

**ENVIRONMENTAL ASSESSMENT
EXECUTIVE SUMMARY
For 2nd disclosure**

**FOR
GANSU REVITALIZATION AND INNOVATION PROJECT
(P158215)**

**Gansu Provincial Culture Department
and
Gansu Financing Holding Group**

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TABLE OF CONTENTS

1	INTRODUCTION	2
1.1	Background	2
1.2	Environmental and Social Legal Requirements	2
2	PROJECT DESCRIPTION	4
3	ENVIRONMENTAL AND SOCIAL BASELINE	13
3.1	Physical Environment.....	13
3.2	Ecological Environment.....	15
3.3	Physical Cultural Resources (PCRs)	15
3.4	Socio-Economic Context.....	16
3.5	Environmental Quality	17
4	ESMF FOR COMPONENT 1 & 3.....	17
4.1	Purpose and Scope of the ESMF	17
4.2	Subproject Description and Screening of Potential Impacts.....	18
4.3	Procedures to Address Safeguards Issues.....	18
4.4	Public Consultation and Information Disclosure for the ESMF	20
4.5	Implementation Arrangements and Capacity Building	20
5	ENVIRONMENTAL and Social ASSESSMENT FOR COMPONENT 2.....	21
5.1	Environmental and Social Benefits	21
5.2	Analysis of Alternatives	22
5.3	Environmental Impacts and Mitigation Measures	24
5.4	Environmental Due Diligence of Associated Facilities	33
5.5	Public Consultation and Information Disclosure	34
5.6	Environmental and Social Management Plan.....	34
6	Conclusions	36

ANNEXES

- Annex 1 Summary of environmental & social mitigation measures for Component 2
- Annex 2 Summary of PCRs Protection Measures for Component 2
- Annex 3 Summary of environmental monitoring plans for Component 2

LIST OF TABLES

- Table 1-1 Compliance with the World Bank Safeguards Policies
- Table 2-1 Description of the Project Components
- Table 2-2 Subcomponent 2.1 Investments: Regeneration of Selected Historic City Cores, Small Towns, and Villages
- Table 2-3 Subcomponent 2.2 Investments: Development of Cultural, Tourism, and Creative Industries
- Table 2-4 Components 1 and 2 Details
- Table 2-5 Component 3 Activities and Estimated Cost
- Table 5-1 The PCRs Identified in the Subproject Areas under Component 2
- Table 5-2 Associated WWTPs of the Subprojects under Component 2
- Table 5-3 Cost Estimate of Environmental Management under Component 2

LIST OF FIGURES

- Figure 3-1 Location of the Subprojects under Component 2
- Figure 4-1 Organizational Structure of Environmental Management for Component 2

1 INTRODUCTION

1.1 Background

Gansu Province is the least developed and the poorest province in China. Despite significant achievements on poverty reduction, with 54 percent of its total population living in poor rural areas, Gansu still has a large low-income population under poverty or vulnerable to poverty.

On the other hand, Gansu Province is an important origin place of the Chinese civilization and has many tourist and heritage sites along the ancient Silk Road. The richness and uniqueness of natural, cultural, and human resources in Gansu constitutes a unique comparative advantage for the province to develop its culture, tourism, and creative industry as sustainable development sectors with high potentials. The government has mainstreamed these sectors as the key drivers of economic growth and poverty alleviation in Gansu. In this context, the Gansu Revitalization and Innovation Project (the Project) was initiated to supplement and build synergy with the ongoing government's programs and investments with the World Bank's supports, focusing on creating employment and improving livelihoods for lower-income urban and rural residents in Gansu.

The Project has been classified as Category A following the World Bank's safeguards policies, which requires full environmental and social assessment. As entrusted by the Provincial Project Management Offices (PPMOs), namely Gansu Provincial Culture and Tourism Department (GPCTD) and Gansu Financial Holding Group Co. Ltd (GFHG), the consulting firm Lanzhou University Applied Technology Research Institute Co., Ltd., prepared the environmental assessment (EA) for the Project in accordance with China's laws, regulations and technical guidelines, as well as the World Bank's safeguards policies. A full Environmental Impact Assessment (EIA) report, an Environmental and Social Management Plan (ESMP), and an Environmental and Social Management Framework (ESMF) were prepared. In addition, a set of social safeguards instruments, consisting of a Social Assessment (SA) report, a consolidated Resettlement Action Plans (RAPs), three Resettlement Due Diligent (RDD) reports and a summary RAP for Component 2 and a Social Risk Management Framework (SRMF, including the Resettlement Policy Framework (RPF) and an Ethnic Minority Development Framework (EMDF) for Component 1, have also been prepared by Hohai University, with the main findings and conclusions incorporated in the EIA, ESMP and ESMF respectively. This document is the Executive Summary (ES) of all the above safeguards documents for the Project. The summary of the ESMF on Component 1 & 3 is presented in Chapter 4; and the summary of the EIA and ESMP of Components 2 is shown in Chapter 5.

1.2 Environmental and Social Legal Requirements

The Project is in full compliance with applicable Chinese laws, policies and regulations, such as the *Environmental Protection Law*, the *Environmental Impact Assessment Law*, and the *Notice on Strengthening EIA Management for Construction Projects Funded by Loans from International Financial Institutions* etc. Based on the safeguards screening, the project triggers totally eight World Bank's safeguards policies, as summarized in **Table 1-1**. In addition, three World Bank Group (WBG)'s Environmental, Health and Safety (EHS) Guidelines are also deemed applicable to the Project, respectively the general guidelines, the one on water and sanitation and one for waste management facilities. By comparing these applicable EHS guidelines with the equivalent national environmental standards, more stringent national standards apply to the environmental assessment and environmental management of the Project.

Table 1-1: Triggering and Compliance with the World Bank's Safeguards Policies

Safeguards Policy	Compliance
Environmental Assessment (OP / BP4.01)	<p>Though the anticipated negative environmental and social impacts are mostly site-specific and temporary in nature during construction, the project is overall classified as Category A considering the types of investments and the sensitivity of the cultural sites involved.</p> <p>Full environmental and social impact assessment has been carried out.</p> <p>Environmental safeguards documents have been prepared, including: (i) an ESMF for Component 1 & 3; (ii) a full EIA and an ESMP for Component 2; and (iii) an ES for the whole Project.</p> <p>Social safeguards documents have been produced, including: RPF and EMDF for Component 1; one SA report, one consolidated RAP, four subproject RAPs and three RDD reports for Component 2.</p> <p>Two rounds of public consultation have been conducted with the safeguards documents disclosed locally and at the Bank's external website.</p>
Natural Habitats (OP/BP4.04)	<p>The policy is triggered considering the river rehabilitation activities (no dredging, mainly slope protection and river banks landscaping) to be supported under Component 2 and subproject uncertainties of Component 1.</p> <p>For Component 1, the ESMF has included screening criteria and assessment requirements for the financing of any credit to micro and small enterprises (MSEs) involving natural habitat issues.</p> <p>For Component 2, ecological impacts assessment has been conducted as part of the EIA, concluding that no critical natural habitat involved or affected. Sufficient measures to mitigate potential impacts on affected non-critical natural habitats are included in the ESMP</p>
Forests (OP/BP 4.36)	<p>Considering sub-loan/subproject uncertainties under Component 1, this policy is triggered from precaution perspective. Relevant screening procedure and subproject preparation requirements when the policy is triggered have been incorporated into the ESMF for future implementation.</p>
Pest Management (OP/BP4.09)	<p>Considering small-scale farming activities possibly to be supported by Component 1, this policy is triggered from precaution perspective. Screening procedure has been established under the ESMF to determine whether this policy will be triggered by selected subprojects and the policy requirements incorporated into the ESMF for future implementation when applicable.</p>
Indigenous Peoples (OP/BP4.10)	<p>For Component 1, an EMDF has been developed and included in the ESMF considering subproject uncertainties.</p> <p>Current proposal of Component 2 involves no indigenous people issue.</p>
Physical Cultural Resources (OP/BP4.11)	<p>For Component 1, the ESMF has included corresponding screening criteria and assessment requirements to prepare any subproject involving PCR issues.</p> <p>For Component 2, Heritage Impact Assessment (HIA) has been prepared during the preparation of the project FSR and EIA. A specific Physical Cultural Resource Management Plan (PCRMP) has been prepared and included in the ESMP.</p>
Involuntary Resettlement (OP/BP4.12)	<ul style="list-style-type: none"> • For Component 1, a Social Risk Management Framework (SMF, with the integration of Resettlement Policy Framework (RPF) and Ethnic Minority Development Framework (EMDF)) has been developed and included in the ESMF considering subproject uncertainties. <p>For Component 2, implementation is expected to result in the physical displacement of 96 persons and the economic displacement of 22 persons, and a Resettlement Action Plan (RAP) has been prepared.</p>
Safety of Dams (OP/BP 4.37)	<p>Considering sub-loan/subproject uncertainties under Component 1, this policy is triggered from precaution perspective. Relevant screening procedure and subproject preparation requirements when the policy is triggered have been incorporated into the ESMF for future implementation.</p>

2 PROJECT DESCRIPTION

The Project development objectives are to increase income-generating opportunities, improve access to infrastructure and services, and strengthen the institutional capacity of participating entities. The focus of the project is to reduce the last pockets of poverty through last mile connectivity between urban and rural settlements, critical improvement to local infrastructure, and by enabling small and micro enterprises to connect to the growing service economy. The project adopts an integrated approach of using local endowments and human capital and traditional/artisan skills as drivers for local economic development and job creation. The project would reach 6,155,600 beneficiaries in four prefectures, of which 70 percent live in counties with an average poverty rate of 11.8 percent or around 6 times China's average poverty rate of 2.2 percent. The beneficiaries fall into five major groups: (a) poor project households (below China's absolute poverty line) in the four prefectures, who will benefit from improved living conditions and economic livelihoods; (b) lower-income residents (bottom 40 percent) living in project sites, who will be provided with improved living and economic livelihoods; (c) MSEs in the cultural, tourism, and creative industries, who will receive micro-credits and business advisory services from the project; (d) public employees of Gansu's provincial government, as well as prefecture- and county-level governments, who will participate in the project and benefit from on-the-job capacity building; and (e) financial institutions, including GFHG, GFGC and PFIs. 28. In parallel, IFC will provide a senior loan of US\$50 million equivalent, with additional syndicated loans, to expand lending by the China Foundation for Poverty Alleviation–Microfinance Management Co., Ltd (CFPA MF) to micro and very small enterprises (MVSEs). IFC aims to expand CFPA MF's lending to women-owned/managed MVSEs in rural area in Gansu, and to support the growth of the tourism and service sector in Gansu. Working with CFPA MF, IFC will be targeting the micro and very small spectrum of the value chain with loan sizes ranging from below US\$5,000 for micro-loans and below US\$15,000 for very small-loans. Thus, collectively, the World Bank Group will cover the full range of enterprises that have expressed a need for credit.

The project aims to create employment and improve livelihoods for lower-income urban and rural residents in Gansu. It comprises three components: (i) providing increased access to financial services for MSEs in the cultural, tourism, and creative industries; (ii) urban-rural regeneration by targeted interventions in infrastructure and public services and support for the local creative industries; and (iii) institution building and transfer of knowledge globally.

Project areas have been strategically selected on the basis of poverty levels, bottom 40 percent population, and underutilized endowments. Among all the fourteen prefectures in Gansu, specific counties, districts and towns in four prefectures along the Xi'an-Urumqi east-west corridor (the ancient Silk Road route) have been strategically selected to benefit from the project, based on the results of an economic geography and competitive cities analysis. These prefectures are Tianshui, Dingxi, Zhangye, and Jiuquan.

The project aims to create employment and improve livelihoods for lower-income urban and rural residents in Gansu. It comprises three components: (i) providing increased access to financial services for MSEs in the cultural, tourism, and creative industries; (ii) urban-rural regeneration by targeted interventions in infrastructure and public services and support for the local creative industries; and (iii) institution building and transfer of knowledge globally. Proposed investments are interrelated and supplementary to each other to maximize benefits to lower-income communities in Gansu Province, enhance local economy, and build stronger institutions to sustain local economic development. The scope of these components is summarized below.

Component 1: Increased Access to Financial Services for MSEs (Total Investment: US\$150 million, IBRD: US\$50 million, participating financial institutions (PFIs): US\$100 million). This component supports private sector development through the provision of financing for new or existing MSEs engaged in the cultural, tourism, and creative industries. The component also seeks to support the creation of a sustainable credit market for MSEs by demonstrating the financial viability of the cultural, tourism, and creative sectors and by supporting the recently established provincial holding

company to serve as a wholesale vehicle for meeting the demands of the underbanked segments in Gansu and for spurring financial innovation.

IBRD financing will be on-lent to the Gansu Finance Holding Group (GFHG). Established in 2016, GFHG is the wholesale financial intermediary and the provincial project management office (PPMO) for this component. Through a subsidiary agreement, GFHG will extend to PFIs a line of credit to co-finance sub-loans to eligible MSEs in the cultural, tourism, or creative industries in Gansu Province. At this time, Bank of Gansu (BoG) has been qualified and selected as the first PFI after meeting compliance indicators with regulatory requirements reflective of capital adequacy and asset quality and following a call for expressions of interest. An allocation of US\$25 million is committed to BoG, which leveraged US\$50 million from BoG. The remaining IBRD unallocated amount (US\$25 million) will be used to partner with additional PFIs through subsequent expressions of interest using transparent selection criteria. Success with the first PFI in terms of sub-loans co-financing is expected to generate interest among subsequent qualified PFIs, with the expectation that co-financing of MSE sub-loans would reach at a minimum ratio of 1 (IBRD):2 (PFI). GFHG will support interested PFIs through outreach and technical assistance and may contribute its own funds in subsequent rounds of allocations.

This component will only finance a positive list of micro and small enterprises (MSEs) on cultural, tourism and creative industry sectors, that fall under Environment Assessment (EA) Category C or B. Relevant capacity building and technical assistance, e.g., business start-up advisory service to MSEs, impact evaluation and capacity building to GFHG, will be provided under Component 3 to ensure synergy, success and sustainability. The component will support the following activities:

To ensure financing along the whole value chain, 40 percent of the financing under this component (that is, US\$60 million equivalent) will be targeted toward the micro sector with a single credit limit of US\$50,000. The remaining financing under the component will provide credits to small enterprises, with most credits around US\$120,000. The component will increase the tenor of the average maturity for the MSE sector from the present one year to two years, corresponding to the need for longer-term financing identified in the market demand survey. A minimum of 40 percent of the component will finance interventions in project areas of Tianshui, Dingxi, Zhangye, and Jiuquan, while the remaining 60 percent may be used to finance enterprises in other prefectures of Gansu. The component is expected to create a minimum of 3,300 permanent jobs (40–50 percent for women) in newly established and growing MSEs. In addition, a minimum of 10 percent of the financing is targeted toward women borrowers. Currently, less than 7 percent of small loans in Gansu are to female entrepreneurs. To ensure sustainability, capacity building for GFHG and selected PFIs, as well as business startup advisory services for MSEs, will be provided under component 3.

In parallel, IFC will provide a senior loan of US\$50 million equivalent, with additional syndicated loans, to expand lending by the China Foundation for Poverty Alleviation–Microfinance Management Co., Ltd (CFPA MF) to micro and very small enterprises (MVSEs). IFC aims to expand CFPA MF's lending to women-owned/managed MVSEs in rural area in Gansu, and to support the growth of the tourism and service sector in Gansu. Working with CFPA MF, IFC will be targeting the micro and very small spectrum of the value chain with loan sizes ranging from below US\$5,000 for micro-loans and below US\$15,000 for very small-loans. Thus, collectively, the World Bank Group will cover the full range of enterprises that have expressed a need for credit. The IFC portion is in a separate investment.

Also, in parallel, GFHG plans to invest US\$50 million as paid-in capital. GFHG will use this investment to back up guarantees to be extended to financial institutions lending to MSEs, against the risk of payment default of such MSEs, up to an estimated amount equivalent to US\$200 million. Technical assistance to GFHG under the project will help build its capacity to administer a credit guarantee facility, which may, over time, contribute significantly to improving financial access to MSEs and sustain project impact beyond the closing date.

