SFG1714 REV

World Bank Financed

Second Gansu Cultural and Natural Heritage Protection and Development Project

ENVIRONMENTAL ASSESSMENT

Final

Client: Gansu Provincial Development and Reform Commission

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Chapter 1 Introduction

1.1 Project Background and Significance

In order to expand the sectors utilizing foreign capital in Gansu Province, enhance the province's capacity in cultural heritage protection and promote tourism development in the province, between 2006 and 2013 Gansu successfully implemented the World Bank financed Gansu Cultural and Natural Heritage Protection and Development Project (Phase I Project). The project used a World Bank loan of US$38.4 million, had 9 subprojects in two regions, the Hexi Corridor and central Gansu, and alleviated funding shortages and inadequate inputs in heritage protection and tourism development.

In reviewing its implementation process, the project brought in new ideas for cultural and natural heritage management; improved management institutions are the organizational guarantee of project implementation, work principles and management approaches suiting local realities are important preconditions of successful implementation and effective tools for achieving implementation progress, close collaboration among different departments is key to smooth implementation, and institutional innovation and flexible arrangements for using saved funds are the driving force for sustainable project development and important measures for achieving project objectives.

Successful implementation of the project has offered a number of valuable experience and lessons. The long lead time of the project affected the enthusiasm of scenic areas in participating in the project and increased unexpected risks; already defined investment models for some subprojects could not well adapt to local realities, leading to midway exit of a few subprojects; during early stages of project implementation, the implementation progress was delayed and implementation difficulties and costs increased due to lack of experience in implementing World Bank projects; the procurement procedures did not adapt to realities in western China, especially during early stages of implementation, complex procurement procedures somewhat delayed implementation progress; affected by reforms of government institutions and project agencies and prolonged preparation and implementation periods, staff of some project agencies changed frequently and lacked work continuity.

In order to further promote cultural and tourism development in the province, in 2013 Gansu Provincial Government developed a series of protection, development and investment plans in cultural, heritage protection, tourism and other sectors, with the aim to achieve integrated cultural heritage protection and tourism development. Given the great success achieved, with the assistance from the World Bank, in the Phase I Project, Gansu Provincial Government hoped to continue to seek for World Bank support and hoped the

Bank continue to help the province carry out new explorations and innovations in heritage protection and sustainable tourism development while building on good practices of the project.

The proposed Second World Bank financed Gansu Cultural and Natural Heritage Protection and Development Project (Phase II Project) is the extension and expansion of Phase I Project, but it would not simply replicate or expand the scope of the Phase I Project. Phase II Project areas would be selected building on the experience of Phase I Project while avoiding the problems of scattered subprojects, extensive coverage and high management costs.

Moving away from Dunhuang City with already concentrated investments in building the city into a renowned international cultural and tourism city and Hexi Corridor Cultural and Tourism Zone with already accumulated capital in cultural and natural heritage protection, the Phase II Project would focus on areas east to the provincial capital of Lanzhou, i.e. the eastern section of the Silk Road Economic Belt, including areas nearby Lanzou and southeastern areas of Gansu. Implementation of the Project would protect cultural and natural heritage, address regional poverty and promote shared prosperity.

Pursuant to Environmental Impacts Assessment Law of the People's Republic of China, Regulations on Administration of Environmental Protection for Development Projects, Circular on Strengthening Administration of Environmental Impacts Assessment of Development Project Financed by International Financial Organizations, the World Bank's safeguard policies, as well as domestic and World Bank's environmental assessment procedures, Gansu Provincial Development and Reform Commission has engaged through public tendering Beijing Zhongzi Huayu Environmental Technology Co., Ltd to undertake environmental assessment for the Project. After contract signing, the company has immediately organized relevant technical staff to conduct studies of the proposed project, carried out site investigation, collected relevant data, and prepared Environmental Assessment for the World Bank Financed Gansu Cultural and Natural Heritage Protection and Development Project II based on engineering analysis, environmental impacts analysis and prediction.

This EA analyzes positive environmental impacts of project implementation, identifies, screens and predicts its potential negative impacts, and proposes effective and targeted mitigation measures and an environmental management plan to address major unavoidable negative environmental impacts. Therefore, the EA can provide evidence for the World Bank to conduct independent appraisal of the Project and for decision-making and administration by the government's comprehensive and environmental management authorities.

1.2 Relationship with Relevant Plans

1.2.1 Relationship with Industrial Policies

Components of the Project would include natural heritage protection, construction of tourism facilities and infrastructure. Implementation of the Project would be in line with Article 34 of Guiding Catalogue for Industrial Restructuring (2014 version) (amended in 2013): …; 2) countryside tourism, **eco-tourism and forest tourism,** industrial tourism, sports tourism, revolutionary base tourism, ethnic minority folk-custom tourism and other comprehensive tourism resources development services; 3) tourism infrastructure construction and tourism information services; and in line with Article 36 of the Catalogue: …; 6) **cultural relics protection and facility construction;** …; 19) **non-physical cultural heritage protection and development.**

1.2.2 Relationship with Gansu Provincial Policies and Plans

1.2.2.1 Relationship with Gansu Provincial 12th Five-year Plan

On February 24, 2011, Gansu Provincial People's Government issued Gansu Provincial 12th Five-year Plan for National Economic and Social Development Plan, whose Article 10 in Section Four of Chapter Two describes "unique cultural tourism base development projects, which aim to **strengthen cultural heritage and cultural relics protection** and construction of infrastructure in cultural parks and scenic areas, and develop exquisite tourist routes…"; Section Two of Chapter Six urges to "develop 321 exquisite tourist routes with focus on developing and promoting the Silk Road and Chinese Civilization-Yellow River tourist routes while developing the province into a tourist attraction and destination in western China…" **The proposed project would protect cultural heritage and cultural relics and build infrastructure in selected scenic areas and these components are in compliance with relevant tourism plans in Gansu Provincial 12th Five-year Plan.**

1.2.2.2 Relationship with Gansu Provincial Master Plan for Tourism Development

Gansu Provincial Master Plan for Tourism Development urges to "accelerate tourism infrastructure development and take more efforts to develop tourism transport with priority being given to roads in national and provincial scenic areas and forest parks."

The Project would build infrastructure for selected scenic areas, including improvement of tourism infrastructure and enhancement of service functions of scenic areas. Therefore, implementation of the Project is in line with relevant requirements in the master plan.

1.2.2.3 Relationship with Gansu Provincial 12th Five-year Plan for Tourism Development

Gansu Provincial 12th Five-year Plan for Tourism Development presents the province's six key tourism projects during the 12th five-year period, which includes construction of infrastructure in scenic areas

with focus on **roads, water supply and drainage, power supply, sanitation, telecommunication and tourism service facilities**. The proposed project would construct roads, water supply and drainage, power supply and sanitation facilities for selected scenic areas to improve infrastructure in and enhance service capacity and levels of these scenic areas. Therefore, implementation of the project is in line with relevant requirements in the plan.

1.2.2.4 Relationship with Pingliang City Master Plan for Tourism Development (2006-2020)

Given the distribution of tourism resources and peculiarities of regional transport in Pingliang City, the overall layout of tourism development in the city has been planned as a "1133467" pattern, namely, **one development center,** one economic circle, three development axes, three tourism resource areas, four passenger mobilization centers outside the city, six tourism collaboration regions (belts) and seven tourism groups.

The Project's Kongtong Mountain Subproject, Jingchuan County Subproject and Zhuanglang County Subproject fall under the **one development center** proposed in the master plan, which is located at the border of Shaanxi, Gansu and Ningxia provinces and is an important support to the three provinces' tourism collaboration network. Therefore, the proposed project is in line with the province's tourism development master plan.

1.2.2.5 Relationship with Longnan City Master Plan for Tourism Development (2006-2020)

Longnan City Master Plan for Tourism Development sets four development zones for the city, namely innovative culture-based leisure zone; health-preserving holiday zone; mountainous area folk customs experiencing zone and ethnic minority folk customs experiencing zone.

Tanchang County Subproject falls under the innovative culture-based leisure zone. As an important county in the city's northwest, Tanchang County is known for its beautiful natural sceneries with Guan'e Gully as a core scenic area. The subproject is the core part of Guan'e Gully (Hadapu) Scenic Area and its implementation would cover Hadapu, create a quality tourism route and catalyze tourism development in Longnan City Wangxiadong, Cheng County Xixiasong and Hui County Santan scenic areas. Therefore, implementation of the subproject is in compliance with requirements of the city's tourism development master plan.

Kang County Subproject falls under mountainous area folk customs experiencing zone, whose components would be in line with relevant requirements of the city's tourism development master plan, which urges to "build Yangba Town into a comprehensive tourism services center, tourists transport center, conference center and health-preserving holiday center in the county".

1.2.2.6 Relationship with Linxia Hui Autonomous Prefecture 12th Five-year Plan for National Economic and Social Development Plan

Linxia Hui Autonomous Prefecture 12th Five-year Plan for National Economic and Social Development Plan urges to expand and strengthen the prefecture's tourism industry, implement an exquisite

tourism strategy, enhance cultural experience of tourism, build the prefecture into an important tourist destination in Lanzhou metropolitan area and along the Hui minority folk culture tourism route, strengthen scenic area planning, development and management, expedite development of tourism projects, star hotels, ethnic minority cultural industry park and tourism products, expand access to tourism investments and financing, actively encourage investment entities with strong financial capacity to take part in tourism industry development, and strengthen collaboration with nearby tourist destinations. The Linxia Subproject would build infrastructure in Songming Rock Scenic Area in Hezheng County of the prefecture, whose components are line with relevant planning requirements in the prefecture's five-year plan.

1.2.3 Relationship with Relevant County Policies and Plans

1.2.3.1 Relationship with Jingchuan County Urban Master Plan (2013-2030)

Jingchuan County Urban Master Plan (2013-2030) urges to develop four "tourism brands" of "King Mother's Home Town, Buddhism Center, Hot Spring Recreational Center and Wanyan Ancient Village". The Project would have a subproject in the county, which is Jingchuan County Subproject, whose main components include heritage protection and infrastructure constrrution and are in line with relevant planning requirements in the plan.

1.2.3.2 Relationship with Jingchuan County National Eco-county Development Plan

Jingchuan County National Eco-county Development Plan (2012-2020) sets the overall tourism industry layout for the county, which is "One Circle and One Belt, Four Major Parks and Eight Base Points", including Jingzhou Ancient Town as the axis, county seat core cultural industry circle focusing on "West King Mother's Culture", Family Ruan Culture, Li Shangyin Tang Dynasty Poem Culture, Wanyan Folk Culture, Dayun Temple Buddhism Culture, Revolutionary Base Culture, ecological culture and hot spring culture, and 50-km stone cave corridor Buddhism culture sightseeing belt building on Stone Cave Temple of Wangmu Palace, Nanshiya Stone Cave, Nanshi Cave Temple, Zhangba Stone Cave Temple, and Luohandong Stone Cave Temple… The Project would have a subproject in the county, which is Jingchuan County Subproject, whose main components include heritage protection and infrastructure construction and are line with relevant requirements for tourism planning in the plan.

1.2.3.3 Relationship with Jingchuan County Cultural Industry Development Plan

The targets of Jingchuan County Cultural Industry Development Plan (2014-2030) are to "consolidate Buddhism culture in Dayun Temple and 'West King's Mother' culture in Wangmu Palace and create a landmark scenic area of religious and folk culture in Gansu; build Dayun Temple National Archaeological Site Park and Wangmu Palace Key National Folk Culture Park, and create a 5A religious and folk culture tourism area…". The Project would have a subproject in the county, which is Jingchuan County Subproject, whose main components include heritage protection and infrastructure construction and are in line with requirements for tourism planning in the plan.

1.2.3.4 Relationship with Zhuanglang County Tourism Development Plan

Pursuant to Zhuanglang County Tourism Development Plan, there are four functional zones in the county: Yunya Temple-Chenjia Cave Scenic Area, history and culture-based tour area,

agriculture, border area and folk customs based tour area, and river system based sightseeing area. These four zones are defined around the Yunya Temple as the core scenic area, with the county town as the center and with National Highway 304 as the axis.

The proposed Zhuanglang County Subproject includes heritage protection and development and infrastructure construction and is in line with relevant requirements in the county's tourism development plan.

1.2.3.5 Relationship with Hezheng County Urban Master Plan (2013-2030)

Hezheng County Urban Master Plan (2013-2030) sets three targets for the county's tourism development: 1) promote ancient animal fossil, Songming Town and "Hua'er folk culture tour; 2) strengthen tourism infrastructure construction, enhance tourism service levels and develop a well-functioning tourism market covering catering, accommodation, transport, recreation, tourism and shopping services; and 3) increase the share of culture in tourism. Implementation of the proposed Hezheng County Subproject is in line with relevant planning requirements in the county's urban master plan.

1.2.3.6 Relationship with Tanchang County Master Plan for Tourism Development (2015-2025)

(1) Overall layout

A spatial structure comprising "two centers and one axis, one scenic area and multiple scenic spots".

Two centers: Tanchang County Tourists Transport and Services Main Center (main center) and Hadafu Tourists Transport and Services Sub-center;

One axis: a tourism industry belt and a sightseeing belt along National Highway 212 as the axis;

One scenic area:**Guan'e Gully Scenic Area;**

Multiple scenic spots: "Revolution Times Cultural Innovation Center", "Qiang Ethnic Minority Green and Eco-friendly Leisure Center", countryside tourism demonstration spot, health-preserving industry demonstration spot and "Hanyuangucha" Religious Culture Center.

(2) Development targets

To develop tourism into a "happiness-oriented" livelihoods industry helping farmers increase their income and get rich and develop tourism services as an important means for the county's rural residents to get rich; inherit traditional cultures of Qiang, Tibetan and other ethnic minorities in the county and build the county into a cultural exchange platform targeting at both China and the world; build on tourism development to promote ecological protection, enhance environmental awareness, improve environmental quality, improve human living environment and build the county into an eco-friendly county in China .

(3) Creation of culture-based tourism products

To create ethnic minority culture-based tourism products building on Guan'e Gully and E'man Gully scenic areas; and create Yangma Ancient Town military culture based tourism products.

(4) Strengthening cooperation and building Guan'e Gully Scenic Area into a large 5A scenic area

As there is no 5A scenic area in Longnan City, Tanchang County would try to build the Guan'e Gully Scenic Area into a large 5A scenic area to promote the city's and the county's tourism development.

(5) Lessons learned and guidance

During its development, the Guan'e Gully Scenic Area shall focus on ecological protection, eco-tour and cultural development. In the process of developing culture-based tourism, it shall focus on developing culture-experiencing tourism products. In addition, it shall also pay attention to interaction and cooperation with surrounding scenic areas and rely on the existing resources to improve the area and build it into a 5A scenic area. Therefore, implementation of the subproject is in line with the county's tourism development master plan.

1.2.3.7 Relationship with Kang County Tourism Development Plan

The plan covers 8 towns and 13 township within the jurisdiction of Kang County, including Chengguan Town, Dabao Town, Pingluo Town, Anmenkou Town, Lianghe Town, Changba Town, Yangba Town, Yuntai Town, Wangguan Township, Sitai Township, Dananyu Township, Miba Township, Wangba Township, Nianba Township, Douba Township, Dianzi Township, Douping Township, Baiyang Township, Taishi Township, Tongqian Township and Sanheba Township. Total area of these towns/townships is 2967.95 km^2.

The plan focuses on Meiyuan Gully Natural Scenic Area, Wanjiadaliang Health Preserving Tourism Area, Qinghe Primeval Forest Area, Baiyun Mountain Forest Park and Longchi Mountain A'luexing Forest Park, as well as on developing scenic spots and scenic areas adjacent to the above areas and parks, including Longshen Gully Scenic Area, Wangba Countryside Scenic Area, Qinglin Gully Scenic Area and Longwang Mountain Scenic Area.

The proposed project Kang County Subproject is located at Yangba Town of the county, which falls under the scope of the plan. The proposed folk culture display center, tourist service center and viewing platform to be built belong to Meiyuan Gully Scenic Area, which comply with relevant requirements of the plan.

1.3 Applicable Laws, Regulations and Policies

1.3.1 Laws, Regulations Governing Environmental Protection and Relevant Policies

1. Environmental Protection Law of the People's Republic of China (Revised in 2014), January 2015 ;
2. Environmental Impacts Assessment Law of the People's Republic of China, October 2002;
3. Law of the People's Republic of China on Water Pollution Prevention and Control, February 2008;
4. Law of the People's Republic of China on Prevention and Control of Ambient Noise Pollution, October 1996;
5. Law of the People's Republic of China on Atmospheric Pollution Prevention and Control, January 2016;
6. Law of the People's Republic of China on Prevention and Control of Environmental Pollution Caused by Solid Waste (Revised in 2015), April 2015;
7. Land Administration Law of the People's Republic of China (Revised), August 2004;
8. Law of the People's Republic of China on Soil and Water Conservation, March 2011;
9. Law of the People's Republic of China on Promoting Clean Production, July 2012;
10. Law of the People's Republic of China on Wildlife Protection, August 2004;
11. Law of the People's Republic of China on Protection of Cultural Relics, April 2015;
12. Forest Law of the People's Republic of China (Revised in 1998), 2009;
13. Detailed Rules for Implementing the Law of the People's Republic of China on Water Pollution Prevention and Control, March 2000;
14. Regulations on Implementing the Law of the People's Republic of China on Soil and Water Conservation (Decree 588 of the State Council), January 8, 2011;
15. Regulations on Environmental Protection Administration of Construction Projects (Decree 253 of the State Council), November 1998;
16. Regulations on Implementing the Forest Law of the People's Republic of China (Decree 278 of the State Council), January 29, 2000;
17. Regulations of the People's Republic of China on Nature Reserves, October 9, 1994;
18. Regulations on Scenic Interest Areas (Decree 474 of the State Council), September 19, 2006;
19. Regulations on Protection and Administration of Geological Relics (Ministry of Geology and Mineral Resources, 1995);

20. Measures for the Administration of National Wetland Parks (Trial) (February 2, 2010, Document 1, State Forestry Administration);

21. Regulations on Wetland Protection and Administration (March 28, 2013, Decree 32, State Forestry Administration);

22. Regulations on the Protection of Basic Farmland (Decree 257 of the State Council), December 1998;

23. Regulations of the People's Republic of China for River Course Administration (Decree 3 of the State Council), March 1988;

24. Decision of the State Council on Various Issues Relating to Environmental Protection (Document 31 issued in 1996 by the State Council), August 1996;

25. Catalogue for Classified Administration of Environmental Impacts Assessment for Construction Projects, June 2015;

26. Regulations on Control and Management of Pollution in Protected Drinking Water Source Sites (Revised), October 2010;

27. Catalogue of Restricted Land Use (2012 version) and Catalogue of Banned Land Use (2012 version) (jointly issued on May 23, 2012 by Ministry of Land Resources and National Development and Reform Commission);

28. Guidelines on Disclosing Information by the Government of Environmental Impacts Assessment of Construction Projects (Trial), Ministry of Environmental Protection, January 1, 2014;

29. Circular on Further Strengthening Supervision and Administration of Development Activities Involving Nature Reserves (Document 57 issued in 2015 by Ministry of Environmental Protection);

30. Suggestions of the State Council on Further Ensuring Effective Protection of Cultural Relics in Development Activities in Tourism and Other Sectors (Document 63 issued in 2012 by the State Council).

1.3.2 Local Regulations and Departmental Rules

1. Gansu Provincial Regulations on Environmental Protection (amended in 2004), June 4, 2004;

2. Gansu Provincial Regulations on Administration of Nature Reserves, September 26, 1999;

3. Decision of Gansu Provincial People’s Government on Various Issues Concerning Environmental Protection (Document 12 issued in 1997), February 20, 1997;

4. Procedures of Gansu Province for Implementing Wildlife Protection Law of the People’s Republic of China (amended in 2010), September 29, 2010;

5. Procedures of Gansu Province for Implementing Forest Law of the People's Republic of China, September 26, 1999;
6. Gansu Provincial Regulations on Cultural Relics Protection (amended in 2010), September 29, 2010;
7. Procedures of Gansu Province for Implementing Water and Soil Conservation Law of the People's Republic of China, June 4, 2004;
8. Gansu Provincial Regulations on Water and Soil Conservation, October 1, 2012;
9. Gansu Provincial Regulations on Wetland Protection, November 28,, 2003;
10. Gansu Provincial Zoning Plan for Surface Water Functional Zones (2012-2030) (Document 4, 2013);
11. Circular on Implementing Interim Provisions on Preparing the Chapter about Public Consultation in Environmental Impacts Assessment of Development Projects (Document 98, 2001), Gansu Environmental Protection Department, October 25, 2001;
12. Opinion on Further Strengthening Environmental Protection (Document 17, 2012), Gansu Provincial People's Government, February 15, 2012;
13. Procedures for Administration of Environmental Supervision of Development Projects (Trial) (Document 66, 2012), Gansu Provincial Environmental Protection Department, April 10, 2012;
14. Provisions of Gansu Province on Responsibilities for Environmental Protection Supervision, Decree 101, Gansu Provincial People's Government, August 7, 2013;
15. Circular on Further Strengthening Protection of Drinking Water Source Sites, Gansu Provincial Department of Environmental Protection;
16. Emergency Preparedness Plan of Gansu Province for Addressing Emergencies at Drinking Water Source Sites (Document 136, 2014), Gansu Provincial Department of Environmental Protection, June 30, 2014;
17. Opinion on Strengthening Protection of Non-physical Cultural Resources (Document 99, 2012) jointly issued by Gansu Provincial Finance Department and Cultural Department;
18. Study of Gansu Provincial Tourism Development Strategy (2014).

1.3.3 World Bank Safeguard Policies

1. World Bank Operational Policy and Procedures: Environmental Assessment (OP/BP4.01)
2. World Bank Operational Policy and Procedures: Natural Habitats (OP/BP4.04)
3. World Bank Operational Policy and Procedures: Involuntary Resettlement (OP/BP4.12)

4. World Bank Operational Policy and Procedures: Physical Cultural Resources (OP4.11)
5. World Bank Procedures: Information Disclosure (BP 7.15)

1.3.4 Technical Documents

1. Technical Guidelines on EIA: General Principles (HJ/T2.1-2011);
2. Technical Guidelines on EIA: Atmospheric Environment (HJ2.2-2008);
3. Technical Guidelines on EIA : Surface Water Environment (HJ/T2.3-1993);
4. Technical Guidelines on EIA : Groundwater Environment (HJ610-2011);
5. Technical Guidelines on EIA: Acoustic Environment (HJ2.4-2009);
6. Technical Guidelines on EIA: Ecological Impacts (HJ19-2011);
7. Guidelines on Environmental Impacts Assessment of Highway Projects (JTG B03-2006);
8. Technical Guidelines on Control of Ambient Noise and Vibration (HJ2034-2013);
9. Technical Guidelines on Assessment of Environmental Risks of Development Projects (HJ/T169-2004);
10. Technical Guidelines on Integrated Management of Soil and Water Conservation (GB/T16543.1-16453.6-1996);
11. Technical Guidelines on Soil and Water Conservation Schemes for Development Projects (SL204-98);
12. Technical Guidelines on Dust Prevention and Control in Urban Areas (HJ/T393-2007).

1.3.5 Relevant Plans

1. Guiding Catalogue for Industrial Restructuring (2011 version) (amended in 2013), Document 21, NDRC;
2. Gansu Provincial 12th Five-year Plan, February 2011;
3. Gansu Provincial Regulations on Administration of Nature Reserves, September 26, 1999;
4. Gansu Provincial Plan for Ecological Protection and Development (Document 36, 2015);
5. Gansu Provincial Zoning Plan for Ecological Functional Zones, Gansu Provincial Department of Environmental Protection, October 2004;
6. Gansu Provincial 12th Five-year Plan for Environmental Protection (Document 51, 2012), General Office of Gansu Provincial People's Government, June 11, 2012;

7. Gansu Provincial Zoning Plan for Surface Water Functional Zones (2012-2030) (Document 4, 2013), January 5, 2013;
8. Gansu Provincial Master Plan for Tourism Development;
9. Gansu Provincial 12th Five-year Plan for Tourism Development, 2011;
10. Pingliang City Master Plan for Tourism Development (2006-2020), 2006;
11. Longnan City Master Plan for Tourism Development (2006-2020), 2006;
12. Linxia Hui Autonomous Prefecture 12th Five-year Plan for National Economic and Social Development, 2011;
13. Master Plan for Gansu Taitong-Kongtong Mountain National Nature Reserve (2006-2015), 2006;
14. Master Plan for Gansu Pingliang City National Geological Park;
15. Master Plan for Gansu Kongtong Mountain Scenic Area, 2009;
16. Jingchuan County Ecological County Development Plan, 2013;
17. Jingchuan County Cultural Industry Development Plan (2013-2020), 2013;
18. Master Plan for Gansu Taizi Mountain Nature Reserve, 2008;
19. Tanchang County Master Plan for Tourism Development (2015-2025), 2015;
20. Gansu Provincial Plan for Chinese Giant Salamander Nature Reserve;
21. Zhuanglang County National-level Ecological County Development Plan (2012-2020), 2012;
22. Approval of Gansu Provincial People's Government for Adjusting the Scopes of Protected Areas of Centralized Drinking Water Source Sites in Kongtong District and Three Counties of Pingliang City (Document 60, 2015), 2015.

1.3.6 Project Documents and Relevant Materials

1. Project Engagement Letter;
2. Feasibility Study of World Bank Financed Gansu Cultural and Natural Heritage Protection and Development Project II;
3. Baseline Environment Monitoring Report for the World Bank Financed Second Gansu Cultural and Natural Heritage Protection and Development Project.

1.4 Applicable Standards

1.4.1 Environmental Quality Standards

1.4.1.1 Atmospheric Environment

Pursuant to the requirements in Ambient Air Quality Standards (GB3095-2012), Category I standard shall be enforced for areas within nature reserves and scenic areas and Category II standard for areas outside nature reserves and scenic areas. Specific standard values are provided in Table 1.4-1.

Table 1.4-1 Ambient Air Quality Standards

Item	Concentration Threshold for Category I Standard		Concentration Threshold for Category II Standard	
	Hourly Average	Daily Average	Hourly Average	Daily Average
SO_2(mg/m^3)	0.150	0.050	0.500	0.150
NO_2(mg/m^3)	0.200	0.080	0.200	0.080
TSP(mg/m3)	-	0.120	-	0.300
PM_{10}(mg/m^3)	-	0.050	-	0.150
$PM_{2.5}$(mg/m^3)	-	0.035	-	0.075
Applicable subprojects	The following subprojects would implement Category I standard: Kongtong Mountain Subproject, Zhuanglang County Subproject, Tanchang County Subproject, Kang County Subproject, Hezheng County Subproject (Songming Rock Scenic Area); the following subprojects would implement Category II standard: Jingchuan County Subproject, Hezheng County Subproject (all villages and Hongruijiayuan Community of Songming Town).			

