing recommended solutions for discussion with the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office.

7. To carry out the M&E, the EMA will address the following tasks.

- (i) **Periodic M&E.** For each subproject, during the implementation of LAR, the EMA will semiannually monitor and evaluate the implementation of the resettlement plan.
- (ii) **Post resettlement M&E.** For each subproject, for two years after the completion of the implementation of the resettlement plan, the EMA will annually carry out post resettlement M&E to evaluate the results of the LAR implementation and impact of the LAR on the affected persons.
- (iii) Participate with the PMO in ADB's review missions, as required.

8. **Monitoring indicators.** There are various monitoring indicators on the implementation of the resettlement plans. Once selected, the EMA will have to present in detail the monitoring indicators to the PMO and ADB for approval. Below are main monitoring indicators:

- (i) For compliance of compensation payment and support provision
 - (a) In case of land-for-land compensation, whether the replaced land is equal in area and location as well as production, living conditions compared with the affected land; in case of cash-for-affected land, whether the replacement cost principle is ensured.
 - (b) Whether compensation for affected structures is equal to materials and labor replacement cost according to standards and specification of the work; whether reused materials are not deducted or discounted; and whether assets are depreciated based on age.
 - (c) Whether compensation for trees and/or crops takes into account market rates.
 - (d) Whether compensation is fully paid to affected persons; either through single installment or multiple installments.

- (e) Whether other assistance as specified in the resettlement plans is provided to affected persons, as required.
- (ii) For compliance of information disclosure and community consultation
 - (a) Whether project documents (resettlement information booklet and relevant documents) are disseminated to communities.
 - (b) Whether information (results of detailed measurement survey, prices application, disbursement of payment) is promulgated at public places, and whether the process was effective.
 - (c) Whether the affected persons are fully consulted about issues of land recovery, policies on compensation, resettlement, livelihood restoration, and access to a grievance redress mechanism.
 - (d) Whether the concerns and recommendations of the affected persons are resolved during the implementation of the resettlement plans; as well as the manner by which they have been addressed.
- (iii) For relocation plan and implementation
 - (a) Resettlement methods, participation in relocation planning, announcement of relocation plan, and support to relocated households.
- (iv) For compliance of LAR implementation for the relocated affected persons
 - (a) Housing and living conditions in resettlement sites (such as road, domestic power, water distribution and/or drainage system); and restoration of community, education, and health services.
 - (b) Whether replacement housing was provided in a complete and timely manner.
 - (c) Any issues related to transitional housing and/or period.
 - (d) Whether the new location has had any impact on the affected persons' livelihoods.
- (v) For compliance of income restoration and support to livelihood stabilization
 - (a) Whether support to income restoration is adequately provided, and efficiency of the income restoration support (e.g., training, credit assistance).
 - (b) Post resettlement life and production stabilization. How affected persons stabilize their life and production.
 - (c) Problems that affected persons are facing during the income restoration and life stabilization.
 - (d) Compensation and restoration of temporary land occupation.
- (vi) For compliance of the satisfaction of the affected persons
 - (a) Satisfaction of the determination of losses and compensation valuation.
 - (b) Satisfaction of compensation payment and other assistance.
 - (c) Satisfaction of information disclosure and consultation.
 - (d) Satisfaction on life stabilization and income restoration support activities.
 - (e) Satisfaction of resettlement site, relocation site, and completeness of facilities.
- (vii) For compliance of grievance redress mechanism of the affected persons
 - (a) Degree of efficiency of the grievance redress mechanism (time, efficiency of resolution).

- (b) Results of complaint resolution at various levels.
- (c) Satisfaction of the grievance redress mechanism.

9. **Methodology of M&E.** The EMA will apply both qualitative and quantitative methods during monitoring, including the following.