Component 2: Urban-Rural Regeneration (IBRD: US\$114 million). This component will make critical investments in small and medium scale infrastructure in project areas that will improve living

conditions for residents and enable the creation of more income-generating opportunities in creative industries. One focus of the component is on regeneration of urban areas and villages with cultural endowments. Another is to expand the cultural, tourism, and creative industries by constructing exhibition sites, spaces for MSE incubation and training, and creating marketplaces. The two sub-components will benefit local residents and visitors and create income-generating opportunities.

- a) **Regeneration of Historic Towns and Villages.** The project will finance physical regeneration, including improved access to infrastructure and services and restoration of old houses and buildings, of four towns and nine villages located in four counties in Gansu. Each town or village is characterized by a distinct cultural or creative industry specialty, such as jade carving, calligraphy and ink painting, colored pottery, lacquerware, sculptures and folk performance. Physical regeneration, together with enabling economic opportunities for MSEs development provided under component 1, will stimulate social and economic regeneration of local communities and leverage private investments.
- b) **Development of Creative Industries.** The project will develop of the creative industries in Gansu and provide clustered and conducive spaces of production, research, presentation, sales and exchange of knowledge and experience. Based on market demand analysis and the comparative advantages of Gansu Province and project cities and towns, this subcomponent will finance development of eight creative industry centers (including incubators and marketplaces); and three tourism facilities, including tourist information centers; physical and virtual display of the ancient silk road history, cultural, and creative industries; display and sales of the cultural and creative products; and performance space for shows by local performers, using modern technologies.

Component 3: Institutions Strengthening and Global Knowledge Transfer (IBRD: US\$16.0 million). This component aims to strengthen the institutional capacity in Gansu to manage economic and social development, using cultural, tourism, and creative industries as a pillar for inclusive and sustainable economic growth and poverty alleviation. It includes the following activities:

- a) Completion of studies and the development of sustainable site management plans, improved policies and regulations, marketing strategies, and Gansu branding and promotion activities. This will strengthen the capacity of local governments and the recently merged provincial Department of Culture and Tourism for better planning, policies, and regulations.
- b) Provision of technical assistance, trainings and business advisory services to communities, MSEs, participating financial institutions and local and provincial officials. This will build the institutional capacity of GFHG and PFIs to establish a sustainable credit market for MSEs and provide incentive for private sector investments. C It will also provide technical assistance (TA) to GFGC on global good practice in executing and managing guarantees. Community outreach and provision of business start-up advisory services to prospective borrowers, especially women, will help them prepare business plans, apply for credits, and support their businesses during the startup phase so that they do not fail.
- c) Provision of support for project management and implementation. This will include compliance with environmental, social, and fiduciary obligations, design institutes, project management, construction supervision, and monitoring and evaluation of the project impacts.
- d) Dissemination of Gansu culture and tourism knowledge globally. Gansu's experience in tourism, cultural, and creative industry development, including under this project, will be curated and shared with other countries with similar development challenges. Existing Dunhuang Expo facilities that are currently used once a year will be utilized throughout the year, as they will serve as a knowledge hub under this project. On-the-job training provided by UNWTO is envisaged for the preparation of tourism circuit development and plans, market demand analysis, workforce development, and the branding, marketing and promotion of Gansu. UNESCO will provide on-the-job training in the preparation of sustainable site

management plans and the safeguarding of intangible cultural heritage and promotion of creative industry. Both UNWTO and UNESCO will also help disseminate Gansu's experience globally.

Details of each components are summarized in Tables 2-1 until 2-5 below.

Table 2-1: Description of Component 1

No.	Project Location	Components & Subprojects	Description of Activities	IBRD Loan (US\$ million)	Total Cost (US\$ million)
1	Increased Access to Financial Services for MSEs			50.0	150.0
1.1	Gansu Province	Line of Credit (LOC)	To provide credits to MSEs on cultural, tourism, and creative industry (40% of the joint IBRD and PFIs financing will support micro enterprises and 60% will support small enterprises)	50.0	150.0

Table 2-2: Subcomponent 2.1 Investments: Regeneration of Selected Historic City Cores, Small Towns, and Villages

Prefecture-level city county/district	Investment in regeneration	Outputs
Tianshui: Qin'an County	Urban regeneration of Wuying town of Dadiwan area	<ul style="list-style-type: none"> - Paving of 28.65 km of road - Renovation and façade lifting of 32,500 m² of old houses - Installation of lighting along the newly paved roads and near the renovated houses - Purchasing/installation of solid waste collection equipment - Upgrading of 14,300 m² of landscaping - Installation of 7.8 km of sewers - Installation of wastewater treatment facilities with capacity of 255 m³/day - Installation of 7.8 km of stormwater drainage - Rehabilitation of 2.40 km of Yanjiagou River
Tianshui: Qin'an County	Urban regeneration of Longcheng historic town of Dadiwan area	<ul style="list-style-type: none"> - Restoration of 36,000 m² of old houses - Restoration of 2,600 m² of traditional courtyards - Upgrading of 10,600 m² of public space - Upgrading of 700 m² of landscaping - Rehabilitation of 21 km of roads and installation of lighting on the street, as well as sewers and drainage under the roads - Installation of two small-scale packaging plants - Purchasing/installation of solid waste collection equipment
Tianshui: Qin'an County	Urban regeneration of Shangguan Ming- and Qing-Dynasty historic street of Dadiwan area	<ul style="list-style-type: none"> - Renovation and façade lifting of 3,500 m² of old houses - Installation of stormwater drainage for the street - Installation of power supply cable - Installation of heating pipelines - Construction of two public toilets
Tianshui:	Urban regeneration	<ul style="list-style-type: none"> - Rehabilitation of 8.8 km of roads

Wushan County	of Shandan town of Wushan jade industry	<ul style="list-style-type: none"> - Rehabilitation of one bridge - Renovation of 23,000 m² of old houses - Installation of 25 km of stormwater drainage - Installation of 17.5 km of sewers - Installation of 9 km of power supply cable - Installation of five mobile public toilets - Purchasing/installation of solid waste collection equipment
Dingxi: Lintao County	Rural regeneration of eight villages of Majiayao area	<ul style="list-style-type: none"> - Rehabilitation of 25.4 km of roads - Renovation and façade lifting of 40,000 m² of old houses - Installation of 25 km of sewers - Installation of eight mobile public toilets - Purchasing/installation of solid waste collection equipment
Zhangye: Ganzhou District	Rural regeneration of folk village in Wulan ancient town of Zhangye	<ul style="list-style-type: none"> - Renovation of 103,692 m² of old houses - Upgrading of 13,523 m² of landscaping - Rehabilitation of 7.36 km of village roads - Installation of street lighting along the rehabilitated road - Installation of 23 fire hydrants and 408 fire extinguishers - Installation of 1.55 km of sewers - Purchasing of solid waste collection equipment

Table 2-3: Subcomponent 2.2 Investments: Development of Cultural, Tourism, and Creative Industries

Prefecture-level city county/district	Cultural, tourism, and creative industries	Outputs	Activities/products of creative industry supported by investment
Tianshui: Qin'an County	Dadiwan Cultural Experience Zone, Incubator Space, and Tourist Service Center	<p>Construction of:</p> <ul style="list-style-type: none"> - Digital exhibition hall - Research and training center - Interactive experience hall - Folk cultural exhibition hall - Tourist service center - Nu Wa Cultural Exhibition Hall - Qin'an Cultural Center <p>Total area: 7,500 m²</p> <p>Installation of matching infrastructure of water supply, sewage, drainage, power supply</p> <p>Purchasing/installation of equipment and supplies for the centers and halls</p>	<ul style="list-style-type: none"> - Research and exhibition of the history of pottery making - Training and incubation of painted pottery production - Research and exhibition of legends and history of Nu Wa - Creation, preparation, and performance of musicals and dances with the theme of Nu Wa stories

Tianshui: Maiji District	Yellow River Lacquerware Creative Industry and Incubator Center	<ul style="list-style-type: none"> - Construction of Carved Wooden Lacquerware Center, 7,355 m² - Purchasing/installation of equipment and supplies for the center 	<ul style="list-style-type: none"> - Research and development of lacquerware beds, loungers, screens, coffee tables, dining tables, bookshelves, tea sets, and smoking sets, as well as more than 200 kinds of small craft souvenirs - Exhibition and sales of lacquerware products - Training and incubation of small businesses that will produce lacquerware
Tianshui: Wushan County	Wushan Jade Art Creative Industry Exhibition and Incubator Center	<ul style="list-style-type: none"> - Construction of Yuanyang Jade Exhibition and Incubator Center, 3,822 m² 	<ul style="list-style-type: none"> - Research and development of three styles of Yuanyang jade carving - Exhibition and sales of carved jade products - Training and incubation of small businesses that will produce carved jade. - Display and exhibition in the same space of Wushan District's intangible cultural heritage, such as folk culture and art, the martial arts, and rotary drum dance
Dingxi: Lintao County	Majiyao Cultural Exhibition, Research, and Incubator Center	<p>Construction of</p> <ul style="list-style-type: none"> - Exhibition hall - Archaeological experience hall - Research center - Incubator space <p>Total area: 8,000 m²</p> <p>Matching infrastructure, including installation of 800 solar lights, purchasing of electric cars, and construction of a parking lot, 1,200 m²</p>	<ul style="list-style-type: none"> - Research and exhibition of Majiyao culture and history - Experience of archaeological restoration for visitors (including field archaeological restoration, cultural relic restoration experience, archaeological lessons, colored pottery making) - Housing of research center in Majiyao digital cultural library - Training and incubation of small businesses that produce traditional handicraft workshops - Training and incubation of small businesses that produce traditional fragrances
Dingxi: Tongwei County	Tongwei Calligraphy and Ink Painting Creative Industry	<p>Construction of</p> <ul style="list-style-type: none"> - Hanmo Cultural and Art Exhibition Center 	<ul style="list-style-type: none"> - Display and interactive experiences for visitors in calligraphy, painting, paper cutting, embroidery, shadow puppets, and straw painting

	Exhibition and Incubator Center	<ul style="list-style-type: none"> - Incubator and workshop space of calligraphy and painting producers Total area: 9,200 m² Matching infrastructure, including construction of 2.5 km of pedestrian street and 30,948 m² of public space. 	<ul style="list-style-type: none"> - Training and incubation of small businesses that produce the “scholar’s four jewels” (writing brush, ink stick, ink slab, and paper) and related products - Production and sales of calligraphy and painting-related products - Exhibition space also to be used for performances of Tongwei Opera and Shadow Puppet Show
Zhangye: Zhangye Proper	City Zhangye Discovery and Tourist Service Center	<ul style="list-style-type: none"> - Restoration of 7,390 m² of old buildings into (a) Zhangye Cultural Research Center, 450 m², (b) Folk Culture Hall, 1,982 m², (c) Time Tunnel to view Zhangye’s history virtually, 800 m², (d) Xiaonan Rock Paintings Hall, 450 m², (e) digital display experience area, 450 m², (f) intangible cultural heritage products market area, 800 m², and (g) performance area, 2308 m². - Conversion of 3,440 m² of old buildings into (a) Zhangye Frontier Fortress Culture Center, 1,439 m², (b) Weapons Show and Interactive Experience Hall, 800 m², (c) Folk Sports Experience Hall, 206 m², (d) 3D Experience Room, 277 m², and (e) Zhangye Frontier Fortress Culture Research Center 	<ul style="list-style-type: none"> - Research, development, production, and exhibition of traditional handicrafts (folk embroidery, straw painting, chrome painting, dough molding, etc.) - Research and exhibition of ancient cold weapons and provision of interactive experience for visitors with the ancient military sports activities
Jiuquan: Suzhou District	Jiuquan Silk Road Culture Research Center and Library	<ul style="list-style-type: none"> - Construction of 12,000 m² Silk Road Culture Research Center and Library, which includes (a) Reception & Tourist Service Center, (b) Cultural Exhibition Center, (c) Ancient Books & Historical Documents Research & Exhibition Center, (d) Dunhuang Overseas Culture Heritage Digital Exhibition Center, and (e) library and reading area - Purchasing/installation of exhibition equipment and supplies 	<ul style="list-style-type: none"> - Research, development, exhibition, and production of Dunhuang painted sculpture, luminous cup sculpture, traditional Mongolian clothing production - Research, development, exhibition, and production of Dunhuang scrolls, bamboo slips of Han Dynasty, etc. - Construing of virtual display artifacts and content through modern technology such as virtual reality and augmented reality

Jiuquan: Dunhuang County-Level City	Dunhuang Posthouse World Heritage Site Discovery and Tourist Service Center (adding this remote site to Gansu's tourism circuit will benefit local communities and reduce pressure on the very famous Mogao Grottoes World Heritage Site)	- Construction of Posthouse Exhibition & Tourist Service Center - Construction of matching infrastructure, including (a) 2.7 km of roads for electric car and horse carriage, (b) 1.5 km of tourist wooden walkway, (c) 3 km of mountain pathway, (d) four outdoor exhibition zones of 123,500 m ² , (e) viewing platform of 160 m ² , (f) campground of 10,000 m ²	- Information center, exhibitions, and spectacular show: use of modern scientific and technological means, such as virtual and augmented reality (VR/AR), to construct virtual display artifacts and content for visitors to experience the ancient post station and observe the cultural relics of the Han Dynasty - Display and sales of the cultural and creative products related to the ancient post station - Research, display, and sales of bamboo slips (ancient letters) and interactive experiences for visitors to appreciate the use of letters and post stations
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Table 2-4 below shows cost details of components 1 and 2, Bank loan amounts, estimated climate co-benefits, estimated net revenues from tickets and other fees, rent, and charges, estimated number of permanent jobs to be created with a gender target of 50 percent, and calculated EIRR.