1.4.1.2 Water Environment

Surface water environment quality standards for the Project's scenic areas are detailed in Table 1.4-2.

Table 1.4-2 Surface Water Environment Quality Standards (mg/L, excluding pH)

Standard	Category I standard in Surface Water Environment Quality Standards (GB3838-2002)	Category II standard in Surface Water Environment Quality Standards (GB3838-2002)	Category III standard in Surface Water Environment Quality Standards (GB3838-2002)
Factor	Concentration Threshold (mg/L)	Concentration Threshold (mg/L)	Concentration Threshold (mg/L)
pH	6-9	6-9	6-9
Dissolved oxygen	≥7.5	≥6	≥5

Standard	Category I standard in Surface Water Environment Quality Standards (GB3838-2002)	Category II standard in Surface Water Environment Quality Standards (GB3838-2002)	Category III standard in Surface Water Environment Quality Standards (GB3838-2002)
permanganate index	≤2	≤4	≤6
COD	≤15	≤15	≤20
TN	≤0.2	≤0.5	≤1.0
NH_3-N	≤0.15	≤0.5	≤1.0
TP	≤0.02	≤0.1	≤0.2
Petroleum	≤0.05	≤0.05	≤0.05
Sulphide	≤0.05	≤0.1	≤0.2
Fecal coliform	≤200	≤2000	≤10000
Applicable rivers/lakes	Guan'e Gully, Daheba Gully, Ming Lake, Yanzi Lake, Yinping Lake, Zhenzhu Lake, Yinping Lake, Zhenzhu Lake, Guan'e Lake, Lijie Lake, Yueya Lake (Tanchang County Subproject); Xiaoxia River (Hezheng County Subproject).	Zhulinsi Reservoir, Yunya River (Zhuanglang County Subproject); Min River (Tanchang County Subproject); Danancha River (Hezheng County Subproject); Yangba River, Taiping River (Kang County Subproject)	Yanzhi River, Kongtong Reservoir (Kongtong Mountain Subproject); Jing River, Rui River (Jingchuan County Subproject); Shuiluonan River (Zhuanglang County Subproject)

The Project's groundwater environment quality standards are detailed in Table 1.4-3.

Table 1.4-3 Groundwater Environment Quality Standards (mg/L, with exception of pH)

Category	Category I	Category II	Category III
Standard	Groundwater Environment Quality Standards (GB/T14848-93)		
pH	6.5-8.5	6.5-8.5	6.5-8.5
permanganate index	≤1.0	≤2.0	≤3.0
NH_3-N	≤0.02	≤0.02	≤0.2
Total hardness	≤150	≤300	≤450
Chloride	≤50	≤150	≤250

Category	Category I	Category II	Category III
Sulfate	≤50	≤150	≤250
Total dissolved solids	≤300	≤500	≤1000
Nitrate	≤2.0	≤5.0	≤20
Nitrite	≤0.001	≤0.01	≤0.02
Iron	≤0.1	≤0.2	≤0.3
Lead	≤0.005	≤0.01	≤0.05
Total fecal coliform	≤3.0	≤3.0	≤3.0
Applicable subprojects	Tanchang County Subproject	Hezheng County Subproject	Kongtong Mountain Subproject Jingchuan County Subproject Zhuanglang County Subproject Kang County Subproject

1.4.1.3 Acoustic Environment

Acoustic environment quality standards to be enforced for all subprojects are shown in Table 1.4-4.

Table 1.4-4 Acoustic Environment Quality Standards (dB(A))

Category	0	I	II	IVa	Applicable Subprojects
Daytime	50	55	60	70	All subprojects
Nighttime	40	45	50	55	
Basis of standards	Acoustic Environment Quality Standards (GB3096-2008)				

1.4.2 Pollutant Emission Standards

1.4.2.1 Atmospheric Pollutant Emission Standards

Comprehensive Emission Standards for Atmospheric Pollutants (GB16297-1996) would be enforced for fugitive emission of dust. Concentration threshold for monitoring of fugitive emission is provided in Table 1.4-5.

Table 1.4-5 Comprehensive Emission Standards for Atmospheric Pollutants(Extract)

Pollutant	Concentration Threshold for Monitoring of Fugitive Emission	
Particulate	Monitoring Point	Concentration (mg/m^3)
	Maximum concentration point outside the boundary	1.0
Applicable subprojects	All subprojects	

1.4.2.2 Water Pollutant Emission Standards

For Kongtong Mountain Subproject and Kang County Subproject, domestic sewage after being treated would be used for scenic area greening and greening standard in Urban Wastewater Reuse and Urban Miscellaneous Water Quality Standards (GB/T18920-2002) would be applied. Specific standard values are given in Table 1.4-6.

Table 1.4-6 Urban Wastewater Reuse and Urban Miscellaneous Water Quality (for Greening) (Extract)

No.	Item	Standard (mg/L)	Applicable Subprojects
1	Total dissolved solids ≤	1000	Kongtong Mountain Subproject, Kang County Subprojectand Jingchuan County Subproject
2	BOD_5≤	20	
3	NH_3-N≤	20	
4	Anionic surfactants≤	1.0	
5	Total fecal coliform (number/L)≤	3	

Domestic sewage from Tanchang County Subproject would be connected to urban sewers and treated by Tanchang County Wastewater Treatment Plant while treated wastewater would be discharged following sewer connection standards. Category IA standard in Urban Wastewater Treatment Plant Pollutant Discharge Standards would be enforced for Hezheng County Subproject, whose domestic sewage would be collected by drainage network and discharged after being treated by Songmingyan Town Wastewater Treatment Plant under the subproject; Category IA standard would be enforced for Jingchuan County Subproject, whose domestic sewage would be discharged into the Jing River after being treated; Category IB standard in Urban Wastewater Treatment Plant Pollutant Discharge Standards would be enforced for Zhuanglang County Subproject, whose domestic sewage would be

discharged into the Shuiluonan River after being treated. Detailed standard values are provided in Table 1.4-7.

Table 1.4-7 Standards to be Enforced for Wastewater Discharge (Unit: mg/L)

Standards	Sewer Connection Standards for Tanchang County Wastewater Treatment Plant	Category IA Standard in Urban Wastewater Treatment Plant Pollutant Discharge Standards	Category IB Standard in Urban Wastewater Treatment Plant Pollutant Discharge Standards
Pollution factor	Concentration Threshold (mg/L)	Concentration Threshold (mg/L)	Concentration Threshold (mg/L)
pH*	6-9	6-9	6-9
SS	230	10	20
BOD_5	220	10	20
COD	400	50	60
NH^3-N	35	5 (8)	8 (15)
Sulfate	1.0	1.0	1.0
Petroleum	30	1.0	3.0
Animal and plant oil	100	1.0	3.0
Applicable subprojects	Tanchang CountySubproject	Hezheng County Subproject	Zhuanglang County Subproject

Note: Number outside brackets represent the control indicator when water temperature is >12℃ while number in the brackets represent control indicator when water temperature is ≤12℃.

1.4.2.3 Noise

Standards for Ambient Noise Emission at Building Construction Site Boundary (GB12523-2011) would be enforced for construction noise from all subjects, Category I standard in Standards for Emission of Social Life Generated Noise (GB22337-2008) would be enforced for noise from social life within protected areas of the Project, and Category II standard in Standards for Emission of Social Life Generated Noise (GB22337-2008) would be enforced for noise from social life outside protected areas of the Project. Specific standard values are given in Table 1.4-8.

Table 1.4-8 Noise Emission Standards to be Enforced

Item	Category I Standard in GB22337-2008	Category II Standard in GB22337-2008	Standards for Noise Emission at Construction Site Boundary	Applicable Subprojects
Daytime, dB	55	60	70	All subprojects
Nighttime, dB	45	50	55	
Standards	Standards for Emission of Social Life Generated Noise (GB22337-2008)		(GB12523-2011) Standards for Ambient Noise Emission at Building Construction Site Boundary (GB12523-2011)	

1.4.2.4 Solid Waste

Storage and disposal of domestic waste generated by staff and tourists of the Project would follow General Industrial Solid Waste Storage and Deposal Ground Pollution Control Standards (GB18592-2001).

1.4.3 Comparison with WB standandsand Gap Analysis

In terms of implementing environmental regulations and standards, both the World Bank and China follow the principle of enforcing stricter applicable standards. The proposed project would need to meet both China's and the World Bank's standards, thus need to conduct a comparative analysis of the two sets of standards.

1.4.3.1 Ambient Air Related Standards

Ambient Air Quality Standards (GB3095-2012) and the General Environment, Health and Safety Guidelines (the General EHS Guidelines) have different cycles for the assessment of ambient air quality (e.g. hourly average, daily average and annual average) and relevant data cannot be compared and analyzed one by one. Compared with the General EHS Guidelines, Ambient Air Quality Standards (GB3095-2012) have clearer categorization of standards. Given most of the project areas are located within the special protected areas, such as nature reserves, scenic areas and forest parks, among others and ecological protection would be the focus, Category I Standard in Ambient Air Quality Standards (GB3095-2012) would be enforced, whose concentration thresholds are stricter than those in the Ambient Air Quality Guidelines of the World Health Organization (WHO). Given human health would be the focus of protection in villages, towns and residential quarters, Category II Standard in Ambient Air Quality Standards (GB3095-2012) would be enforced, some indicators of which are lower than those in WHO's Ambient Air Quality Guidelines, but meet the requirements

for demarcation of local ambient air quality function areas. If higher standards are adopted, significant financial and material inputs would be needed and their implementation would be more difficult technically. Ambient air is a regional issue and carrying out air quality control efforts only in the project areas would not have strong operability. Therefore, Ambient Air Quality Standards (GB3095-2012) would be enforced for ambient air quality in the project areas. This can meet requirements for air quality in the project areas.

Construction activities under the project would have minimal impacts on ambient air, pollutants are mainly emitted in a fugitive manner, fugitive emission standards in Comprehensive Emission Standards for Atmospheric Pollutants (GB16297-1996) are more representative and targeted. However, the General EHS Guidelines does not provide standards for fugitive emission of air pollutants; if the guiding emission values for small and medium sized combustion facilities in the General EHS Guidelines are compared with emission standards in GB16297-1996, the latter is stricter. Given the above, Comprehensive Emission Standards for Atmospheric Pollutants (GB16297-1996) would be enforced for air pollutantemission in the project areas.

1.4.3.2 Water Related Standards

Compared with the General EHS Guidelines, Surface Water Environment Quality Standards (GB3838-2002) and Groundwater Environment Quality Standards (GB/T14848-93) have different quality standards for different water bodies and have quantified a range of water quality indicators, which facilitate water quality monitoring and evaluation. Therefore, Surface Water Environment Quality Standards (GB3838-2002) and Groundwater Environment Quality Standards (GB/T14848-93) would be enforced for water environment quality in the project areas.

Compared with emission standards for treated domestic sewage in the General EHS Guidelines, the Standards for Emission of Pollutants at Urban Wastewater Treatment Plants (GB18918-2002) has stricter and more targeted indicators, which are separated into Category IA and IB. Therefore, Standards for Emission of Pollutants at Urban Wastewater Treatment Plants (GB18918-2002) would be enforced for domestic sewage emission under Hezheng County, Jingchuan County and Zhuanglang County subprojects; sewer connection standard would be enforced for Tanchang County Subproject, which meets local requirements and does not have comparability; as all domestic sewage under Kongtong Mountain Subproject and Kang County Subproject would be treated and used for greening in the scenic areas, the greening standard in Urban Wastewater Reuse and Urban Miscellaneous Water Quality Standards (GB/T18920-2002) would be enforced, which is stricter than domestic sewage treatment and emission standards in the General EHS Guidelines.

1.4.4.3 Sound Related Standards

Compared with the General EHS Guidelines, Acoustic Environment Quality Standards (GB3096-2008) has more detailed categories of standards and more targeted quality standards for different regions.Categories 0, I and II standards to be enforced for the project are stricter than relevant standards in the General EHS Guidelines while the Category IVa Standard is only for special areas along both sides of aterial roads, which is more applicable to local relalities. Therefore, Acoustic Environment Quality Standards (GB3096-2008) would be enforced for the project.

Compared with the General EHS Guidelines, Standards for Emission of Social Life Generated Noise (GB22337-2008) has different standards for areas both within and outside the project's protected areas, which are more applicable to the project features and more stricter. In addition, Standards for Ambient Noise Emmisison at Construction Site Boundary (GB12523-2011) would be enforced for and more targeted at construction sites of the project.

1.5 EA Category, Methodology and Scope

1.5.1 EA Category of the Project

EA category of the Project is defined according to requirements for environmental functions in the project areas and features, nature, size and scope and level of impacts of the Project and in compliance with Circular on Strengthening Administration of Environmental Impacts Assessment of Development Project Financed by International Financial Organizations (Document 324, 1993) issued by the former State Environmental Protection Administration, relevant technical guidelines for environmental impacts assessment and the World Bank OP4.01 on Environmental Assessment. Specific EA categories are described in Table 1.5-1.

Table 1.5-1 EA Categories of Development Projects

EA Category	Environmental Impacts	EA Contents
A	Projects having potential significant environmental impacts	A full EA is required for such projects
B	Projects having limited potential adverse environmental impacts in terms of impacts scope and level; such impacts can be significantly mitigated through specified advanced techniques and mature control measures	Normally, a full EA is not required for such projects, but specific EA or impacts analysis is required pursuant to engineering features and features of environmental factor of these projects
C	Project having no or minimal environmental	Normally, EA or impacts analysis is not

	impacts	required for such projects and only environmental management filing is needed

Given the nature, size and level of impacts of the Project and environmental features in the project areas, environmental impacts of the Project would be short term, less significant and reversible, EA category A would be applied.

1.5.2 EA Scope

Table 1.5-2 EA Scope

Medium	Factor	Scope and Contents
Ecological environment	Water and soil erosion	200m from the central line of a road on either side of the road; 500m from the boundary of land occupation for other buildings or structures
	Vegetation	Vegetation affected by construction activities
Acoustic environment	Construction noise	Within 200m from the boundary of construction site and around the quarry
	Noise during operation	Communities within 200m from construction sites
Ambient air	Waste gas during construction	Rectangular area 2.5km away from the center of construction site
	Waste gas during operation	Rectangular area 2.5km away from the center of construction site
Water environment	Wastewater from construction	Project areas
	Domestic sewage during operation	

1.6 Environmental Impact and EA Factors

This EA has adopted a matrix approach to identify major environmental issues of the Project (see Table 1.6-1 for details).

Table 1.6-1 Environmental Impacts Identification Matrix

Factor	Pollution Factor	Construction Period	Operation Period
Atmosphere	Particulate	Δ	-
	SO_2	Δ	-
	NO_2	Δ	-
Water	COD	Δ	Δ
	SS	Δ	Δ
	NH_3-N	Δ	Δ
	TP	Δ	Δ
Noise	Noise	Δ	Δ
Solid waste	Solid waste	Δ	Δ

Note: ▲Significant impacts; Δ moderate impacts.

Based on the above tale, major environmental issues of the Project are impacts of domestic sewage and domestic waste on the ambient environment.

Pursuant to the results of environmental impacts identification, factors for this EA are provided in Table 1.6-2.

Table 1.6-2 Assessment Factors

Medium	Baseline Environment Assessment Factor	Impacts Prediction Factor
Atmosphere	SO_2, NO_2, PM_{10}, TSP, $PM_{2.5}$	—
Surface water	pH, dissolved oxygen, COD, permanganate index, NH3-N, TN, TP, petroleum, sulphate, fecal coliform	COD, SS, NH_3-N, Fecal coliform
Groundwater	pH, total hardness permanganate index, NH_3-N, chloride	—
Noise	Leq(A)	Leq(A)
Eco-environment	Animal and plant resources	—
Solid waste	Domestic, comprehensive utilization and amount of disposal	—
Environmental risk	—	COD, SS, NH_3-N, TP

Chapter 2 Project Description

2.1 Project Composition, Investment and Schedule

The Project includes 6 subprojects in 6 counties (districts) in 3 cities (autonomous prefectures), namely, Pingliang City, Longnan City and Linxia Prefecture. The selected scenic areas are, as a miniature of cultural and natural heritage of Gansu province, have strong representation. All of these subprojects include three components: heritage site conservation and development, community basic service delivery and capacity building and project management. This EA would provide separate introduction to each subproject. Investment by subproject is given in Table 2.1-1 and a location map of the project is shown in Figure 2.1-1.

Table 2.1-1 Project Construction Sites

City (Prefecture)	County (District)	Subproject	Competent Authority/PMO	Investment (RMB 10,000)
Pingliang City	Kongtong District	Kongtong Mountain Subproject	Kongtong Mountain Scenic Area Administration	25,034.77
	Jingchuan County	Jingchuan County Subproject	Jingchuan County Administration of Culture, Radio, Film & TV	14,370.36
	Zhuanglang County	Zhuanglang County Subproject	Yunya Temple Scenic Area Administration of Zhuanglang County	14,640.90
Longnan City	Tanchang County	Tanchang County Subproject	Tourism Administration of Tanchang County	15,498.47
	Kang County	Kang County Subproject	Tourism Administration of Kang County	18,140.88
Linxia Autonomous Prefecture	Hezheng County	Hezheng County Subproject	Hezheng County Administration of Culture, Radio, Film & TV	16,810.06

Project implementation period: the planned is 5 years (2016-2020) and total project investment is RMB10,449.554 million.

Figure 2.1-1 Subproject Distribution of World Bank Financed Second Gansu Cultural and Natural Heritage Protection and Development Project

2.2 Project Components

2.2.1 Kongtong Mountain Subproject

Table 2.2-1 Summary of Kongtong Mountain Subproject

Category	Name of Works		Components
Main Works	Construction works of the scenic area	Repair, restoration and protection of ancient buildings: restoration works for Xiangshan Temple Hall, Jingle Palace Hall, Taiqing Palace Hall, Lianhua Temple, Mituo Temple Hall, Wangmu Palace Hall and Wendao Palace.	Base: No work is done to both mountains and the front base and rear supports, exposed base and step body are removed. Side faces and "elephant eyes" of the exposed base would be built with grey bricks while base edges, steps and ramps with ashlars; Floor: the floor bricks are removed and replaced by grey square bricks sized 300×300×80; Wall surface: All cracks would be grouted. Paint finish: The primary coating would be cleared for new paint finish. Meanwhile, floor of the temple would be paved with grey bricks and surrounding greening would be arranged.
		Repair of ancient towers: Lingfeng Tower, Lingmi Tower, Putong Tower, Yinxiang Tower, Huairui Monk Tower, Dache Tower and Yingxueshanren Tower	Surface drainage would be rearranged, all mortar joints would be repaired, a sand road would be built, the original grey brick fences would be removed and built. An archaeological survey would be made. The tower foundation of lime-soil compaction piles would be dealt with and all original components are restored.
		Xiangshan Scenic Area Administration Building	The Administration Building of Xiangshan Mountain Parking Lot of the Kongtong Mountain is in a double-storey reinforced concrete framework structure, with a floor area of 260.00 m2
		The current Xiangshan Mountain Parking Lot is reconstructed into a tourism transport center.	The scheduled grass planting tiles reach an area of 3,500m^2, 1 office building would be built for heritage management, security management for the Xiangshan Scenic Area and logistics guarantee; A 340m-long

Category	Name of Works		Components
			landscape corridor would be built as a platform for tourists in the peak to overlook the east side of the Kongtong Mountain.
		Xiangshan Mountain eco-parking lot would be built.	An ecological parking lot would be built at a recessed site 1km off the Xiangshan Mountain top, which covers an area of 3,500m^2 An ecological parking lot refers to an open parking lot whose ground is paved with air and water permeable paving materials and planted with certain green plants like trees at certain spacing to form a shade cover, thus forming organic combination between parking space and landscaping space.
		Residence improvement for religious personnel	A total of 35 wing-rooms would be repaired and their surrounding environment would be improved.
		Geological disaster control	3 places on both sides of Pingjing Highway, 5 places along the Ticket Center of the ropeway on the southwest side of the reservoir and 1 place along the road up to the mountain on the east gate of the park. Slope cutting + slope toe retaining wall support protection and anchor lattice on the middle-upper part.
	Transport works	Trail on north bank of Tanzheng Gorge, trail from Pavilion of Eight Fairies to Buddhist Lodge, trail of Feng Gully Scenic Area, trail from Xiangshan Mountain to Houzhi Gully, plank road from Leisheng Peak to Zhongtai and trail of Yueshi Gorge	Total length of all trails amounts to 20.75km, which is in boardwalk structure with a width of 1.8m; A total of 17 recreation platforms, 26 sightseeingpavilions, 1landscape platform and 25 break pavilions would be built.
		Maintenance and reinforcement of the Tongtian Bridge in Tiantai Mountain	Comprehensive maintenance and reinforcement of the bridge structure
		Wharf reconstruction and extension	Extension would be made to three wharfs on the north bank of the

Category	Name of Works		Components
			Tanzheng Gorge
		Xigou Village	Hardening of 4.5 km community road
Public and auxiliary works	Water supply & drainage and firefighting works	Fire pool of the Xiangshan Mountain Scenic Area	Pool Volume: 200 m^3;
		Pipeline for use of reclaimed water within the scenic area	DN50 pipeline for use of reclaimed water with a length of 8km
		Sewage pipeline within the scenic area	DN 200 Sewage collection pipeline, with a length of about 5.5km
		Water supply tower and pumping well built for Miaozhuang Village and Dongshe Community,	Water supply capacity: 55.54m^3/d; two 50m^3water storage tanks.
	Power supply works	Power supply line from the Xiangshan Mountain to the Jingle Palace and from the Jingle Palace to Houzhi Gully	A 10KV overhead line is laid below the trail for underground reconstruction. Total length of the reconstructed cable line is about 2.8km, in the same direction as the original overhead line.
	Lighting works	LED solar landscape garden lamps	86 in Xigou Village.
	Signs and markings	Wutai and Huangcheng Scenic Areas	Various scenery (scenic spot) introduction boards, road signs, warning signs and indicating signs, amounting to a total number of 210, would be added.
Environ-mental protection works	Sewage treatment	Huangcheng Sewage Treatment Station	A small buried sewage treatment station with a capacity of 15m^3/h would be built. Domestic sewage, after treatment in the septic tank and oil separation, is removed with BOD_5 through secondary biochemical treatment in A/O process and the buried integrated sewage treatment equipment.
		Wutai Sewage Treatment Station	Same process as above, with a capacity of 15m^3/h
		Sewage Treatment Station in the Xiangshan Scenic Area	Same process as above, with a capacity of 10m^3/h
	Public toilet		A total of 26 environmentally friendly toilets would be installed as appropriate;

Category	Name of Works	Components
	Solid waste disposal	Hundreds of imitated ecological trash bins would be installed;
		2 garbage trucks would be purchased
		1 buried garbage collection point
	Other works	Installation of 25km scenic area protective fence.
		Filing and management of old and famous trees, with bilingual signs added.

Note: for an environmentally friendly toilet, flushing is replaced by foam generated by foam liquid and foam is checked by light sensing signal, constantly keeping foam in the toilet bowl at a certain height. Foam can effectively block smell and lubricate the toilet bowl, making the excrement flow smoothly into the biochemical tank for treatment. As being immediately covered by foam, the excrement is invisible, providing toilet users with a comfortable environment while effectively impeding the spread of pathogenic bacteria in the excrement and curbing breeding of flies and mosquitoes.

2.2.2 Jingchuan County Subproject

Table 2.2-2 Summary of Jingchuan County Subproject

Category	Name of Works		Components
Main Works	Museum works	Newly Built Jingchuan County Museum	The Jingchuan County Museum would be built in Chengbei New District of Jingchuan County with a floor area of 4,000m^2, which is composed of 4 function rooms including display area, exhibit warehouse, visit and activity area and visitor service area.
	Culture exhibition room	Wanyan Folk Culture Exhibition	Cultural exhibition activities would be carried out.
	Maintenance works	Maintenance and protection of Chenghuang Temple	Water proofing for the warehouse for an area of 370m^2, ground renovation in the temple for an area of 839 m^2, lawn planting for an area of 443 m^2, construction of a new gate, construction of a new tablet pavilion and construction of an exhibition hall.
	Reinforcement and repair works	Reinforcement and restoration of Arhat Stone Cave	Reinforcement of cliffs and repair of Buddha statues, relief sculptures and frescoes.

Category	Name of Works		Components
	Traffic works	Road hardening project	Hardening of roads in Luohandong Village and Wanyan Village, amounting to a total length of 3.4km.
		Scenic area trails	A 1.5km scenic area trail would be arranged in the Luohandong-Hanjia Gully Stone Caves
		Imitation wood plank road	2 small bridges cross Hanjia gully of the Luohandong-Hanjia Gully Stone Caves, with 1.4km imitation wood plank road
		Parking Lot	An ecological parking lot of 700m^2would be built in the Luohandong-Hanjia Gully Stone Caves.
Public and auxiliary works	Water supply & drainage and firefighting works	Water supply pipe	1.64km and 1.7km water supply pipelines would be laid respectively at Luohandong Village and the Wangmu Palace.
		Sewage pipeline	5.26km sewage HDPEdouble - wall corrugated pipeline and 1.1km UPVC drainage pipeline would be laid at Luohandong Village
		Rainwater lifting	Design for improving rainwater facilities in the Chenghuang Temple
	Power supply works	Luohandong-Hanjia Gully power supply line	Burying 2.6km lighting power line of 10KV and 0.4KV and installing 1 125KVA box-type transformer
	Lighting works	LED solar landscape garden lamps	80 at Wanyan Folk Village and 40 at Luohandong Village
	Signs and markings	Scenic area	Installing 91 guide signs in the Luohandong-Hanjia Gully Stone Caves
Environmental protection works	Sewage treatment	Sewage treatment station	1 set of integrated sewage treatment facilities and 5septic tanksto be built at Luohandong Village
	Public toilet		4flush toiletsin the Chenghuang Temple and Luohandong-Hanjia Gully
	Solid waste disposal		Setting up 6 garbage collection points at Luohandong Village and 152trash bins in the Wangmu Palace and Luohandong-Hanjia Gully
			2 garbage trucks would be purchased
	Other works		Building a 160m^2comprehensive administration building in the Luohandong-Hanjia Gully Caves

Category	Name of Works	Components
		Setting up facilities including safety fences and remote monitors in the Zhangba Temple, Jiangjiaping, Fenghuanggou, Taishan Temple and Tomb of Prince Han

2.2.3 Zhuanglang County Subproject

Table 2.2-3 Summary of Zhuanglang County Subproject

Category	Name of Works	Construction Works	Size
Main Works	Natural heritage protection	Geological disaster management in scenic area	Management of 5 geological disaster points in scenic area and setup of 1 set of geological disaster warning system.
	Scenic area improvement	Reconstructing Dianzixia-Yanchangzi firefighting access	7.05km-long cement-concrete pavement with 4.5m-wide base and 3.5m-wide pavement
		Building Fogoumen-Yunya Temple firefighting access	7.56km-long cement-concrete pavement with 4.5m-wide base and 3.5m-wide pavement
		Construction of firefighting access in scenic area	7.8km long with 3m-wide gravel pavement
		Improvement of battery car lane	Repair and improvement of existing 5.54km-long battery car lane connecting Hongya Temple, Yunya Temple and Da Temple with pavement being widened to 4m and base widened to 4.5m
		Construction and improvement of trails	1. Jingwa Temple-Yunya Temple trail: cement-concrete pavement to dressed stone pavement; 1.8m wide and 1.42km long; 2. Construction of Yunya Temple trail: 1.8m wide and 16.18km long, including 2.34km long anti-corrosion wood trail and 14.47km long dressed stone trail.
		Construction and improvement of	1. Improvement of 2,000 m^2 parking lot at Qiansanmen

		parking lot	Tourist Service Center,200 m^2 battery car parking lot at Hongya Temple; 2. Construction of 300m^2 eco-battery car parking lot at Da Temple; 3. Construction of 1800m^2 Fomengou paking lot.
		Construction and improvement of tourist service centers	1. Construction of 530m^2 Fomengou Tourist Service Center; 2. Improvement of 200m^2 Qiansanmen Tourist Service Center
		Scenic area water supply and drainage systems	1. Construction of water supply system: 1.78km pipeline, 18 valve wells, 5 water meters; 2. Construction of drainage system: 8.83km pipeline, 2 sewage pump stations, 4 septic tanks, 1 set of integrated sewage treatment facility (with capacity of 7m^3/h).
		Signs and markings	5 panoramic instruction signs, 30 explanation signs, 50 guide signs and 100 advisory signs would be installed.
Environmental protection works	Environmentally friendly toilet, waste transfer station, garbage collection point, dustbin, suction-type sewer scavenger and garbage truck.	Build 12 environmentally friendly toilets (environmental flushing free toilets), 1 compression-type waste transfer station, 7 garbage collection points and purchase 110 trash bins, 1 suction-type sewer scavenger and 2 garbage trucks in the scenic area.	
Community development	Road hardening	2km village road hardening	
	Solar garden lamps	80 sets	
	Purchase of mobile retailer stalls and improvement of horizontal inscribed boards of surrounding	10 mobile retailer stalls and 10 inscribed boards of farmer inns	

	farmer inns	
Capacity enhancement	1. Management staff training (27 participants); 2. Scenic area practitioners training (60 participants); 3. Community residents training (80 participants).	