- (i) Quantitative methods
 - (a) Conduct baseline survey (prior to start of LAR) covering a representative sample of affected persons, focusing more on those seriously affected and vulnerable affected persons.
 - (b) Conduct semiannual and annual questionnaire survey during project implementation for 50% of severely affected households and 20% of all other affected households.
 - (c) Use the existing statistical data at local levels, and data from district and/or county resettlement bureaus.
 - (d) Survey affected businesses and workers.
 - (e) Conduct final M&E of LAR implementation (prior to project completion) by conducting a sample survey on 50% of severely affected households and 20% of all other affected households.
- (ii) Qualitative methods
 - (a) Review project documents (feasibility study reports and resettlement plans), ADB relevant policies, laws and regulations of the PRC, Guizhou Province, Anlong County, and Nayong County.
 - (b) Consult and discuss with different stakeholders, including Guizhou Provincial Government, Anlong County Government, and Nayong County Government, and social organizations through consultation meetings, in-depth interviews, and group discussions.
 - (c) Undertake focused group discussions, in-depth interviews with the target affected persons; and/or groups such as severely affected households, relocated households, vulnerable households, and women's groups.
- (iii) Site visits
 - (a) Conduct site visits to original housing areas and resettlement sites, as well as project construction sites to check whether resettlement sites are constructed with complete infrastructure and identify potential impacts on local people during civil works construction.

10. All information and data collected will be processed, analyzed, and included in the baseline or subsequent M&E reports. The EMA must store the processed data to be used for the next M&E. These data will belong to (and will be the asset of) the PMO and will be made available to ADB and the PMO on request. All documentation will be transferred to the PMO at the completion of the contract.

11. **Qualification required and detailed tasks of personnel.** The EMA should be a registered social organization (research institution, design institute, consulting institution and/or firm, university or nongovernment organizations) without direct administrative subordination relations with the Guizhou Provincial Government, Anlong County Government, and Nayong County Government. The EMA should have 5 or more qualified technical staff members. Professional staff members of the EMA should have degree in economics, sociology and/or anthropology, or relevant field of social sciences; are familiar with ADB's or World Bank's

resettlement policies and procedures; and have previous experience in M&E of LAR for projects funded by ADB or World Bank. The EMA should also have experience in undertaking similar projects in the PRC.

12. The EMA will establish an M&E team. The main duties of the team are to (i) carry out the M&E on the implementation of the resettlement plans to ensure it is in compliance with the resettlement plans; (ii) advise PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office on the implementation of the resettlement plans to ensure policies and procedures are complied with; and (iii) provide information and data, monitoring results, and observations that the team leader will aggregate into the external M&E reports.

13. All team members must be fluent in English as well as Chinese, and reports submitted to ADB will be in English. For each of the members, (i) possession of a related degree, qualification, and/or memberships of related academic societies; and/or past participation in related training courses; (ii) experience in similar positions for projects; and (iii) experience in working with international organizations and/or international consultants will be highly evaluated.

1. Resettlement Specialist and Team Leader (national, 13.0 person-months)

14. The specialist will undertake the following tasks: (i) lead all the activities of the team; (ii) lead and set up the monitoring methodology, including design of baseline and tracer surveys; (iii) work and coordinate with relevant agencies and/or bodies within the project to implement the task of M&E activities; (iv) lead and conduct the M&E activities and required surveys to collect data and information at office and project sites, and then analyze the findings; (v) prepare external resettlement M&E reports which include conclusions and recommendations; (vi) discuss findings with the PMO, PIUs, Pingqiao Reservoir Co. Ltd., and Pingshan Reservoir Management Office to reach agreement on follow-up actions; and (vii) participate in ADB review missions.

2. Social Evaluation Specialist (national, 13.0 person-months)

15. The specialist will undertake the the following tasks: (i) monitor the LAR activities mentioned in the resettlement plans to ensure LAR is being carried out in compliance with principles, requirements, and procedures according to the resettlement plans and the governments' laws and/or regulations; and monitor the compensation payments and livelihood restoration of the affected persons; (ii) provide inputs to the external resettlement M&E reports, which would include progress, challenges and/or bottlenecks during implementation; and propose solutions and/or recommendations to address these issues; (iii) participate in ADB review missions, if required; and (iv) conduct any other duties assigned by the resettlement specialist/team leader.