Table 2-4: Components 1 and 2 Details

Subproject	Estimated cost US\$ M	Bank loan US\$ M	Estimated climate co- benefit %*	Net revenues US\$ M**	No. of jobs created	EIRR/ EIRR%
Component 1: Increased Access to Financial Services for MSEs Installation of energy efficient equipment and appliances and replacing old energy-consuming ones.	150	50	30-40%	N.A.	3,204	FIRR 25%
Component 2: Urban-Rural Regeneration (investments by county): Dadiwan: (a) urban regeneration of Wuying, Longcheng, and Shangguan Historic Areas; (b) Dadiwan Cultural Experience Zone, Incubator Space, and Tourist Service Center	26.99	26.99	72%	4.23	375	16.4
Yellow River Lacquerware Discovery and Incubator Center	7.88	7.88	75%	5.12	400	21.3

Majiyao: (a) rural regeneration of eight Villages; (b) Majiyao Cultural Exhibition, Research, and Incubator Center	18.84	18.84	78%	16.48	500	25.8
Tongwei Calligraphy and Ink Painting Creative Industry Exhibition and Incubator Center	12.70	12.70	28%	19.03	230	27.0
Zhangye: (a) rural regeneration of Folk Village in Wulan Ancient Town; (b) Zhangye Discovery and Tourist Service Center	11.99	11.99	78%	23.51	514	19.1
Jiuquan Silk Road Culture Research Center and Library	10.93	10.93	77%	-7.92	66	21.9
Dunhuang Posthouse Discovery and Tourist Service Center	15.70	15.70	78%	15.00	80	18.3
Wushan: (a) urban regeneration of Shandan Town; (b) Wushan Jade Art Creative Industry Exhibition and Incubator Center	8.96	8.96	70%	11.27	40	21.5
Component 2 total	114.00	114.00	45-55%	86.73	2,205	21.2
<p>* Estimates are subject to further verification by Climate Co-Benefits Assessment Team of Climate Change Group.</p> <p>** Net revenue refers to revenue net of O&M cost and taxes. Figures are proxies for the amounts of lease fees each municipal government can set as a minimum in selecting an operator under a lease contract.</p>						

Table 2-5: Component 3 Activities and Estimated Cost

Component 3	Estimated cost US\$ M	Bank loan US\$ M
3.1 Strengthening Financial System/Financial Institution		
Credit risk management and corporate governance	0.45	0.45
Financial technology in support of MSEs' application and credit assessment	0.35	0.35
TA to GFGC on global good practice in executing and managing guarantees	0.20	0.20
3.2 Reform of Culture & Tourism System to Improve the Capacity of New Institutions		
Improve strategic planning and regulations of culture and tourism sector	0.22	0.22
Branding, marketing, & promotion	0.29	0.29
Training of cultural tourism practitioners	0.29	0.29
Community outreach and training on creative industries and safeguarding intangible cultural heritage	0.29	0.29
Business startup advisory services for prospective micro- and small enterprise	0.29	0.29

operators, especially women		
Skills training in Tianshui lacquer carving	0.15	0.15
Community outreach and capacity-building services for low-income groups for business startup	0.15	0.15
3.3 Capacity Building of Grass-Roots Governments Participating in the GRIP		
Project management consulting services, including socioeconomic impact evaluation and beneficiary satisfaction surveys	2.60	2.60
Establishment of project management information system (procurement of standard software)	0.41	0.41
Environmental impact assessment & monitoring	0.29	0.29
Social development assessment & monitoring	0.29	0.29
Consulting services for design, construction drawings, BQs of Qin'an County, Tianshui	1.08	1.08
Consulting services for design, construction drawings, BQs of Maiji District and Wushan County, Tianshui	0.62	0.62
Consulting services for design, construction drawings, BQs of Lintao County and Tongwei County, Dingxi City	1.23	1.23
Consulting services for design, construction drawings, BQs of Zhangye	0.48	0.48
Consulting services for design, construction drawings, BQs of Jiuquan and Dunhuang	1.06	1.06
Construction supervision of Qin'an, Tianshui, Tongwei, and Shandan Works	2.08	2.08
Construction supervision of Zhangye, Jiuquan, and Dunhuang	1.11	1.11
3.4 Global Knowledge Development and Transfer		
Advisory service with UNESCO to strengthen Gansu creative industry, support intangible heritage, develop Dunhuang site management plan, and support global knowledge sharing (on-the-job capacity strengthening)	0.51	0.51
Advisory service with UNWTO to review and enhance Gansu tourism strategy, enhance marketing, promotion, and branding strategy efforts, and support global knowledge sharing (on-the-job capacity strengthening)	0.40	0.40
Learning exchanges	0.76	0.76
Establishment of Gansu Global Culture and Tourism Knowledge Hub (curating knowledge content and development of communication strategies)	0.40	0.40
Total of Component 3	16.00	16.00

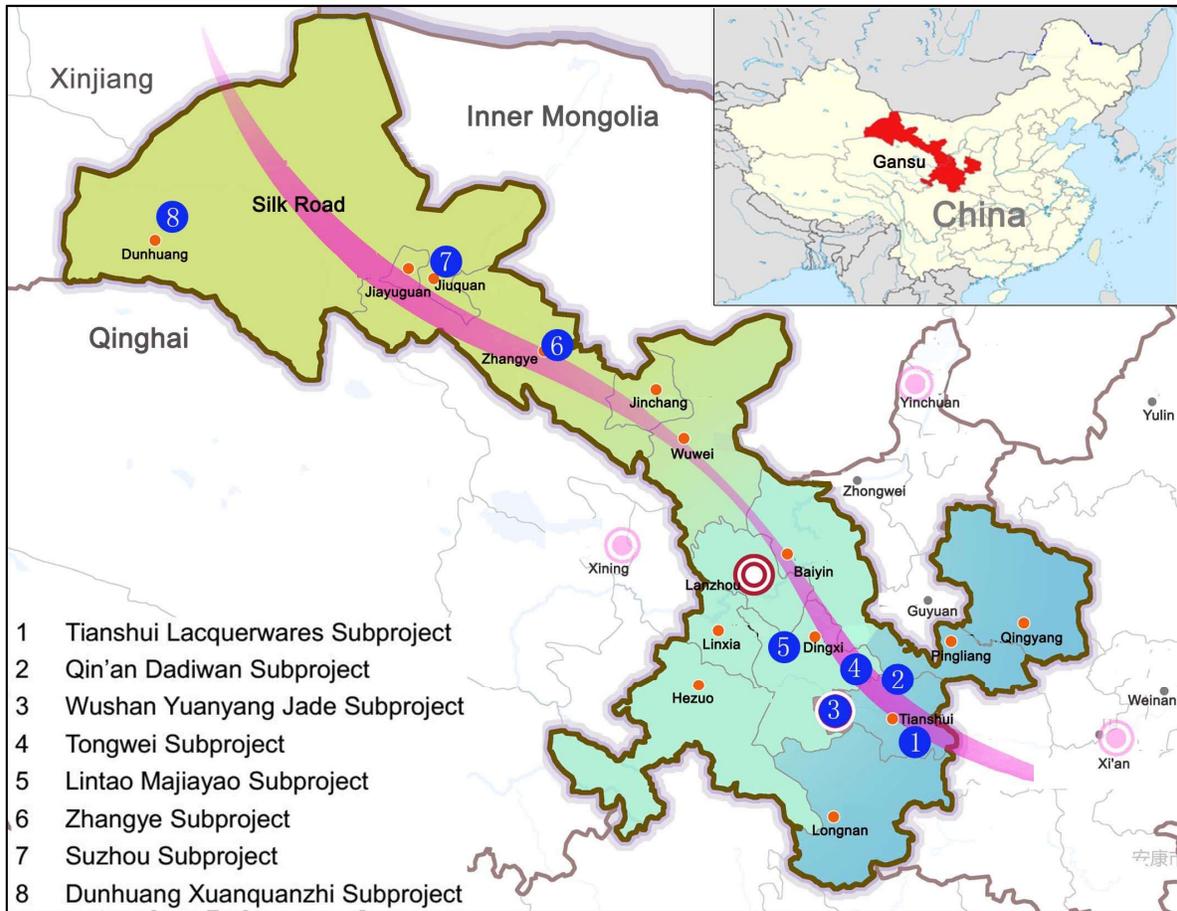
3 ENVIRONMENTAL AND SOCIAL BASELINE

3.1 Physical Environment

(a) Location

Gansu Province lies in the upper Yellow River basin in northwestern China. Among the 14 prefectures in Gansu, 4 prefectures (including 8 city/districts/counties along the Silk Road route from east to west) have been strategically selected as the “hubs” (base cities) to achieve the project development objectives, namely Tianshui (including Qin’an County, Wushan County, and Maiji District), Dingxi (including Lintao County and Majiayao County), Zhangye (Ganzhou District), and Jiuquan (including Suzhou District and Dunhuang County-level City). The project location is shown in Figure 3-1.

Figure 3-1: Location of the Subprojects under Component 2



(b) Topography

Renowned for the complex and diverse landscape, Gansu situates in the convergence zone of Loess Plateau, Tibetan Plateau and Inner Mongolian Plateau, with the altitude above 1,000 m. The topography is characterized by widely distributed mountains, plateaus, plains, river valleys, and deserts. It has a large territory of 425,800 km² in the shape of a long and narrow strip, with the length of 1,655 km from the east to west and the width of 530 km from the north to south. The terrain slopes from southwest to northeast and varies greatly from region to region. In the southeast, Tianshui and Dingxi are located on the Loess Plateau, topographically dominated by terrace in the valley; while in the northwest, Zhangye and Jiuquan are situated in Hexi Corridor where alluvial plain and Gobi desert are widely spread.

(c) Climate

The climate in Gansu is dominated by temperate continental monsoon. The average annual temperature is 7.8°C, ranging from 0°C to 14.8°C in different regions within the province. Generally, Gansu has an arid climate with low rainfall and high evaporation. The annual precipitation varies between 42mm and 757mm; and the annual evaporation is from 1,000mm to 3,500 mm. Some regions, especially those in Hexi Corridor, are characterized by fierce winds with the average wind speed of 2.1-4.5m/s. From southeast (Tianshui and Dingxi) to northwest (Zhangye and Jiuquan) in the project-focused areas, the climate varies from semi-humid monsoon type to temperate arid type. The average annual temperature decreases from 10.7°C to 7°C; the average annual precipitation declines from 600 mm to 44.5 mm; and the average annual evaporation increases from 1,200mm to 2,444mm.

(d) Hydrology

The water resources in Gansu are mainly distributed in nine river systems within the basins of Yellow River, Yangtze River and other inland rivers. The total volume of water resource is 28.94 billion m³/year, of which 97.4% is from surface water and only 2.6% from groundwater. The distribution is unbalanced throughout the province, rich in the southeast (e.g., Tianshui and Dingxi) with abundant precipitation and poor in the northwestern Hexi Corridor (e.g., Zhangye and Jiuquan) despite of the replenishment of melted water from glaciers. Groundwater resources are mainly distributed in the basins of the Yellow River and inland rivers.

In the project area, there are tributaries of the Yellow River, such as Yaohe River, Weihe River, Jihe River and Shandan River, also some other inland rivers such as Taolai River and Shule River. There is rich groundwater resource with good quality in Wushan County (Wushan Yuanyang Jade Subproject) and Lintao County (Lintao Majiayao Subproject), so the groundwater serves as the primary drinking water source supplying 6,000m³/d of water to about 60,000 residents in each of the two counties.

3.2 Ecological Environment

(a) Fauna and Flora

The vegetation in Gansu varies with latitude, climate and landform. In general, the province has a limited forest area and desert vegetation is widely spread. The forests are mainly distributed in the mountainous regions of Qilian, Longnan and at the edge of Gannan Plateau. The main tree species include fir, spruce, quercus, populus, armandii pine and birch. Its total forest area is only 50,745km² with a coverage rate of 11.28%. There are alpine meadows, sparse vegetation and mountain snowmelt above the forests and steppe or desert steppe below the forests. With diverse landscape, Gansu is home to 659 species of wild animals, of which over 90 species are rare ones under a state protection.

However, most of the proposed subprojects will be sited in urban or rural built-up areas. Based on the ecological survey conducted during EA process, the vegetation in the project-affected areas belongs to common plants without rare, threatened or endangered species; and large wildlife no longer inhabits in this area due to human disturbance. Under the Project, a visitor information center will be constructed at the entrance of Fengshan Forest Park, which is a provincial-level forest park in Qin'an County of Tianshui Prefecture with a total land area of 16 km². The vegetation there is dominated by artificial forests, and only 5 species of national third-class protected birds were found in the park.

(b) Soil Erosion

In 2016, a total area of 0.28 million km² suffered from soil erosion in Gansu, accounting for approximately 66% of the province's total territory. This implies a relatively serious situation of soil erosion in Gansu. The major erosion types are water erosion, wind erosion, gravity erosion, mudflow and frozen erosion. So far, 25% (71,800 km²) of the eroded land has been well controlled, and the rest 75% still need proper management. In the project-affected areas, the primary soil erosion is wind erosion; among others, Maiji Town (Tianshui Lacquerwares Subproject), Mogao Town (Dunhuang Xuanquanzhi Subproject) and Jiantan Town (Zhangye Subproject) are officially listed as key areas for soil erosion control by the provincial government of Gansu.

3.3 Physical Cultural Resources (PCRs)

Gansu province is well known as home of grottoes art, cultural heritage sites, magnificent natural scenery and the key area of the ancient Silk Road route. There are 7 world Cultural Heritage Sites (CHSs), 153 national-level Heritage Conservation Units (HCUs), 577 provincial HCUs, and 3,880 city or county level HCUs. Based on the survey conducted during project preparation, nine PCR sites

were identified within the project-affected scope under five subprojects as shown in **Section 5.1**.

3.4 Socio-Economic Context

Gansu, a hinterland province, is one of the least developed provinces among all the 31 provinces in China. It consists of 12 prefecture-level municipalities and 2 autonomous prefectures with Lanzhou as the capital city. The total population was 26.26 million in 2017, 53.6% of which were in rural areas. Han Chinese constitute the main ethnic group in Gansu, and there are 54 ethnic minorities with 2.2 million people, accounting for 8.7% of the province's total population.

Gansu Province exemplifies the challenge of spatial inequality in China. Despite Gansu's rich natural, cultural, and historical resources, it is China's poorest province and significantly lags other provinces on most economic and social indicators. Gansu's per capita income is less than half the national average and a mere 23 percent of that in leading provinces. Measured by per capita disposable income and access to and quality of infrastructure, Gansu also ranks last among all the provinces. About 65 percent of Gansu's population belongs to the national bottom 40 percent group, compared with only 9.21 percent of Beijing's population. Agricultural development alone has proved inadequate to lift Gansu's poor out of poverty. The once-powerful heavy industries are declining. The province is turning to the service sectors to drive its economic growth but so far has had only limited success. Uneven development and significant disparities exist within Gansu Province—there are also striking disparities between rural and urban areas, and a wide gap between the capital city, Lanzhou, and secondary cities and towns.

Tourism is one of the four pillars of Gansu's poverty alleviation program. Known as the "golden section" of the ancient Silk Road, Gansu is ranked fifth among all provinces in China in terms of the richness and uniqueness of its natural, cultural, and historical resources. Globally, and in Gansu, the creative industries sector is growing, and it contributes increasingly to GDP and job creation, employing more people between the ages of 18 and 29 than any other sector. The creative industries are defined as those which produce and distribute goods, services, or activities with intangible cultural content that conveys ideas, symbols, and ways of life, irrespective of their commercial value. Among Gansu's prefecture-level cities, too, the more dominant the tourism industry, the smaller the gap in income relative to the national average. As a result of past investments by the government in tangible cultural and natural endowments, the number of tourists visiting Gansu each year increased from 43 million in 2010 to 239 million in 2017. Gansu's revenues from tourism have also increased but are not yet commensurate with the increase in the number of visitors. Moreover, tourism remains concentrated in the big cities and, hence, does not yet contribute to reducing regional disparities.

Gansu is also less developed in terms of infrastructure construction, especially in townships and rural areas with limited access to tap water, wastewater treatment, heat supply and public green areas. Regarding the three major industries' contribution to GDP, the tertiary sector dominated with a percentage of 46.9%-53.4%. This implies that the service sector has become in the leading position in local economy.

22. Project areas have been strategically selected on the basis of poverty levels, bottom 40 percent population, and underutilized endowments. Among all the fourteen prefectures in Gansu, specific counties, districts and towns in four prefectures along the Xi'an-Urumqi east-west corridor (the ancient Silk Road route) have been strategically selected to benefit from the project, based on the results of an economic geography and competitive cities analysis. These prefectures are Tianshui, Dingxi, Zhangye, and Jiuquan. The selection criteria used were (a) poverty level and size of the bottom 40 percent of the population (that is, the portion of the population with per capita disposable income below the national poverty line and the national 40 percentile); (b) transformation from agriculture or manufacturing to a service-based economy; (c) having underutilized endowments with high potential for local economic development; (d) location (that is, located along or connected to Gansu's main tourism routes); and (e) not having previously received sufficient funds under various government and donor development programs to implement their development plans. Data reveal

the extent to which counties, districts and towns of the project's prefectures lag compared to leading cities in China. Project counties, districts and towns where large investments are made have an average per capita GDP of RMB 21,000 which is significantly below the national average of RMB 59,660, and only a fraction of the per capita GDP in Beijing (RMB 118,198) or Shanghai (RMB 116,562). Similar trends exist for per capita household disposable income. Most project counties have high poverty rates. For example, Tongwei county has a poverty rate as high as 17.61 percent in comparison with the national average of 2.19 percent. Poverty rates in Tianshui and Dingxi prefectures, where most project investments are made, stand at 9.80 percent, and 14.30 respectively. There are a small population of ethnic minorities from Hui, Mongolian, Zhuang and Yugu nationalities living there but ethnically mixed with the Han people.

3.5 Environmental Quality

Ambient Air: The overall ambient air quality is improving in Gansu, but there were still 39 days suffering from sandstorm in 2017. The air quality in most of the subproject areas was generally OK; however, there were records of non-compliance (PM₁₀, PM_{2.5} and TSP) against the Ambient Air Quality Standard (GB3095-2012) in Ganzhou District (Zhangye Subproject), Dunhuang (Suzhou Subproject and Dunhuang Xuanquanzhi Subproject) and Qin'an (Qin'an Dadiwan Subproject) in dry and windy days.