2.2.4 Tanchang County Subproject

Table 2.2-4 Summary of TanchangCounty Subproject

Category	Name of Works	Construction Works	Components
Main Works	Heritage and Protection of the Qiang Folk Culture	Qiang and Tibetan Folk Culture Research	Establish the topic of the Research on History, Folk Customs and Culture of the Qiang and Tibetan Nationalities of Guan'e Gully of Tanchang County for protection and exploration of local Qiang and Tibetan cultures.
		Rescue protection of 14 existing wood board roofed houses	Reinforce and repair the only existent 14 ta-ban building s (8 in Luren Village and 6 in Xinping Village): including integral reinforcement of truss, amendment of cracks in the beams and columns, recover deterioration and apply roof waterproof operation.
		Re-organization and performance of folk dances of Qiang and Tibetan Nationalities	Writing of Qiang and Tibetan song and dance dramas and purchasing of clothing for rehearsal and performance, making of folk musical instruments and purchasing of traditional musical instruments
		Build the "Live" museum of folk culture of the Qiang and Tibetan Nationalities	Select 7 wood board roofed buildings with small adjacency and stable structure as the Qiang Folk Culture Museum, respectively displaying: needleworks and garments; musical instruments and dances & songs; history of the Qiang Nationality; worship ceremonies; customs; production and farm implements; architecture.
		Build training centers for successors of the Ben Religion	Modify 5 existing wood board roofed buildings into culture training centers and establish e-records for literature on the Ben Religion
		Comprehensively transform village	Reconstruct facades of buildings in Luren Village and Xinping Village, which fail to comply with the

Category	Name of Works	Construction Works	Components
		appearances	primitive Qiang and Tibetan cultures of ancient villages Choose adjacent or retained areas for building 6 new wood board roofed buildings on the premise of respecting the original appearance of the village.
	Comprehensive management of geological disaster points in the scenic area	Zhuwaping Gully debris flow disaster control	The control approach of combining detention with discharge would be applied. A detention dam wouldbe respectively built in the middle reach of the main gully and the branch gully for retaining solid matter. Exhausting embankments would be distributed on both banks of the middle and downstream reaches to ensure the gully banks are not eroded. The site near the gully entrance shows flat topography where sludge deposit field would be arranged.
		Collapse disaster control of the mountain opposite to Yinpinzhai Village	Slope cutting + slope toe retaining wall support protection and active protective net on the middle-upper slope
		Leigu Mountain Trail collapse disaster control	Slope cutting + slope toe retaining wall support protection and active protective net on the middle-upper slope
		Daheba Zhima River-Eman Tianchi Section landslide disaster control	Slope cutting + slope toe retaining wall support protection and anchor lattice on the middle-upper slope.
		Landslide disaster control of left bank of Guan'e Gully entrance	Slope cutting + slope toe retaining wall supporting + anchor lattice at each level + interception and drainage ditch + slope face greening.
		1 online geological disaster monitoring platform	
Public works	Power supply works	Laying 10KV power cables	Total 11km, including 4.5km from Wukesong to Shibagongli, 4.0km from Shibagongli to Zhimaheliang (one 400KVA transformer station), and 2.5km from Shibagongli to Leigu Mountain top (one 400KVA transformer stations).
	Sewage works	Sewage pipeline within the scenic	New 64km HDPE double-wall corrugated pipeline (DN 300), 18.016km UPVC water drainage pipeline

Category	Name of Works	Construction Works	Components
		area	and 240m DN300 steel pipeline; construction of one integrated pumping station at Xinchengzi Villag; destruction and restoration of 50,000m^2 of concrete pavement.
	Lighting works	Solar street lights	45 sets
Environmental protection works	Sewage treatment	Septic tank	14 tanks
	Public toilet	10 new flush toilets	Land area: 800m^2
	Purchase of garbage trucks		2
Other works	Rare wild plant survey and filing (once)		Survey and identify rare national priority protected plants, register and establish records for them and hang labels for priority protection. Individually name ancient and famous trees and rare species and maintain their normal development; preparation of a picture book about rare wild plants.
	Guide sign system		Erection of 400 signs for plant introduction, nature protection and firefighting, 5 panoramic instruction signs, 100 explanation signs, 200 direction signs and 175 advisory signs.
	Building of smart scenic area information systems		

2.2.5 Kang County Subproject

Table 2.2-5 Summary of Kang County Subproject

Category	Name of Works	Construction Works	Components
Main Works	Buildings/ structures	Courier hostel on northern Ancient Tea Horse Route	Floor area: 210m^2, including a tea culture display area, tea making display area, tea tasting area and tea selling area.
		Yangba Scenic Area Administration Building	Single-storey and partially double-storey framework building with a coverage of 260 m^2, of which the first floor mainly includes the reception hall, ticket windows, guide room, medical room and toilet and the second floor the tourist tea room, lounge, offices, promotion

			room and meeting room. A slope retaining wall of 700m^2 and a 100 m^2 sightseeing platform would be also built.
		Tourist Center	Gross floor area: 430m^2, one storey on the ground, two areas: tourist service area and office area.
	Transport works	Meiyuan River Scenic Area	Contruction of 13.56km wood plank road for patrol with pavement covered by anti-corrsion materials, which starts at the ticket barrier of Meiyuan Gullyand ends at Liujiaba Village, including two sections: entrance to Youfangba and Xiaomomo Mountain to Liujiaba; 1.8m wide; 13 break pavilions.
		Trail from Xiaomomo Mountain to Nangoukou	14.792km long and 1.8m wide with gravel pavement.
		Firefighting access from Xiaomomo Mountain to Liujiaba	Build a 15.23km Yinbazi-Xiaomomo Mountain firefighting access, which conforms to the technical standard of Class IV Highway at designed speed of 10km/h; according to relevant standards, its width shall be 5m, but is reduced to 3.5m to mitigate impacts on the scenic area.
		Patrol access from Xiaomomo Mountain to Liujiaba (including wood plank road)	Build a 13.17km Xiaomomo Mountain-Liujiaba patrol access and a camping area, paved with pebbles.
		Ecological parking lot	The Yinbazi Scenic Area Parking Lot is built on the open space east of the entrance to the scenic area gate, who floor area reaches 1,600m^2. It's an ecological parking lot
Public works	Water supply	All residents in the scenic area drink spring water, which is conveyed through pipelines to the collecting bank in gravity flow, boosted up to the elevated water tower by a clarified water pump and further supplied to each household through the distribution pipelines.	
	Power supply	The existing 110KV transformer substation is used. Power consumption of the scenic area is drawn from the substation respectively at 35KV and 10KV in double-wire loops. In principle, power cables in the scenic area are in direct buried installation.	
	Drainage	Water drainage in the scenic area uses rainwater-sewage separation system, where rainwater is discharged into nearby mountain streams by taking advantage of surface slope. Sewage pipeline and integrated sewage treatment facilities would be built for Youfangba Village.	
	Heating	Air-conditioning system would be applied for heating.	

Environmental protection works	Toilet	A total of 16 environmentally friendly toilets.
	Garbage collection	Inside Village: Add 2 garbage transfer trucks, 2 road sweepers and 350 trash bins. Another 70 trash bins would be distributed in the scenic area.
Others		1. Training of 29 person/times for administrative staff; 2. Training of 150 person/times for employees in the scenic area; 3. Training of 1,289 person/times for residents; 4. Building 20 scenic spot introduction boards, 50 scenic spot guide boards, 200 scenic area road signs, 500 plant introduction boards and 124 safety warning signs.

2.2.6 Hezheng County Subproject

Table 2.2-6 Summary of Hezheng County Subproject

Category	Name of Works		Components
Main Works	Transport works	Community road hardening	Hardening 20.5km roads in such 6 administrative villages as Bianpo Village, Cheba Village, Dashanzhuang Village, Diaotan Village, Ketuo Village and Zhongxin Village; unpaved pavement to cement-concrete pavement, 4-4.5m wide.
		Improvement of existing scenic area main road	Repair and improvement are planned for the existing main road amounting to 3.792km; paving 5cm thick asphalt with width remaining to be 6m.
		Construction of scenic area trail in the improvement period	Improvement and repair are planned for the 11.28km-long trail and another 7.62km-long trail would be built in Songmingyan Scenic Area. For the improvement and repair section, existing concrete pavement would be improved to dressed stone or anti-corrosion wood pavement; for the new section, width would 1.8m and would be increased to 3.2m at some parts.
	Hua'er (a style of folk song) Training Center	Building of community Hua'er Training Centers	Building 450m^2 community Hua'er Training Centers in 5 administrative villages: Bianpo Village, Cheba Village, Dashanzhuang Village, Diaotan Village and Ketuo Village.
	Storehouse improvement	Comprehensive upgrading of storehouse.	Comprehensively upgrade the existing 1,900 m^2 storehouse of the Fossil Museum into a standard cultural relics storehouse of constant temperature and

Category	Name of Works		Components
			humidity.
Public and auxiliary works	Power supply works	Change overhead power cables in the scenic area into buried-type.	Lay 5km-long 10KV cable and 4km-long low voltage cable from scenic area gate- Xinsi Gully and from 317 provincial highway-scenic area gate (overhead line) and change the box-type transformers along scenic area gate-Xinsi Gully into 2 100KVA box-type transformers.
	Garden lamp works	Install solar garden lamps in communities	Install 240 LED solar garden lamps in 6 administrative villages: Bianpo Village, Cheba Village, Dashanzhuang Village, Diaotan Village, Ketuo Village and Zhongxin Village.
	Signs and markings	Songmingyan Scenic Area	Add 20 panoramic indicating signs, 50 explanation signs, 50 guide signs and 120 advisory signs.
Environmental protection works	Sewage treatment	Town Sewage Treatment Plant	Rainwater and sewage pipelines would be laid along street of the town, with the length of sewage pipeline being 25.076km. Sewage is discharged into the Sewage Treatment Plant in the north of the town and rainwater into near water bodies. A sewage treatment plant covering an area of 0.76ha is to be built outside the planning zone in the north of the town. Designed sewage treatment capacity is 500m^3/d for the near term, 1,000 m^3/d for the long term with the A/A/O treatment technique to be used. Mechanical thickening and dehydration technique would be used for sludge treatment.Sludge would be transported to domestic waste landfill.