3. Field Surveyors (national, two positions, 6.5 person-months each)

16. The surveyors will (i) assist the resettlement and social evaluation specialists in carrying out the monitoring on the implementation of the resettlement plans to ensure that the LAR implementation is in compliance with the resettlement plans; (ii) under the guidance of the resettlement and social evaluation specialists, carry out field surveys; (iii) analyze the data collected from the field surveys; (iv) provide assistance to the resettlement and social evaluation specialists for the preparation of the external resettlement M&E reports; and (v) conduct any other duties assigned by the resettlement specialist/team leader.

F. Cost Estimate**Table A2.4: Cost Estimate**

Item	Total Cost (\$'000)
1. Consultants	
a. Remuneration and per diem National consultants (39.0 person-months)	219.7
b. Local travel	5.2
c. Reports and communications	0.5
2. Surveys	3.0
3. Miscellaneous administration and support costs	2.0
4. Contingencies	11.6
Total	242.0

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-05: PROJECT MANAGEMENT SUPPORT

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation of the Guizhou Rocky Desertification Area Water Management Project. The direct client of the consulting services is the project management office (PMO). The PMO is under Guizhou Provincial Water Resources Bureau and physically located in Guizhou Water Resources Investment Company Limited (GWIC) wholly-owned by the Guizhou provincial government (executing agency of the project). The consulting services will be also provided to two project implementation units (PIUs). One is physically located in Pingqiao Reservoir Company Limited which belongs to Anlong County Water Resources Bureau; and another PIU is physically located in Pingshan Reservoir Management Office which belongs to Nayong County Water Resources Bureau.

B. Implementation Arrangements

2. The consulting services for project management support will be carried out by a team of consultants through a firm. A total of 71.0 person-months of national consulting services will be required. The consulting services will be financed by Asian Development Bank (ADB) and the consultants will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consulting firm will be selected by (i) inviting simplified technical proposals; and (ii) using the quality- and cost-based selection method, with a quality-cost ratio of 80:20. The consulting services are expected to start in 8 January 2018 until 31 December 2023.

C. Reporting Requirements

3. The consultant team will produce (i) an inception report within 4 weeks of the start of the consulting services, (ii) an annual report by the end of each year during 2017–2022, (iii) draft project completion report (PCR) by 31 October 2023, and (iv) a final PCR by 31 December 2023. The inception and annual reports and draft PCR will be subject to tripartite reviews by ADB, PMO, and consultants. All reports are to be written in English and translated into Chinese. One soft and three hard copies of each report are to be submitted to ADB (English version only) and the PMO (both Chinese and English versions).

4. The inception report will present an approach for the consulting services, including a work plan and an implementation schedule. The annual reports will present activities conducted by the consultants, effects of the consulting services, issues encountered, and recommendations to improve project management. The draft and final PCRs will include summary and evaluation of project implementation; environmental management; land acquisition and resettlement; ethnic minority development; implementation of ethnic minority and social development plans (EMSDPs), and gender action plan (GAP); compliance to the loan and project covenants; and achievements of the project impact, outcome, and outputs; as well as lesson learned from the project implementation and follow-up actions recommended.

D. Other Requirements

5. The consultant team will provide a fully qualified interpreter to work with the consultants on a full-time basis and support the ADB missions.

E. Scope of Services and Consultants' Inputs

6. For each of the national consultant positions, (i) possession of a related degree, qualification, memberships of related academic societies, and/or participation in related training courses, (ii) experience in similar positions for projects or technical assistances, and (iii) experience in working with international organizations and consultants, will be highly evaluated.

1. Project Management Specialist/Team Leader (national, 14.0 person-months [pm])

7. The specialist will (i) coordinate all project management support activities as team leader; (ii) finalize approaches for project management support; (iii) prepare the inception report, interim reports, annual reports, draft PCR, and final PCR; (iv) assist the PMO in implementing, monitoring, and evaluating the overall project and subprojects; (v) assist the PMO in preparing quarterly project progress reports in a format provided by ADB; (vi) assess needs for capacity development for staff of the PMO, PIUs, and others, and plan, design, organize, and implement seminars, workshops, and/or training for project management; financial management; disbursement arrangements, implementation, monitoring; and evaluation of resettlement, gender development, and environmental management, and project monitoring and evaluation [M&E]), if necessary;³ (vii) monitor compliance with the loan covenants, assess key implementation issues, and make recommendations for improvement; and (viii) conduct any other necessary work for smooth and appropriate implementation of the project.