Surface Water: The water quality of major medium- or large-sized rivers in Gansu is generally good based on the regular monitoring results; however, other watercourses may have different situation in terms of water quality. For the project-affected areas, the collected monitoring results showed that water quality of Qingshui River (Qin'an Dadiwan Subproject), Yingchuan River (Tianshui Lacquerwares Subproject) and Niugu River (Tongwei Subproject) failed to meet applicable standards (*GB3838-2002 Surface Water Quality Standard*). The main pollutants were Chemical Oxygen Demand (COD), Total Phosphorus (TP), Total Nitrogen (TN), Ammonia nitrogen (NH₃-N), and fecal coliform etc., which was mainly caused by the discharge of untreated domestic wastewater along the rivers.

Acoustic Environment: In Gansu, the average noise level in urban areas was between 47.6 dB(A) and 56.8 dB(A) in 2017. In the project areas, the acoustic environment quality was generally good in both daytime and nighttime, compliant with the *Acoustic Environmental Quality Standard (GB3096-2008)*.

4 ESMF FOR COMPONENT 1 & 3

4.1 Purpose and Scope of the ESMF

Since the activities to be supported by Component 1 will only be identified during project implementation, a separate Environmental and Social Management Framework (ESMF) has been developed as the instrument to guide Gansu Financial Holding Group (GFHG) and the Participating Financial Institutions (PFIs, namely Bank of Gansu and other future PFIs) on environmental and social management during the implementation of Component 1. In compliance with both Chinese environmental laws and regulations and the World Bank's safeguards policies and EHS guidelines, the ESMF sets out the principles, rules, guidelines, tools and procedures to be applied for proportionate management of environmental and social impacts during the "project cycle" of micro-credit subprojects under Component 1. In addition, the ESMF will also apply to Component 3 during implementation to cover all the TA activities. Following the ESMF, each of the proposed subprojects under Component 1 & 3 will be screened to identify its potential impacts, safeguards policies triggered, EA category, and safeguards instruments to be prepared. The ESMF also describes the requirements on public consultation, information disclosure, institutional arrangement and capacity building which are necessary to guarantee the ESMF implementation. In addition, the document includes in the Annexes useful tools to support the environmental and social management during implementation, especially with regards to the screening of environmental and social safeguards issues, the

Environmental Management Plan (EMP) template and the integrated Social Risk Management Framework (SRMF, including RPF and EMDF).

4.2 Subproject Description and Screening of Potential Impacts

Component 1 will invest no less than 40% of the total US\$150 million of loan in the 4 selected prefectures, and the remaining 60% in other prefectures of Gansu. It implies that this component may cover a broader area within the province. The Component is designed to support only the small-scale investments in cultural, tourism, and creative industry that fall under Category B or C. Based on the market demand analysis conducted during project preparation, such activities will mainly include catering, wholesaling and retailing, lodging (countryside complex/homestay/hotels/car camping), tourism products (handicraft) manufacturing and various leisure/tour services.

The screening of environmental impacts related to these activities have been conducted during the ESMF preparation. Since the physical investments expected under this Component will be small-scaled and scattered in the province, negative environmental impacts anticipated from their implementation will be mostly site-specific and insignificant, including general construction nuisance (dust, noise, wastewater and solid waste) and minor impacts during operation such as the increase of vehicle exhaust, noise, sewage and domestic solid waste. These impacts can be mitigated to an acceptable level by easily designed measures. However, it is noted that the processing/manufacturing of some handicrafts, such as wooden Lacquerwares carving and straw weaving, will have the potential to generate a small amount of Volatile Organic Compound (VOC) emission if oil paints are used in the production, which will make the proposed subprojects fall under Category A under China's EIA regulations and will not be supported by the Component.

4.3 Procedures to Address Safeguards Issues

The safeguards management procedures during the subproject "life cycle" will consist of six steps as listed below.

Step 1: Subproject Screening

The loan applicants (MSEs) should prepare and submit to Gansu Bank the Environmental and Social Screening Form (Annex 1 of the ESMF) together with their project proposal. Gansu Bank, with the assistance of its environmental and social consultants, will complete the environmental screening based on the project information provided and determine to support the proposal under the Component.

The following **Exclusion Criteria** will be applied to the subproject screening and have been integrated into the Environmental and Social Screening Form:

- (i) A proposal will not be supported if it is not relevant to cultural, tourism, and creative industry;
- (ii) An enterprise/a proposal will not be supported if it is not compliant with the World Bank safeguards policies or any applicable environmental laws and regulations in China, for example, it is anticipated to occupy or involve significant conversion or degradation of critical natural habitats/protected areas, such as core zone or buffer zone of a nature reserve, drinking water protection zone, primary grassland, forest park, listed cultural heritage conservation unit, registered ancient trees, etc.
- (iii) A proposal will not be supported if it is anticipated with significant adverse environmental impacts that are sensitive, diverse or unprecedented, i.e., the project is classified as Category A as defined in the World Bank's safeguard policy OP/BP4.01 Environmental Assessment or it is required to prepare EIA report for official approval according to China's EIA law.

Step 2: Subproject Categorization and Identification of Safeguards Instruments

This component will thus only finance Class B or Class C subprojects based on the screening results

of potential safeguards risks. Following Chinese environmental regulations and the Bank's safeguards policies, the applicable environmental safeguards instruments are defined as below:

- (i) Category B subprojects: An Environmental Impact Assessment Form (EIA form, according to the requirements of the Chinese laws and regulations) and the Environmental Management Plan (EMP, according to the World Bank OP4.01); and
- (ii) Category C subprojects: no need for any EA documents, but the projects should be registered in accordance with China's regulatory requirements.
- (iii) Subproject triggering other WB safeguards policies (OP4.04, OP4.09, OP4.11, OP4.36 or OP4.37): corresponding impact assessment to be conducted as part of EIA and mitigation measures to be integrated into the EMP, specific instruments may include Physical Cultural Resources Management Plan (PCRMP, for OP4.11), Pest Management Plan (PMP, for OP4.09).

Step 3: Preparation of Safeguards Instruments

Based on the results of Step 2, the loan applicants will be responsible for the preparation of the required environmental safeguards documents according to Chinese laws/regulations and the World Bank's safeguards policies. A template of EMP (including PCRMP, PMP) is provided in the ESMF. All the environmental safeguards documents will be submitted to the FI in Chinese.

Step 4: Review and Approval

The loan applicant should be responsible for following domestic EIA review and approval procedure in compliance with the Chinese regulations. At the same time, the EA documents and domestic approval (when applicable) should be submitted to the FI and be reviewed and cleared by the environmental manager in the FI with the supports of external professional consultants. The World Bank will only conduct post-review of EA documents on a random basis during the Component implementation. More specifically: (i) Category B subprojects: EIA Form to be reviewed and approved by local Environmental Protection Bureau (EPB); while the EIA approval and EMP should be submitted to the FI for review and clearance.; (ii) Category C projects: Only the online environmental impact registration and filing in the Chinese EPB system should be completed if applicable, and the completed online Environmental Impact Registration Form (EIRF, with the official seal of the enterprise) generated automatically should be submitted to the FI for review.

Step 5: Implementation and Supervision

The loan applicants, namely the MSEs, are responsible for the implementation of the environmental mitigation measures as described in the EA documents; and their environmental performance will be supervised by Gansu Bank with the assistance of its environmental consultants, and the World Bank will carry out irregular spot check on the implementation of EMPs for Category B subprojects.

Step 6: Monitoring and Evaluation

The FI should hire qualified environmental consultant to monitor the effectiveness of EMP implementation. This will enable the government and the World Bank to evaluate the performance of the ESMF and take corrective actions when necessary.

In addition, three more tasks will be implemented throughout the subproject "life cycle", namely (1) public consultation and information disclosure, (2) Grievance Redress Mechanism (GRM) and (3) Archive management and reporting.

Public Consultation and Disclosure

For Category B and C projects, information disclosure and public consultation are required, At least one (1) round of information disclosure and public consultation should be conducted during subproject preparation. Public consultation should be targeted at the project-affected persons and other

identified stakeholders/interested parties to seek their opinions during subproject planning and implementation to maximize environmental benefits of the subprojects and to timely address their concerns on potential negative environmental impacts. Relevant documents/information should be disclosed in the ways easily accessible for the affected groups and other interested groups.

Grievance Redress Mechanism (GRM)

The Grievance Redress Mechanism (GRM) should be established by the GFHG and the FI during subproject preparation and implementation to accept, handle and respond to the complaints from individuals or groups on subproject-related environmental issues.

Archiving and Reporting

Semi-annual progress reports should be prepared by Gansu Bank with the assistance of its environmental consultants to reflect the implementation of ESMF and submitted to the World Bank and the PPMO once every half a year. All the safeguards documents, including but not limited to, the subproject proposal, approved EIA form, EIR form approval and EMPs, should be properly archived by Gansu Bank.

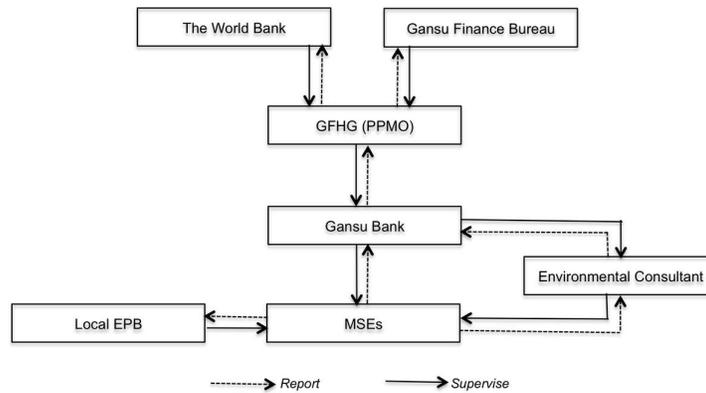
4.4 Public Consultation and Information Disclosure for the ESMF

Two rounds of public consultation were conducted in the selected subproject areas during the EA process of Component 1. The first round took place in July - August 2018. A consultation meeting was held with the public to seek their opinions on the ESMF. The second round of consultation with Gansu Bank, the PPMO and other related parties was carried out in late August 2018 after the draft ESMF was completed. The ESMF was updated based on the comments received. The component description, the environmental screening criteria and the contact information have been disclosed locally with the full ESMF uploaded to the official website of the PPMO; and the full ESMF was also disclosed at the Bank's external website on Oct. 24th, 2018.

4.5 Implementation Arrangements and Capacity Building

The institutional arrangements of environmental management for Component 1 is shown in Figure 4-1. Among which, the GFHG, the FI and the loan applicants will play important roles in safeguards compliance during the implementation of Component 1. For Component 3, the Gansu Provincial Culture Department (GPCD) and its PPMO will take the main responsibilities to implement ESMF for TA activities identified during project implementation. Based on the assessment of their existing capacity on safeguards management, the ESMF has also develop a detailed capacity building program to ensure the effectiveness of ESMF implementation.

Figure 4-1: Organizational Structure of Environmental Management for Component 1



5 ENVIRONMENTAL AND SOCIAL ASSESSMENT FOR COMPONENT 2

5.1 Environmental and Social Benefits

The project is expected to bring overall positive environmental and social impacts through the conservation of cultural relics and traditional houses, the upgrading and paving of access roads, the building of wastewater collection and treatment system and landscaping in the selected communities.

Economic development: The ancient houses, court yards, old streets, public squares and cultural heritage sites will be regenerated so that residents and communities can keep their sociocultural identities and attract more tourists and investments. Supported with the micro-credit opportunities under Component 1, local people can establish MSEs to better utilize the improved cultural and tourism resources, and hence improve their living conditions. As a result, it is expected that the income of local people can be increased by about RMB 7,945 per year. Moreover, the renovated areas will be integrated into the overall tourism circuit of Gansu, which can largely promote the tourism industry growth and economic development in these areas.

Improvements of municipal infrastructure: As one of the key objectives for the Project, the urban and rural municipal infrastructure will be improved to serve local communities. The project activities include the construction or rehabilitation of 23.5km water distribution pipelines, 2.5km heat supply pipelines, 39 km storm drains, 92.5km sewers, 6 small WWTPs with a total capacity of 3,750m³/day, 32 public toilets, 10 Domestic Solid Waste (DSW) collection sites, and 2 DSW transfer stations. All these investments are integral parts of local governments' master plans and will help to facilitate the development of selected less developed city/towns/counties.

Pollution control and environmental improvement: With the improvements of sanitation infrastructure under Component 2, about 13,000t/y of DSW will be collected for proper disposal, instead of being dumped in the environment and eventually polluting local rivers; and 1,042,300 m³ of wastewater that are directly discharged into local water bodies will get treated to reduce 416.9 tons of COD, 260.6 tons of BOD₅ and 41.7 tons of NH₃-N discharged into watercourse every year. This will contribute to and synergize with ongoing pollution control and environmental improvement plans, programs and investments in the areas.

Drinking water source protection: The above DSW and wastewater management solutions will also help protect the drinking water sources (groundwater) from being further polluted by improperly managed DSW and untreated wastewater in the areas.

Landscape and ecosystem improvement: Urban and rural landscape will be upgraded after the regeneration and renovation activities, by lifting 276,000 m² of façade of traditional buildings, constructing or upgrading 51 km of roads, rehabilitating 4,800 m² of river banks and ditches, and building 40,000 m² of green areas, etc. These will not only increase the aesthetic values of local

landscape, but also improve the quality of ecological environment.

Social development: The investments in urban and rural regeneration will improve basic infrastructure, renovate urban and rural settlements, increase residents' living standard, create more job opportunities, and reduce poverty. It's estimated that the total direct project beneficiaries will be 77,663 persons, and the total indirect beneficiaries will be 2.12 million people. At the same time, the production facilities and product exchange markets for the creative industry, training spaces for communities, and intangible cultural heritage research and exhibition centers that are to be built under the Project will promote cultural heritage conservation and cultural development in Gansu.

5.2 Analysis of Alternatives

Various alternatives, including “no project” scenario, have been identified and compared during the EA process to avoid or minimize potential adverse environmental and social impacts. The comparison was conducted from technical, economic, environmental and social points of view. The project design has been optimized based on the results of alternative analysis.

(a) With and Without Project

Without the Project, no land acquisition or resettlement will be needed and there will be no negative impact (such as noise, dust, wastewater and solid waste) resulting from project construction and operation. However, the social value of relevant cultural heritage resources is expected to be lessened due to the lack of appropriate maintenance or conservation-based development; the urban and rural infrastructure would not get improved to serve the communities; local environment would remain under the pressures of deterioration because of the improperly managed wastewater and solid waste; and the project area would continue to face the poverty status and local residents would keep living in the poor conditions. In addition, without the urban and rural regeneration activities, alternative large-scale resettlement or planned urban gentrification would be needed to achieve the objectives of the Project, then more investment will be required and more social and environmental impacts such as land acquisition and natural resources disturbance would be generated.

The “With Project” scenario will effectively resolve the above issues, and generate significant economic, social, and environmental benefits for the project region. The urban and rural regeneration activities can improve local residents' livelihoods, reduce poverty and hence promote economic development in such areas. Urban and rural municipal infrastructure will also be improved by constructing 92.5 km sewer pipelines, 6 small WWTPs, 10 DSW collection sites and 2 DSW transfer stations. They will contribute to treat 1,042,300m³ of domestic wastewater and properly dispose 13,000t of DSW every year; also help protect the groundwater as drinking water sources from being further threatened by the uncollected waste and/or untreated wastewater. The built-up areas will be improved by restoring 276,000 m² of façade lifting for ancient houses and court yards, paving 51 km of urban and rural roads, rehabilitating 4,800 m² of river banks and ditches, and planting 40,000 m² of green areas etc. This will result in an improved living condition of local people and an attractive investment environment of local areas. It is clear that the “With Project” scenario could induce some adverse environmental impacts (such as dust, noise, and solid waste in construction phase; and domestic wastewater and DSW in operation phase) and social impacts (such as land acquisition and resettlement). However, these impacts can be mitigated or compensated through appropriate measures that have been prepared and included in the ESMP.