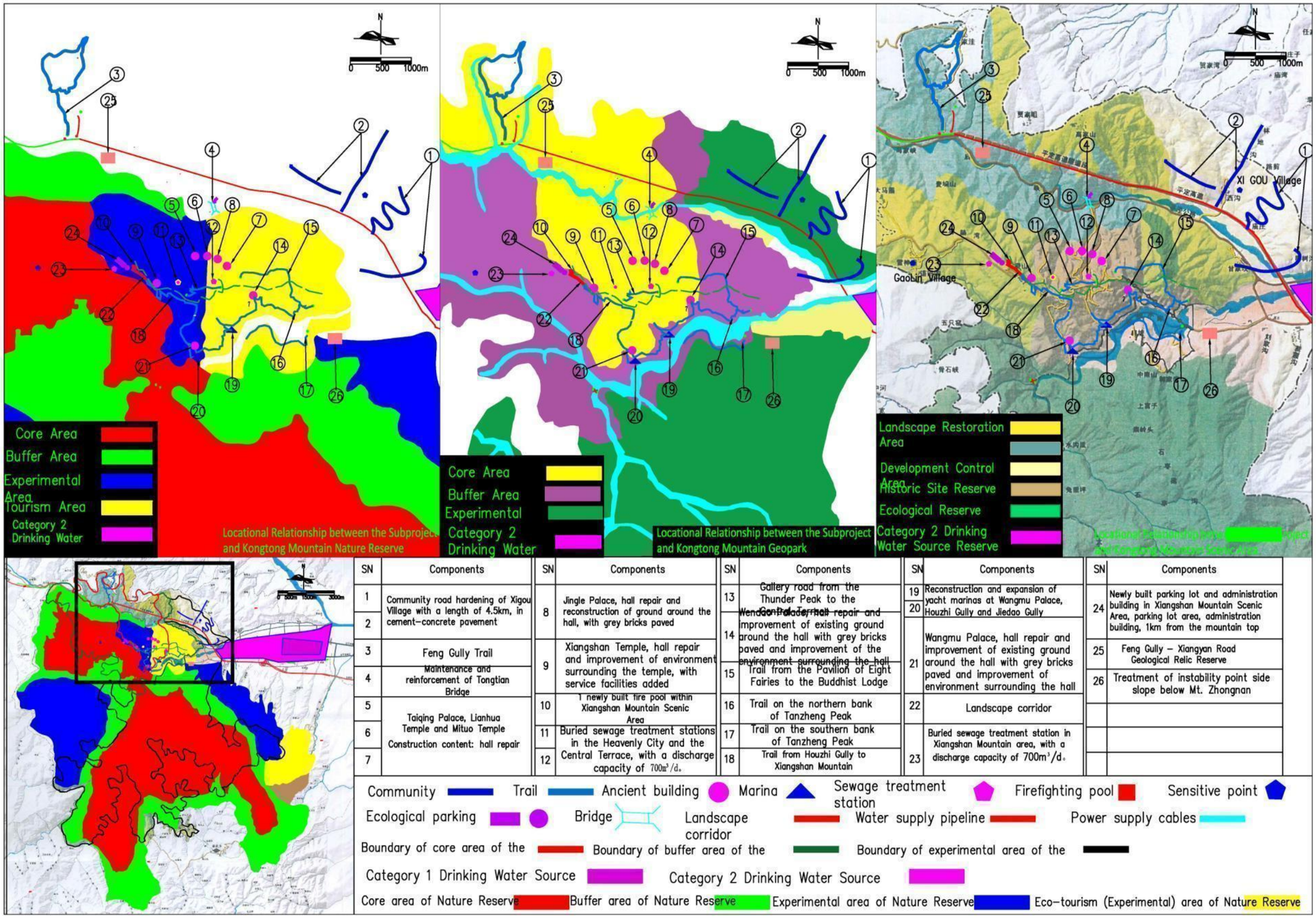

Figure 2.2-1 Kongtong Mountain Subproject

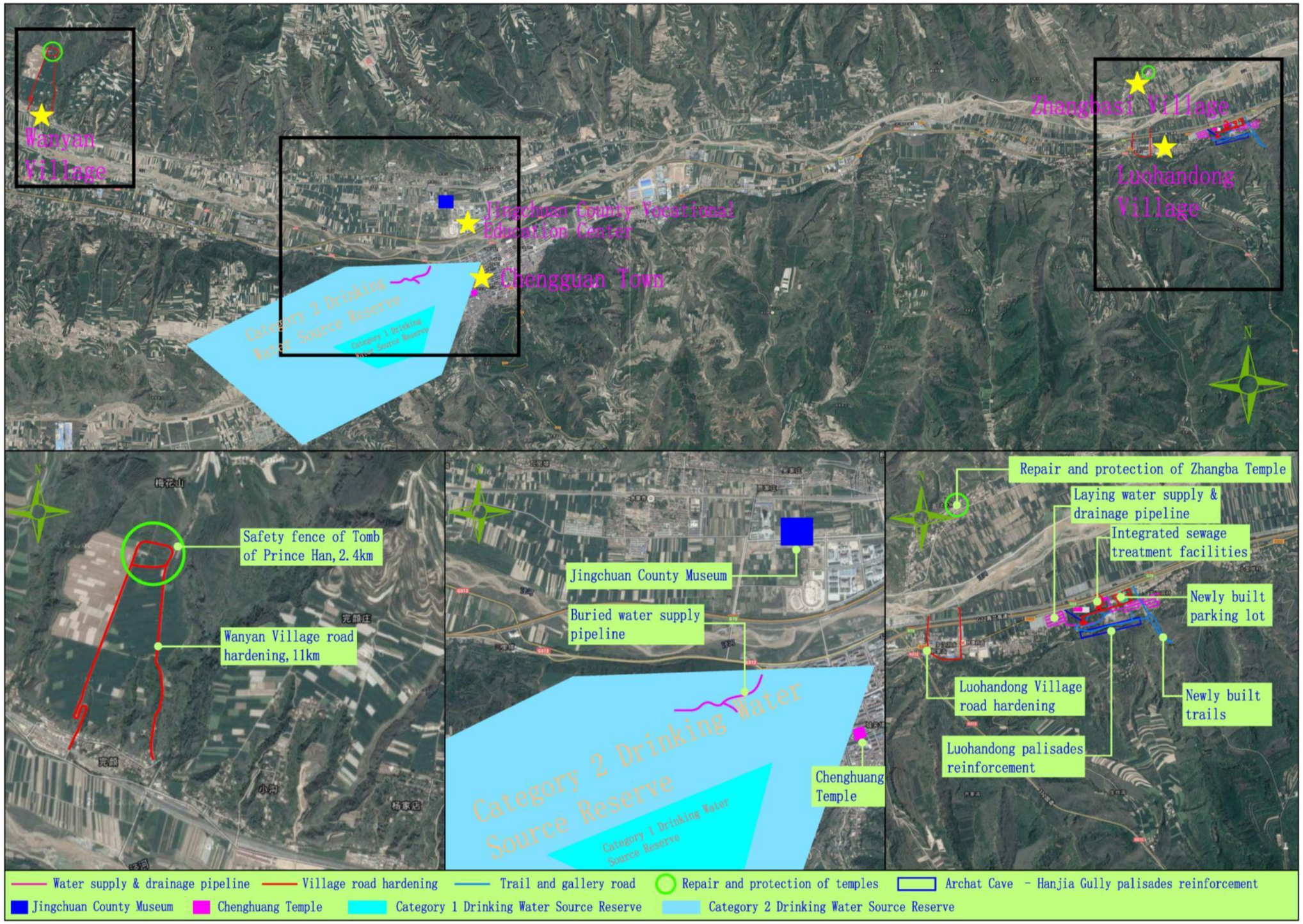

Figure 2.2-2 Jingchuan County Subproject

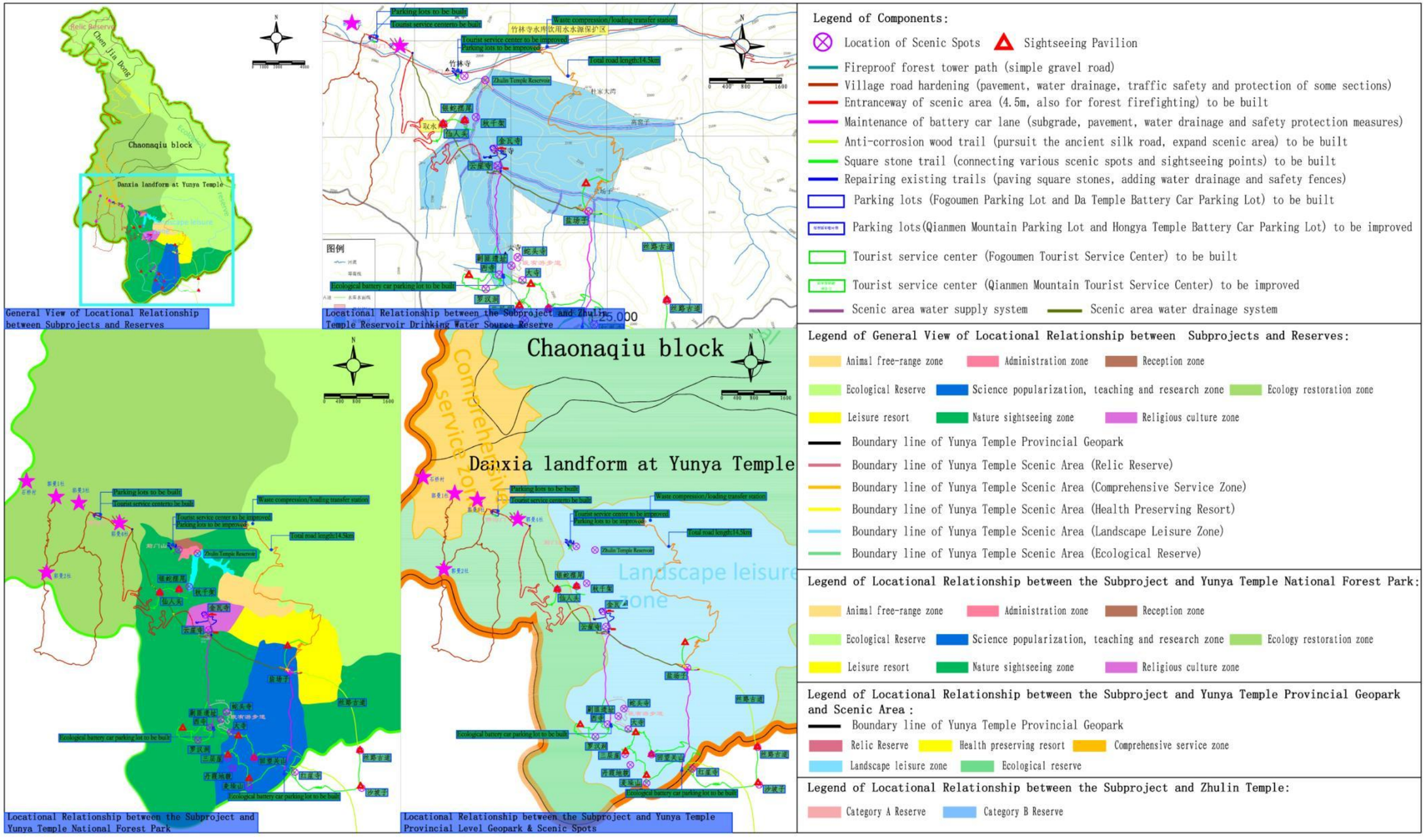

Figure 2.2-3 Zhuanglang County Subproject

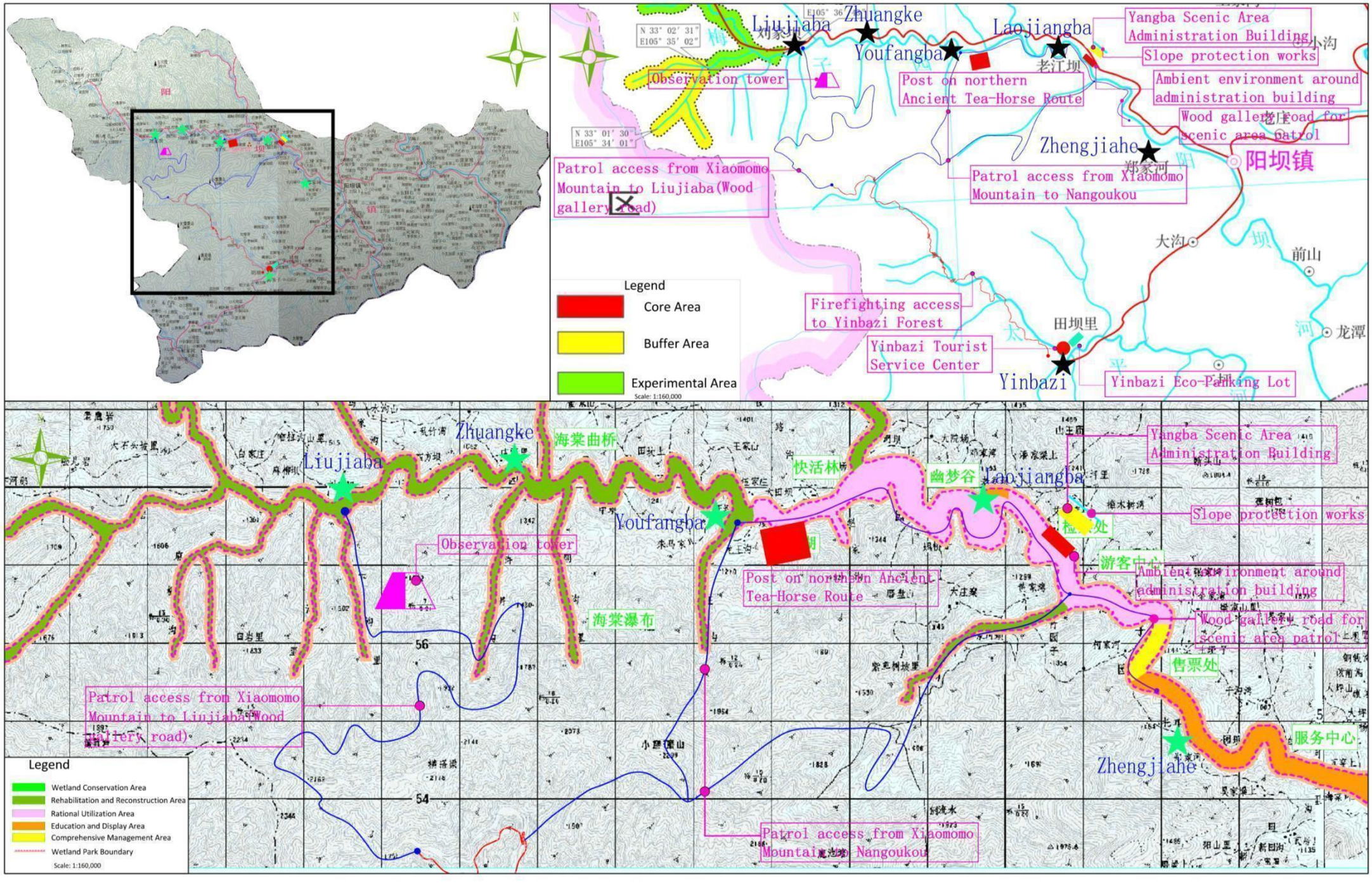

Figure 2.2-4 Kang County Subproject

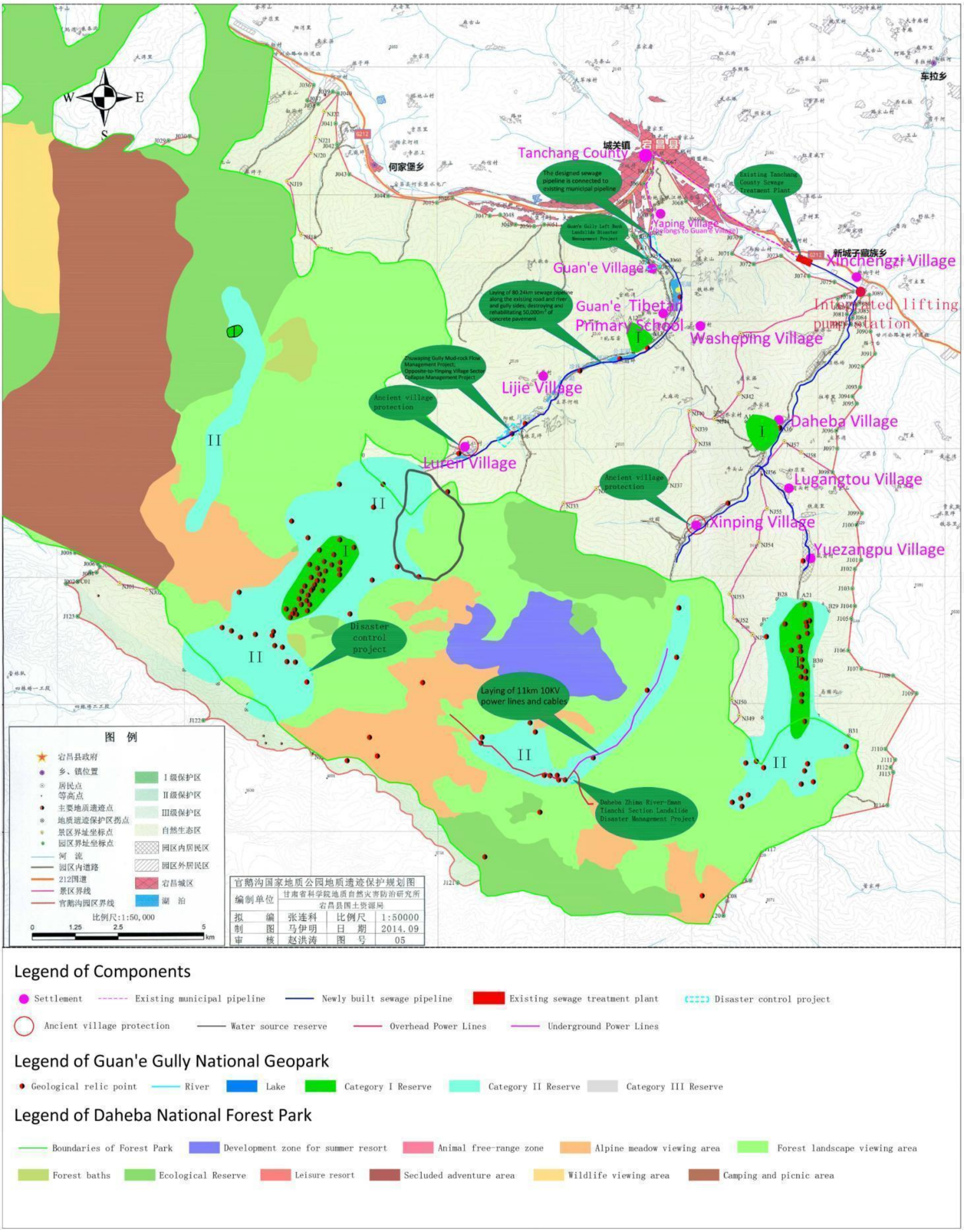

Figure 2.2-5 Dangchang County Subproject

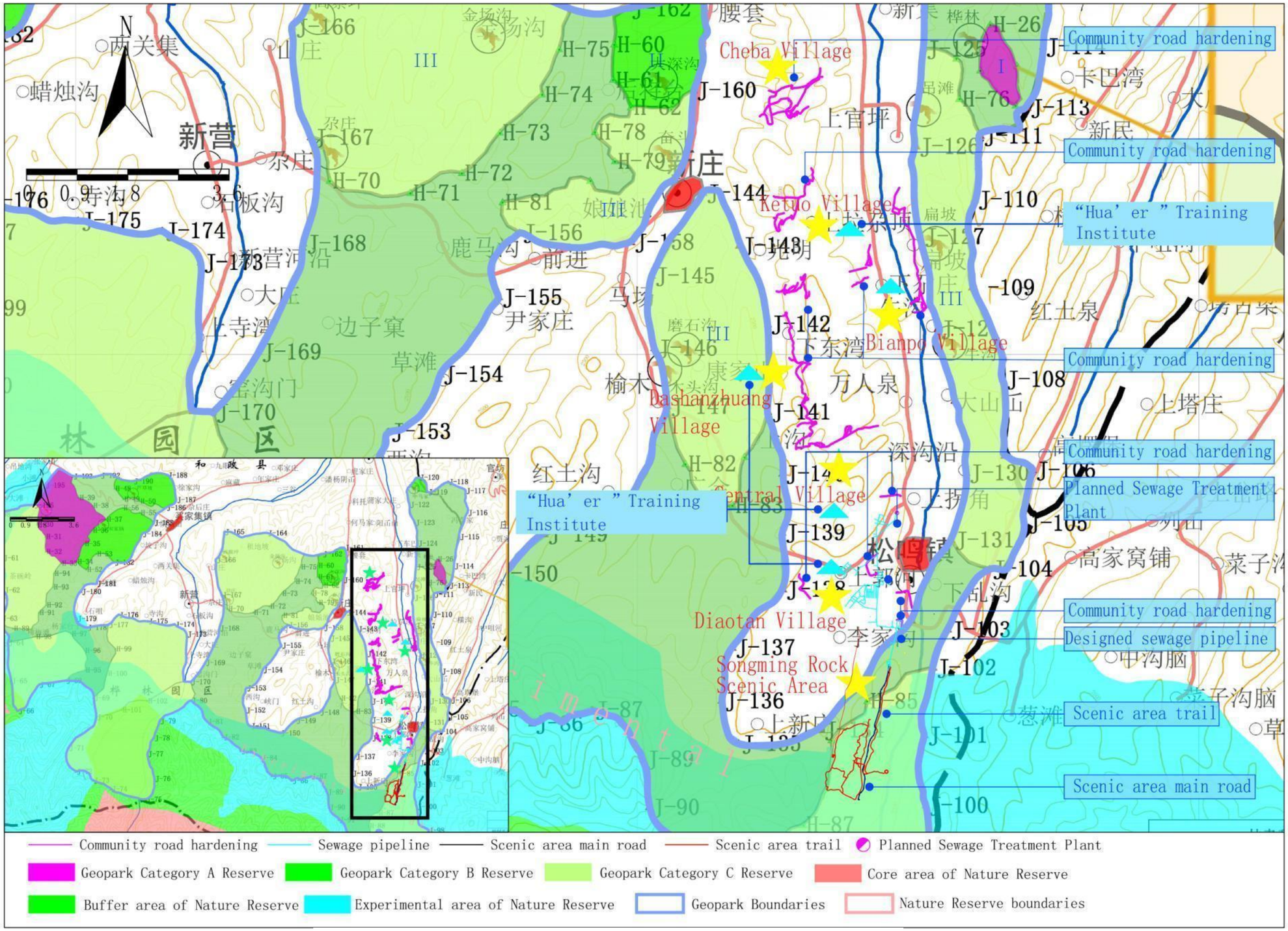

Figure 2.2-6 Hezheng County Heritage Protection Subproject

2.3 Environmental Protection Targets

2.3.1 Acoustic and Atmospheric Environment Protection Targets

On the basis of site survey by the project team, acoustic and atmospheric environment protection targets are shown in Table 2.3-1.

Table 2.3-1 Summary of Acoustic and Atmospheric Environment Protection Targets

Item Name	Components	Name	Location	Number of households/ people	Distance from construction site (m)
Kongtong Mountain Subproject	Road hardening	Xigou Village	Both sides	235/1024	In the village
	Xiangshan Parking Lot	Gaoling Village	Both sides	111/461	1,300
Jingchuan County Subproject	Repair of Jingchuan County Museum and Chenghuang Temple	Chengguan Town	West side	6032/25216	In the town
	Jingchuan County Museum	Jingchuan County Occupational Education Center	Southeast side	5,514 people	450
	Wanyan Folk Culture Exhibition Room	Wanyan Village	Northwest side	476/2124	In the village
	Zhangba Temple safety	Zhangbasi Village	South side	361/1765	20
	Shuiquan Temple safety	Shuiquansi Village	Northwest side	370/1851	10
	Emergency reinforcement of the Arhat Stone Cave cliff	Luohandong Village	North side	398/1537	20
Zhuanglang County Subproject	Road hardening	Shiqiao Village of Handian Town	West side of scenic area	211/1022	In the village
	Building and reconstruction of ecological parking lot/tourist service center	Guoman Village of Handian Town	Scenic area entrance	197/857	In the village

Item Name	Components	Name	Location	Number of households/ people	Distance from construction site (m)
Tanchang County Subproject	Landslide disaster control of left bank of Guan'e Gully entrance	Guan'e Village of Chengguan Town (including Yaping Village)	North side of Guanzhu Gully Ticket Center	216/1,046	In the village
	Sewage pipeline to be built	Guan'e Tibetan Primary School	West side	About 180 people	260
		Washeping Village of Chengguan Town	East side	168/712	290
		Lijie Village of Chengguan Town	West side	114/487	395
		Xinchengzi Village of Xinchengzi Tibetan Township	North side of Ticketing Center of E'man Gully Scenic Area	204/962	70
		Lugangtou Village of Xinchengzi Tibetan Township	Southeast side of Liulinwogui	111/484	Through
		Xinping Village of Xinchengzi Tibetan Township	North side of Eman Gully Tourist Service Center	207/830	Through
		Yuezangpu Village of Xinchengzi Tibetan Township	Southeast side of Eman Gully Scenic Area	123/626	Through
	Ancient village protection of Luren Village and Xinping Village	Luren Village of Chengguan Town	South side of TCM Herb Museum	180/830	In the village
		Xinping Village of Xinchengzi Tibetan Township	North side of Eman Gully Tourist Service Center	207/830	In the village

Item Name	Components	Name	Location	Number of households/ people	Distance from construction site (m)
Kang County Subproject	Wood patrol access in Meiyuan River Scenic Area	Youfangba Village	South side	80/281	10
		Laojiangba Village	North side	58/214	150
	Patrol access from Xiaomomo Mountain to Liujiaba	Liujiaba	North side	30/126	100
	Courier hostel on Northern Ancient Tea-Horse Route	Youfangba Village	North side	80/281	10
	New Tourist Service Center	Yinbazi	Northwest side	83/280	200
	New ecological parking lot	Yinbazi	Northeastern side	83/280	500
Hezheng County Subproject	Hezheng Ancient Animal Fossil Museum	Hongrui Jiayuan Residential Compound	Southeast side	1000/4000	150
	Songmingyan Hua'er Cultural Heritage Protection Project	Bianpo Village	Adjacent	366/1760	In the village
		Cheba Village	Adjacent	476/2425	In the village
		Dashanzhuang Village	Adjacent	529/2709	In the village
		Diaotan Village	Adjacent	436/2173	In the village
		Ketuo Village	Adjacent	389/1935	In the village
		Zhongxin Village	Adjacent	448/2257	In the village

2.3.2 Water Environment Protection Targets

Water protection targets for all subprojects are shown in Table 2.3-2. For water intakes and for drinking water source reserves, please refer to Table 2.3.-3.

Table 2.3-2 Summary of Water Environment Protection Targets

Subproject	Protection Target	Relationship and distance with Subproject	Width(m)	Water Quality Target	Function of Water Body
Kongtong Mountain Subproject	Kongtong Mountain Reservoir	About 15m from the reservoir	30	III	Agricultural irrigation
	Yanzhi River	About 20m from the riverside	5	III	Landscape water
Jingchuan County Subproject	Jing River	About 390m from the riverside	50	III	Landscape water
	Rui River	About 530m from the riverside	20	III	Landscape water
Zhuanglang County Subproject	Yunya River	About 20m from the riverside	20	II	Drinking water function
	Shuiluonan River	About 20m from the riverside	20	III	Agricultural irrigation
	Zhulin Temple Reservoir	Close to the reservoir dam	Area 0.37km^2	II	Landscape, agricultural irrigation, drinking water source
Tanchang County Subproject	Min River	Crossing of sewage pipeline	2239.3	II	Landscape and agricultural irrigation
	Guan'e Gully	Crossing of sewage pipeline	10	I	Landscape and agricultural irrigation
	Daheba Gully	Crossing of sewage pipeline	8	I	Landscape and agricultural irrigation
	Ming Lake	About 10m to west of sewage pipeline	Area about 2,000m^2	I	Landscape and agricultural irrigation
	Yanzi Lake	Sewage pipeline laid alongside the lake	Area about 100m^2	I	Landscape and agricultural irrigation
	Yinping Lake	Sewage pipeline laid alongside the lake	Area about 240m^2	I	Landscape and agricultural irrigation

Subproject	Protection Target	Relationship and distance with Subproject	Width(m)	Water Quality Target	Function of Water Body
	Pearl Lake	Sewage pipeline laid alongside the lake	Area about 700m^2	I	Landscape and agricultural irrigation
	Guan'e Lake	Sewage pipeline laid alongside the lake	Area about 600m^2	I	Landscape and agricultural irrigation
	Eman Lake	About 80m to east of sewage pipeline	Area about 200m^2	I	Landscape and agricultural irrigation
	Lijie Lake	Sewage pipeline laid alongside the lake	Area about 300m^2	I	Landscape and agricultural irrigation
	Yueya Lake	About 70m to west of sewage pipeline	About 720m^2	I	Landscape and agricultural irrigation
Kang County Subproject	Meiyuan River	8 cable bridges to be built in the project cross the river	5	II	Agricultural water
	Taiping River	Firefighting access is parallel to the river	5	II	Agricultural water
Hezheng County Subproject	Xiaoxia River	Close to river	5	I	Landscape water
	Danancha River	About 20m from the riverside	8	III	Landscape and agricultural irrigation

Table 2.3-3 Water Intakes and Drinking Water Source Reserves

subproject	Name	Water Body	Relationship with Subproject	Scale of water plant	Reserve zoning
Kongtong Mountain Subproject	Drinking Water source reserve of Kongtong District, Pingliang City	Centralized drinking water for Yangzizhai Village	About 250m outside Category II Reserve	6,205,000 m^3/a	Demarcation of Category I Reserve: Range of the Category I Reserve for Yangzizhai Drinking Water Source of Kongtong District is the circumscribed quadrilateral of the circle with

subproject	Name	Water Body	Relationship with Subproject	Scale of water plant	Reserve zoning
					a radius of 200m centered as all water intake wells in the drinking water source, which covers a total area of 1.71km^2. Four boundaries of the Category I Reserve are respectively: west boundary: 200m west of 11# and 12# wells; north boundary: Kongtong Ave.; South boundary: Pingjing Highway; East boundary: Baishi Gully Demarcation of Category II Reserve: Range of the Category II Reserve for Yangzizhai Drinking Water Source is the circumscribed polygon of the circle with a radius of 2,000m centered as all water intake wells in the drinking water source, which covers a total area of 6.15km^2. Four boundaries of the Category II Reserve are respectively: west boundary: East of G22 Expressway; South boundary: South end of Juxian Bridge- Pingliang West Toll Gate of G22 Expressway - South Slope; East boundary: Qingnian Rd.; North boundary: North bank of Jing River.
Zhuanglang County Subproject	Drinking water source place of Zhuanglang County	Zhulin Temple Reservoir	Within range of Category II Reserve	90,000,000 m^3/a	Category I Reserve, with an area of 0.48km^2. Water Area: All reservoirs in the catchment area below normal water level, reaching an area of 0.048km^2; Land Area: All land in the catchment area below the 1,967.30m elevation of dam crest. Land area of Category I Reserve is 0.033km^2. Land area of Category II

subproject	Name	Water Body	Relationship with Subproject	Scale of water plant	Reserve zoning
					Reserve is 8.925km^2. Water Area: Coverage of all water-gathering areas extending 3,000m from the 1,953.30m elevation of the normal water level at the northwest intake towards upstream northeast and southeast (excluding water area in Category I Reserve), amounting to 0.491km^2; Land Area: Coverage of all land within the water-gathering areas extending from the northwest water intake northeast, southeast and southwest towards all ridges below the 2,100m elevation line (excluding land area in Category I Reserve), amounting to 8.434km^2.
Jingchuan County Subproject	Jingchuan Yanliuwan Water Source	Jing River	Within range of Category II Reserve	/	Radius of the Category I Reserve for Yangliuwan Drinking Water Source is 200m, amounting to a control area of 0.919 km^2. The Category II Reserves respectively for Shuiquan Temple and Yangliuwan Drinking Water Sources are integrated into one with a radius of 2,000m and a control area of 90.57 km^2.
Tanchang County Subproject	Guan'e Gully Drinking Water Source	Guan'e Gully	The sewage pipeline is distributed 720m off the downstream Guan'e Gully Drinking Water Source	/	Category I Reserve: Water Area: Its length ranges from 1,000m up the water intake and 100m down and its width is 5m; Land Area: Its length is equal to that of the waters in Category I Reserve and depth of land along the bank has a horizontal distance of 50m from the river bank.

subproject	Name	Water Body	Relationship with Subproject	Scale of water plant	Reserve zoning
					Category II Reserve: Water Area: Extending up by 2,000m from the upstream boundary of the Category I Reserve; Outer boundary at the downstream is 200m from the boundary of the Category I Reserve; Land Area: Range of the entire basin.

2.3.3 Ecological Environment Protection Targets

Ecological environment protection targets for all subprojects are shown in Table 2.3-4.

Table 2.3-4 Summary of Ecological Environment Protection Targets

No.	Subproject	Protection Target		Overview of Protection Target
1	Kongtong Mountain Subproject	Woodland		The subproject occupies a total of 72.17mu woodland
		Terrestrial plant		180.43t/a of plant loss incurred from permanent and temporary land occupation of works
		Aquatic organism		Various fishes in the Kongtong Reservoir occupied
		Wild animal		Wild animals within the impact scope of the subproject
		Key naturalhabitat	Taitong-Kongtong Mountain National Nature Reserve	The subproject is located in the experimental area of the Taitong-Kongtong Mountain National Nature Reserve
			Gansu Pingliang Kongtong Mountain National Geological Park	The subproject is located in the Category I, II and III protected areas of the park.

No.	Subproject	Protection Target		Overview of Protection Target
			Gansu Kongtong Mountain Scenic Area	The subproject is located in Gansu Kongtong Mountain Scenic Area
2	Jingchuan County Subproject	Grassland		The subproject occupies a total of 72.17mu grassland
		Terrestrial plant		35.58t/y biomass loss incurred from permanent temporary land occupation of works
3	Zhuanglang County Subproject	Woodland		The subproject permanently occupies a total of 228.1mu woodland
		Terrestrial plant		forest vegetation loss incurred from permanent land occupation of works
		Aquatic organism		Various fishes in Yunya River, Shuiluonan River and Zhulin Temple Reservoir
		Wild animal		Wild animals within the impact scope of the subproject
		Key naturalhabitat	Yunya Temple Provincial Level Scenic Area	The subproject is located in the landscape leisure zone of the Yunya Temple Provincial Scenic Area
			Yunya Temple National Forest Park	The Yunya Temple Provincial Level Scenic Area has the same area as the Yunya Temple National Forest Park and the subproject is located in the area.
			Yunya Provincial Geological Park	The subproject is located in the Yunya Temple Danxia landform of the Yunya Provincial Geological Park
4	Kang County Subproject	Grassland		The subproject occupies a total of 215.33mu grassland
		Terrestrial plant		323t/a of plant loss incurred from permanent and temporary land occupation of works
		Wild animal		Wild animal to be affected is giant Salamander
		Key naturalhabitat	Gansu Giant Salamander Nature Reserve	Meiyuan River Scenic Area wood pratrol plank road and firefighting access from Yinbazi to Xiaomomo Mountain are located in the buffer area of the Reserve, involving Meiyuan River and Taiping River. All adjusted components of the subproject are outside the reserve.
			Meiyuan River Wetland Park	Meiyuan River Scenic Area wood pratrol plank road is in the buffer area of the park.

No.	Subproject	Protection Target		Overview of Protection Target
5	Tanchang County Subproject	Terrestrial plant		vegetation losses due to permanent and temporary land occupation for works
		Aquatic organism		Various fishes in surface water bodies of Min River, Guan'e Gully, Daheba Gully, Ming Lake, Yanzi Lake, Yinping Lake, Pearl Lake, Guan'e Lake, Lijie Lake, Yueya Lake and Eman Lake
		Wild animal		Wild animals within the impact scope of the subproject
		Key naturalhabitat	Tanchang Guan'e Gully National Geological Park, Gansu	New 11km-long 10KV power cables,Leigu Mountain Trail collapse disaster control area and Daheba Zhima River-Eman Tianchi Section landslide disaster control are are located in Category I Reserve and others are located in Category III Reserve.
			Gansu Guan'e Gully National Forest Park	New 11km-long 10KV power cables,Leigu Mountain Trail collapse disaster control area and Daheba Zhima River-Eman Tianchi Section landslide disaster control are are located in Category I Reserve.
6	Hezheng County Subproject	Grassland		The subproject occupies a total of 29.94mu grassland
		Terrestrial plant		27.86t/y biomass loss incurred from permanent land occupation of works
		Wild animal		Wild animals within the impact scope of the subproject
		Key naturalhabitat	Gansu Taizi Mountain National Nature Reserve	Main roads and tourist trails to be built are located in the experimental area of the Reserve
			Hezheng County Ancient Animal Fossil National Geological Park	Main roads and tourist trails to be built are located in the Cateogry III Reserve of the park

2.3.4 Social Environment Protection Targets

Social environment protection targets are shown in Table 2.3-5.

Table 2.3-5 Summary of Social Environment Protection Targets

SN	Protection Target	Overview of Protection Target
S1	Infrastructure	Farmland water irrigation facilities along the project; existing roads and housing buildings
S2	Traffic Obstruction	Impacts of construction on existing road traffic and access of surrounding nearby residents
Applicable subproject		All subprojects

For location map of subprojects and sensitive targets, refer to Figures 2.2-1 to 2.2-6.

2.4 Review of Auxiliary Environmental Facilities

Given that auxiliary environmental facilities of all subprojects would have a direct bearing on the impacts of the Project after its implementation and operation, such facilities are reviewed below.

2.4.1 Kongtong Mountain Subproject

1. Sewage treatment method

Septic tanks would be used for domestic sewage and fecal treatment within the scenic areas. Capacity of the septic tanks of the Huangcheng Scenic Area, the Zixiao Palace Scenic Area, the East Terrace and the Central Terrace reaches respectively 216m^3, 30m^3 and 216m^3 and 100m^3. Sewage treatment system of the scenic area, which is not yet connected to the municipal pipeline, has a capacity of 487m^3/d. Part of the sewage is collected by fecal suction trucks on a regular basis and delivered to Pingliang Tianyu Sewage Treatment Plant 15km away from the scenic area, which has a design capacity of 50000m^3/d.

2.Garbage treatment method

Domestic waste of the Kongtong Mountain Scenic Area is mainly transferred by garbage transfer trucks to Pingliang city waste disposal site for uniform disposal. 15km away from the scenic area, the disposal site that is located in Yangqu Gully southeast of Baofeng Village, Liuhu Township, Kongtong District, Pingliang City has a urban garbage disposal capacity of 375t/d. Total storage capacity of the garbage landfill is 2,130,000m^3. As a standard sanitary landfill, it adopts double HDPE impermeable membrane. Garbage leachate is dealt with in biochemical + anti-osmosis process. Domestic waste from the project is about 11t/d, only accounting for 3% of the daily capacity of the landfill, so no major impactswould be produced.

2.4.2 Jingchuan County Subproject

Sewage pipeline of the newly built Jingchuang County Stone Cave Art Museum and ArhatStone Cave Relics Protection Program would be connected to the network of the Urban Sewage Treatment Plant on northeast corner of Jiangjia Village, Wenquan Development Zone located on the south bank downstream of the Jing River. The plant that covers an area of 31.78mu consists of such 4 parts as sewage treatment, sludge treatment, auxiliary buildings for production and life and supporting pipeline. Sewage is disposed of in CASS process and Chlorine dioxide disinfection, thus meetingCategory IB standard set forth in the Standards for Emission of Pullutants at Urban Wastewater Treatment Plants (GB18918-2002) and is directly discharged into the Jing River after biological treatment and disinfection.

Major setups of the plant include feed water control well, coarse screen room and sewage pumping station, fine screen and vortex-type grit chamber, CASS biological reaction tank, disinfecting tank, chlorine dosing room and blower room; Sludge is disposed through mechanical thickening and dehydration process and mud cake is transported away for landfill. Its major setups include aeration storage pool and sludge thickening and dehydrating station; Supporting works for the pipeline mainly include completion of main sewage pipeline in the Chengbei New District, reconstruction of the main sewage pipeline in the old urban area, building of the main sewage pipeline in the Industrial Park and completion of the main pipeline from the Industrial Park to the Sewage Treatment Plant, with the total length of pipelines amounting to 25.4km; Sewage treatment capacity would top 10,000m^3/d, 25.4km sewage pipelines would be newly added, density of sewage network would reach 9.43km/km^3 and its coverage would amount to 70%, capable of effectively bearing production and domestic sewage discharge.