2. Procurement and Contract Management Specialist (national, 14.0 pm)

8. The specialist will (i) monitor procurement activities under the project and assist the PMO in updating and implementing the procurement plan; (ii) assist the PMO in conducting management of contracts for civil works, goods, and consulting services, including, but not limited to, supervision and inspection of activities under contracts; payments to contractors, suppliers, and consultants; preparation of withdrawal applications; improvement of fund flow efficiency by streamlining the preparation of withdrawal applications; and contract variations; (iii) assist the project management specialist/team leader in monitoring compliance with the loan covenants, assess key implementation issues, and make recommendations for improvement, from procurement and contract management viewpoint; (iv) provide the PMO with support for the preparation of procurement and contract management aspects of quarterly progress reports; (v) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for procurement and contract management; (vi) provide support to the project management specialist/team leader for preparing the inception report, annual reports, draft PCR, and final PCR; and (vii) conduct any other necessary work for procurement and contract management assigned by the project management specialist/team leader.

3. Environmental Specialist (national, 17.0 pm)

9. The specialist will (i) assist the PMO and design institute in updating the environmental impact assessment (EIA) report and environmental management plan (EMP) approved by ADB for the project, in ADB format and based on the detailed designs; and obtain ADB's approval of

³ Costs for seminars, workshops, and training excluding consulting services (costs for venues, printing, accommodation and transport for participants, etc.) will be funded from ADB loan under the project separately from the contract for the consulting services.

them;⁴ (ii) assist the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in constructing, operating, maintaining, and monitoring the project facilities in strict conformity with all applicable laws and regulations, including national and local regulations and standards for environmental protection, health, labor, and occupational safety; and ADB's Safeguard Policy Statement (2009),⁵ and the EIA report and EMP; (iii) assist the PMO in preparing and submitting to ADB semiannual environmental monitoring reports in a format acceptable to ADB during construction and implementation of the project; (iv) monitor compliance with the EIA report and EMP, assess the degree of impacts and key implementation issues, explain key issues to the PMO and PIUs, and assist them in conducting follow-up actions to address the key issues; (v) provide the PMO with support for the preparation of environmental aspects of quarterly progress reports; (vi) provide supports to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for environmental management; (vii) provide support to the project management specialist/team leader for preparing the inception report, annual reports, draft PCR, and final PCR; and (viii) undertake any other necessary work assigned by the project management specialist/ team leader.

4. Resettlement Specialist (national 8.0 pm)

10. The specialist will (i) assist the PMO, PIUs, and design institute in updating the resettlement plans approved by ADB, in ADB format and based on the detailed designs; disclose them to the affected persons prior to ADB's approval; and obtain ADB's approval of them; as necessary; (ii) assist the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in implementing land acquisition and resettlement in accordance with the resettlement plans, (iii) assist the PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in supervising contractors to ensure compliance with requirements of the resettlement plans, applicable laws and regulations, and ADB's Safeguard Policy Statement; (iv) assist the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in supervising the processes of resettlement by collecting and updating basic data, and closely coordinating between the PMO, PIUs, Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, and an external resettlement monitor; (v) follow up with the Anlong and Nayong county governments for post resettlement subsidies to be provided to households displaced by the construction of Pingqiao and Pingshan reservoirs; affected; (vi) review external M&E reports prepared by the external resettlement monitor and ADB's comments on the reports, monitor compliance with the resettlement plans, assess the degree of impacts and key implementation issues, explain key issues to the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office, and assist them in conducting follow-up actions to address the key issues; (vii) assist the PMO to monitor compliance with the resettlement plans, assess key implementation issues, formulate remedial measures, and assist them in conducting follow-up actions; (viii) provide the PMO with support for the preparation of resettlement aspects, including semiannual internal resettlement monitoring of quarterly progress reports; (ix) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for implementation and M&E of land acquisition and resettlement; (x) provide support to the project management specialist/team leader for preparing the inception report, annual reports, draft PCR, and final PCR; and (xi) undertake any other necessary work assigned by the project management specialist/team leader.

⁴ The EMP is included in the EIA report.