To conclude, the benefits of the “with project” alternative will greatly outweigh the adverse impacts. Thus, the Project is necessary.

(b) Alternatives for Siting

Alternatives sites for major structures were analyzed for two subprojects:

- (i) Under Dunhuang Xuanquanzhi Subproject, two options were studied on siting the information

center. The option of combining the information center with the exhibition center to share the same location was selected due to better accessible conditions, less civil works, less land acquisition, less vegetation disturbance, less wastewater and solid waste generated by staff etc.

- (ii) For Wushan Yuanyang Jade Subproject, to choose the right location of the major structures (the jade cultural complex and the cultural square) in Shandan Town, two alternatives were considered. The location that is outside the Class II protection zone of the drinking water source was selected because of less potential risks to the groundwater source, less permanent land use, less vegetation disturbance, and more harmony between natural scenery and humanity landscape.

(c) Alternatives for Wastewater Treatment Technologies

New facilities are needed to collect and treat the domestic wastewater generated in the operational phase of 3 subprojects (Qin'an Dadiwan - Dadiwan and Longcheng subareas; Tianshui Maiji; and Dunhuang Xuanquanzhi). Six small-sized buried integrated WWTPs are designed to serve these subprojects with a total capacity of 3,750 m³/d. The alternative technologies for the small WWTPs include buried integrated AO system, buried integrated MBR system and constructed wetland. The buried integrated AO system was chosen due to easier operation & maintenance (O&M) and more stable performance. Sand filters were also designed to supplement the AO process for these WWTPs.

(d) Alternatives for Wastewater Management Systems

Alternatives of wastewater collection and treatment systems were studied for 4 subprojects:

- (i) Under Qin'an Dadiwan Subproject, two subareas around Dadiwan Relic Site need new wastewater treatment facilities. Sharing one WWTP to serve both subareas will trigger more permanent land acquisition and the pipelines will have to pass across the protection zone of Dadiwan Relic Site. In the end, the design of two individual small WWTPs was adopted. In this scenario, the green space at Dadiwan Relic Site can be used as the WWTP site with no need of new land acquisition; and construction of pipelines in the heritage protection zone can be avoided as well.
- (ii) For Dunhuang Xuanquanzhi Subproject, it was selected to build a new small WWTP rather than transport the septic tank-pretreated wastewater using suction sewage trucks to an existing WWTP in its vicinity. The selected option will have less O&M cost and more water reuse.
- (iii) For Wushan Yuanyang Jade Subproject, a new WWTP to be built in Shandan Town would threaten the safety of the drinking water source located throughout the town. Therefore, the alternative of building a 6 km long sewer pipeline was selected to deliver the wastewater to Wushan Municipal WWTP for treatment. This is expected to protect the drinking water source from potential pollution.
- (iv) For Lintao Majiayao Subproject, building new sewers was chosen to connect the subproject site to the adjacent WWTP. It will result in less land acquisition, more stable and easier O&M, and less investment, comparing with building a new small WWTP.

(e) Other Alternatives

Other alternatives were also developed and analyzed on DSW transfer arrangement, water supply systems, and public toilets types etc.

- (i) The original design of a DSW transfer station under Wushan Yuanyang Jade Subproject was cancelled. Instead, the DSW will be directly transported to the landfill in Wushan County to prevent the potential impacts of the proposed DSW transfer station on the drinking water source.
- (ii) Two water supply schemes were studied for Dunhuang Xuanquanzhi Subproject. It was chosen to transport water using tank trucks from the relic site to Dunhuang City instead of

getting water from the adjacent Tianshuijing Well. This alternative can reduce the negative impacts on groundwater and local ecological environment.

- (iii) Three types of toilets, namely dry latrine, water flushing toilet, and water free sanitary toilet, were considered as the public toilets to be adopted in the tourism spots and communities to be developed under the Project. The water free sanitary toilets were chosen at last, because they won't generate wastewater so don't need sewage systems, and additionally they are clean and safe and meet aesthetic demands.

5.3 Environmental Impacts and Mitigation Measures

5.3.1 Identification of Environmental and Social Sensitive Areas/Receptors

For the 8 subprojects under Component 2, the following sensitive areas/receptors have been identified during the EA process. Recommendations from the EA consultants have been integrated into the project design to minimize anticipated negative environmental impacts on these identified sensitive areas/receptors, and specific impact analysis has been conducted for these areas in the EA process with mitigation measures developed, which will be presented later in the summary.

Surface water: There are six rivers¹ within 1km from the proposed subproject sites, but only three of them are identified as environmentally sensitive receptors. Among others, Qingshui River has no more environmental capacity²; the project section of Shandan River (Wushan Yuanyang Jade Subproject) flows through the Class II protection zone of drinking water source (groundwater) in Wushan County; and the Yingchuan River is categorized as Class II water body³. In addition, Lintao Majiayao Subproject is located upstream of the drinking water source (groundwater), therefore, the drinking water source protection zones of these two subprojects are also considered as sensitive areas during the EA process.

Air and noise sensitive areas/receptors: Within 35m to the construction sites or to the major noise sources of the subprojects, 41 communities including 9 residential apartment complexes, 20 villages, 10 schools, and 2 clinics will be sensitive to air and noise pollution. This will result in 2,320 affected persons. Most of them will be influenced by short-term construction impacts and a small amount of them will be affected by operation impacts.

Ecological sensitive areas: Fengshan Forest Park is a provincial level forest park. A small visitor information center is proposed at the park's entrance under the Qin'an Dadiwan Subproject. Therefore, the park is identified as the ecological sensitive receptor and the project's potential indirect impacts on the park have been considered during environmental assessment.

PCRs: Totally 9 PCRs are identified in the project-affected areas, including 1 UNESCO world Cultural Heritage Site (CHS), 3 national-level Heritage Conservation Units⁴ (HCUs) and 4 provincial-level HCUs in or within the vicinities of 4 subprojects with details shown in **Table 5-1**. Specific protection measures should be undertaken during construction and operation to avoid or minimize negative impacts on these identified PCRs.

¹ They are Qingshui River (Qin'an Dadiwan Subproject), Niugu River (Tongwei Subproject), Yingchuan River (Tianshui Lacquerwares Subproject), Shandan River (Heihe River Basin, Zhangye Subproject), Taohe River (Lintao Majiayao) and Shandan River (Weihe River Basin, Wushan Yuanyang Jade Subproject).

² It refers to the maximum capacity for a certain section/part of surface water (river/lake) to receive pollutants while maintaining its defined water use and ecological functions, which is calculated and verified by Chinese environmental protection administrations following applicable technical guideline.

³ The GB3838-2002 Class II standard is applicable to the surface water classified as "Grade I surface drinking water source protection zone, habitats for rare aquatic lives, spawning ground for fish and shrimp and feeding ground for fry."

⁴ HCUs refer to the immobile cultural relics under legal protection at different levels of governments (national, provincial, city or county) following the Law of the People's Republic of China on the Protection of Cultural Relics.

Table 5-1: PCRs Identified in Project-affected Areas under Component 2

Subproject	Name of the PCRs	Descriptions of the PCRs	Legal Protection Status of the PCRs	Relation between the Subproject and the PCRs
Qin'an Dadiwan Subproject	Longquan Ancient Well	Ancient relic of Qing Dynasty	NA	To set up signs and barriers around the ancient well
	Dadiwan Relic Site	Ancient relic about 4,800-60,000 years old	National level HCU	The subproject is in the construction-controlled zone
	Shangguan Ming-Qing Old Street	Ancient buildings and streets of Ming-Qing dynasties	Provincial level HCU	Sewage and drainage pipelines are to be laid in the protection zone.
Zhangye Subproject	Grain Warehouse	Ancient buildings of Ming-Qing dynasties	Provincial level HCU	To construct exhibition facilities in the site
	General's Mansion Complex	Ancient buildings of Qing Dynasty	Provincial level HCU	To construct exhibition facilities in the site.
	East Old Gate Tower	Ancient building of Han Dynasty	Provincial level HCU	Water supply and sewage pipelines are to be laid in the protected zone.
Lintao Majiayao Subproject	Majiayao Relic Site	Ancient relic of the Neolithic Age about 3300 years old	National level HCU	Construction of pipelines and rehabilitation of 2 villages are in Class I construction-controlled area.
Dunhuang Xuanquanzhi Subproject	Xuanquanzhi Posthouse Relic Site	Ancient relics of Han Dynasty	National level HCU & UNESCO world cultural site	Footpath/plank roads are to be built in the protected zone; and lanes to be built in the construction control area
	Tianshuijing Well Beacon Tower	Ancient relics of Han Dynasty; and registered cultural heritage	-	The subproject is to set up signs and barriers around the Beacon Tower

5.3.2 Impacts and Mitigation Measures during Construction

Under Component 2, the construction activities of the subprojects mainly include renovation of traditional houses and courtyards; rehabilitation and construction of roads, public spaces, and infrastructure (such as drainage and sewer systems, heat supply networks, public toilets, DSW transfer stations, small WWTPs etc.); river bank rehabilitation; landscape restoration and greening; development of heritage exhibition centers; and construction of associated tourism facilities (such as entrances, information centers, toilets, parking lots, and management houses etc.). The impacts caused by the construction activities and the measures to mitigate those impacts are summarized in this section; and the details are included in the ESMP. With the proper measures, the negative impacts generated in construction phase can be avoided, minimized, mitigated or otherwise compensated to an acceptable level.

(a) Impacts of wastewater

The construction activities will generate a small amount of wastewater, including wastewater from material processing system, oily wastewater from washing construction machinery and vehicles, and domestic wastewater generated by workers etc. Since the quantity of the wastewater is limited, its impacts on the environment will be minor but still likely to pollute the watercourses, contaminate the soils, and affect urban or rural landscape if it is discharged directly without any treatment. Proper measures will be adopted to mitigate these impacts. Simple sedimentation tanks will be set up at the construction sites to settle the processing wastewater, and the treated wastewater will be used for spraying to suppress dust. Simple oil separators together with simple sedimentation tanks will be used to treat the oily wastewater. Domestic wastewater generated by workers will be discharged into local sewers since household buildings will be used as the workers' camps. For Dunhuang Xuanquanzhi Subproject, a specific construction camp will be set up for the workers since the construction site is far from the urban areas. A set of mobile toilets will be installed in site for the

workers, and they will also be used to collect the domestic wastewater generated from the kitchens and washrooms. In a periodic manner, the wastewater will be transported using suction trucks to adjacent manholes and transmitted by sewers to the related WWTP for treatment.

(b) Impacts of solid waste

Solid wastes mainly include construction wastes (gravel, concrete, waste brick, sand, lime, wood, and earthwork, etc.) and DSW (from workers and construction site preparation). Without proper management, the solid waste will disturb residents' living environment, hinder people's movement, induce dust in windy days and cause air pollution, and contaminate water quality if they enter water bodies. Mitigation measures are therefore required to reduce these impacts to an acceptable level. The construction waste will be used for backfilling or ground leveling, with the residual waste transported to and disposed at adjacent landfills for disposal. For most of the subprojects, the DSW generated by the workers will be handled by local sanitation systems where local household buildings will be used by the workers as their camps; while for Dunhuang Xuanquanzhi Subproject, the DSW generated at the specifically established camps will be collected using garbage bins and then transported to adjacent landfills for disposal. Under Qin'an Dadiwan Subproject, 500 tons of DSW will be removed out of the Yanjiagou stream and then transported to Lianhuagou Landfill for disposal.

(c) Impacts on water environment

Under Qin'an Dadiwan and Wushan Yuanyang Jade subprojects, the proposed river rehabilitation works are mainly to landscape riverbanks, and there is no dredging, water diverting or earth excavation to be carried out in water. Despite the minor impacts, the construction activities are still likely to increase suspended substance in the water bodies and disturb the aquatic ecology. In addition, a small amount of wastewater and solid waste generated in construction activities are also likely to enter the river sections and hence impact the water quality. Besides the above-mentioned wastewater and solid waste management measures, additional measures will be undertaken to prevent the potential water pollution include: shorten construction period and arrange construction activities in dry seasons; reduce the scope of construction sites; set up barriers around the construction sites to block materials and waste from entering the water bodies; set up sedimentation tanks to settle wastewater and reuse it for spraying to suppress dust; build drainage to divert storm water surrounding construction sites; and strengthen construction management to prevent domestic wastewater and solid waste from discharging into the watercourses etc.

(d) Impacts on drinking water sources

Two subprojects involve issues of drinking water sources. Under Lintao Majiayao Subproject, a section of road is to be rehabilitated about 10 m away to the Class II protection zone of the drinking water source (groundwater). The major civil works include signs and lights installation and green belts construction. The construction activities will not cause severe risks to the drinking water source, but still likely to have indirect impacts on the groundwater by influencing the surface water. It's therefore forbidden to discard any construction waste into the adjacent Taohe River that is the replenishment source of the groundwater. For Wushan Yuanyang Jade Subproject, the whole subproject area is located in the protection zone of Wushan County's drinking water source (groundwater). To prevent the wastewater generated in the construction phase to affect the drinking water source, construction sites should be set up far from the Shandan and Weihe rivers that replenish the groundwater, and wastewater should be reused in construction after sedimentation to prevent discharge. The impacts on the drinking water sources caused by the construction activities will be reduced to the acceptable level with the mitigation measures.

(e) Impacts on ambient air

During the construction, air pollution will be caused by: (i) airborne dust from demolition, earth excavation, earth backfilling, site leveling, construction materials processing, materials and solid waste stockpiling, and vehicle movement etc.; (ii) waste gas emission from vehicles and machinery

containing SO₂, NO₂, non-methane hydrocarbon and other air pollutants; and (iii) exhaust emission from short-term concentrated or long-term dispersed decoration activities before the project facilities become operational. To protect the ambient air quality and prevent the sensitive receptors from the construction air pollution, it's required to cover the powdered material stockpiles, cover or enclose the materials during transportation, timely clean the material transportation roads, spray water to suppress dust on construction sites and access roads, install fence around construction sites near sensitive areas, halt earth works and material handling activities in windy days, and strengthen vehicle inspection and maintenance to reduce waste gas emission etc.

Within 35 m to the construction sites, about 2,320 persons from residential apartment complexes, villages, schools, and clinics will be affected by the air pollution caused by the construction activities under the Project. Among them, 757 persons under 5 subprojects⁵ will be more sensitively influenced because they are from 10 schools and 2 clinics as the first row of buildings adjacent to the roads/ areas that will be under construction. To protect these people from the construction air pollution, except for the common measures as mentioned above, it is specifically required to install barriers with height of no less than 2 m along the construction sites near the sensitive receptors; inhibit construction at nights, lunch breaks, school hours and exam time; and enforce spraying water for dust reduction in windy days etc.

The impacts of air pollution during construction are insignificant, site-specific and temporary. They would be minimized with the proper mitigation measures and disappear after the construction is completed.

(f) Impacts on acoustic environment

Noise in construction mainly comes from machine operation and vehicle transportation with noise level ranging from 75 dB(A) to 115 dB(A). It was predicated that the noise would exceed the applicable standard within 200 m of adjacent communities. There will be 41 areas involving 2,320 persons sensitive to construction noise, so construction during night should be forbidden. Among them, 757 affected persons from 10 schools and 2 clinics will be the most sensitive receptors. To reduce the noise impacts on these people, it is specifically required to install barriers with height of no less than 2 m along the construction sites near the sensitive areas; inhibit construction at nights, lunch breaks, school hours and exam time; strictly control the schedule of construction and transportation; control vehicle speed; enforce horn ban; properly maintain access roads and vehicles, etc.

(g) Impacts on ecological environment

Construction activities such as building foundation excavation, road pavement, pipe trenching, land occupation of access roads, and material and waste stockpiling will destroy surface soil and vegetation in the construction sites. Most of the subprojects are located in urban/rural build-up areas, so there is only a small amount of plant species in the construction areas and most of them are widespread artificial plants. The construction activities will reduce the amount of the vegetation; but will not decrease the number of the species nor cause habitat fragmentation. After the construction is completed, the disturbed land would be restored with proper vegetation replanted. Also due to the locations in build-up regions, there are very few wild animals and no national protected animal species in the areas. The construction activities might disturb a few wild animals' areas of activity, but will not affect the number, composition and structure of their species. The disturbance would disappear after the construction is completed.