Garbage produced after implementation and completion of Jingchuan County Stone Cave Art Museum and Arhat Stone Cave Relics Protection Programs would be delivered to the domestic waste landfill site by special garbage truck. The landfill site, completed and put into use in 2010, is located near the Gaofeng Temple and is about 2km away from the nearest point of the project. 15,200m^2 impermeable membrane has been laid in this standard sanitary landfill site, in which the garbage leachate is dealt with in biochemical + anti-osmosis process. The site has a design volume of 240,000m^3, an effective volume of 210,000m^3, a daily disposing capacity of 49t and a design service life of 10 years, fully meeting production and living needs.

2.4.3 Zhuanglang County Subproject

1. Sewage treatment method

Septic tanks would be used for domestic sewage and fecal treatment within the scenic areas. After treatment, they would be cleaned and transported by villagers from Shiqiao Village and Guoman Village for farmland irrigation as farm manure.

2. Domestic waste treatment

Domestic waste in the scenic area would be delivered to Zhuanglang County Waste Landfill Site for sanitary landfill. About 18.4km away from the scenic area, Zhuanglang County Waste Landfill Site, which is located in Lizhuang Village, Shuiluo Town of Zhuanglang County, has a design waste landfill capacity of 720,000m^3 and can dispose 135t domestic waste each day. The site was completed and put into use in July 2010. As a standard sanitary landfill, it adopts double HDPE impermeable film. Garbage leachate is dealt with in biochemical + anti-osmosis process.

2.4.4 Tanchang County Subproject

After completion of the subpproject, drainage of Guan'e Gully Scenic Area would apply to rainwater and sewage separation system. Rainwater runs into nearby surface water bodies through ditches while domestic sewage in the tourism area, Luren Village, Lijie Village, Washeping Village, Guan'e Gully, Xinping Village, Daheba Village, Lugangtou Village and Yuezangpu Village is connected to septic tanks, collected by sewage pipeline after treatment in septic tanks and conveyed to Tanchang County Sewage Treatment Plant for centralized treatment. It is prohibited to discharge any untreated sewage into natural water bodies or the scenic area ecosystem.

The sewage pipeline adopts gravity flow. All main DN300 pipelines are laid along roads in the villages. Tanchang County Sewage Treatment Plant, located at First Terrace of north bank of the Min River south of urban Tanchang County, takes up an area of 1.32hm^2 and adopts CASS process. Effluent after Chlorine dioxide disinfection meets Grade 1B set forth in the Discharge Standard of Pollutants for Municipal Wastewater and is reused as greening water or urban miscellaneous water. Put into operation in October 2015, Tanchang County Sewage Treatment Plant with a near (2015) and future (2020) sewage treatment capacity of 4,000m^3/d and 6,000m^3/d respectively is now in sound operation (actual treatment is 1,200m^3/d), whose tail water meets the requirements specified in the Discharge Standard of Pollutants for Municipal Wastewater .

Waste generated after completion of the subproject would be conveyed to Tanchang County domestic waste landfill site by trucks. Occupying an area of 4.8mu, Tanchang County domestic waste landfill site, located in Hongshi Gully about 2.5km northwest of urban Tanchang County and about 6km north of the Guan'e Gully Scenic Area, is a standard sanitary landfill site with lining, of which the garbage leachate is collected through pipelines and sprayed on the surface layer of the landfill site. The site has a total volume of 340,000m^3, an effective volume of 300,000m^3, a daily domestic waste disposal capacity of 44t and a design service life of 15 years. Tanchang County domestic waste landfill would meet the needs of the subproject.

2.4.5 Kang County Subproject

Field survey on communities participating in Kang County Yangba Scenic Area shows all farmer households in the communities have built their own septic tanks for sewage treatment, after which the sewage is used for irrigation of their own farmland. Flush toilets are built in the scenic area and sewage is directly discharged after treatment in septic tanks.

At present, domestic waste is collected together and conveyed to Yangba Town waste landfill site for centralized treatment. Yangba Town waste landfill site that covers an area of about 49.5mu applies sanitary landfill. The site is located northeast to the scenic area about 4.0km away. As a standard sanitary landfill, it adopts double HDPE impermeable membrane. Garbage leachate is dealt with in biochemical + anti-osmosis process. Meanwhile, auxiliary living management zone, access road and garbage collection and transportation system are also built. The site has a daily domestic waste disposal capacity of 18t/d, a total volume of 150,000m^3, an effective volume 130,000m^3 and a design service life of 15 years. Daily disposal capacity of the site is Category II. The site is also equipped with facilities including auxiliary living management zone, access road and garbage collection and transportation system are also built.

Solid waste produced in the scenic area takes up 1.33% of the daily disposal capacity of Yangba Town waste landfill site, indicating the site is capable of meeting the need of the project.

2.4.6 Hezheng County Subproject

1.Wastewater treatment

Currently, Songmingyan Town does not have a wastewater treatment plant. The proposed subproject would build one wastewater treatment plant with the near-term designed treatment capacity of 500 m^3/d and the long-term capacity of 1,000 m^3/d. Wastewater would be treated using the A/A/O technique. Treated wastewater would meet Category A standard, some of which would be reused for greening and the remaining would be discharged.

2. Domestic waste treatment

Domestic waste in the scenic area would be transported to Hezheng County Landfill for sanitary disposal. Located in the county, the landfill is 14km from the county town and 20.4km from the scenic area. Completed in 2007 and operated since then, the landfill has a total designed volume of 340,000 m^3 and daily treatment capacity of 32 tons. As a standard sanitary landfill, the landfill uses double-layer HDPE membrane for seepage control and the method combining bio-chemical treatment + reverse osmosis (RO) for leachate treatment.

Chapter 3 Environmental and Social Baseline

3.1 Topography and Landforms

3.1.1 Gansu Province

Gansu has complex landforms, where the mountainous regions, plateaus, plains, river valleys, deserts and Gobi are in staggered distribution. The terrain inclines from the southwest to northeast. The topography of Gansu shapes 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 landform could be divided into six regions with different features:

—Longnan mountainous region: This mountainous region is located in the south of the Wei watershed, east of Lintan and Têwo County and west of Qinling. The mountains and hills are higher in the west and lower in the east, with the landscape of both Jiangnan and "Five Ranges".

—Longzhong and Longdong Loess Plateau: Located in the middle and east of Gansu Province, this region extends from the east to the border of Shaanxi and Gansu Province, and Wushaoling to the west. This area has innumerable treasure, with abundant oil reserve and water energy resources in Liujiaxia, Yanguoxia and Bapanxia.

—Gannan plateau: It's located on the north edge of the Qinghai-Tibet Plateau—known as the "Roof of the World", with average altitude over 3,000 meters. As a typical plateau, it is a key base for developing animal husbandry industry in Gansu province and an important water conservation area for the Yellow River.

—Hexi corridor: Running across Qilian Mountain to the north, North Mountain to the south, Wushaoling to the east, and the border of Gansu and Xinjiang to the west, Hexi corridor is a narrow strip stretching from the east to west, inclined from the south to north. It is known as an oasis in desert, with flat land, good farming conditions and plentiful sunshine.

—Qilian mountain area: Located in the south of Hexi corridor, this area is covered with snow all year round. Covering twisted glaciers, it functions as a natural solid water reservoir for Hexi corridor, with vegetation cover vertically distributed.

—North area of Hexi corridor: This area, called North Mountain Land, is a strip running over 1,000 km from the east to west, with elevations ranging from 1,000 to 3,600 m. This vast area of featureless mountain and desert is hard for crop farming.

Gansu is a mountainous province, whose land forms mainly consist of mountains and plateaus. The major mountains include Qilian Mountain, Wushaoling, Liupanshan Mountain, Aerjinshan Mountain, and Mazongshan Mountain. Most of them orientate from the northwest to southeast. The forest resources are centralized in these mountainous areas, from which most rivers form their headstreams.

3.1.2 Pingliang City

Situated in the west of the Loess Plateau, Pingliang city is located in the uplift part in the middle of Longshan and Liupanshan Mountain. Mixed with valleys, gullies, and hills, the terrain is higher in the west, lower in the east, uplifted in the middle and inclined from the south to north. The altitudes range from 890 to 2,857.5 m. The city consists of three landforms: tablelands and gullies in the east of the Loess Plateau, mountains in the middle and south and hills in the west.

3.1.2.1 Kongtong District

Kongtong Mountain Subproject is located in the areas between Liupanshan Mountain and hilly areas in the eastern Loess Plateau. Liupanshan Mountain is a Mid-Ridge with the elevations ranging from 2,000 to 2,500 m. It consists of two parallel mountains running from the south to north: The west mountain is the main peak of Liupanshan Mountain (i.e. narrowly defined Liupanshan Mountain) and also known as Large Guanshan Mountain, with the elevation over 2,500m and the main peak reaching a height of 2,942 m. The eastern mountain is called Small Guanshan Mountain, with the length of 70 km, the width of 10 km and elevation ranging from 2,000~2,400m. A basin, filled with loess evolved from the Tertiary Period of the Ecocene Epoch, Oligocene and Quaternary Period, is situated between the Large and Small Guanshan Mountains, with a width of 5 km. The mountainous areas are separated by south-to-north and north-north-to-west rifts, forming typical stair-step mountainous lands. Three rising steps are shaped from eastern hills to the summit of Large Guanshan Mountain in the west. Classified by landform genesis, this area consists of etching structured Mid-Ridge, etching structured Lower-Ridge, etching loess hills and etching structured valley terrace. Please refer to Figure 3.1-1 for its geographical location.

3.1.2.2 Jingchuan County

The landform of the project areas is typical loess hills, inclined from the northwest to southeast, where Hanjia Gully and Luohandong are located. The landform of the Wangmu Palace and Wanyan Tribe are loess terrain, with uneven edge and exposed bedrock in the gully. The land surface is flat and spacious. Dayun Temple area is Category I terrace, with flat and spacious land. Please refer to Figure 3.1-2 for its geographical location.

3.1.2.3 Zhuanglang County

The terrain of Zhuanglang County is higher in the northeast and lower in the southwest, with elevations ranging from 1,405 to 2,587 m and average elevation of 1,700 m. The northeast part is bedrock mountainous areas, as a part of Liupanshan Mountain, which was formed in the new structure movement of Himalayas. Zhuanglang County is located at the hilly areas on the Loess Plateau. The landforms include bedrock mountainous area, loess hill and valley. The bedrock mountainous areas account for 32% of total areas, including middle-and-high mountainous areas and low hilly area. The middle-and-high mountainous area is located in the ridge of Liupanshan Mountain. Due to folded structure and cut by flowing water, this area is full of twisted ridges and valleys, with high coverage of forest and grassland. The low hilly area forms a V-shape, and the land is eroded seriously. The loess hilly area accounts for 63.3% of total areas, while valley area only accounts for 4.7%, which mainly refers to Zhuanglang River valley, Shuiluo River valley terrace and Hulu River basin, including river bed, flood plain and 1st, 2nd and 3rd category terraces. Please refer to Figure 3.1-3 for its geographical location.

3.1.3 Longnan City

Situated in a fold and thrust belt running from the east to west in Qinling Mountain, Longnan is located in a junction of Qinba Mountain, Tibetan Plateau and Losses Plateau, lying in a transition area from China's second terraces to the third terraces. Longnan City lies in the transition area of the Southern Gansu Plateau-the edge of Tibetan Plateau-in the west, the Loess Plateau in the north, Sichuan Basin in the south, Qinling Mountains and Hanzhong Basinin the east. The terrain of the city is featured higher in the northwest and lower in the southeast, with an average altitude of 1,000m. The West Qinling Mountains and Minshan Mountain stretch into Longnan from the east and the west, respectively. High mountains and deep valleys interweave with hills and basins, forming the unique and complex landform in this region.

Xili Mountain in the north of Longnan City is a low mountain valley featuring loess terrain, with the altitude around 1,800 m. In the east, Huicheng basin is situated between the north and south of Qinling, with a length of over 100 km and a width of 10 kilometers, presenting a hilly valley terrace, at the altitude around 1,000 m.

Mountain peaks around Longnan: In the north, there are Dalaliang Ridge and Min'e Mountain, while Toumaju Mountain on the border of Gansu and Shaanxi is situated in the east. In the west, Congdi Mountain is situated on the border of Gannan, and Motian Ridge is located on the border of Gansu and Sichuang in the south. With an altitude of 4,187m, the highest peak Xionghuang is situated at Tunzhai Township in the northwest of Wen County. At the altitude of 550 m, Guanzi Gully is the lowest point in Zhongmiao Township in the southeast of Wen County. It is also the lowest point in Gansu Province.

3.1.3.1 Kang County

Kang County is located in Longnan Mountain in the south of Western Qinling. In terms of geological structure, the County consists of folded belts of Kunlun Qinling Mountain. The terrain is featured higher in the west and middle, while lower in the east, south and north. The Dalongwang Mountain is the highest peak in the county at the altitude of 2,483m, while the lowest altitude is 560 m in the county.

The project areas is located at Meiyuanhe Valley, surrounded by steep mountains on the two sides with luxuriant vegetation. There is a small and flat terrace in the foothills. Washed by twisted river, the steep and vertical cliffs are formed on the concave bank, with exposed rock strata. Some parts of concave bank form a small terrace due to sedimentation. Please refer to Figure 3.1-4 for its geographical location.

3.1.3.2 Tanchang County

On the edge of Tibetan Plateau, Tanchang County is located at the junction of Western Qinling and Min Mountain. Washed by Min River and Bailong River, Tanchang County has a complex landform, mixed with ravines and gullies and presenting distinctive mountain features. The terrain inclines from the northwest to southeast, and consists of mountains, hills and valleys. Deep mountains and valleys are commonly seen in the south, while most loess hills are located in the north. The elevations range from 1,138 to 4,154 m in the county, with average altitude of 2,300m. The highest point is Leigu Mountain at the altitude of 4,154m, while the lowest point is the gully in Shawan Town at the altitude of 1,138m. The average altitude of Tanchang County is 1,748m.

Guan'e Gully scenic area is located in the south of Western Qinling and south bank of Min River. The landforms include high mountains, deep valleys and rolling hills, inclined from the

southwest to northeast. Terraces are well formed on the two sides of Guanzhu Gully and Eman Gully, while these terraces are not wide. Please refer to Figure 3.1-5 for its geographical location.

3.1.4 Hezheng County

The terrain of Hezheng County is higher in the south and lower in the north. The south part is rocky mountainous area, as an extension of Qinling Mountain in the west. The north part is losses hilly area with the features of Losses Plateau. Based on Taizi Mountain, the County is divided into four valleys and two gullies by four mountains extending towards the north-south and two mountains extending towards the east-west.

There is a flat land in the northeast of the ticket office in scenic area, offering a flat and spacious terrace meeting Category I land standard for Xiaoxia River. Entering the scenic area, there are valley roads with steep mountains standing on the two sides, with a small and flat terrace lying in the foothills. Please refer to Figure 3.1-6 for its geographical location.

Figure 3.1-1 Geographical Location of Kongtong Mountain Subproject

Figure 3.1-2 Geographical Location of Jingchuan County Subproject

Figure 3.1-3 Geographical Location of Zhuanglang CountySubproject

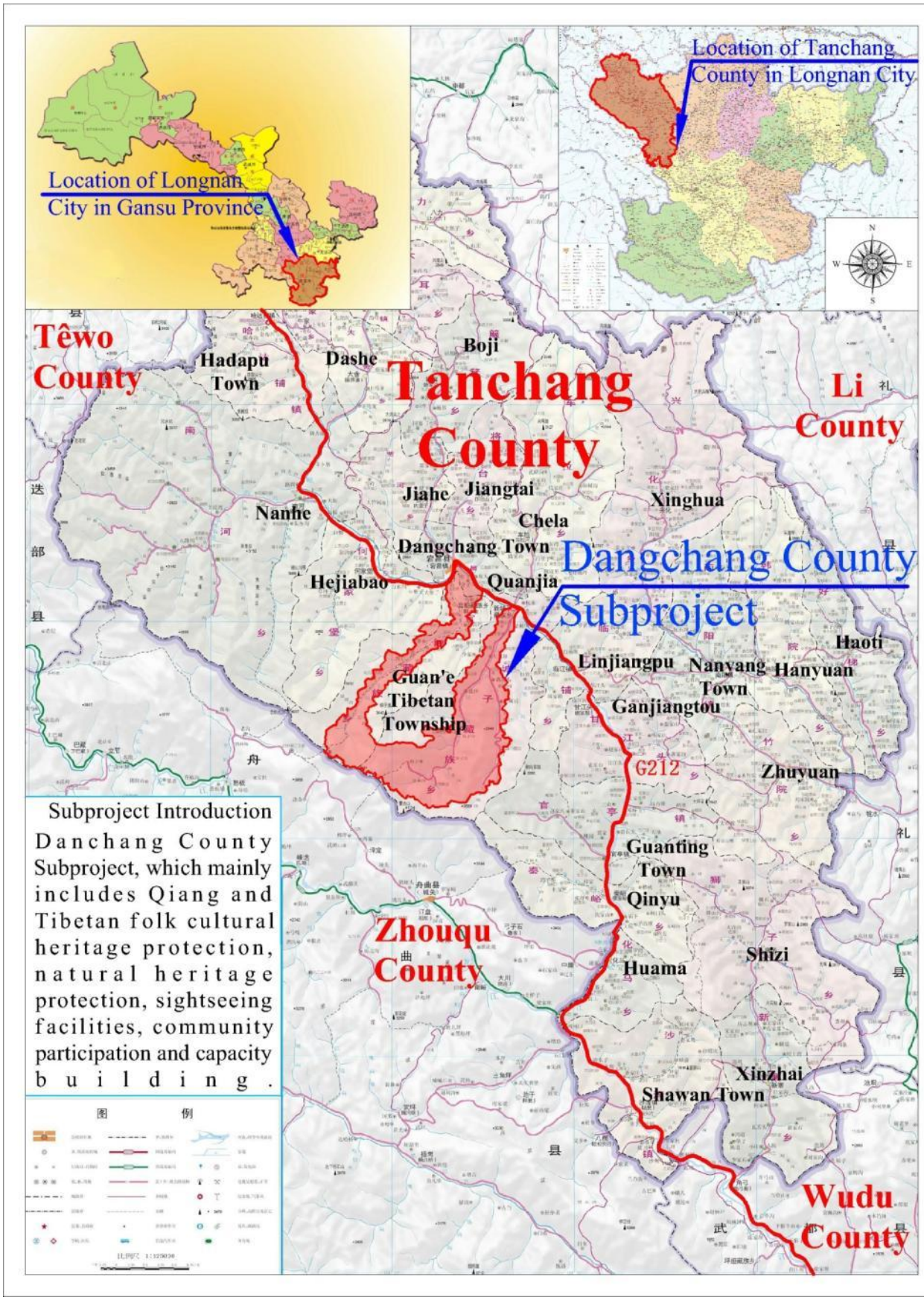

Figure 3.1-4 Dangchang County Subproject

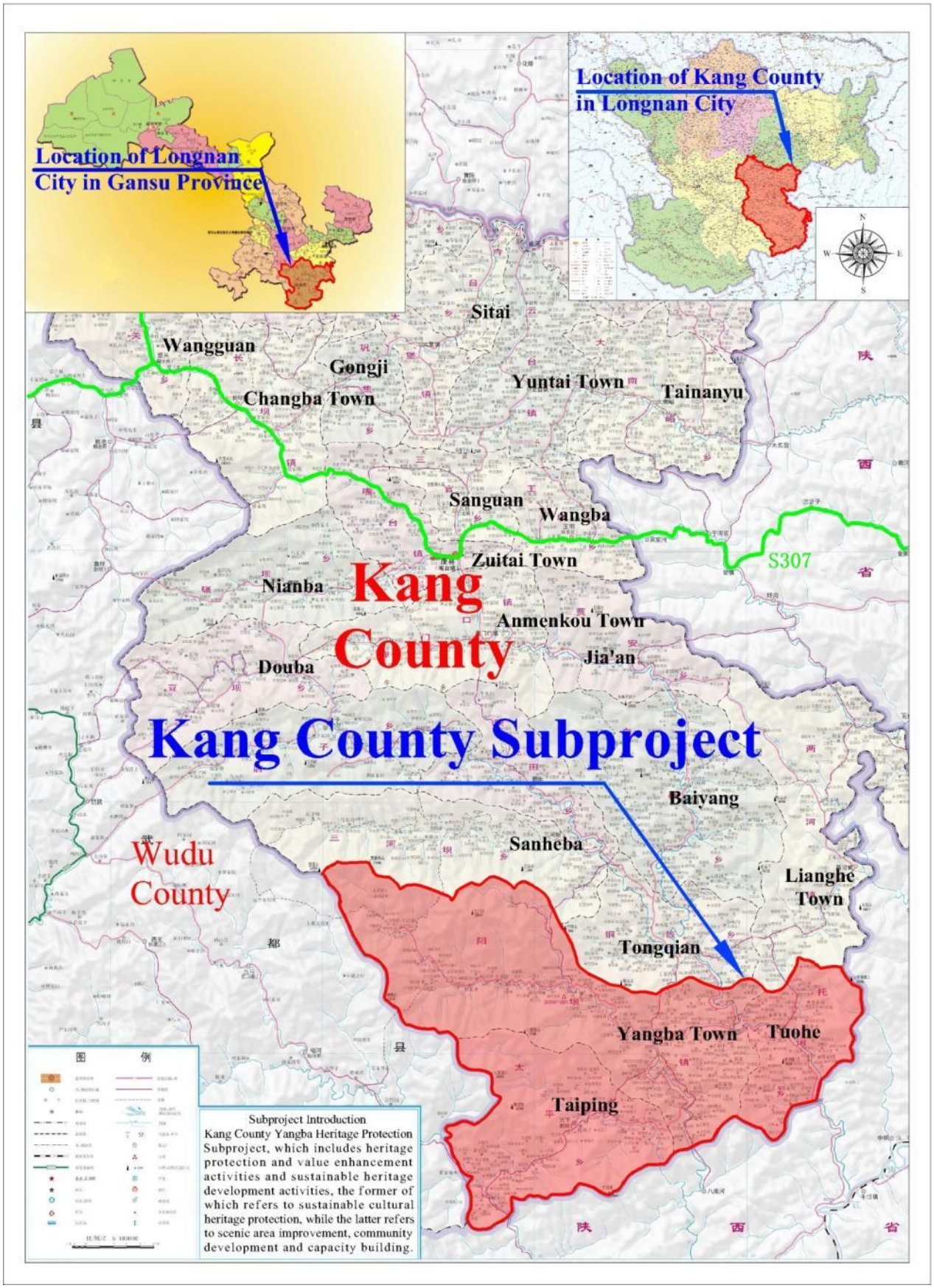

Figure 3.1-5 Geographical Location of Kang County Subproject

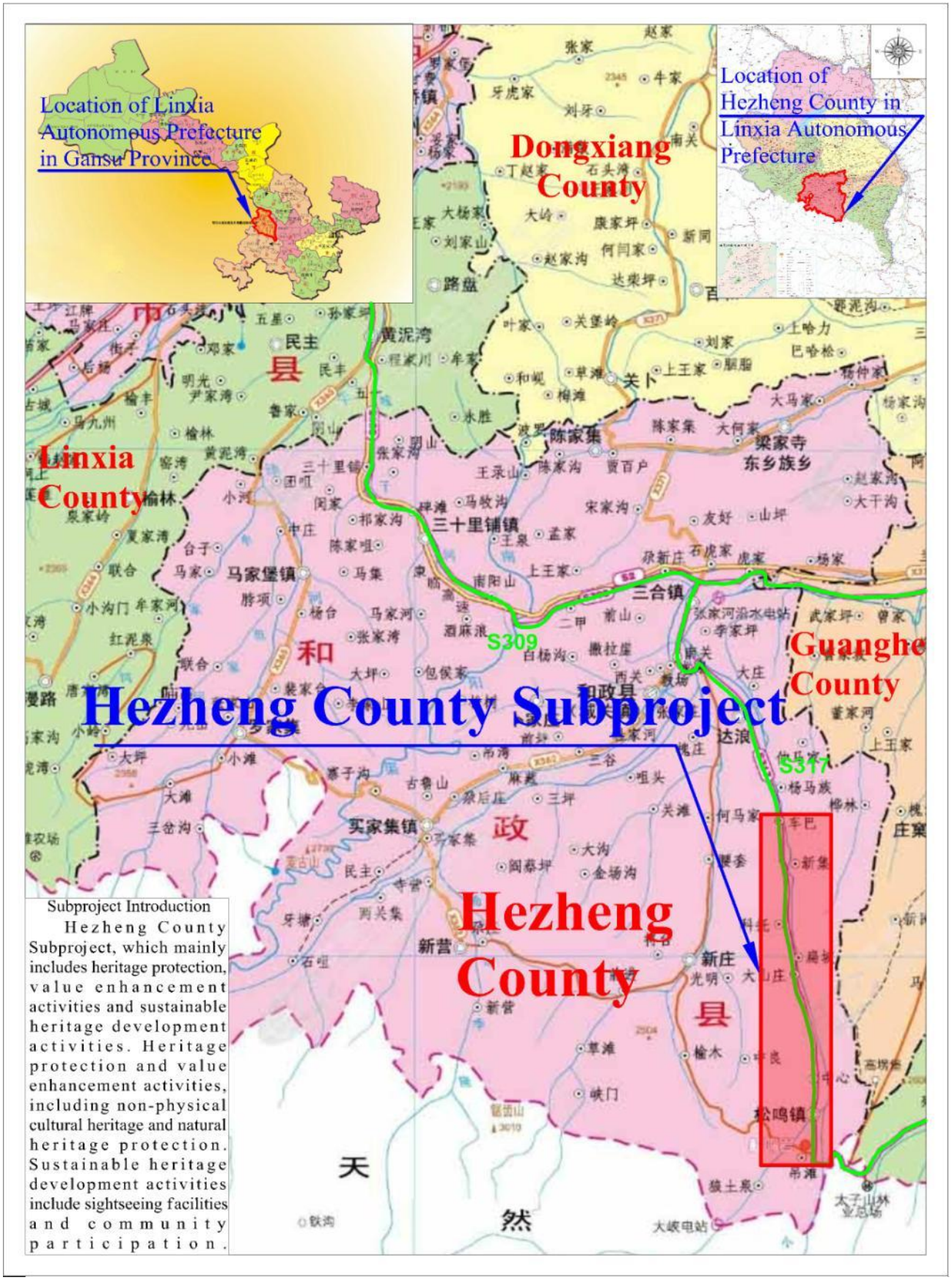

Figure 3.1-6 Geographical Location of Hezheng County Subproject

3.2 Climate

3.2.1 Gansu Province

Situated in northwest of China, most of parts in Gansu are dry and enjoy a temperate monsoon climate featured by an apparent transition towards continental climate. The annual average temperature of the whole province is 0℃-16℃. Altitude and temperature are varied across the province. The annual precipitation across the whole province is 36.6-734.9 mm. The precipitation gradually reduces from the southeast to northwest. The rainfall drops significantly in the area west to Wushaoling, while rainfall is abundant in Longnan and eastern Qilian Mountain. The frost-free days are varied in Gansu. There are around 280 frost-free days in Longnan valley, while only 140 days in Gannan Plateau.