⁵ Available at: <http://www.adb.org/documents/safeguard-policy-statement>

5. Social Development and Gender Specialist (national, 8.0 pm)

11. The specialist will (i) if there is a change in the project scope, assist the PMO, PIUs, and design institute in updating the EMSDPs approved by ADB, in ADB format and based on the change; and obtain ADB's approval of it; (ii) assist the PMO and PIUs in implementing the EMSDPs and GAP prepared during project preparation; (iii) assist the PMO, PIUs, Pingqiao Reservoir Company Limited, and Pingshan Reservoir Management Office in supervising contractors to ensure compliance with requirements of the EMSDPs and GAP, and applicable laws and regulations; (iv) monitor compliance with the EMSDPs and GAP; assess the degree of impacts and key implementation issues; explain key issues to the PMO and PIUs; and assist them in conducting follow-up actions to address the key issues; (v) provide the PMO with support for the preparation of social aspects of quarterly progress reports, including semiannual internal social monitoring reports; (vi) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for implementation and M&E of the EMSDPs and GAP; (vii) provide support to the project management specialist/team leader for preparing the inception report, annual reports, draft PCR, and final PCR; and (viii) undertake any other necessary work assigned by the project management specialist/team leader.

6. Economist (national, 4.0 pm)

12. The specialist will (i) review background documents, including the economic analysis of the project undertaken during project preparation; (ii) conduct economic analyses of the overall project and each subproject to determine economic internal rate of return of the overall project and each subproject at the midterm of project implementation (in 2020), and at physical completion of the project; (iii) provide support to the project management specialist/team leader for assessing needs for capacity development; and planning, designing, organizing, and implementing seminars, workshops, and/or training for economic analysis, as necessary; (iv) provide support to the project management specialist/team leader for preparing the inception report, annual reports, draft PCR, and final PCR; and (v) undertake any other necessary work assigned by the project management specialist/team leader.

7. Financial Specialist (national, 6.0 pm)

13. The specialist will (i) review background documents, including the financial analysis of the project undertaken during project preparation; (ii) conduct financial analysis at the midterm of project implementation (in 2020), and at physical completion of the project, including (a) financial sustainability analysis to assess the fiscal sustainability debt repayment capacity of the GWIC as a whole; and (b) an assessment of the financial viability of the revenue-generating components, i.e., water supply; (iii) assist the GWIC, PMO, Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, and PIUs in establishing and implementing a financial management system; (iv) assist the Guizhou Provincial Government including GWIC and PMO, and Anlong and Nayong county governments including Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, and PIUs in preparing withdrawal applications and streamlining the preparation of withdrawal applications; (v) assist the Guizhou Provincial Finance Department, Guizhou Provincial Audit Office, PMO, and PIUs in meeting requirements of the financial management action plan (Table V-1, project administration manual); (vi) provide support to the project management specialist/team leader for assessing needs for capacity development; and planning, designing, organizing, and implementing seminars, workshops, and/or training for financial analysis, as necessary; (vii) provide support to the project management specialist/team leader for preparing the inception report, annual reports, draft PCR, and final PCR; and (ix)

undertake any other necessary work assigned by the project management specialist/team leader.

F. Cost Estimate

Table A2.5: Cost Estimate

Item	Total Cost (\$'000)
1. Consultants	
a. Remuneration and per diem National consultants (71.0 person-months)	579.3
b. Local travel	64.5
c. Reports and communications	2.0
2. Surveys	3.0
3. Miscellaneous administration and support costs ^e	4.0
4. Contingencies	34.2
Total	687.0

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-06: WATER AND ROCKY DESERTIFICATION MANAGEMENT

A. Introduction

1. This document sets out indicative terms of reference for consulting services for water and rocky desertification management for the Guizhou Rocky Desertification Area Water Management Project. The direct client of the consulting services is the project management office (PMO). The PMO is under Guizhou Provincial Water Resources Bureau and physically located in Guizhou Water Resources Investment Company Limited, wholly-owned by the Guizhou Provincial Government (executing agency of the project). The consulting services will be also provided to two project implementation units (PIUs). One is physically located in Pingqiao Reservoir Company Limited which belongs to Anlong County Water Resources Bureau; and another PIU is physically located in Pingshan Reservoir Management Office which belongs to Nayong County Water Resources Bureau.