Under Qin'an Dadiwan Subproject, there will be an information center to be constructed about 20 m to the south of Fengshan Forest Park. Due to the small quantity of civil works, the construction activities will have minor impacts on the forest park. To prevent the potential impacts, it's forbidden to

⁵ They are Qin'an Dadiwan, Lintao Majiayao, Wushan Yuanyang Jade, Tongwei, and Zhangye subprojects.

dispose waste or discharge wastewater into the forest park; it's prohibited to catch or kill animals; and it's required to strengthen the awareness of forest fire prevention among the workers etc.

(h) Soil erosion

Construction of roads, pipelines and buildings will remove the topsoil and vegetation, and disturb the landform and soil structures. This will lead to increased exposure to soil erosion, bring more pollutants into water, and degrade the productivity of the land and the ecosystem. The total area of land to be disturbed by the subprojects' construction is about 1.3 km², which is estimated to cause 6,774.6tonne of soil erosion. To mitigate the adverse impacts, a Water and Soil Conservation Plan (WSCP) has been developed and included in the ESMP. Efforts shall be taken to combine engineering measures with botanical measures. Priority shall be given to implementing engineering measures as they can immediately play an effective role. Botanical measures are supplementary measures, and they can ensure long-term water and soil conservation and beautify the environment in the areas.

(i) Impacts on PCRs

The construction activities related to the identified PCRs will not involve repair and reinforcement of the PCRs themselves; instead, they will be carried out within the protection areas or the construction control areas or the adjacent areas of the PCRs. This requires a strict enforcement of relevant laws and regulations, and a proper implementation of the mitigation measure developed and presented in the PCRMP. It's not allowed to carry out any other construction activities within above-mentioned areas of the PCRs without the approval of appropriate authorities.

In construction, air-borne dust, vibration, visual impacts and excavation would affect the PCRs negatively; and the repair and reinforcement of the PCRs would also cause impacts on them.

The air-borne dust would cause the color of the PCRs changed or faded or cause the strength of the PCRs fragile; and it's also the media for growing mold on the PCRs. Measures have been designed and included in the PCRMP. To protect the PCRs from the influence of air-borne dust, it's forbidden to carry out the activities that cause a large amount of air-borne dust near the PCRs; adjacent roads should be cleaned and sprayed with water regularly; and materials should be covered or enclosed during transportation by vehicles.

The PCRs are old and poorly maintained, so they are vulnerable to the vibration caused by excavation, backfilling and transportation during construction of buildings, roads and pipelines nearby or setting up exhibition facilities inside the PCRs. It's therefore required to use light-duty and hand-held equipment that could generate minor vibration, and use manual digging to keep the PCRs stable.

Excavation will disturb the underground cultural relics at Xuanquanzhi, Majiayao and Dadiwan sites. In the areas where there are likely undiscovered underground relics, it's required to use small-scale artificial excavation to avoid destroying any buried relics. The chance-find procedures must be launched as soon as any suspected relics are discovered.

(j) Impacts of resettlement and land acquisition

To address land acquisition and resettlement impacts, extensive consultation and investigations were conducted during project preparation. Accordingly, four RAPs and three RDD reports have been developed in accordance with national laws/regulations and the requirements of the World Bank's BP/OP4.12.

The total permanent land acquisition caused by Component 2 will be 280.52 mu. This will affect a population of 96 persons. The total temporary land acquisition will be 11 mu which will affect 14 households, with a population of 42. The plot area of buildings to be demolished is 4,440m², including

rural and urban residential houses, small shops, factories, livestock farm etc. In addition, the economic displacement will affect 22 persons.

As for permanent and temporary land acquisition, a compensation plan has been developed and included in the RAPs. The standard for compensation was determined in light of China's laws and policies, local regulations of Gansu as well as World Bank's BP/OP 4.12. The institutional framework of resettlement and the grievance redress mechanism are also established in the RAPs. The impacts of land acquisition and resettlement will be mitigated to a minimal level.

(k) Social Impacts

Through consultation and investigation conducted during project preparation, a Social Assessment (SA) report has been produced to assess the possible social impacts, with main conclusions summarized below.

Public safety and health: Labor will mainly be recruited locally, so they won't have more safety and health risks to local communities. However, the communities will be exposed to the safety risks due to the increased traffic of construction fleet. To prevent any risks in public safety and health, propaganda and education to the construction workers and residents will be educated regarding public security and traffic safety. Training on health care, risks of infectious diseases and environmental protection will be provided to the workers.

Aesthetics of the scenic areas: The noise, dust, wastewater and solid waste generated in construction will affect the scene of the tourism areas. Such impacts are temporary, and the scope of the impacts is limited to a small area compared with the large area of the scenic spots. In addition, proper measures to control the noise, dust, wastewater and solid waste will be implemented to reduce the impacts to an acceptable level.

Loss of tourism income: The conservation of the PCRs will induce loss of tourism income. Shops, restaurants and other tourism facilities near the construction sites will be closed or affected to cause income losses. Such impacts are expected to be temporary and can be compensated by greatly increased income when the tourist flow grows after the construction is completed.

Local traffic: The stockpile of material and waste, truck transportation, roads pavement, buildings renovation and pipeline construction may potentially increase the traffic and induce jams. There will be more such impacts on specific sensitive sites like the schools involved in 5 subprojects. The travels of the students, their parents and teachers would be affected. To mitigate the impacts, it's required to develop the construction schedule and inform the public about it; optimize the construction plan to reduce the construction period; direct the traffic at rush hours; and set up temporary signs at specific sites near schools etc.

Impacts on public facilities: Construction activities of most of the subproject will not affect public service. Only the construction of 6km sewer pipelines under Wushan Yuanyang Jade Subproject will interfere a few sections of national road G316 and Longhai Railway. The pipe laying will be carried out by manual work on the open spaces outside the roadbeds, therefore the influence on the road, the railway and the traffic is minor. Seeking comments and applying for approval from relevant authorities will help reduce the impacts.

Resettlement impacts on residents' livelihood: Land acquisition and resettlement will cause inconvenience to the affected people in their living, farming or commercial activities. A compensation plan has been developed, which will minimize or compensate the disturbance to local residents to a minimal level.

5.3.3 Impacts and Mitigation Measures during Operation

(a) Impacts on wastewater

Domestic wastewater generated by residents as well as potential tourists is about 2,208m³/d in operation phase. Without proper treatment, they would increase environmental pollution and ecological deterioration by contaminating watercourses or soils. 68% of the wastewater will be treated by 6 small WWTPs to be built under Component 2; and the effluent will be reused for municipal irrigation or flushing toilets. The rest 701m³/d of the wastewater will be transmitted to local municipal WWTPs for treatment, which will not increase the pressure on the existing treatment systems nor lead to the significant increase of pollutants discharged into the receiving rivers.

Wastewater will also be generated in some special processes. A small amount of leachate will be generated at the DSW transfer stations to be built under Qin'an Dadiwan and Wushan Yuanyang Jade subprojects. Foundation lining, leakage collection tanks, and small-sized buried integrated WWTPs have been designed for the leakage treatment. Under Wushan Yuanyang Jade Subproject, the jade processing will be undertaken in water. This process will generate wastewater that contains particles; but the wastewater will be returned to the manufacturing processes for reuse after sedimentation.

(b) Impacts on Ambient Air

Odor emission from wastewater and waste management facilities will have impacts on ambient air. The WWTPs are buried and the DSW transfer stations are covered, so they would cause little odor emission. The organic substance in the DSW will decay and emit unpleasant odor during the collection and transportation. It's therefore required that the DSW transportation routes should avoid crowded areas, and the vehicles should be enclosed for the DSW transportation.

Motor vehicles to serve the tourism development will produce exhaust emission and dust. Instead of private cars, various alternatives will be provided to tourists such as special bus lines, battery cars, and bicycle rental etc. The roads should be cleaned regularly and sprayed with water. Thus, the vehicle traffic will not cause significant impact on the ambient air quality.

Oil smoke will be released from the restaurants that will be built under Qin'an Dadiwan, Tongwei, Lintao Majiayao, Dunhuang Xuanquanzhi and Wushan Yuanyang Jade subprojects. It's required to use smoke and waste gas purification facilities in the catering places; and it's encouraged to use clean energy such as electricity and natural gas for cooking.

Wet process is adopted in Lacquerwares and jade processing under Tianshui Lacquerwares Subproject and Wushan Yuanyang Jade Subproject, so there will be little dust to be generated. Oil paints that will emit VOCs are forbidden to use in the Lacquerwares production, and natural paints are adopted instead, so there will be little waste gas emission into the ambient air.

(c) Impacts on Acoustic Environment

The traffic flow on the project roads is expected to grow after the cultural and tourism resources become operational, which will affect the acoustic receptors along the roads. Based on the investigation to the similar scenic areas close to the project area, the first row of buildings along the roads are usually tourist service places, and most of the sensitive receptors such as residential areas are located behind. It is thus expected that the traffic noise will have limited impacts on the sensitive receptors. About 240 persons from 3 residential areas under Zhangye Subproject and 1 clinic under Wushan Yuanyang Jade Subproject will be significantly sensitive to the noise generated by the operation of the tourism facilities. To reduce the noise impacts on these people, it is required to install double-glazing windows to these buildings, and properly manage the schedule of social activities in the adjacent areas, etc.

The operation of the equipment such as pumps, blowers and power generators would cause noise with the intensity ranging between 65 dB(A) to 100 dB(A). The equipment will be installed underground or in enclosed buildings. Noise barrier, and vibration and noise reduction devices will be

adopted to reduce the impact of noise.

In addition, the operation of shops, entertainment venues and exhibition events will also generate noise with the intensity between 60 dB(A) to 70 dB(A). With strengthened management of business hours and tourists, the impacts can be mitigated to an acceptable level.

Parking lots would be another noise source in the operation phase. The noise intensity of this source is usually below 60 dB(A) in the low seasons and between 65 dB(A) and 75 dB(A) in the pick seasons. Enhanced management of vehicles will reduce the impacts on the acoustic environment.

(d) Solid waste

Tourists and residents will produce about 4,398 tons of DSW every year. 456t/y of DSW from Zhangye Subproject will be transported to local incineration power plant for treatment; and the rest DSW from other subprojects will be transported to adjacent landfills for proper disposal.

Food residues will be generated at the catering sites operated under Qin'an Dadiwan, Tongwei, Lintao Majiayao, Dunhuang Xuanquanzhi and Wushan Yuanyang Jade subprojects. Special containers will be equipped at each catering site to collect the food waste. Local licensed agencies will be retained to provide professional services of food residue treatment.

Sludge from the septic tanks will be regularly collected by the sanitation workers and sent to the nearby WWTPs for treatment. The sludge generated by the 6 new small WWTPs will be mechanically thickened and dewatered using high-pressure filter press, and the sludge cakes after drying will be transported to local landfills for final disposal.

Special solid waste generated in the Lacquerwares processing under Tianshui Lacquerwares Subproject mainly includes woodchips and sawdust and can be recycled as materials in local particleboard industry. The wastewater sedimentation residue from the jade processing in Wushan Yuanyang Jade Subproject will be naturally dried and transported to local landfill for disposal.

(e) Impacts on drinking water sources

Lintao Majiayao and Wushan Yuanyang Jade subprojects are located upstream of the drinking water sources. More wastewater will be generated along with the rapid development of the tourism industry. This will cause risks to the groundwater sources. Proper sewer and WWTP systems with appropriate capacities have been arranged in the subprojects, and they are able to collect and treat the wastewater to mitigate the risks to the minimum level.

(f) Impacts on ecological environment

Most of the subprojects are located in urban or rural built-up areas with few native vegetation and animal species, so the tourism activities will have little impacts on the ecological environment in these areas. For the Dunhuang Xuanquanzhi Subproject, the ecosystem is fragile around the relic site, and the vegetation is liable to be destroyed and difficult to be restored. Because of the tourism development, tourists will cause disturbance to local ecosystem. The flux of tourists would change the soil structure by hardening the ground; and the tourists' improper behaviors (such as collection or damage of vegetation, and littering) would directly affect the ecological environment. To protect the vegetation from destroying, a conservative flux of 2,400 persons per day was chosen to minimize the disturbance of tourists to the ecosystem. In addition, the impacts of the tourists can be further mitigated by other measures, such as restricting the scope of movement within the exhibition center, scheduling the routes of tourism along the wooden walkways, and carrying out public awareness promotion activities etc.

(g) Impacts on cultural heritage

When the subprojects become operational, numerous people will be attracted to the PCR sites, which will bring financial benefits to the heritage management, but also cause negative impacts on the PCRs. The increasing tourists will produce a large amount of solid waste, wastewater, vehicular exhaust, and damage or disturbance to the PCRs caused by improper behaviors of the tourists. Mitigation measures have been developed and presented in the PCRMP. As well as the management measures of wastewater, solid waste and air pollution, it's also required to limit the number of visitors not to exceed the carrying capacity, arrange reasonable routes and scopes of movement, and improve the tourists' awareness about PCR protection etc. With the proper measures, the negative impacts on the PCRs will be effectively mitigated.

(h) Social Impacts

After the subprojects are completed and become operational under Component 2, the increasing flux of tourists and the operation of the tourism facilities will generate adverse social impacts especially on local communities.

- Local economic development will be promoted, at same time it will also raise the consumption levels and cause rises in prices, which will increase residents' living cost.
- More tourists will be attracted to the scenic areas. This will increase local traffic and induce more traffic accidents especially in rural areas where local villagers have little safety awareness and knowledge.
- With the increase of tourists, public security and social order may also become a concern.
- Waste, vehicle exhaust and noise to be generated by the tourists as well as the tourists' behavior will bother the local communities.

Specific social impact assessment has been conducted and included in the SA report. Proper mitigation measures have also been recommended. For example, education and training will be provided to local people on public security and traffic safety knowledge; the tourists will be diverted to different communities, to reduce the pressure on the service capacity on certain communities; and the propaganda on good behavior will be provided to the tourists to reduce the conflict with the local communities etc.

5.3.4 Induced Impacts

Through the development of cultural tourism, the project is expected to not only increase income generating opportunities for rural and urban communities, but also the pressure on ambient environment, including air pollution and noise from increased traffic and sewage and garbage from anticipated influx of tourists, which might deteriorate the local environmental quality and have long-term impacts on various protected areas such as drinking water protection zone, forest park, heritage sites, etc. However, the conservation-based tourism developments under the Project have been proposed in full compliance with existing tourism development plans and applicable ecological functional zoning to control the induced development.

5.3.5 Cumulative Impacts

The proposed investments are mostly of small scale and scattered in the dumbbell-like province, some even in remoted areas in the wilderness (e.g., Dunhuang Xuanquanzhi). No significant cumulative effect is anticipated in-between the subprojects. It was confirmed that all the investments are confirmed to be fully compliance with local planning. The EIA further reviewed all the local development plans available and relevant to the proposed subprojects. Three project counties/town were selected for the analysis of cumulative analysis considering the planning of other developments/activities within the planning horizon, namely, Qin'an County, Lintao County and Wulan Town. The cumulative impacts were assessed based on the scoring of environmental carrying capacity considering the carrying capacity of most vulnerable water bodies, heritage sites and environmental infrastructure (sewage and solid waste), the traffic conditions and the satisfaction of

local people. Based on the scoring results for planning horizon, the tourism development activities will have no significant cumulative impacts on environmental carrying capacity in the project areas; however, attention should be paid to the implementation of planned environmental infrastructure (sewage and DSW) and local traffic management to ensure sustainable development by the planning horizon. In conclusion, the cumulative impacts in relation to Component 2 are generally positive, and it is recommended to strengthen the collaboration among government agencies to ensure the synergic benefits and minimize the adverse impacts.