3.2.2 Pingliang City

Pingliang enjoys a temperate semi-arid continental monsoon climate. Average annual precipitation of the city is 420-600 mm, average temperature is between 7.4 and 10.1℃ and average annual temperature range is 9.7-12.8℃. The average frost-free days are 156-188 days. Average annual sunshine hours are 2,144-2380 hours, and annual solar radiation is 123-134 kcal/cm2. The whole Pingliang City has a temperate climate, with abundant rain and sunshine. It is cooler in Pingliang's summer than Xi'an and Lanzhou. Guanshan forest zone is a good summer resort.

3.2.2.1 Kongtong District

Taitong-Kongtong Mountain is located in northwest inland, with a temperate semi-arid continental monsoon climate. It is cold and dry, blowing northwest wind in winter and spring, while it is hot and humid in summer and autumn. Annual average temperature is 8.6℃. The temperature reaches the highest in June-August, with monthly average temperature around 18℃. The average highest temperature is 21.0℃ in July. The temperature drops the lowest in December-February, with average temperature around -4℃. The lowest temperature is -5.2℃ in January. Diurnal temperature range is 11.6℃, and annual temperature difference is 26.2℃. The extreme highest temperature ever recorded was 37.3℃(August, 3 1944) and the extreme lowest temperature reached -25.4℃(December 13, 1975). The frost days start from early October and end in late April. Annual wind speed is 2.1m/s. The air is humid, with annual average air pressure of 86,600 pa.

3.2.2.2 Jingchuan County

Located in inland, the researched area is a continental monsoon climate. The County has a short spring and autumn, with radical temperature changes. Valley and basin areasare hot in summer, while plateau and mountainous areas are cooler in summer. The winter is long and cold. The County has abundant solar power while with less precipitation. Annual average precipitation is 555mm, while annual average temperature is 10.0℃. The annual average temperature reached 10.8℃ in 1973, while the lowest annual average temperature was 4.5℃ in 1964.

3.2.2.3 Zhuanglang County

Zhuanglang County has a continental monsoon climate and is affected by western upper air winds in the most of the year. The wind prevails from the northwest in winter and from the southeast in summer. It has six months in winter and a short summer. Autumn comes earlier and spring comes late. It has plentiful solar power and little precipitation. Annual average temperature is 7.9℃. January is the coldest month with average temperature of-5.5℃, while July is the hottest month with average temperature of 19.9℃. The annual average precipitation is 548.7 mm, and annual precipitation varies greatly, with a difference around 400 mm between the largest and smallest year. The precipitation in spring, summer, autumn and winter account for 17.9%, 52.2%, 28.0% and 1.9% of the precipitation in the whole year, respectively. Most of precipitation is concentrated in July, August and September. The wind would blow from the northwest in winter and from the southeast in summer. Dry and hot wind would blow from the south in summer, affecting the maturity of summer crops and growth of autumn crops. Drought, hail, flood and other meteorological hazards frequently occur.

3.2.3 Longnan City

In a horizontal distribution, Longnan City has three kinds of climate: north subtropical climate, warm temperate climate and mid-subtropic climate. North subtropical areas include the south of Kang County and Wudu, east of Wen County, Bailong River, Baishui River, Jialing River Valley and shallow mountainous area. There are two high temperature zones in this area. One is Bailong River, Baishui River bank, valley and shallow mountainous areas, with annual average temperature of 2-14℃,≥10℃accumulated temperature of 4,000-8,000℃. The precipitation is around 600 mm. The arable land is around 300,000 mu, accounting for 6.7% of total land area. The City is a farming zone with two hot seasons in a year. The other is Jialing Valley and Huicheng Basin. The annual average temperature is 10-12℃, and ≥10℃

accumulated temperature is 3,500-4,000℃. The arable land is around 1.7 million mu, accounting for 37.8% of total arable land in the city, yielding crops triply in two years.

The warm temperate zone includes central, east and south regions, with the altitude between 1,100 and 2,000m, ≥10℃ accumulated temperature 2,100-4,000℃, the precipitation of 500-800 mm, arable land around 1.5 million mu, accounting for 33.3% of total arable land in the city, yielding crops quadruply in two years. The mid-subtropic area refers to the north and west region of Longnan City, mainly including the most parts of Tanchang County and Xihe County, Jinchang, Maying County, Chiba and Li County in Wudu District. This region lies at the altitude above 2,000 m, ≥10℃ accumulated temperature less than 2,100 ℃, the lowest temperature below -20℃, with around 1 million mu arable land, accounting for 22.2% of total arable land in the city. The agricultural areas could yield crops once per year or twice in three years.

3.2.3.1 Kang County

Kang County is a typical transition climate from warm temperate to subtropical climate. It is warm and rainy and one of the counties in Gansu Province with the largest precipitation. Over the years, annual average temperature remains 11℃, relative humidity is 74%, annual average precipitation is 777.5mm, annual average temperature is 10.0℃, and annual average evaporation is 1,062.4mm. The temperature shows distinctive characteristics of vertical climate zone, because of rolling mountains stretching from the east to the west. The surveyed area is located in Kang County, Longnan City. The terrain is the mid-ridge at the altitude above 1,400m. The annual average temperature is 5-10℃, with the highest temperature reached 35℃, while the lowest temperature was -5℃. The frozen period falls in January with the temperature ranging 0~-3℃.

Affected by terrain, vegetation, and other factors, the precipitation is distributed unevenly, illustrating a decline trend from the southeast to northwest. The surveyed area is located in Yangtian River Valley, with annual precipitation of 554.2mm. The precipitation varies greatly in different years in the area. According to the data from Wudu meteorological station, the largest precipitation recorded was 1,162.2 mm in 1961, while the smallest precipitation was 494.6 mm in 2002, 2.3 times less than that of in 1961. The precipitation also varies in different months. 56% of precipitation is concentrated in July-September, accompanied with more heavy rain and rainstorm. The data show that the largest precipitation in a day was 146.7 mm, 48.00 mm in an hour and 320.4 mm in a shower of rainfall.

3.2.3.2 Tanchang County

Tanchang County has distinctive vertical climate changes as the altitude is varied between the north and south. It is situated in a transition area among north-subtropical, warm temperate and plateau climate. With a temperate continental monsoon climate, it is warm and humid in Tanchang County. Annual average temperature is 8.8℃. Average temperature is -2.9℃ in January and 19.2℃ in July. The extreme highest temperature is 34.4℃, while the extreme lowest temperature is -16.9℃, ≥10accumulated temperature is 2,689.6℃. Annual frost-free period is 160 days. Average precipitation is 633.8cm. The precipitation is concentrated in June-September, accounting for 61% of total amount in the whole year. The average evaporation is 1,348.6 mm, and average relative humidity is 68%. The longest frozen soil depth is 45cm.

3.2.4 Hezheng County

Hezheng County has a north-subtropical continental climate with the features of plateau climate (i.e. spring comes late spring, autumn comes earlier, winter lasts long and summer is short). There is heavy rain and snow in spring, while it is hot and short in summer accompanied with many thunderstorm and hailstorm. The temperature drops quickly in autumn. Overcast and rainy weather frequently occurs. The winter is long and dry. Annual precipitation is 639 mm, concentrated in July and August in Chinese calendar. Crops are easily affected by the flood in autumn. It is humid in the south, while dry in the north or humid in the north while wet in the south, due to different altitudes and climates between the south and north. Annual average sunshine hours are 2,457 hours, while frost-free periods are 133 days and annual average temperature is 5℃.

3.3 Hydrology

3.3.1 Gansu Province

Surface water is scare in Gansu Province, and water resources exhibit a decline trend. Water resources in Gansu are mainly distributed across nine river systems in the Yellow River, Yangtze River and inland river drainage basins, with an annual runoff of 60.3 billion m^3. Among them, there are 78 rivers with runoff above 100 million m^3. Inland river basins include Shiyang River, Hei River and Shule River systems, totalling 15 rivers, with an annual runoff of 17.45 billion m^3 and covering an area of 270,000 km^2. The river water in Gansu Province enjoys a good quality, classified as Category I or Category II water quality.

3.3.2 Pingliang City

Pingliang City is part of Yellow River basin, next to Jing River and Wei River. Nearly 20 river branches run across the city, with a runoff of 2.67×109m^3 and the depth of runoff is 54.55 mm on average. In the west, there is Hulu River--a branch of Wei River, with a drainage area of 3.72×103 km^2, while Jing River runs across the east, with a drainage area of 7.42×103 km^2. These two rivers are main surface water sources for Pingliang City, which are polluted to some extent. The precipitation is the main water source. The groundwater resources mainly consist of shallow ground water, stored between the earth surface and impermeable layer. The groundwater reserve is 4.40×108m^3 in the city, most of which is geothermal water. The water quality is similar to groundwater and the salinity is slightly higher than river water, suitable for human and animal drinking.

3.3.2.1 Kongtong District

Groundwater is a result of synthetic action of meteorological, hydrogeological and topographic factors. The groundwater in this reserve is mainly sourced from rainfall and stored river water. Kongtong District enjoys favorable meteorological conditions, unique landforms and geographic structure, leading to diversified water types and distributed differently. By the features of groundwater storage, groundwater could be classified into the following types: river, phreatic water in ravines, phreatic water at loess layer, phreatic water over bedrock and confined water between layers. In the project areas, the groundwater sources include atmospheric precipitation, rainfall, snow and rainfall leakage, vertical seepage of irrigation water and river water, and lateral supply from fracture water in bedrock and undercurrent in gullies).

Rivers flowing across Kongtong District are either part of Jing River system or Wei River System, which are two water systems among five Yellow River water systems. There are 162 rivers in total. Among them, Jing River system flow across the reserve, including eight rivers (i.e. Jing River, Jie River, Dalu River, Xiaolu River, Panjian River, Dacha River, Jian River and Sishilipu River). Jing River is the largest river among these eight rivers. Sourced from the east of Liupanshan Mountain in Jingyuan County, Ningxia Hui Autonomous Region, it flows across the whole region, with a length of 75 km. Jing River has average runoff of 56m^3 per second, whose stream and branch have a drainage area of 1.72 km^2. At Kongtong Gorge, average flow is 3.88 $m^{3/}$s, and the largest flow reached 58.5m^3/s (on September 25, 1963). Now, Kongtong Gorge Reservoir has been built here.

The water quality is good in this area, suitable for human and animal drinking. The water resources could be used for drinking or farming irrigation, with good development value. Only water in some areas is not suitable for drinking, with poor quality.

3.3.2.2 Jingchuan County

Jingchuan County has plentiful water resources. Five rivers (Jing River and its branches) flow across the county. Jing river flows 58 km with a drainage area of 743 km^2. Over the years, the average runoff remains 352.56 million m^3, total groundwater resources amount to 35.36 million m^3 and exploitable water is 54.99 million m^3.

3.3.2.3 Zhuanglang County

There are four rivers (e.g. Hulu River, Zhuanglang River, Shuiluo River and Chaligou River) in Zhuanglang County, as part of Wei River system. The runoff is 161.06 km long, with a drainage area of 938.25 km^2 and average runoff of 257.7 million m^3. Water supply in the county reaches 101.7 million m^3, accounting for 39.5%. There are 2,353 branch gullies with a length over 500 meters, totalling 1,871 km. Among them, there are 224 Category I rivers, with a total length of 762 km, 303 Category II rivers, with a total length of 445 km, and 1,826 Category III rivers, with a total length of 664 km. 26 rivers have frequent water flow on the surface.

3.3.3 Longnan City

In Gansu Province, Longnan City is the only county in Yangtze River valley. Many rivers and high mountains are located in Longnan city, which are riddled with waterfalls and streams. All rivers in the city are part of Jialing River water system, including 48 Category I branches (e.g. Bailong River and Xihanshui River), with a total length of 1,297 km; 751 Category II branches (e.g. Baishui River and Min River), with a length of 4,756 km; 1,651 Category III branches, with a length of 4,313 km; 1,312 Category IV branches, with a length of 3,428 km. With rivers mingled together, the river density reaches 0.5 per square kilometer.

Main rivers are summarized as follows: The branch of Jialing River runs across southeast of Liangdang County and Hui County, with a length of 86.2 km, annual

runoff of 2.2 billion m^3 and a drainage area of 2,556 km^2. Xihanshui River, a Category I branch along the upstream stretch of Jialing River, runs through Li County, Xihe County, Cheng County and Kang County, with a length of 205.6 km, annual runoff of 1.67 billion m^3 and a drainage area of 9,569 km^2. Bailong River, the largest branch in Jialing River upstream, runs across Tanchang County, Wudu County and Wen County, with a length of 229.5 km, annual runoff of 9.38 billion m^3 and a drainage area of 13,200 km^2. Baishui River, the Category II branch of Jialing River, runs through the city starting from Shijiba Village, Yuwen County and meets Bailong River at Guantouba of Yulei Township. The River has a length of 107.3 km, annual runoff of 3.43 billion m^3 and drainage area of 3,040 km. Bailong River is situated between 33° and 34° north latitude and the isothermal line of 0℃ in January as Qinling and Huai River. Rivers in the south of this line are not frozen. Thus, Bailong River is known as a natural line to separate northern and southern China along with Qinling and Huai River.

3.3.3.1 Kang County

Kang County has plentiful water resources and is part of Jialing River system of Yangtze River Valley, with a runoff of 1.094 billion m^3 and groundwater reserve of 577 million m^3, including stable water reserve of 197 million m^3 and adjusted water reserve of 380 million m^3. Many water channels flow water all year round. The drainage area exceeds 50 km^2 and there are 15 rivers with the lowest water flow not less than 0.05 m^3/s. Separated by Wanjiadaliang, these rivers flow to the south and north respectively, forming two streams (i.e. Xihanshui Water System and Yanzi River Water System).

Rivers in Kang County are mountainous rivers periodically supplied by rainfall. The river length is not too long, and most of them are only dozens of kilometres long. Seven rivers flowing within the county are Changba River, Dabao River, Sanguan River, Nianba River, Sanhe River, Yangtian River and Maliu River. Eight rivers flow across counties, including Xihanshui (Xiniu River), Pingluo River, Yanzi River, Meiyuan River, Taiping River, Qing River, Yaoping River and Wangba River.

3.3.3.2 Tanchang County

Rivers in Tanchang County are part of Jialing River System outflowing Yangtze River, consisting of Bailong River valley and Xihanshui River valley. There are 78 river channels, including 15 rivers and branch gullies with the drainage area larger than 50km^2 and annual lowest flow larger than 0.1 m^3/s, featured as big longitudinal slope,

long flow and concentrated river fall. Theoretically, the hydropower could reach 263,000 kw, with the exploitation amount of 72,000 kw. Now, 11,000 kw hydropower has been developed, accounting for 15.4% of total exploitation amount. Groundwater resources are abundant in the county, amounting to 66.7 million m^3. The water is clean. In Tanchang County, 97% of water is fresh water, and the salinity is 1-2 g/liter. 30% of water is brackish with the salinity of 2-5 g/liter. Chemical compositions in water sources meet the quality standards suitable for human and animal drinking. Min River, Lianggong River and Jiaogong River are main rivers in Tanchang County.

Main stream of Bailong River only flows 20 km in Tanchang County. Min River and Jiaogong River meet Bailong River in Tanchang County.

Min River: Min River was called Tanchang River, Qiangshui, and Qian River in ancient times. It is a tributary of Bailong River. Sourced from North Qinling watershed, Min River is 100 km long, with a drainage area of 2,239.3 km^2. As the longest river in the county, it runs across ten villages and towns (i.e. Awu, Hadapu, Nanhe, Hejiabao, Chenguan, Xinchengzi, Linjiangpu, Ganjiangtou, Guanting and Lianghekou) and then meets Bailong River at Lianghekou Village. The branches flowing into Min River include Lichuan River, Nanhe River, Ganggou River, Guan'e River, Jiajia River, Hong River (Bashangou River), Chela River, Dakeba River, Guanting River and Qinyu River. Over the years, the annual average flow rate of Min River remains 16.7 m^3/second, the lowest flow rate is 2.1 m^3/s, and the largest flow rate is 258.0 m^3/s. Average gradient is 7.3%. Min River provides bountiful functional resources and water resources for national economic development.

3.3.4 Hezheng County

From the south to west, there are five rivers flowing across Hezheng County, which are Danancha River, Xiaonancha River, Xinying River, Yatang River, and Niujin River. The annual average runoff is 362.5 million m^3 and hydroenergy reserve reaches 37,200 kw, with the exploitation amount of 25,600 kw. Annual average runoff is 362.3 million m^3, and per-capita runoff is 1,847 m^3.

3.4 Ecological Environment

3.4.1 Gansu Province

Gansu Province features a province with small forest areas. In the whole province, the forestland areas amount to 10.4265 million hectares, with forest areas of 5.0745 million hectares, and a forest coverage rate of 11.28%. The main tree species include fir, spruce, quercus, populous, armandii pine and birch.

All kinds of wild plant species are distributed widely. There are main seven categories of forest resources: over 100 oil plants (e.g yellowhorn (pawpaw), cocklebur, Artemisia desertorum Spreng, Myricaria, Juglans cathayensis Dode and Vernicia fordii); nearly 100 species of fiber and paper-making plants (e.g. Apocynum venetum, Caragana, Chinese Alpine Rush, Streptocaulon and Achnatherum splendens); over 20 starch and brewing plants (e.g. acorn, oleaster, fern root, zaminkand, wasabi, and tuckaheo); 20 wild chemical materials and cork oaks (e.g. cork tree, gallnut and pagoda tree); over 100 wild fruit trees (e.g. Chinese gooseberry, cherry, loquat, Chinese chestnut and sea-buckthorn); 951 herbs (e.g. rheum officinale, angelica sinensis, glycyrrhiza uralensis fisch and red astragalus root, cynomorium, cistanche salsa and gastrodia tuer); 10 special fruit plants, such as valuable wild plants (e.g. hair-like seaweed, fiddlehead, edible fungus, potentilla anserine, daylily, nostoc commune, haggis, mushroom and carrageen).

Wild animal resources: There are over 650 species of wild animals in Gansu. Among them, there are 24 kinds of amphibians, 57 types of reptiles, 441 kinds of birds and 137 kinds of mammals. There wild animals are mainly distributed in Wen County, Wudu District, Kang County, Cheng County, and Liangdang County. Rangshui River and Danbao in Wen County have been listed as No. 13 nature reserve, where the world-level precious animals could be found, such as panda, golden monkey, musk deer, lynx and ermine. There are also farm-raised sika deer, red deer and musk deer. Among wild animals, there are over 90 nationally protected rare animals, including 24 protected species in category I, 24 protected species in category II and 4,011 protected species in category III. Main poultry breeds include horse, donkey, mule, cow, sheep and camels.

3.4.2 Pingliang City

There are five forest, eco-system and wild animal nature reserves in Pingliang City, occupying an area of 74,000 hectares, accounting for 6.6% of total land area. The forest area is 3.97 million mu, with a forest coverage rate of 17.98%. There are 51 families, 84 genera, 254 species plants and 31 species of wild animals.

3.4.2.1 Kongtong District

Vegetation area consists of forest and grassland in southern Loess Plateau, and zonal vegetation includes deciduous broad-leaved forest and meadow steppe. There are four types of vegetation: temperate coniferous forest, deciduous broad-leaved forest, deciduous forest scrub and grassland. In the reserve, wild plant resources are abundant, including 103 families, 377 genera and 750 species vascular plants (except for cultivated vegetable and flower crops). Among them, fern plants consist of 13 families, 21 genera and 37 species (including variants), and seed plants (naked seed and angiosperms) include 90 families, 356 genera and 713 species (infra species).

Animal resources are abundant in this area, including 194 species of terrestrial vertebrates, belonging to 25 orders and 64 families. Among them, there are 6 kinds of amphibians, 11 kinds of reptiles, 133 types of birds and 44 types of mammals. Among terrestrial vertebrates in this area, there are 14 species of oriental realm, accounting for 7.22%, 110 species of palearctic realm, accounting for 57.22% and 18 ubiquitous species, accounting for 9.28%. Obviously, palearctic realm accounts for a large majority.

3.4.2.2 Zhuanglang County

Zhuanglang County is located in the junction of Qilian Mountain and Qinling, with abundant flora and fauna resources. Natural forests are distributed in eastern Guanshan Mountain, mainly consisting of multi-generation coppice and secondary forest. Vegetation distribution is varied at different altitudes. The vertically distributed community composition could be classified into four types (i.e. deciduous broad-leaved forest, red birch forest, subalpine shrubwood and subalpine grassland), and main species include red birch, Chinese scholartree, spruce, aspen, C. myrtifolia, red pine and wouldow. Artificial forests include locust tree, populus tree, Chinese pine and larch as well as commercial fruit forest (e.g. apple, pear, wild pepper and almond tree). Zhuanglang County has many wild animal and plant species, including 57 families, 292 genera and 513 species wild plants and over 100 species of herbs (e.g. precious Chinese herbal medicine poria cocos and glossy ganoderma). There are 32 families, 117 genera and 330 species animal resources, among them, leopard, deer, golden pheasant and ring-necked Pheasant are key nationally protected animals.

3.4.2.3 Jingchuan County

Jingchuan County is a transitional belt of forest steppe, rather than a natural forest area. Shrub and tree species are comparably scare. According to the survey data, there are 172 species shrub trees, including 146 species, 1 subspecies, 24 variants and 1 transformation specie (including 100 introducing species and 20 variants), belonging to 46 families and 72 genera. There are 32 species of evergreen trees (15 species of arbor trees and 17 species of shrub), 130 species of deciduous trees (84 species of arbor trees and 46 species of shrub), and 10 species of deciduous climbers. Wild animal resources in Jingchuan County mainly include: 4 species, 2 orders and 3 families of amphibians, 6 species, 3 orders, 4 families of reptiles, 47 species, 24 families and 10 orders birds and 13 species, 9 families and 4 orders of beasts. Totally, there are 70 species, 39 families and 19 orders.

3.4.3 Longnan City

Longnan City has abundant flora and fauna resources. According to the survey data, there are over 2,500 species 140 families seed plants, including 54 species nationally protected plants. Among them, there are 6 species of Category I nationally protected plants (i.e. Chinese dove tree, davidia involucrata var. vilmoriniana, taxus chinensis var.mairei, gingko, fossil tree and kingdonia uniflora), 21 species of Category II nationally protected plants (e.g. Qinling fir tree and picea brachytyla) and 21 species of Category III nationally protected plants (e.g. paeonia rockii and euptelea pleiospermum).

According to the survey data, there are 430 pieces 91 families of terrestrial vertebrates, including 80 pieces of beasts in 28 families. Among them, there are 10 species of Category I nationally protected animals, such as giant panda, golden monkey, antelope and leopard, and 15 species of Category II nationally protected animals, such as rhesus monkey, black bear and forest musk deer. There are 280 species of birds in 43 families, 30 species of amphibians in 8 families, 40 species of reptiles in 12 families and 70 species of fish in 8 families.

There are plentiful wild green mountain delicacies, and over 100 species of edible and fungi, such as hericium erinaceus, mushroom, auricularia auricula, Rhizoma Gastrodiae, osmunda japonica and Mulongtou. Agricultural and forest products produced in the city possess distinctive local features. Longnan wild pepper (commonly known as Dahongpao) was a royal tribute in the Tang dynasty and won the golden award at the 1st China Agricultural and Forest Expo. Kang County is listed as one of 27 walnut production bases in China. The bank of Bailong River in Wudu District is rated as the best oliver production zone in China by Chinese Academy of

Forestry. These resources lay a foundation for developing local agriculture and eco-agriculatural tourism.

3.4.3.1 Kang County

Due to unique geological location and climatic conditions, Kang County enjoys abundant natural species resources, including 161 species and subspecies, 20 families, 3 divisions of woody plants, 161 species, 33 families and 14 orders of birds and 65 species and subspecies, 21 families and 6 orders of terrestrial animals. There are 339 species, 90 families and 19 orders of insects, 76 genera and 6 divisions of floating vegetation (including 30 genera green algae, 20 genera bacillariophyta, 8 genera euglenophyta, 9 genera cyanophyta, 5 genera dinophyta and 4 genera chrysophyta). The number of floating vegetation is 5.29 million - 685,000 per liter, biomass weight of 0.61-1.41 mg/liter. Bacillariophyta accounts for 65.4% of total biomass weight, and green algae accounts for 11.9%, while the rest of divisions account for 2.1-8.3%. There are 57 species and subspecies, 19 families and 6 orders of animals. Among them, there are 28 species, 5 families and 3 orders of fish (such as provincial protected fish (including Jialing schizothoracin, spualiobarbus curriculus, varicorhinus macrolepis and Pareuchiloglanis anteanalis), and 17 species, 8 families and 4 orders of amphibians and reptiles, which include andrias (national Category II protected animals), stream salamander (provincial protected animals), common frog, asiatic toad, soft shelled turtle, eumeces capito, elaphe taeniura, banded wolf snake, zaocys dhumnades, elaphe carinata and protobothrops jerdonii with valuable economic and research value. It is significant to protect wild andrias and its living environment for investigating the origin, phylogenesis, migration, geological distribution and evolution of Chinese terrestrial vertebrates.

3.4.3.2 Tanchang County

Tanchang County has abundant biological resources, suitable for plant growth. The County has a forest land area of 1.27 million mu, with a forest coverage rate of 29.7%. The forest vegetation is vertically distributed, mainly consisting of temperate deciduous broad-leaved forest, mixed coniferous broad leaved forest and subalpine dark coniferous forest, with over 700 tree species in 41 families. The forest areas are distributed in Nanhe, Guan'e Gully, Daheba, Guanting, and Shizi administered by Min River Forest Farm, including 82 tree species (e.g. picea asperata, fir, larch and Chinese pine). Grassland resources are abundant, with annual grass production of 78,000 tons, mainly distributed in Awu, Bali, Chela and Shizi Villages at the altitude above 2,500-3,000m. The main forage grass consists of 73 species and 9 families such as aristida triseta and alfalfa. There are 692 Chinese herbs. Among them, planted precious Chinese herbs occupy 100,000 mu, such as angelica sinensis, codonopsis pilosula, rhubarb, radix hedysari, radix bupleuri and astragalus root.

Tanchang County is known as the "Medicine Home of Thousands Years". There are over 30 species of precious wild animals, including national Category I protected animals (e.g. white-lipped deer, serow, black bear, blue eared pheasant, brown eared pheasant, forest musk deer and tragopan temminckii), 23 species of national Category II protected animals (e.g. tufted deer, Sumatran serow, black bear, blue eared pheasant, brown eared pheasant, dwarf musk deer and Temminck's tragopan) and seven species of provincial protected animals (e.g. batrachuperus, muntiacus muntjak, and stone marten).