B. Implementation Arrangements

2. The consulting services for project management support will be carried out by a team of consultants through a firm. A total of 63.0 person-months of national consulting services will be required. The consulting services will be financed by Asian Development Bank (ADB) and the consultants will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consulting firm will be selected by (i) inviting simplified technical proposals; and (ii) using the quality- and cost-based selection method, with a quality-cost ratio of 90:10. The consulting services are expected to start on 1 March 2018 until 31 December 2023.

C. Reporting Requirements

3. The consultant team will produce (i) an inception report within 4 weeks of the start of the consulting services, (ii) an annual report by the end of each year during 2018–2022, (iii) draft final by 31 October 2023, and (iv) a final report by 31 December 2023. The inception, annual, and draft final reports will be subject to tripartite reviews by ADB, PMO, and consultants. All reports are to be written in English and translated into Chinese. One soft and three hard copies of each report are to be submitted to ADB (English version only) and the PMO (both Chinese and English versions).

4. The inception report will present an approach for the consulting services, including a work plan and an implementation schedule. The annual, draft final, and final reports will present activities conducted by the consultants, effects of the consulting services, issues encountered, and recommendations.

D. Other Requirements

5. The consultant team will provide a fully qualified interpreter to work with the consultants on a full-time basis and support the ADB missions.

F. Scope of Services and Consultants' Inputs

The consultant team will undertake the following tasks:

(Water user association)

- (i) Assist Pingqiao Reservoir Company Limited and Pingshan Reservoir Management Office including the PIUs in establishing water user associations for both the reservoirs by the commencement of reservoirs operation.

(Re-vegetation)

- (ii) Review and finalize a manual to be used by local people for site preparation, construction of water storage and/or transfer facilities, re-vegetation, maintenance of the trees and/or plants, and simple monitoring (e.g. survival rate), which was drafted by project preparatory technical assistance consultants.
- (iii) Review and finalize a monitoring plan, including indicators (e.g. survival rate, effectiveness for water retention and soil erosion reduction, etc.), and implementation arrangements (e.g. counting and reporting of survived trees by the local people who planted the trees, more detailed monitoring on sampling basis by consultants engaged under this package, etc.), which was drafted by PPTA consultants.
- (iv) Conduct training for local people who will participate in re-vegetation before the re-vegetation starts, using the manual.
- (v) Supervise re-vegetation by local people, by giving instructions as necessary.
- (vi) Conduct detailed monitoring after re-vegetation on sampling basis based on the monitoring plan.

(Pilot projects for promotion of sustainable to reduce rocky desertification areas)

- (vii) Review and finalize a manual to be used by local farmers for sustainable farming and simple monitoring, drafted by PPTA consultants.
- (viii) Review and finalize a monitoring plan, including indicators (e.g. effectiveness for water retention and soil erosion reduction, cost and benefit compared to unsustainable farming, etc.), and implementation arrangements (e.g. simple monitoring by the local farmers, more detailed monitoring by consultants engaged under this package, etc.), drafted by PPTA consultants.
- (ix) Conduct training for local farmers who will participate in the pilot projects before the pilot projects start, using the manual.
- (x) Supervise the pilot projects, by giving instructions to the local farmers as necessary.
- (xi) Conduct detailed monitoring (e.g. effectiveness for water retention and soil erosion reduction, cost and benefit compared to unsustainable farming, etc.) based on the monitoring plan.

(Publicity and promotion of sustainable farming)

- (xii) Conduct on-site workshops in the pilot project areas inviting local farmers from other areas, in close cooperation with Anlong and Nayong county agriculture bureaus.

- (xiii) Conduct market surveys and provide guidance to local farmers on how to select, grow, and sell crops, in close cooperation with Anlong and Nayong county agriculture bureaus.