5.4 Environmental Due Diligence of Associated Facilities

Environmental due diligence has been conducted for associated facilities identified during the EA process, and the key conclusions are summarized below.

(a) Wastewater Collection and Treatment Facilities

There are 7 existing municipal wastewater treatment plants (WWTPs), as shown in **Table 5-2**, to be available and reliable to collect and treat the wastewater generated by 6 subprojects under Component 2. Qin'an Dadiwan Subproject involves three subareas, of which only one subarea has an existing WWTP available to serve the new development facilities. Zhangye Subproject has two proper WWTPs available to its two subareas respectively.

Table 5-2: Associated WWTPs for the Subprojects under Component 2

No.	Subproject and the Wastewater Quantity	WWTP and the Treatment Capacity
1	Qin'an Dadiwan Subproject - Shangguan subarea (150 m ³ /d)	Qin'an WWTP (20,000 m ³ /d)
2	Wushan Yuanyang Jade Subproject (750 m ³ /d)	Wushan WWTP (30,000 m ³ /d)
3	Lintao Majiayao Subproject (1,328 m ³ /d)	Lintao WWTP (17,500 m ³ /d)
4	Tongwei Subproject (82.6 m ³ /d)	Tongwei WWTP (25,000 m ³ /d)
5	Zhangye Subproject - Cultural Heritage (67.5 m ³ /d)	Zhangye WWTP (120,000 m ³ /d)
	- Wulan Ancient Town (15 m ³ /d)	Gucheng WWTP (30 m ³ /d)
6	Suzhou Subproject (94 m ³ /d)	Jiuquan Suzhou 2 nd WWTP (18,000 m ³ /d)

These 7 WWTPs have existing sewer systems accessible to the subprojects. Among which, Wushan WWTP is in operation to its full capacity, and the extension is undergoing and expected to become operational in early 2019; and the remaining 6 associated WWTPs are demonstrated to have enough spare capacities to receive and treat the wastewater from the corresponding subprojects. The treated effluents from the WWTPs have been monitored and met the discharge standards.

(b) Domestic Solid Waste Management Facilities

Existing sanitary facilities are available and accessible to receive the domestic solid waste (DSW) generated by the implementation of all subprojects under Component 2.

The DSW generated by Zhangye Subproject can be treated at local waste incineration power plant. The treatment capacity of the incineration plant is 600t/day and is enough to cover the additional small amount of DSW. The waste gas and the wastewater are monitored periodically in the plant. The distance from the two sites of the subproject to the plant is also reasonable, about 14 km and 23 km respectively.

For the other subprojects, the facilities are local standard sanitary landfills with enough capacity to dispose the DSW from the subprojects. They have proper engineering measures on leakage proof such as using HDPE films plus geo-membrane liners; and the leachate is reused for site spaying after pretreatment. Regular monitoring is conducted to the waste gas emission and the leachate. The transportation distance is reasonable ranging from 3 km to 23 km from the landfills to the subproject

locations; except that Dunhuang Xuanquanzhi Subproject is 55 km away from the landfill because the subproject is sited in suburban area.

5.5 Public Consultation and Information Disclosure

5.5.1 Public Consultation

In accordance with the requirements of China's laws and regulations, as well as the Bank's safeguards policies, key stakeholders were identified through field investigation and stakeholder analysis to ensure meaningful consultation. The stakeholders include government agencies (local community residents committees, EPBs, culture bureaus, tourism bureaus, construction bureaus, planning bureaus, cultural heritage bureaus (CHBs), water bureaus, transportation bureaus, etc.), residents and other sensitive receptors such as schools, clinics, etc.

Two rounds of public consultation were conducted in the subproject-affected areas during the EA process. The first round took place in 6 February - 14 February 2018. 876 questionnaires were issued to the potential affected individuals such as residents, students and shopkeepers; and 70 questionnaires were issued to the project-related resident committees, schools and enterprises. The second round of consultation was carried out in July - August 2018 after the draft EIA report was completed. 675 and 54 questionnaires were issued to individuals and organizations respectively. Separate meetings and interviews were also conducted, and the affected people and relevant experts attended the two rounds of public consultation.

In general, the public supported the subprojects under Component 2, and accepted the EIA conclusions and mitigation measures. At the same time, the public and experts expressed some concerns about the project design, such as setting up additional bus lines, and installing sports facilities etc. The EA team forwarded these concerns to the FS team and collaborated with them to incorporate the comments in the design. Some comments to address the possible environmental impacts, such as dust control in windy days, wastewater and solid waste management, and construction arrangement were also incorporated into the EIA report and the ESMP.

5.6.2 Information Disclosure

The subproject information and the main EA findings have been disclosed to the public through government websites, local newspapers and posters before each round of the consultation. The draft EIA report was also released on the official websites of GPCD (where the PPMO for Component 2&3 is housed) and other government departments. The hard copies of the EIA were also accessible to the public in local project implementation units (PIUs). The electronic versions of the EA documents including the EIA, ESMF, ESMP and this ES will also be disclosed locally and at the World Bank's external website.

5.6 Environmental and Social Management Plan

A stand-alone ESMP has been developed. It includes generic measures to mitigate environmental and social impacts during the construction and operation phases, institutional arrangements, responsibilities for project implementation and supervision, environmental monitoring and capacity building plans, reporting and public grievance mechanisms, and estimated investment in environmental and social management.

A series of separate documents were developed as the annexes to the ESMP to provide detailed instructions. They include the Environmental Codes of Practices (ECOP) and PCRMP. The ECOP presents a summary of the generic measures for mitigating the potential environmental impacts; and it will also be used as a compulsory component of bidding documents and civil work contracts for the contractors to fulfill their environmental and social management obligations. The PCRMP is a specific document produced according to the World Bank BP/OP4.11, to protect local PCRs from being directly or indirectly affected by the project implementation. The SA, RAPs and RDDs are the social

safeguards instruments, whose key findings and recommendations are used to mitigate the social impacts as well as the impacts of resettlement and land acquisition.

5.6.1 Institutional Arrangements

The PPMO under Gansu Provincial Cultural and Tourism Department and eight PIUs at city/district/county level will take the overall responsibility for environmental management of Component 2 during both construction and operation, who will track environmental issues related to the Project and communicate with the World Bank and relevant Chinese governmental authorities (including EPBs, Cultural Heritage Bureaus and Forestry Bureaus and Water Resources Bureaus) on safeguards management. Both the PPMO and PIUs will nominate dedicated, trained and qualified environmental management staff to facilitate the ESMP implementation.

For construction phase, the environmental mitigation measures specified in the ESMP will be implemented by the Construction Contractors (CCs) and their sub-contractors as part of their contractual obligations. Construction Supervision Companies (CSCs) will establish Environmental Management Unit to deal with all daily environmental issues related to project construction activities on site, with regular reporting to the PPMO and PIUs.

In addition, independent environmental consultants will be employed by the PPMO as part of the technical assistance services to provide external monitoring and technical recommendations to support the effectiveness and improvements of ESMP implementation during project construction and operation.

5.6.2 Mitigation Measures

The measures for avoiding and mitigating potential negative impacts of the subprojects under Component 2 were developed and included in the ESMP, which cover the design, construction, and operation phases of this component. Mitigation measures will be incorporated into the detailed designs, bidding documents, and contracts; and will be implemented by the design institutes, contractors, construction supervision engineers, and operators under the supervision of the PPMO and PIUs, Cultural Heritage Bureaus (CHBs), EPBs, and other related authorities. Accordingly, necessary actions can be taken in a timely manner to strengthen or adjust such measures and to ensure meeting the defined environmental and social objectives. The major mitigation measures on general environmental and social impacts generated in construction and operation phases are summarized in **Annex 1**, and the summary of specific PCRs protection measures is presented in **Annex 2**.

5.6.3 Environmental Monitoring

Environmental monitoring plans on ambient air, surface water and acoustic environment have been developed for the construction and operation phases and incorporated into the ESMP (summarized in **Annex 3**). They provide the monitoring location, frequency, monitoring parameters, standards applied, cost estimate, as well as responsibilities of different organizations.

During the construction phase, monitoring of ambient air quality, water quality, and acoustic environmental quality will be conducted periodically at the sensitive receptors in each subproject area by qualified environmental monitoring agencies. Contractors and environmental supervision engineers should be responsible for the daily inspection on the mitigation measures implementation and handling the environmental issues arising at construction sites. Monitoring of water and soil erosion will be undertaken to all subprojects except for those that do not involve this issue. For the impacts on the PCRs, specific monitoring and assessment would be carried out by experts, and the detailed plans are presented in the PCRMP.

During the operation phase, monitoring of ambient air quality and acoustic environmental quality will be conducted regularly at the sensitive receptors in each subproject area. For the subprojects that

produce wastewater during the operation phase, monitoring of wastewater discharge at the outlets of the WWTPs will be undertaken to examine if the treated effluent can meet the standard of discharging into local sewers or receiving waters.

5.6.4 Capacity Building and Training

A training program has been developed and included in the ESMP for the purpose to improve the environmental management capacity of the PPMO and PIUs staff, construction supervision engineers, and contractors. The training will focus on the responsibilities of the relevant organizations, environmental regulations, mitigation measures, environmental monitoring and supervision, public grievance mechanism, and reporting and archiving.

5.6.5 Reporting and Public Grievance Mechanism

The requirements for reporting system have been clearly specified. Semiannual project progress reports and semiannual environmental & social monitoring reports are required. They are reporting on the project progress, implementation of the ESMP, environmental and social monitoring, and public concerns etc. The public grievance mechanism will be established and maintained throughout the Project to deal with any public concerns on the project implementation and related environmental and social issues.

5.6.6 Cost Estimates

The estimated investment in the environmental management in design and construction phases of Component 2 is US\$ 804,147 in total; and the environmental investment in the operational phase is US\$ 554,440 per year (at least for the first year). The details are presented in **Table 5-3**.

Table 5-3: Cost Estimate of Environmental Management under Component 2

No.	Item	Cost (US\$ million)
	Design Phase	151,163
1	EA at the FS phase	151,163
	Construction Phase	652,984
1	Environmental mitigation measures	256,186
2	Water and soil conservation	Included in civil work costs
5	Environmental monitoring	130,422
3	Cultural heritage preservation	32,023
4	Environmental supervision	58,224
6	Environmental training	96,070
7	Public consultation	7,278
8	Contingency	72,780
	Operation Phase	Cost Estimate (US\$ per year)
1	Environmental mitigation measures	554,440
2	Environmental acceptance	240,175
3	Environmental monitoring	72,780
4	Environmental training	63,901
5	Cultural heritage preservation	87,336
6	Public consultation	39,301
7	Contingency	7,278
	TOTAL	43,668

6 CONCLUSIONS

The Project will generate significant ecological, environmental, social, and economic benefits to the project area. The urban and rural landscape will be upgraded after the regeneration and renovation activities. The enhanced municipal infrastructure will largely contribute to urban and rural environment improvement, pollution control, drinking water source protection, and surface water purification. The

cultural and natural heritage resources will produce their real value after the development and maintenance. The urban-rural regeneration and community economic development will improve residents' living conditions, create more job opportunities and reduce poverty. The regenerated cultural and tourism facilities will attract quality tourists and investments and can largely promote the tourism industry growth and economic development in such areas.

Negative impacts will also be generated in the project implementation. During the construction phase, the civil works and transportation will induce dust, noise, wastewater and solid wastes, and cause disturbance to the PCRs. The Project will also lead to land acquisition and resettlement, which will have passive influence on the affected-people's livelihood. During the operation phase, the tourism facilities will generate domestic wastewater, solid waste and noise, and the small WWTPs and DSW transfer stations will also emit odor and noise. However, these adverse environmental and social impacts can be avoided, minimized, mitigated or otherwise compensated by various measures proposed in the ESMP.

In short, the Project will generate significant benefits to the project area along the Silk Road route in Gansu, while the negative impacts can be managed to an acceptable level with effective implementation of the mitigation measures. As a conclusion, the benefits of the Project outweigh the adverse impacts, so the Project is feasible in environmental and social safeguards.

Annex 1: Summary of environmental & social mitigation measures for Component 2

Potential Impacts	Mitigation Measures	Implemented by	Supervised by
Design Stage			
Practical use of the ESMP	1.Preparation of the ESMP. 2.Incorporation of the ESMP into bidding documents and into contracts with contractors, construction supervisors and environmental supervisors to ensure the ESMP implementation.	Design institute, EA team, PIUs	Local EPBs, PPMO
Various impacts such as land acquisition, sensitive areas, etc.	1.Recommended the sites of the main structures for Dunhuang Xuanquanzhi and Wushan Yuanyang Jade subprojects. 2.Recommended the treatment depth, treatment technology and system planning for the small WWTPs. 3.Recommended the system layout for Qin'an Dadiwan, Dunhuang Xuanquanzhi, Lintao Majiayao, and Wushan Yuanyang Jade subprojects. 4.Recommended other alternatives on DSW transfer arrangement, water supply systems, and public toilets.	Design institute, EIA agent	Local EPBs, PPMO, PIUs
Construction Stage			
Eco-environment	1.Forest park protection: it's forbidden to dispose waste or discharge wastewater into the forest park; it's forbidden to catch or kill animals; and it's required to strengthen the awareness of forest fire prevention among the workers etc. 2. Water and soil conservation: Engineering measures, botanical measures and other temporary measures should be jointly adopted. Priority shall be given to implementing engineering measures as they can immediately play an effective role. Botanical measures are supplementary measures, and they can ensure long-term water and soil conservation and beautify the environment in the project areas. 3.Implement other measures prescribed in the ESMP.	Constructors	Local EPBs, PPMO, PIUs
Ambient air	1.Air borne dust: cover powdered materials stockpiles; use covered trucks to transport materials; timely clean material transportation roads; implement water spraying to suppress dust on construction sites and access roads; install fence around construction sites near sensitive areas; and halt earth works and material handling in windy days etc. 2.Waste gas emission from vehicles and machinery: strengthen vehicle inspection and maintenance to reduce waste gas emission. 3.Implement other measures prescribed in the ESMP.	Constructors	Local EPBs, PPMO, PIUs
Solid waste	1. Construction waste will be transported to and disposed at the existing construction waste disposal sites. 2. Domestic waste generated by the workers will be collected using garbage bins and then transported to the adjacent landfills for disposal. 3. DSW discovered in the Yanjiagou will be removed out of the stream and transported to Lianhuagou Landfill for disposal. 4. Implement other measures prescribed in the ESMP.	Constructors	Local EPBs, PPMO, PIUs
Wastewater	1.Sedimentation tanks and oil separators shall be set up to treat/settle the wastewater generated from concrete processing and the oily wastewater from washing construction machinery; and the treated	Constructors	Local EPBs, PPMO, PIUs

Potential Impacts	Mitigation Measures	Implemented by	Supervised by
	<p>wastewater shall be used for spaying to suppress dust.</p> <p>2. Domestic wastewater can be discharged into local sewers in the vicinity; and in the areas that cannot rely on urban sanitation systems, the domestic wastewater will be treated by the small WWTPs built under the subprojects.</p> <p>3. Implement other measures prescribed in the ESMP.</p>		
Water environment	<p>1. Shorten construction period and arrange the construction in dry seasons.</p> <p>2. Reduce the scope of construction site; and set up barriers around construction site to block materials and waste from entering water bodies.</p> <p>3. Set up sedimentation tanks to settle wastewater and reuse it for spraying to suppress dust.</p> <p>4. Build drainage to divert storm water surrounding construction site.</p> <p>5. Strengthen construction management to prevent domestic wastewater and solid waste from discharging into the watercourses.</p> <p>6. Implement other measures prescribed in the ESMP.</p>	Constructors	Local EPBs, PPMO, PIUs
Impacts on drinking water sources	<p>1. For Lintao Subproject, it's forbidden to discard any construction waste into the adjacent Tao River.</p> <p>2. For Wushan Subproject, it's required that construction sites should be set up far from the Shandan and Weihe rivers that replenish the groundwater, and wastewater generated in construction should be reused after sedimentation to prevent discharge.</p> <p>3. Implement other measures prescribed in the ESMP.</p>	Constructors	Local EPBs, PPMO, PIUs
Acoustic environment	<p>1. Install barriers along the construction sites near the sensitive areas.</p> <p>2. Strictly control the schedule of construction and transportation.</p> <p>3. Control vehicle speed and enforce horn ban.</p> <p>4. Properly maintain access roads and vehicles.</p> <p>5. Implement other measures prescribed in the ESMP.</p>	Constructors	Local EPBs, PPMO, PIUs
Resettlement and land acquisition	<p>1. A RPF, a SAP, four RAPs and three RDD reports have been developed in accordance with national laws/regulations and the requirements of the World Bank's OP4.12.</p> <p>2. A compensation plan has been developed. The standard for compensation was determined in light of China's laws and policies, local regulations of Gansu as well as World Bank's OP4.12.</p> <p>3. The institutional framework of resettlement and the grievance redress mechanism are also established in the above RAPs.</p> <p>4. Implement other measures prescribed in the ESMP.</p>	Constructors	Local EPBs, PPMO, PIUs
Impacts on public transport	<p>1. Produce construction plans and schedules by consulting local transportation authorities.</p> <p>2. Place notice boards on construction sites for public to get information and notice.</p> <p>3. Carry out the construction section-by-section and accelerate excavation and backfilling processes.</p> <p>4. Designate specific personnel to direct traffic near construction sites during traffic peak and set up necessary signs.</p>	Constructors	Local EPBs, PPMO, PIUs