3.4.4 Hezheng County

Hezheng County is located at a transitional area between the Loess Plateau and Tibetan Plateau. The natural vegetation is affected by alpine humid climate in southwest China and semi-dry climate in the Loess Plateau in northeastern China, as well as frequent grazing and human activities. The distribution of natural vegetation is varied with distinctive zoning features. In terms of vegetation belt, the County is situated in temperate grassland. The vegetation consists of dry grassland vegetation, deciduous broad-leaved forest vegetation, coniferous forest vegetation, alpine and subalpine shrub and meadow land vegetation and alpine cold desert vegetation. Hezheng County has many wild beasts in various species. Among them, musk deer, deer, yellow cow, serow, beaver, otter, wolf, hog badger, jackal, leopard, lynx, fox, weasel, squirrel, black rat, wild boar, and dog cat have higher economic values, while serow is Category II nationally protected animals and musk deer and beaver are Category III nationally protected animals. There are over 30 species of wild birds including crossoptilon auritum, tetraogallus tibetanus, blood pheasant, dove, turtle dove, quail, wild goose and magpies. Among them, crossoptilon auritum and tetraogallus himalayensis are Category III nationally protected animals.

3.5 Ecologically Sensitive Areas

See Table 3.5-1 for the relationship between six subprojects of World Bank Financed Second Gansu Cultural and Natural Heritage Protection and Development Project Phase II and all ecologically sensitive areas.

Table 3.5-1 Summary of all Ecologically Sensitive Areas in the Project

Sensitive area	Subproject /Sensitive area	Nature and category of reserve	Approval authority	Approval year and month	Subproject sites and correlation	Key protection targets
Nature reserve	Kongtong Mountain Subproject: Gansu Taitong-Kongtong Mountain National Nature Reserve	National Nature Reserve	State Council	2005.7	Trails and parking lots to be built in the subproject are located in the experimental area	Forest ecosystems in warm temperate zone and wild animal and plant resources in forest
	Hezheng Subproject: Gansu Taizi Mountain National Nature Reserve	National Nature Reserve	State Council	2012.1	Components such as trails are located in the experimental area	Forest ecosystems and biodiversity in transitional areas of Qinghai-Tibet Plateau and Loess Plateau
	Kang County Subproject: Gansu Giant Salamander Nature Reserve	Provincial nature reserve	Provincial Government of Gansu	2009.11	Patrol plank roads in the Meiyuan River Scenic Area and firefighting accesses from Yinbazi to Xiaomomo Mountain are located in the buffer zone. All adjusted components of the subproject are outside the reserve.	Giant salamander
Geological Park	Kongtong Mountain Subproject: Gansu Pingliang Kongtong Mountain National Geological Park	National Geological Park	Ministry of Land Resources	2004.1	The trails and parking lot are located in category-1 reserves; the trails pass through Category II and category-3 reserves;	Danxia landform
	Zhuanglang Subproject: Provincial Geological Park of Yunya Temple, Zhuanglang County, Pingliang City	Provincial Geological Park	Provincial Department of Land Resources of Gansu	2013.4	Firefighting access, trails and ecological parking lot are located in the category-1, Category II and category -3 reserves of the Geological Park	

Sensitive area	Subproject /Sensitive area	Nature and category of reserve	Approval authority	Approval year and month	Subproject sites and correlation	Key protection targets
	Tanchang Subproject: Tanchang Guan'e Gully National Geological Park, Gansu	National Geological Park	Ministry of Land Resources	2014.1	New 10kv power cables, Leigu Mountain Trail collapse disaster control sites and Daheba Zhima River-Eman Tianchi Section landslide disaster control sites are located in Category II reserves, and other components are located in category-3 reserves	Sections of typical geological structures, Quaternary glaciers , Geological landscape, mountainous landscape, water landscape, geological site and disaster landscape,
	Hezheng Subproject: Gansu Hezheng Ancient Animal Fossil National Geological Park	National Geological Park	Ministry of Land Resources	2012.11	Trails are located in category-3 reserves	Ancient Animal fossil
Parks in the scenic area	Kongtong Mountain Subproject: Gansu Kongtong Mountain Scenic Area	National scenic area	State Council	1994.1	All components of the subproject are located in the scenic area	Animals and plants, ecosystem biodiversity and landscape diversity
	Zhuanglang Subproject: Yunya Temple Provincial Scenic Area	Provincial Scenic Area	Gansu Provincial People's Government	2004.10	All components of the subproject are located in the scenic area	
Forest park	Zhuanglang Subproject: Yunya Temple National Forest Park	National forest park	National Forestry Bureau	1992.11	All components of the subproject are located in the forest park	
	Tanchang Subproject:Gansu Guan'e Gully National Forest Park	National forest park	National Forestry Bureau	2003.12	New 10kv power cables, Leigu Mountain Trail collapse disaster control sites and Daheba Zhima River-Eman Tianchi Section landslide disaster control sites are located in the forest park	

Sensitive area	Subproject /Sensitive area	Nature and category of reserve	Approval authority	Approval year and month	Subproject sites and correlation	Key protection targets
Drinking water source protection area	Jingchuan County Subproject:Yanliuwan Drinking Water Source	Provincial drinking water source protection area	Gansu Provincial People's Government	2012.12	Water supply pipes are located in water source Category II reserves	Water source
	Zhuanglang Subproject: Zhulinsi Reservoir Drinking Water source protection area	Provincial drinking water source protection area	Gansu Provincial People's Government	2015.6	Firefighting access, trails and battery car lanes are located in the Category II reserve	
	Kongtong Mountain Subproject:Concentrated drinking water reserve of Yangzizhai, Kongtong District, Pingliang City	Provincial drinking water source protection area	Gansu Provincial People's Government	2010.9	Components of the subproject are about 250m from water source area	
	Tanchang Subproject:Guan'e Gully water source area	County-level water source protection area	Tanchang County People's Government	2011.3	Components of the subproject are about 720m from water source area	Water source
Wetland parks	Kang County Subproject:Meiyuan River National Wetland Park in Kang County, Gansu	National wetland park	National Forestry Bureau	2014.2	Trails in Meiyuan River Scenic Area are located in the rational utilization area	Wetland

Pursuant to Table 3.5-1, the Project would involve six types of ecologically sensitive areas, namely, nature reserve, geological park, forest park, wetland park, scenic area, water source protection area. Baseline of these sensitive areas is described below.

1. Nature reserve

1. Kongtong Mountain Nature Reserve

The reserve is a mountain forest ecosystem dominated by warm temperate zone broad-leaf trees, whose protection targets are mountain forest ecosystem and rare plants and animals and their habitats. The reserve boasts rich animal and plant resources. In recent years, administration bureau of the reserve has effectively

protected forest resources through a number of measures, such as developing public-good plantations, protecting natural forest resources and implementing the “grain-for-green” program. Currently, the reserve is well protected.

2. Taizi Mountain National Nature Reserve

The reserve is a forest ecosystem, whose key protection targets are forest ecosystem in thetransitional area between the Qinghai-Tibet Plateau and the Loess Plateau and wild animals and plants. There are 11 key national protected wild animals in the reserve, including snow leopard, musk deer and serow, 21 key national protected birds, including bearded vulture, accipiter gentilis schvedow and Crossoptilon auritum. There are also 51 rare and endangered and key protected plants in the reserve. Currently, the reserve is well protected.

3. Kang County Giant Salamander Nature Reserve

Core area of the reserve mainly includes tributaries of the Jiangling River and mountain stream in six sparsely populated towns/townships in sourthern Kang County, i.e. Yangba, Tongqian, Lianghe, Sanhe, Baiyang and Dianzi towns/townships. These tributaries and streams have abundant aquatic resources, such as aquatic insect, fish, frog and snake, which provide natural food for giant salamander. Thanks to efforts by Administrative Bureau of Kang County Giant Salamander Nature Reserve, natural habitats and breeding grounds for giant salamander have been well protected and there are no artificial destructions and pollution.

4. Geological park

1. Kongtong Mountain Geological Park

Protection target of the park is Danxia geological site. The Danxia landform is a cliff-shaped landform with dense and consecutive stone forests and poles and widely distributed caves. Currently, most geological relics and landscape are well protected. Affected by climate factors, the park has some geological disasters, which mainly include mud-rock flow, landslide and collapse.

2. Yunya Temple Geological Park

The park thematic geological park dominated by Danxia landform, which accounts for about 30% of the park's total area. Currently, most geological relics and landscape are well protected. Affected by climate factors, the park has some geological disasters, which mainly include mud-rock flow, landslide and collapse.

3. Guan'e Gully Geological Park

The park is a deposit structured geological relic park. Main geological relics include six types of landscape, namely, typical geological structure section, quaternary glacier landform, geological landform landscape, mountain landform landscape, water landscape and geological relic landscape.

Evaluated in accordance with Assessment Criteria for National Wetland Parks issued by the Ministry of Land Resources, the overall score of the park is 91 (out of 100). The park has complex geological structrure as Tanchang County is located on the famous earthquake belt from Lintan County to Min County and to Tanchang County in China. The park has rich rainfall, steep mountains and risks of geological disasters due to wind and water erosion for tens of thousands of years, such as collapse, falling stone, landslide and mud-rock flow.

4. Hezheng County Ancient Animal Fossil Geological Park

Protection target of the park is Neopaleozoic ocean (shallow ocean) animal fossils and unearthed fossils correspond respectively to four different mammals in late Cenozoic: giant rhino about 30 million years ago, Platybelodon about 16-20 million years ago, Hipparion about 11-5 million years ago and Equus eisenmannae about 200,000 years ago. Currently, the park is well protected.

5. Forest park

1. Yunya Temple Forest Park

The park is located in the temperate forest-grassland zone and is at the middle of the belt of transition from temperate broad-leaf forest desert and grassland. As the result of implementing natural forest protection program since 1998, the ecosystem has been restoring and improving. The park boasts abundant animal and plant resources including over 270 plant species and over 118 wild animal species. Currently, ecologicalenvironment is good in the park.

2. Guan'e Gully National Forest Park

The park has high mountainvalleys and waterfalls as well as unique plant landscape comprising natural forest, wild flowers and high mountain grassland. The park also features Qing and Tibetan ethnic group cultures and is a good place for holidays, exploration, scientific research and education, picnic and recreational activities. Protection targets of the park are animal and plant species diversity, inheritance diversity, ecosystem diversity and landscape diversity. Thanks to measures taken by Tanchang County Government, such as implementing natural forest protection, barren mountain plantation and "grain-for-green" programs, the park has a sound ecosystem with densely distributed and rapidly growing trees.

3. Scenic area

1. Kongtong Mountain Scenic Area

The area has unique Taoist Thought, religious buildings and protocols, Kongtong martial arts, good natural environment and geological wonders. Open tour spots are concentrated in Huangcheng, Wutai and Xiangshan areas. The area has well maintained facilities and road network. Service facilities and infrastructure in the area can meet needs of tourists. Tour spots such as Yanzi Mountain, Tanzheng Gorge, Wangjia Mountain and Taitong Moutain lack sound associated service facilities and wastewater in some areas is discharged without treatment. Overall conditions are good in the area.

2. Yunya Temple Scenic Area

The area boasts dense vegetation, unique Danxia landform, beautiful seasonal forest landscape and a number of relics and historical sites such as the national protected Yunya Temple stone cave. Infrastructure in the area needs to be improved, including aging firefighting access, tourist trails, battery car lanes, tourist service centers and parking lots. Domestic sewage has been discharged without treatment. These bottlenecks have significantly restricted tourist activities and development of the area.

3. Water source protection area

1. Jingchuan County Yangliuwan Water Source Site

Potential pollution sources that may harm groundwater quality mainly include domestic sewage and farmland non-point source pollution. Groundwater quality at the site is of Category III. Apart from being used for agricultural and industrial purposes, treated groundwater can be used as drinking water. Overall conditions at the site are good.

2. Zhulinsi Reservoir Drinking Water Source Protection Area

Zhuanglang County Urban Water Supply Program uses water from Zhulinsi Reservoir and can supply 9000 m^3 of water a day. Pursuant to current water quality monitoring indicators, water quality in the reservoir meets Category II standard in Surface Water Environment Quality Standards (GB3838-2002). There is a 2,800m-long tourist trail between the reservoir and Yunya Temple and tourists need to enter the scenic area via the dam top. Domestic sewage and waste generated by tourists may have potential adverse impacts on water quality of the site.

3. Yangzi Village Centralized Drinking Water Source Protection Area

Located at Zhaizijie of Kongtong District, the Yangzi Village water source is the existing water source for Pingliang City and can supply 17,000$m^3$of water per day. Potential pollution sources that could affect groundwater quality are domestic sewage, solid waste and farmland fertilizer and pesticide. Groundwater quality is of Category I-III with the exception of α radiation. Apart from being used for agricultural and industrial purposes, treated groundwater can be used as drinking water.

4. Guan'e Gully Water Source Site

The site is located at E 104°19′ 46.7″ and N 33°57′ 27.1″ with the elevation of 2109 m, and annual runoff of 25 million m^3. The site has good water quality, which meets the requirements of Sanitation Standards for Drinking Water (GB5749—2006).

5. Meiyuan River National Wetland Park

The park is located within Yangba Town in southern Kang County and falls under Kangnan Forest Area, which is one of the largest 10 forest areas in Gansu Province. Forest coverage in the Kangnan Area is 83% with rapidly growing and high closing trees. Thanks to efforts by the Administrative Bureau of Meiyuan River National Wetland Park, water quality in the river has met Category III standard in Surface Water Environment Quality Standards (GB3838-2002). Environmental quality, natural landscape and animal and plant species have been well protected.

3.6 Baseline Cultural Relics and Other Cultural Resources

Three subprojects under the Project – Kongtong Mountain, Jingchuan County and Tanchang County subprojects - would involve ancient towers, ancient buildings, stone caves, stone inscriptions, and folk culture villages, among other cultural resources. Kongtong Mountain and Jingchuan County subprojects would involve protection and repair of cultural relic; Wanyan Folk Culture Village in Jingchuan County would only involve improvement of existing infrastructure, and Luren and Xinping villages in Tanchang County would only involve reinforcement and repair of "wood board roofed" houses and would not involve protectionand repair of cultural relics. Baseline cultural resources under these subprojects are described below.

(1) There are various cultural and natural heritage in Kongtong Mountain scenic area, including ancient buildings, ancient pagodas, ancient temples, inscriptions, horizontal tablets, and ancient and famous trees. There are 8 terraces, 9 palaces, 12 yards and 42 places built on mountains, such as nunneries, temples, yards, towers, and pavilions. Among them, Heavenly City building complex, Thunder Peak building complex and their affiliated cultural relics are classified as national key cultural relic protection sites. The fund for such cultural relic protection is sufficient and these cultural relics are well preserved. However, most of ancient towers and temples lie in a poor condition in the scenic area, lacking necessary protection funds and infrastructure support. These cultural relics are in urgent need of repair and maintenance.

In Kongtong scenic area, seven ancient towers are classified as municipal cultural relic protection sites, such as Yinxiang Tower, Basic Tower and Huairui Monk Tower. These towers were built during the Qing dynasty and are in a poor condition. The projectwould carry out a series of rescue, protection, experiment, monitoring and technical research works, to protect the body and carriers of these seven ancient brick towers, and improve the stability of their surrounding environment. The project aims to ensure the stability and durability of cultural relic protection, extend the life of cultural relics, and achieve the purposes of disaster prevention and reduction. Please refer to Table 3.6-1.

(2) Over 600 caves and grottos distributed in a “非” shape on the edge of mountains on both banks of Jinghe River in Jingchuan County. Among these caves, except for two well-preserved national cultural relics protection sites, Arhat Caves are the largest caves with a higher value than the rest of caves. Now, these two caves are damaged severely in a poor condition. Thus, the projectwould focus on protecting and repairing these two caves. Please refer to Table 3.6-1.

Located in Wangcun town in Jingchuan County, Wanyan Folk Culture Village is the largest settlement of Wanyan Zongbi (Wuzhu)'s descendants, with traditional customs best preserved. In the village, ten cultural relics are well preserved, such as Wanyan Ancestral Hall, the portraits of Wanyan Wuzhu, the royal mausoleums of Wanyan Chenglin - the last emperor of Jin and great-grandson of Wuzhu, and Wanyan Heng--son of Wuzhu, as well as Plum Mountain, ancient wells, caves and village gates, witnessed over 800-year history of Wanyan descendants guarding their ancestor tombs. Some traditional rituals have been carried forward until today, such as Shamanism ritual and memorial ceremonies (e.g. horse running, crane, rope and

god worship). Wanyan Village is one of 9 cultural projects listed in Jingchuan County Cultural Industry Development Plan. The Plan specifies a series of measures to develop the ecological folk culture tourism in Wanyan Village, such as scenic area development, protecting and carrying forward local cultures (e.g. martial arts, folk culture, food, and dialect), explore Wanyan folk culture, carry out fundamental protection works (e.g. digitalization, archive and restoring of cultural resources), as well as infrastructure building (e.g. exhibition rooms, administration rooms and road hardening). Wanyan Village would be developed into the most influential place to experience Wanyan folk culture in China.

(3) Zhuanglang County Yunya Temple Caves were established in the North Wei Dynasty. Going through the changes of dynasties (i.e. the Western Wei Dynasty, the Northern Zhou Dynasty, Tang Dynasty, Song Dynasty, Yuan Dynasty, Ming Dynasty and Qing Dynasty), the Yunya Temple Caves finally took today's shape, based on Yunya Temple as the center, covering eight temples (i.e. Yunya Temple, Hongya Temple, Zhulin Temple, Da Temple, Xi Temple, Chaoyang Temple, Jinwa Temple and Fogou Temple) and Dianwan, Mujiang Cliff and Sanjiaodong Cave in a 5km radius.

(4) In Tanchang County, “wood board roofed” buildings are dominant houses of Qiang Ethnic Group. The building has two floors with earth-wood structure and roof being covered by wood boards, above which white limestones are placed. Local people live on the second floor in spring and summer and the first floor in autumn and winter. “Bee houses” are remaining traditional houses in Shawan, Xinzhai and Shizi villages, which have a different structure comprising two floors built with large and small logs and the flat roof being covered by compressed earth, which is used as a ground for drying wheat. Local people live on the second floor and the first floor is used to raise livestock. The door of the “bee house” is often closed, making it look at a “pillbox”. These houses are interconnected and villagers can visit each other through the roof. Some Qiang and Tibetan houses (wood board roofed) in Guan’egou Village have been damaged seriously, and some buildings have even been demolished due to the impacts of modern culture, man-made damage and natural erosion. Now, there are only 14 such houses left (8 in Luren Village and 6 in Xinping Village). The projectwould adopt rescue protection measures to protect these 14 houses, such as repair, reinforcement, anti-corrosion, hanging tags, and increasing water-proof and drainagefacilities.

Table 3.6-1 Baseline Cultural RelicsProtection in Subprojects

Item	Name of Cultural Relics	Category of Cultural RelicsProtection	Approval Authority	Batch/Date	Type	Subproject Contents
Kongtong Mountain Subproject	Lingfeng Tower	Municipal/County-Level Cultural Relic Protection Sites	The People's Government of Pingliang City	1988	Ancient building	1. Surface drainage would be rearranged; (2) the structural parts would be supplied and all mortar joints would be repaired; (3) a sand road would be built; (4) the original grey brick fences would be removed and newly built; (5) an archaeological survey would be made around the tower; (6) the tower foundation of lime-soil compaction piles would be dealt with; (7) all original components are restored; and (8) setting up the display board.
	Lingmi Tower	The municipal cultural relic protection sites	The People's Government of Pingliang City	1989	Ancient building	
	Ordinary Tower	The municipal cultural relic protection sites	The People's Government of Pingliang City	1989	Ancient building	
	Yinxiang Tower	The municipal cultural relic protection sites	The People's Government of Pingliang City	1989	Ancient building	
	Huairui Monk Tower	Municipal/County-Level Cultural Relic Protection Sites	The People's Government of Pingliang City	1989	Ancient building	
	Dache Tower	Not confirmed	——	——	Ancient building	
	Yingxueshanren Tower	The municipal cultural relic protection sites	The People's Government of Pingliang City	1989	Ancient building	
	Xiangshan Temple	Not confirmed	——	——	Ancient building	
	Jingle Palace	Not confirmed	——	——	Ancient building	
	Taiqing Palace	Not confirmed	——	——	Ancient building	
	Mituo Temple	Not confirmed	——	——	Ancient building	
	Lianhua Temple	Not confirmed	——	——	Ancient building	
	Wangmu Palace	Not confirmed	——	——	Ancient building	

Item	Name of Cultural Relics	Category of Cultural RelicsProtection	Approval Authority	Batch/Date	Type	Subproject Contents
	Wendao Palace	Not confirmed	——	——	Ancient building	
Jingchuan County Subproject	Arhat Cave	County-Level Cultural Relic Protection Sites	The People's Government of Jingchuan County	1984	Shiku Temple and stone inscriptions	(1) dangerous rock control; (2) decay prevention and control; (3) water disaster control; (4) preventive measures for man-made damage; and (5) preventive protection measures for wall painting and relievo;
	Hanjia Gully Stone Cave	County-Level Cultural Relic Protection Sites	The People's Government of Jingchuan County	2001	Shiku Temple and stone inscriptions	
	Chenghuang Temple	Provincial cultural relic protection Sites	Gansu Provincial People's Government	1993	Shiku Temple and stone inscriptions	(1) repair warehouse; (2) restore damaged wall; (3) building stele pavilion; (4) building environmentally friendly toilets; (5) grey brick flooring; and (6) improving drainage facilities;
	Wangmu Palace Stone Cave	National cultural relic protection sites	State Administration of Cultural Heritage	6^{th} batch	Shiku Temple and stone inscriptions	Increasing waste treatment facilities

3.7 Social Baseline

Socioeconomic status of counties (districts) where the subprojects are located is provided in Table 3.7-1.

Table 3.7-1 Social Development Overview

Name	Area (km^2)	Latest GDP (hundred million Yuan)	Population (10,000)	Population Density (people/km^2)	GDP per capita (Yuan),	Fiscal Revenue (hundred million Yuan)	Percentage of GDP Generated by Three Industries	Urban per capita Income (Yuan)	Rural per capita Income (Yuan)	Proportion of Minorities (%)	Proportion of Tourist Income in Total GDP (%)
1. Pingliang City	11325	350.53	208.67	184	16776	46.28	24.3:38.3:37.4	19086	5395	7.3	16.06
1) Kongtong District	1808	89.85	47.08	260	21387	5.79	16.2:26:57.8	17853	6691	29	28.16
2) Jingchuan County	1409.3	51.04	35.87	255	17999	3.8567	35.5:25.2:39.3	17158	5480	0.5	4.3
3) Zhuanglang County	1553	35.57	45.08	290	9286	1.66	34.16:26.55:39.29	18752	4596.	0.25	9.28
2. Longnan City	27923	262.9	257	92	10229	49.28	25.2:26.4:48.4	17001	4023	2.2	15
1) Tanchang County	3331	18.9	30.8	92	6236	1.65	26:22.3:51.7	16990	3234	2.57	28.7
2) Kang County	2958	15.29	20.32	67	7524	0.31	26.1:32.1:41.8	14958	3278	3.5	19.62
3. Linxia Autonomous Prefecture											
1) Hezheng County	960	11.4055	21.14	220	5395	1.8012	31.4:20.7:47.9	12525	3394	56.2%	52.53%

Note: The data comes from National Economic and Social Development Statistics Communique in 2014 of each county (district).

Pursuant to Table 3.7-1, population density in the project areas (ranging from 67 to 290 people/km²) is higher than that in Gansu Province (57 people/km²). Of all the districts (counties) in the project areas. Per capita GDP in the project areas (ranging from 5,395 to 21,387 Yuan) is lower than that in Gansu Province (26,427 Yuan), indicating that the project aeras are relatively poor areas in Gansu Province.

Fiscal revenue in the Project areas ranges from 31 to 385.67 million Yuan. Of all the districts (counties), Kongtong District ranks first while Kang County comes last. Percentage of GDP generated by the primary industry in the project areas ranges from 16.2% to 35.5%, higher than that in Gansu Province (13.2%), indicating that these areas have a traditional economic structure with agriculture still taking a larger share; percentage of GDP generated by the secondary industry in the project areas ranges from 20.7% to 32.1%, lower than that in Gansu Province (42.8%); percentage of GDP generated by the tertiary industry ranges from 39.29% to 57.8%. With the excpetion of Hezheng County and Kongtong District, tertiary industry in 4 districts has lower percentage of GDP than that in Gansu Province (44.0%); tourism contributes to 4.3%-52.53% of total GDP in the project areas. Of all the districts (counties), Hezheng County ranks the first in terms of the percentage of GDP generated by tourism.

Urban per capita income in the project areas (ranging from 12,525 to 18,752 Yuan) is lower than that in Gansu Province (20,804 Yuan). Rural per capita income in the project areas ranges from 3,234 to 6,691 Yuan. Except for Kongtong District, 5 districts (counties) have lower rural per capita income than that in Gansu Province (5,736 Yuan).

The proportion of ethnic minorities in the project areas ranges from 0.25% to 56.2%. Except for Hezheng County and Kongtong District, 4 districts (counties) in these areas have lower proportions than that in Gansu Province (8.69%). Hezheng County has the highest proportion of ethnic minorities among all 6 districts (counties) with Hui people being dominant in terms of number of people.

3.8 Monitoring and Evaluation of Baseline Environment Quality

3.8.1 Monitoring of Baseline Environment Quality

3.8.1.1 Point distribution, timing and methodology for atmospheric monitoring

2-3 atmospheric monitoring points would be set up for each subproject. See Table 3.8-1 for specific locations of monitoring points.

Sampling was conducted for 7 consecutive days (at least 20 hours per day) to get the daily mean concentration of PM10; sampling was conducted for 4 times per day respectively at 2:00, 8:00, 14:00 and 20:00 for at least 45 minutes each time to get hourly concentration of SO_2 and NO_2 .

The sampling was conducted according to the analytic methods as stipulated in Section 6.2 of the Technical Specifications for Environmental Monitoring and Ambient Air Quality Standards published by State Environmental Protection Administration of PRC (GB3095-2012).

3.8.1.2 Point distribution, timing and methodology for surface water monitoring

Monitoring points would be set up for each subproject and a qualified environmental monitoring company would be engaged to conduct sampling and analysis. See Table 3.8-2 for arrangement of monitoring points.

Monitoring was conducted once a day for 3 consecutive days.

It was conducted according to the requirements as stipulated in Technical Specifications for Environmental Monitoring and Analysis and Methodology for Water and Wastewater Monitoring (the fourth edition) issued by State Environmental Protection Administration of PRC.

3.8.1.3 Point distribution, timing and methodology for groundwater monitoring

Monitoring pointswould be set up for each subproject and a qualified environmental monitoring company would be engaged to conduct sampling and analysis. See Table 3.8-3 for arrangement of monitoring points.