(Monitoring of rocky desertification and climate change impacts on it)

- (xiv) Assist Guizhou Provincial Climate Change Center and the PMO in monitoring rocky desertification in the project areas and climate change impact on it, including (a) designing of monitoring methodology; (b) collection of initial data to establish baseline for variables regarding rocky desertification; (c) assessment of the extent of climate change on rocky desertification; (d) monitoring of effectiveness of the project on rocky desertification reduction or slowing down; and (e) related capacity development.
- (xv) Assist Pingqiao Reservoir Company Limited and Pingshan Reservoir Management Office in establishing eco-compensation mechanisms.
- (xvi) Assist Pingqiao Reservoir Company Limited, Pingshan Reservoir Management Office, Anlong and Nayong County Water Resources Bureaus, and/or Anlong and Nayong County Forestry Bureaus in closing important forest areas to public.
- (xvii) Review governments' existing policies and regulations on promotion of sustainable farming and reduction of rocky desertification areas, and recommend improvements, as necessary.
- (xviii) Review the existing micro financing systems to farmers being operated in Anlong and Nayong Counties by the county Poverty Reduction Offices, and recommend improvements to promote sustainable farming (e.g. by changing lending policy so that only farmers who will conduct sustainable farming can borrow).
- (xix) Assist relevant government agencies in conducting domestic study tours for water and rocky desertification management.
- (xx) Assist the PMO and other relevant agencies in disseminating project's initiatives, through tours to project sites participated by government officials from other rocky desertification areas; publications including knowledge products; disclosure of project information on website; submission of papers to academic societies; application for a model project for eco-civilization; application for award programs, etc.

6. Each consultant's input is shown in Table A2.6. For each of the national consultant positions: (i) shall possess a related degree, qualification, memberships of related academic societies, and/or participation in related training courses; (ii) shall have experience in similar positions for projects or technical assistances; and (iii) shall have experience in working with international organizations and consultants.

Table A2.6: Consultants' Inputs

Activities	Consultants Inputs (person-months)								
	Water and rocky desertification management SP	Water user association SP	Re-vegetation and forestry SP 1	Re-vegetation and forestry SP 2	Sustainable farming SP	Capacity development SP	Climate change SP	Eco-compensation SP	Micro financing SP
	NA	NA	NA	NA	NA	NA		NA	NA
(Water user associations)									
(i) Establish water user associations		3.00							
(Re-vegetation)									
(ii) Finalize a manual			0.25	0.25					
(iii) Finalize a monitoring plan			0.25	0.25					
(iv) Train local people			2.50	2.50		5.00			
(v) Supervise re-vegetation			2.50	2.50					
(vi) Monitor re-vegetation									
(Pilot projects for promotion of sustainable farming to reduce rocky desertification)									
(vii) Finalize a manual					0.25				
(viii) Finalize a monitoring plan					0.25				
(ix) Train local farmers					0.50	0.50			
(x) Supervise pilot projects					2.00				
(xi) Monitor pilot projects									
(Publicity and promotion of sustainable farming)									
(xii) Conduct on-site workshops					1.00	2.00			
(xiii) Conduct market surveys and provide guidance					1.50	1.00			
(Monitoring, policy reforms, capacity development, and knowledge sharing)									
(xii) Monitor rocky desertification and climate change impact on it	3.00						7.00		
(xii) Establish eco-compensation mechanisms								4.00	
(xiii) Protect important re-vegetated areas			1.00	1.00					
(xiv) Recommend on policies and regulations	1.00		1.00	1.00	1.00				
(xv) Recommend on micro financing					1.00				2.00
(xvi) Conduct domestic study tours	1.50					1.50			
(xvii) Disseminate project's initiatives	3.00		0.75	0.75	1.50	1.00			
(Tasks as TL)	2.00								
Total	10.50	3.00	8.25	8.25	9.00	11.00	7.00	4.00	2.00

NA = national, SP = specialist, TL = team leader.

F. Cost Estimates**Table A2.7: Cost Estimate**

Item	Total Cost (\$'000)
1.	Consultants
a.	Remuneration and per diem
	National consultants (63.0 person-months)
	520.6
b.	Local travel
	33.5
c.	Reports and communications
	2.0
2.	Surveys
	15.0
3.	Miscellaneous administration and support costs ^e
	7.0
4.	Contingencies
	29.9
Total	608.0

Source: Asian Development Bank estimates.