Potential Impacts	Mitigation Measures	Implemented by	Supervised by
	4. Implement other measures prescribed in the ESMP.		
Public health and safety of workers and local communities	<ol style="list-style-type: none"> 1. Carry out training and education to the workers on work safety and disease prevention. 2. Inform residents of the construction scopes and activities. 3. Carry out education to local residents on traffic safety and disease prevention. 4. Implement other measures prescribed in the ESMP. 	Constructors	Local EPBs, PPMO, PIUs
Operation Phase			
Wastewater	<ol style="list-style-type: none"> 1. 68% of the wastewater generated in the operation phase will be treated by 6 new small-sized buried integrated WWTPs; and the effluent will be reused for municipal irrigation or flushing toilets. The remaining 701 m³/d of the wastewater will be transmitted to local municipal WWTPs for treatment. 2. Foundation lining, leakage collection tanks, and small WWTPs have been designed for the treatment of the leakage generated by the DSW transfer stations. 3. The wastewater generated in jade processing will be returned to the manufacturing processes for reuse after sedimentation. 4. Implement other measures prescribed in the ESMP. 	Operator/ Owner	Local EPBs, PPMO, PIUs
Ambient Air	<ol style="list-style-type: none"> 1. It's required that the DSW transportation routes should avoid crowded areas and sensitive areas, and the vehicles should be enclosed for the DSW transportation to prevent DSW odor impacts. 2. Instead of private cars, various alternatives will be provided to tourists such as special bus lines, battery cars, and bicycle rental to reduce vehicle exhaust emission. 3. The roads should be cleaned regularly and sprayed with water. 4. It's required to use smoke and waste gas purification facilities in the catering places; and it's encouraged to use clean energy such as electricity and natural gas for cooking. 5. Dust catching and removing facilities are required to treat the emissions generated in Lacquerwares and jade processing. 6. Implement other measures prescribed in the ESMP. 	Operator/ Owner	Local EPBs, PPMO, PIUs
Acoustic Environment	<ol style="list-style-type: none"> 1. The equipment will be installed underground or in enclosed buildings. 2. Noise barrier, and vibration and noise reduction devices will be adopted 3. Management of business hours and tourists should be strengthened. 4. Implement other measures prescribed in the ESMP. 	Operator/ Owner	Local EPBs, PPMO, PIUs
Domestic solid waste	<ol style="list-style-type: none"> 1. DSW in Zhangye City will be transported to local incineration power plant for treatment. 2. DSW from other subprojects will be transported to adjacent landfills for disposal. 3. Special containers will be equipped to collect the food residue generated by the catering sites; and local licensed agencies will be retained to provide professional services of food residue treatment. 4. Implement other measures prescribed in the ESMP. 	Operator/ Owner	Local EPBs, PPMO, PIUs
Ecological environment	<ol style="list-style-type: none"> 1. The Monitor the tourist flow will be monitored to avoid the overburden on the environment caused by the tourists. 	Operator/ Owner	Local EPBs, PPMO, PIUs

Potential Impacts	Mitigation Measures	Implemented by	Supervised by
	2.The Carry out codes of conduct for tourists, promote public awareness promotion, control of the number of tourists, and schedule of the movement routes should be carried out. 3.Implement other measures prescribed in the ESMP.		

Annex 2: Summary of PCRs Protection Measures for Component 2

Phase	Activities	Affected PCRs	Potential Impacts	Mitigation/Protection Measures	Implemented by	Supervised by	Cost (RMB)
Design Phase							
Qin'an Dadiwan Subproject	Facilities' siting or routing	Dadiwan Relics	The small WWTPs and sewer pipelines' potential impacts on the relics	<ul style="list-style-type: none"> Separate small WWTPs will be built in each subareas of the subproject. Detailed measures are presented in the PCRMP. 	Design Institute	PPMO, PIU, Tianshui CHB	Included in design and consulting cost
	Facilities' design style	Dadiwan Relics and Shangguan Ming-Qing Old Street	Impacts on architectural style and aesthetics of the relics	<ul style="list-style-type: none"> The design should meet cultural, architectural and aesthetic requirements in terms of style, height, size, color etc. The design should follow the review and approval comments of experts and authorities. Detailed measures are presented in the PCRMP. 			
Lintao Majiayao Subproject	Facilities' design style	Majiayao relics	Impacts on architectural style and aesthetics of the relics	<ul style="list-style-type: none"> The design should meet cultural, architectural and aesthetic requirements in terms of style, height, size, color etc. The design should follow the review and approval comments of experts and authorities. Detailed measures are presented in the PCRMP. 	Design Institute	PPMO, PIU, Dingxi CHB	Ditto
Zhangye Subproject	Facilities' design style	Grain Warehouse and General's Mansion Complex	Impacts on architectural style and aesthetics of the relics	<ul style="list-style-type: none"> The design should meet cultural, architectural and aesthetic requirements in terms of style, height, size, color etc. The design should follow the review and approval comments of experts and authorities. Detailed measures are presented in the PCRMP. 	Design Institute	PPMO, PIU, Zhangye CHB	Ditto
	Facilities' routing	East ancient tower	The drainage pipelines' potential impacts on the relic	<ul style="list-style-type: none"> Construction of drainage pipelines should avoid the protection area of the relic. The design schemes should follow the review and approval comments of experts and authorities. Detailed measures are presented in the PCRMP. 	Design Institute	PPMO, PIU, Zhangye CHB	Ditto
Dunhuang Xuanquanzhi Subproject	Facilities' routing	Xuanquanzhi Posthouse Relic Site	The roads' potential impacts on the relic	<ul style="list-style-type: none"> The design schemes should follow the review and approval comments of experts and authorities. The roads construction should keep within the construction 	Design Institute	PPMO, PIU, Dunhuang CHB	Ditto

Phase	Activities	Affected PCRs	Potential Impacts	Mitigation/Protection Measures	Implemented by	Supervised by	Cost (RMB)
				control area by paving the existing roads. • Detailed measures are presented in the PCRMP.			
	Construction methods	Tianshuijing Well Beacon Tower	Excavation's impacts on the relic	• The outer wooden fence should be carefully designed, and large area of excavation is forbidden. • Detailed measures are presented in the PCRMP.	Design Institute	PPMO, PIU, Dunhuang CHB	Ditto

Phase	Activities	PCRs	Potential Impacts	Mitigation/Protection Measures	Implemented by	Supervised by	Cost (RMB)
Construction Phase							
Qin'an Dadiwan Subproject	Earth excavating in the construction control area of the PCR, and rehabilitating the ancient streets	Dadiwan relics, Longquan Old Well, and the ancient buildings and streets	Potential impacts on the PCRs by the vibration, airborne dust, solid waste, wastewater, and workers' behavior in construction	<ul style="list-style-type: none"> Carry out protective measures by producing detailed construction plans, training and educating the workers on PCR protection, consulting relevant authorizes for advice, controlling vehicles and equipment to reduce vibration etc. Carry out chance-find procedures for any PCRs discovered in construction, and immediately report to the local CHBs. Implement other measures prescribed in the PCRMP. 	Contractor	PPMO, PIU, Tianshui CHB	50,000
Lintao Majiayao Subproject	Constructing pipelines and rehabilitating Majiayao and Qijiatan villages in the construction control area of the PCR	Majiayao Relic Site			Contractor	PPMO, PIU, Dingxi CHB	30,000
Zhangye Subproject	Setting up intangible cultural heritage exhibition facilities inside the PCRs	Grain Warehouse, and General's Mansion Complex			Contractor	PPMO, PIU, Zhangye CHB	40,000
	Constructing pipelines in the protection area of the PCR	East Old Gate Tower			Contractor	PPMO, PIU, Dunhuang CHB	100,000
Dunhuang Xuanquanzhi Subproject	Building footpaths and wooden walkways in the protection area of the PCR, and lanes in the construction control area	Xuanquanzhi Posthouse Relic Site					
Operation Phase							
Qin'an Dadiwan Subproject	Tourism activities, transportation, and catering service activities	Dadiwan relics, Longquan Old Well, and the ancient buildings and streets	Potential impacts on the PCRs by gas, garbage and wastewater generated in	<ul style="list-style-type: none"> Limit the number of visitors and arrange reasonable routes and scopes of movement. Carry out training and education to the staff and 	PIU	PPMO, Tianshui CHB	90,000
Lintao Majiayao Subproject	Tourism activities, and catering service activities	Majiayao Relic Site			PIU	PPMO, Dingxi CHB	50,000
Zhangye	Intangible culture heritage exhibition	Grain Warehouse,			PIU	PPMO,	60,000

Phase	Activities	PCRs	Potential Impacts	Mitigation/Protection Measures	Implemented by	Supervised by	Cost (RMB)
Subproject	activities and tourism activities	General's Mansion Complex, and East Old Gate Tower	the tourism facilities' operation; and potential damage to the PCRs by the tourists and/or the staff.	tourists on PCR protection. <ul style="list-style-type: none"> • Manage waste gas, wastewater and garbage to prevent pollution to the PCRs. • No firing, smoking or heating near or inside the PCRs. • Implement other measures prescribed in the PCRMP. 		Zhangye CHB	
Dunhuang Xuanquanzhi Subproject	Tourism activities, the relic operational activities, and catering service activities	Xuanquanzhi Posthouse Relic Site, and Tianshuijing Well Beacon Tower			PIU	PPMO, Dunhuang CHB	100,000

Annex 3: Summary of environmental monitoring plans for Component 2

Subproject	Monitoring Factor	Monitoring Parameters	Monitoring Location	Monitoring Frequency	Cost (RMB)
Construction Phase					
Qin'an Dadiwan Subproject	Acoustic environment	Noise	Wuying Primary and Middle School, Longcheng Primary and Middle School	(i) Acoustic environment: Twice in construction phase, and twice a day at daytime and nighttime.	10,000
	Ambient air	TSP	Wuying Primary and Middle School, Longcheng Primary and Middle School		60,000
	Qingshui River	SS	Upstream and downstream Wuying and Longcheng towns along the river		12,000
Tianshui Lacquerwares Subproject	Acoustic environment	Noise	Xizhi Village	(ii) Ambient air: twice in construction phase, once in heating season and once in non-heating season.	5,000
	Ambient air	TSP	Xizhi Village		30,000
	Yingchuan River	SS	Upstream and downstream the subproject area along the river		6,000
Tongwei Subproject	Acoustic environment	Noise	Taiping Primary School in Pingrang Township		5,000
	Ambient air	TSP	Taiping Primary School in Pingrang Township		30,000
	Niugu River	SS	Upstream and downstream the subproject area along the river		6,000
Lintao Majiayao Subproject	Acoustic environment	Noise	Majiayao Village, Lifanjia Village	45,000	
	Ambient air	TSP	Majiayao Village, Lifanjia Village	60,000	
	Taohe River	SS	Upstream and downstream the subproject area along the river	6,000	
Zhangye Subproject	Acoustic environment	Noise	Wanjiajiayuan Residential Area, Jiatan Township Primary School, Xiaokanglou House	65,000	
	Ambient air	TSP	Jiatan Township Primary School, Xiaokanglou House		
	Shandan River	SS	Upstream and downstream the subproject area along the river		3,000
Suzhou Subproject	Acoustic environment	Noise	First row of buildings in Shengzhou Residential Area	5,000	
	Ambient air	TSP	First row of buildings in Shengzhou Residential Area		30,000
Dunhuang Xuanquanzhi Subproject	Water source	SS	Outlet of Xuanquan water source, and 300m downstream	6,000	
	Ambient air	TSP	Xuanquanzhi relics		30,000
Wushan Yuanyang Jade Subproject	Ambient air	TSP	Shandan Primary School, Shandan Middle School	(iii) Surface water: once in construction phase.	60,000
	Shandan River, and Weihe River	SS	Upstream and downstream of the subproject area along the rivers		12,000
	Acoustic environment	Noise	Shandan Primary School, Shandan Middle School		10,000
TOTAL					542,000

Subproject	Monitoring Factor	Monitoring Parameters	Monitoring Location	Monitoring Frequency	Cost (RMB)
Operation Phase					
Qin'an Dadiwan Subproject	Ambient air	PM ₁₀	Wuying Primary & Middle School, Longcheng Primary & Middle School	All parameters must be monitored in the first year; and the next years should apply the rules below: (i) Ambient air, acoustic environment and Surface water: to use local EPB's conventional monitoring cases, and to take specific monitoring as needed; (ii) Outlets of the small WWTPs: to inspect by observation, and conduct specific test as needed;	60,000
	Water pollution source	SS, COD, BOD ₅ , NH ₃ -N	Outlet of the small WWTP		10,000
	Acoustic environment	Noise	Wuying Primary & Middle School, Longcheng Primary & Middle School		10,000
	Qingshui River	pH, SS, COD, BOD ₅ , NH ₃ -N	Upstream & downstream Wuying & Longcheng towns along the river		40,000
Tianshui Lacquerwares Subproject	Ambient air	PM ₁₀	Xizhi Village		30,000
	Water pollution source	SS, COD, BOD ₅ , NH ₃ -N	Outlet of the small WWTP		10,000
	Acoustic environment	Noise	Xizhi village		5,000
	Yingchuan River	SS, COD, BOD ₅ , NH ₃ -N	Upstream and downstream the subproject area along the river		20,000
Tongwei Subproject	Ambient air	PM ₁₀	Taiping Primary School in Pingrang Township, Songbo village		30,000
	Acoustic environment	Noise	Taiping Primary School in Pingrang Township		5,000
Lintao Majiayao Subproject	Ambient air	PM ₁₀	Majiayao village, Lifanjia Village		60,000
	Acoustic environment	Noise	8 villages and Xiping Middle School		4,000
	Taohe River	SS, COD, BOD ₅ , NH ₃ -N	Upstream and downstream the subproject area along the river		10,000
Zhangye Subproject	Acoustic environment	Noise	Wanjiajiayuan Residential Area, Jiatang Township Primary School, Xiaokang House		15,000
	Ambient air	PM ₁₀	Jiatang Township Primary School	30,000	
	Water pollution source	SS, COD, BOD ₅ , NH ₃ -N	Outlet of the small WWTP	10,000	
Suzhou Subproject	Ambient air	PM ₁₀	Shengzhou residential area	30,000	
	Acoustic environment	Noise	Shengzhou residential area	5,000	
Dunhuang Xuanquanzhi Subproject	Ambient air	PM ₁₀	The west boundary of buffer zone in Xuanquanzhi relics	30,000	
	Water pollution source	SS, COD, BOD ₅ , NH ₃ -N	Outlet of the small WWTP	10,000	
	Water source	SS, COD, BOD ₅ , NH ₃ -N	Outlet of Xuanquanzhi water source; and 300 m downstream	20,000	
TOTAL					534,000