Monitoring Frequency: once

It was conducted according to the requirements as stipulated in Technical Specifications for Environmental Monitoring and Analysis and Methodology for Water and Wastewater Monitoring (the fourth edition) issued by State Environmental Protection Administration of PRC.

3.8.1.4 Point distribution, timing and methodology for acoustic monitoring

Monitoring points would be set up for each subproject and a qualified environmental monitoring company would be engaged to conduct sampling and analysis. See Table 3.8-4 for arrangement of monitoring points.

Monitoring was conducted twice a day respectively at daytime and night for 2 consecutive days.

The monitoring was conducted according to the measuring methods as stipulated in Quality Standards for Acoustic Environment (GB3096-2008) and Industrial Enterprises Noise Emission Standards (GB12348-2008).

3.8.2 Evaluation of of Baseline Environment Quality

3.8.2.1 Evaluation of baselineatmospheric environment

(1) Evaluation factors

Evaluation factors for the quality of baselineatmospheric environment are: SO_2 ,NO_2 ,PM_{10} ,TSP.

(2) Evaluation methods

The single standard index method was adopted to evaluate urrent atmospheric quality, namely:

$$Iij= Cij /Csi$$

In this formula: Iij——"i"th pollutant, index of "j"th monitoring point;

Cij——"i"th pollutant, average monitoring value of "j"th monitoring point (mg/m^3);

Csi——evaluation standard for "i"th pollutant (mg/m^3).

(3) Evaluation standards

Normal pollutants at the locations of each subproject are SO_2, NO_2, PM_{10} and TSP. Each subproject would be implemented in accordance with relevant standards as stipulated in

Ambient Air Quality Standard (GB3095-2012). See Table 1.4-1 for specific standard values. See Table 4.1-3 for evaluation results.

Table 3.8-1 Results of Ambient Air Quality Assessment

Subproject	Location	Evaluation Item		NO_2		SO_2		PM_{10}	$PM_{2.5}$	TSP
				Hourly Average	Daily Average	Hourly Average	Daily Average	Hourly Average	Daily Average	Daily Average
Kongtong Mountain Subproject	Jingle Palace	Category I Standards	Monitoring Value (mg/m^3)	0.018-0.05	0.029-0.042	0.008-0.041	0.019-0.032	0.041-0.048	0.028-0.034	0.102-0.118
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.09-0.25	0.362-0.525	0.053-0.273	0.38-0.64	0.82-0.96	0.8-0.971	0.85-0.983
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Xigou Village	Category I Standards	Monitoring Value (mg/m^3)	0.026-0.075	0.045-0.061	0.024～0.049	0.035-0.046	0.041-0.048	0.028-0.033	0.109-0.118
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.13-0.375	0.56-0.762	0.08-0.46	0.7-0.92	0.82-0.96	0.8-0.942	0.908-0.983
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Tanzheng Lake	Category I Standards	Monitoring Value (mg/m^3)	0.021-0.057	0.034-0.047	0.012-0.047	0.74-0.48	0.042-0.048	0.029-0.033	0.104-0.119
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.105-0.285	0.425-0.587	0.08-0.313	0.48-0.74	0.84-0.96	0.828-0.942	0.867-0.992
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard

Subproject	Location	Evaluation Item		NO_2		SO_2		PM_{10}	$PM_{2.5}$	TSP
				Hourly Average	Daily Average	Hourly Average	Daily Average	Hourly Average	Daily Average	Daily Average
Jingchuan County Subproject		Category II Standards	Monitoring Value (mg/m^3)	0.025-0.061	0.039-0.046	0.017-0.046	0.028-0.036	0.041-0.048	0.022-0.031	0.106-0.118
			Evaluation Standards (mg/m^3)	0.2	0.08	0.5	0.15	0.15	0.75	0.3
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.125-0.305	0.488-0.575	0.034-0.092	0.187-0.24	0.273-0.32	0.029-0.041	0.353-0.393
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Shuiquansi Village	Category II Standards	Monitoring Value (mg/m^3)	0.032-0.068	0.046-0.053	0.026-0.063	0.036-0.042	0.041-0.049	0.025-0.034	0.102-0.117
			Evaluation Standards (mg/m^3)	0.2	0.08	0.5	0.15	0.15	0.75	0.3
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.16-0.34	0.575-0.663	0.052-0.126	0.24-0.28	0.273-0.327	0.033-0.045	0.34-0.39
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Luohandong Village	Category II Standards	Monitoring Value (mg/m^3)	0.025-0.064	0.037-0.049	0.015-0.048	0.027-0.039	0.040-0.047	0.025-0.032	0.106-0.114
			Evaluation Standards (mg/m^3)	0.2	0.08	0.5	0.15	0.15	0.75	0.3
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.125-0.32	0.463-0.613	0.03-0.096	0.18-0.26	0.267-0.313	0.033-0.213	0.353-0.38
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Zhuanglang County	Yunya Temple	Category I	Monitoring Value (mg/m^3)	0.015-0.038	0.026-0.033	0.005-0.028	0.016-0.023	0.040-0.047	0.022-0.032	0.106-0.118

Subproject	Location	Evaluation Item		NO_2		SO_2		PM_{10}	$PM_{2.5}$	TSP
				Hourly Average	Daily Average	Hourly Average	Daily Average	Hourly Average	Daily Average	Daily Average
Subproject	National Forest Park	Standards	Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.075-0.19	0.325-0.413	0.033-0.187	0.32-0.46	0.80-0.94	0.063-0.091	0.883-0.983
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Qianshanmen Tourist Service Center	Category I Standards	Monitoring Value (mg/m^3)	0.018-0.049	0.031-0.037	0.008～0.039	0.021-0.027	0.039-0.049	0.028-0.034	0.107-0.119
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.09-0.245	0.388-0.463	0.053-0.260	0.42-0.54	0.78-0.98	0.080-0.097	0.892-0.992
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Shiqiao Village	Category I Standards	Monitoring Value (mg/m^3)	0.029-0.071	0.042-0.051	0.019-0.061	0.032-0.041	0.039-0.048	0.028-0.034	0.107-0.117
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.145-0.355	0.525-0.638	0.127-0.407	0.64-0.82	0.78-0.96	0.080-0.097	0.892-0.975
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Kang County Subproject	Laojiangba	Category I Standards	Monitoring Value (mg/m^3)	0.005-0.007	0.005-0.024	0.013-0.016	0.007-0.013	0.033-0.037	0.017-0.02	0.064-0.072
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12

Subproject	Location	Evaluation Item		NO_2		SO_2		PM_{10}	$PM_{2.5}$	TSP
				Hourly Average	Daily Average	Hourly Average	Daily Average	Hourly Average	Daily Average	Daily Average
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.06-0.09	0.025-0.12	0.26-0.32	0.01-0.03	0.66-0.74	0.49-0.57	0.53-0.6
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Yangba Town	Category I Standards	Monitoring Value (mg/m^3)	0.017-0.048	0.008-0.029	0.016-0.018	0.009-0.017	0.041-0.049	0.03-0.033	0.113-0.119
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.21-0.6	0.04-0.15	0.32-0.36	0.02-0.03	0.82-0.98	0.86-0.94	0.93-0.99
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Tanchang County Subproject	Yaping Village	Category I Standards	Monitoring Value (mg/m^3)	0.007-0.037	0.008-0.027	0.013-0.021	0.019-0.022	0.041-0.048	0.025-0.033	0.104-0.118
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.035	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.035-0.185	0.1-0.338	0.087-0.14	0.38-0.44	0.82-0.96	0.714-0.923	0.867-0.983
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Xinping Village	Category I Standards	Monitoring Value (mg/m^3)	0.005-0.026	0.013-0.021	0.017-0.025	0.023-0.025	0.042-0.048	0.026-0.031	0.101-0.112
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.035	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0

Subproject	Location	Evaluation Item		NO_2		SO_2		PM_{10}	$PM_{2.5}$	TSP
				Hourly Average	Daily Average	Hourly Average	Daily Average	Hourly Average	Daily Average	Daily Average
			Standard Index	0.025-0.13	0.163-0.263	0.113-0.167	0.46-0.50	0.84-0.96	0.743-0.886	0.842-0.933
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Hezheng County Subproject	Songmingyan Scenic Area	Category I Standards	Monitoring Value (mg/m^3)	0.005ND-0.012	0.003ND-0.007	0.007ND-0.011	0.004ND-0.006	0.028-0.049	0.015-0.027	0.047-0.087
			Evaluation Standards (mg/m^3)	0.2	0.08	0.15	0.05	0.05	0.35	0.12
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.013-0.06	0.019-0.088	0.023-0.073	0.04-0.12	0.56-0.98	0.043-0.077	0.392-0.725
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Songmingyan Scenic Area	Category II Standards	Monitoring Value (mg/m^3)	0.005ND-0.015	0.005-0.009	0.007ND-0.014	0.004ND-0.006	0.104-0.142	0.071-0.082	0.154-0.229
			Evaluation Standards (mg/m^3)	0.2	0.08	0.5	0.15	0.15	0.75	0.3
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0
			Standard Index	0.013-0.075	0.063-0.113	0.007-0.028	0.013-0.04	0.693-0.947	0.095-0.109	0.513~0.763
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard

3.8.2.2 Assessment of Baseline Surface Water Environment Quality

(1) Assessment standards and methods

Standards for assessment: Water standards for each subproject are detailed in Table 1.4-2 according to "Gansu Province Surface Water Function Zoning (2012-2030)".

Methods for assessment: According to the monitoring results and standard index methods, water quality parameters are evaluated individually. The formula is as follows:

$$S_{i,j} = \frac{C_{i,j}}{C_{si}}$$

In this formula: $S_{i,j}$ -- the standard index of water quality parameter i at point j, dimensionless; $S_{i,j} \geq 1$ means exceeding the standard, otherwise it doesn't exceed;

Ci, j-- monitoring value of water quality parameter i at point j, in mg / L;

Csi-- standard value of water quality parameter i, in mg / L.

Where, standard index of pH is:

$$S_{pH,j} = \frac{7.0 - pH_j}{7.0 - pH_{sd}} \quad (\text{pHj}7.0) \qquad S_{pH,j} = \frac{pH_j - 7.0}{pH_{su} - 7.0} \quad (\text{pHj} > 7.0)$$

In this formula: $S_{pH,j}$-- standard index of water quality parameter pH at point j;

pHj - pH value at point j;

pH_{su}——the upper limit of pH value prescribed in surface water quality standards;

pH_{sd}——the lower limit of pH value prescribed in surface water quality standards.

(2) Monitoring results and baseline assessment

Water quality monitoring and assessment results of the project are listed in Table 3.8-2.

Table 3.8-2 Baseline Surface Water Environment Quality Monitoring and Assessment Results (mg / L)

Subproject	Water Area	Item		pH	DO	COD	Permanganate index	Ammonia nitrogen	Total phosphorus	Petroleum	Sulfide	Total nitrogen	Fecal coliform
Kongtong Mountain Subproject	Tanzheng Lake	Category III standards	Monitoring value	8.3-8.35	7.68-7.96	6.06-12.6	1.52-3.28	0.079-0.131	0.012-0.022	0.01-0.04	0.015-0.026	0.81-0.96	330-1400
			Standards for assessment	-	≤5	≤20	≤6	≤1.0	≤0.05	≤0.05	≤0.2	≤1.0	≤10,000
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.66-0.69	1.536-1.592	0.303-0.63	0.253-0.547	0.079-0.131	0.24-0.44	0.2-0.8	0.075-0.13	0.81-0.96	0.033-0.14
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Yanzhi River	Category III standards	Monitoring value	8.21-8.27	7.83-7.94	5.07-5.25	1.28-1.46	0.104-0.136	0.012-0.016	0.01	0.014-0.017	0.87-0.92	330-340
			Standards for assessment	-	≤5	≤20	≤6	≤1.0	≤0.05	≤0.05	≤0.2	≤1.0	≤10,000
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.62-0.66	1.566-1.588	0.2535-0.2625	0.213-0.243	0.104-0.136	0.24-0.32	0.	0.07-0.085	0.87-0.92	0.033-0.034
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Zhuanglang County Subproject	Yunya River	Category II standards	Monitoring value	8.30 ~8.33	7.81-7.90	5L	1.16-1.32	0.186-0.194	0.02	0.02	0.018-0.020	0.39-0.43	20
			Standards for assessment	6-9	≤6	≤15	≤4	≤0.5	≤0.1	≤0.05	≤0.1	≤0.5	≤2,000
			Maximum Exceeding Standard Rate	0	0	0	0	0	0	0	0	0	0

Subproject	Water Area	Item		pH	DO	COD	Permanganate index	Ammonia nitrogen	Total phosphorus	Petroleum	Sulfide	Total nitrogen	Fecal coliform
			(%)										
			Standard Index	0.65-0.67	0.30-0.32	0	0.29-0.33	0.37-0.39	0.20	0.40	0.18-0.20	0.78-0.86	0.01
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	South Shuiluo River	Category III standards	Monitoring value	8.33-8.38	7.81-7.98	11.1-12.8	3.86-4.07	0.198-0.206	0.02	0.02	0.021-0.026	0.90-0.93	60-70
			Standards for assessment	6-9	≤5	≤20	≤6	≤1.0	≤0.2	0.05	≤0.2	≤1.0	≤10,000
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.67-0.69	0.31-0.33	0.56-0.64	0.64-0.68	0.20-0.21	0.10	0.40	0.11-0.13	0.90-0.93	0.006-0.007
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Zhulinsi Reservoir	Category II standards	Monitoring value	8.25 ~8.29	8.03-8.05	6.06-6.91	1.97-2.14	0.216-0.236	0.01-0.02	0.02-0.03	0.027-0.029	0.44-0.47	90-120
			Standards for assessment	6-9	≤6	≤15	≤4	≤0.5	≤0.025	0.05	≤0.1	≤0.5	≤2,000
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.63-0.65	0.34	0.40-0.46	0.49-0.54	0.43-0.47	0.40-0.80	0.40-0.60	0.27-0.29	0.88-0.94	0.05-0.06
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Jingchuan County Subproject	Jing River (Cross Section of Wanyan Village)	Category III standards	Monitoring value	8.14-8318	8-8.06	12.6-15.2	4.67-4.92	0.638-0.7	0.12-0.14	0.03-0.04	0.035-0.039	0.91-0.94	2200-2800
			Standards for assessment	6-9	≥5	≤20	≤6	≤1.0	≤0.2	0.05	≤0.2	≤1.0	≤10,000

Subproject	Water Area	Item		pH	DO	COD	Permanganate index	Ammonia nitrogen	Total phosphorus	Petroleum	Sulfide	Total nitrogen	Fecal coliform
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.57-0.59	0.06-0.08	0.63-0.76	0.78-0.82	0.64-0.70	0.60-0.70	0.60-0.80	0.18-0.20	0.91-0.94	0.22-0.28
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Jing River (Cross Section of Luohandong)	Category III standards	Monitoring value	8.03-8.05	7.97-8.05	11.4-13.9	3.86-4.04	0.73-0.771	0.15-0.16	0.03-0.05	0.044-0.05	0.94-0.97	9200-9200
			Standards for assessment	6-9	≥5	≤20	≤6	≤1.0	≤0.2	0.05	≤0.2	≤1.0	≤10,000
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.52-0.53	0.07-0.09	0.57-0.70	0.64-0.67	0.73-0.77	0.75-0.80	0.60-1.0	0.22-0.25	0.94-0.97	0.92-0.92
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Rui River (Cross Section of Wangmu Palace)	Category III standards	Monitoring value	8.09-8.12	7.91-8.01	11.5-12.2	4.1-4.21	0.675-0.694	0.11-0.14	0.03-0.04	0.03-0.034	0.9-0.94	5400-9200
			Standards for assessment	6-9	≥5	≤20	≤6	≤1.0	≤0.2	0.05	≤0.2	≤1.0	≤10,000
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.55-0.56	0.08-0.11	0.58-0.61	0.68-0.70	0.68-0.69	0.55-0.70	0.60-0.80	0.15-0.17	0.90-0.94	0.54-0.92
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Tanchang County	Upstream of	Category II	Monitoring value	8.33-8.43	5.73-5.78	17.2-18.4	5.95-6.59	0.46-0.471	0.08-0.09	0.01L	0.018-0.02	11.2-11.5	9200

Subproject	Water Area	Item		pH	DO	COD	Permanganate index	Ammonia nitrogen	Total phosphorus	Petroleum	Sulfide	Total nitrogen	Fecal coliform
Subproject	Minjiang River	standards	Standard Index	0.665-0.715	1.33-1.405	1.147-1.227	1.488-1.468	0.92-0.942	0.8-0.9	/	0.18-0.2	22.4-23	4.6
			Above-standard Rate (%)	0	100	100	100	0	0	0	0	100	100
			Maximum times beyond standards	-	0.405	0.227	0.468	-	-	-	-	22	3.6
			Level of Compliance	Up to standard	Above-standard	Above-standard	Above-standard	Up to standard	Up to standard	Up to standard	Up to standard	Above-standard	Above-standard
	Downstream of Min River	Category Ⅱ standards	Concentration range	8.16-8.27	5.05-5.1	25.2-26.8	3.25-3.87	0.639-0.649	1.6-1.63	0.01L	0.019-0.021	15.2-15.5	16000
			Standard Index	0.58-0.635	2.35-2.425	1.680-1.787	0.813-0.968	1.278-1.298	16-16.3	/	0.19-0.21	30.4-31	8
			Above-standard Rate (%)	0	100	100	0	100	100	0	0	100	100
			Maximum times beyond standards	-	1.425	0.787	-	0.298	15.3	-	-	30	7
			Level of Compliance	Up to standard	Above-standard	Above-standard	Up to standard	Above-standard	Above-standard	Up to standard	Up to standard	Above-standard	Above-standard
	Guan'e Gully	Category Ⅰ standards	Concentration range	8.33-8.42	6.74-6.79	16.1-17.2	2.85-3.23	0.125-0.127	0.014-0.019	0.01L	0.02-0.022	0.73-0.77	1600
			Standard Index	0.665-0.71	1.852-1.912	1.073-1.147	1.425-1.615	0.833-0.847	0.700-0.950	/	0.4-0.44	3.65-3.85	8
			Above-standard Rate (%)	0	100	100	100	0	0	0	0	100	100
			Maximum times beyond standards	-	0.91	0.147	0.615	-	-	-	-	2.85	7
			Level of Compliance	Up to standard	Above-standard	Above-standard	Above-standard	Up to standard	Up to standard	Up to standard	Up to standard	Above-standard	Above-standard

Subproject	Water Area	Item		pH	DO	COD	Permanganate index	Ammonia nitrogen	Total phosphorus	Petroleum	Sulfide	Total nitrogen	Fecal coliform
	Daheba Gully	Category Ⅰ standards	Concentration range	8.29-8.37	6.24-6.31	15.8-16.4	2.9-3.27	0.044-0.049	0.14-0.15	0.01L	0.025-0.027	0.8-0.84	9200
			Standard Index	0.645-0.685	2.428-2.512	1.053-1.093	1.45-1.635	0.293-0.327	7-7.5	/	0.5-0.54	4-4.2	46
			Above-standard Rate (%)	0	100	100	100	0	100	0	0	100	100
			Maximum times beyond standards	-	1.512	0.093	0.635	-	6.5	-	-	3.2	45
			Level of Compliance	Up to standard	Above-standard	Above-standard	Above-standard	Up to standard	Above-standard	Up to standard	Up to standard	Above-standard	Above-standard
	Ming Lake	Category Ⅰ standards	Concentration range (mg/L)	8.16-8.3	6.84-6.91	15.2-15.8	3.1-3.26	0.096-0.107	0.09-0.1	0.03-0.04	0.021-0.023	0.82-0.86	1600
			Standard Index	0.58-0.65	1.708-1.792	1.013-1.053	1.55-1.63	0.64-0.713	4.5-5	0.6-0.8	0.42-0.46	4.1-4.3	8
			Above-standard Rate (%)	0	100	100	100	0	100	0	0	100	100
			Maximum times beyond standards	-	0.792	0.053	0.63	-	4	-	-	3.3	7
			Level of Compliance	Up to standard	Above-standard	Above-standard	Above-standard	Above-standard	Above-standard	Up to standard	Up to standard	Above-standard	Above-standard
	E'man Lake	Category Ⅰ standards	Concentration range (mg/L)	8.18-8.31	6.72-6.78	15.1-15.6	3.4-3.41	0.113-0.127	0.1-0.11	0.01L	0.02-0.022	0.94-0.97	3400
			Standard Index	0.59-0.655	1.864-1.936	1.007-1.04	1.7-1.705	0.753-0.847	5-5.5	/	0.4-0.44	4.7-4.85	17
			Above-standard Rate (%)	0	100	100	100	0	100	0	0	100	100
			Maximum times beyond standards	-	0.936	0.04	0.705	-	4.5	-	-	3.85	16

Subproject	Water Area	Item		pH	DO	COD	Permanganate index	Ammonia nitrogen	Total phosphorus	Petroleum	Sulfide	Total nitrogen	Fecal coliform
			Level of Compliance	Up to standard	Above-standard	Above-standard	Above-standard	Up to standard	Above-standard	Up to standard	Up to standard	Above-standard	Above-standard
Kang County Subproject	Yangba River (Meiyuan River)	Category Ⅱ standards	Monitoring value (mg/L)	7.87-8.11	7.8-7.94	8.41-17.1	2.18-3.1	Not detected	0.03-0.04	0.01-0.04	0.15-0.23	0.47-0.51	1400-2800
			Standards for assessment (mg/L)	6-9	≤5	≤15	≤6	≤1.0	≤0.2	≤0.05	≤0.2	≤0.5	≤2000/L
			Maximum Exceeding Standard Rate (%)	0	0	50	0	0	0	0	0	17	50
			Standard Index	0.44-0.56	0.10-0.14	0.59-1.14	0.36-0.52	0.01	0.15-0.20	0.20-0.80	0.08-0.12	0.95-1.01	0.70-1.40
			Level of Compliance	Up to standard	Up to standard	Above standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Above standard	Above standard
Hezheng County Subproject	Xiaoxia River (Cross Section of Songming Rock)	Category Ⅰ standards	Monitoring value	8.26-8.36	8.38-8.79	6.8-8.62	0.7-0.96	0.108-0.13	0.012-0.014	0.04L	0.005L	0.111-0.19	40
			Standards for assessment	6-9	≥7.5	≤15	≤2	≤0.15	≤0.02	≤0.05	≤0.05	≤0.2	≤200
			Maximum Exceeding Standard Rate (%)	0	0	0	0	0	0	0	0	0	0
			Standard Index	0.63-0.68	0.48-0.65	0.45-0.57	0.35-0.48	0.72-0.87	0.60-0.70	0.40	0.002	0.56-0.95	0.20
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Danancha River (Cross Section of Daxia River and Xiaoxia River	Category Ⅱ standards	Monitoring value	8.18-8.3	8.38-8.98	6.43-7.21	0.71-0.91	0.314-0.336	0.013-0.015	0.04L	0.005L	0.403-0.49	40-50
			Standards for assessment	6-9	≥6	≤15	≤4	≤0.5	≤0.1	≤0.05	≤0.1	≤0.5	≤2,000
			Maximum	0	0	0	0	0	0	0	0	0	0

Subproject	Water Area	Item		pH	DO	COD	Permanganate index	Ammonia nitrogen	Total phosphorus	Petroleum	Sulfide	Total nitrogen	Fecal coliform
	confluence)		Exceeding Standard Rate (%)										
			Standard Index	0.59-0.65	0.26-0.41	0.43-0.48	0.18-0.23	0.63-0.67	0.05-0.15	0.40	0.03	0.81-0.98	0.02-0.03
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard

3.8.2.3 Assessment of BaselineGroundwater Environment Quality

(1) Assessment standards and methods

Standards for assessment: According to "Gansu Province Surface Water Function Zoning (2012-2030)", the location of the project is "buffer zone of Jing River in Gansu and Ningxia" with Category Ⅲ water body as the target water quality. See Table 2.2-4.

Methods for assessment: According to the monitoring results and standard index methods, water quality parameters are evaluated individually. The formula is as follows:

$$S_{i,j} = \frac{C_{i,j}}{C_{si}}$$

$$S_{pH,j} = \frac{7.0 - pH_j}{7.0 - pH_{sd}} (\mathrm{pH_j} \leq 7.0) \quad S_{pH,j} = \frac{pH_j - 7.0}{pH_{su} - 7.0} (\mathrm{pH_j} > 7.0)$$

In this formula: $S_{i,j}$ -- the standard index of water quality parameter i at point j, dimensionless; $S_{i,j} \geq 1$ means exceeding the standard, otherwise it doesn't exceed;

Ci, j-- monitoring value of water quality parameter i at point j, in mg / L;

Csi-- standard value of water quality parameter i, in mg / L.

Where, standard index of pH is:

$$S_{pH,j} = \frac{7.0 - pH_j}{7.0 - pH_{sd}} (\mathrm{pH_j} \leq 7.0) \quad S_{pH,j} = \frac{pH_j - 7.0}{pH_{su} - 7.0} (\mathrm{pH_j} 7.0)$$

In this formula: $S_{pH,j}$-- standard index of water quality parameter pH at point j;

pHj - pH value at point j;

pH_{su}——the upper limit of pH value prescribed in surface water quality standards;

pH_{sd}——the lower limit of pH value prescribed in surface water quality standards.

(2) Monitoring results and baseline assessment

Water quality monitoring and assessment results of the project are shown in Table 3.8

Table 3.8-3 Baseline Groundwater Environment Quality Monitoring and Assessment Results (mg / L)

Subproject	Waters		Item	Total hardness	Sulfate	chloride	Permanganate index	Nitrate	Nitrite	Ammonia nitrogen	Iron	Lead	Total coliforms
Kongtong Mountain Subproject	Category Ⅲ standards	Tanzheng Lake	Monitoring value	279	76	-	0.56	2.01	0.003	0.062	0.03	0.01	<3.0
			Standards for assessment	≤450	≤250	≤250	≤3	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.62	0.304	-	0.187	0.100	0.15	0.31	0.1	0.2	-
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅲ standards	Xigou Village	Monitoring value	274	113	-	1.14	2.04	0.003	0.069	0.03	0.010	
			Standards for assessment	≤450	≤250	≤250	≤3	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.61	0.452	-	0.38	0.102	0.15	0.345	0.1	0.2	0
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Jingchuan County Subproject	Category Ⅲ standards	Wanyan Village	Monitoring value	179	107	21.8	0.87	3.3	0.003L	0.052	0.04	0.010L	3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.4	0.43	0.02	0.29	0.17	0.08	0.26	0.13	0.3	0.5
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅲ standards	Shuiquan Temple	Monitoring value	448	78	75.9	1.68	14.8	0.003L	0.094	0.03L	0.010L	3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0

Subproject	Waters		Item	Total hardness	Sulfate	chloride	Permanganate index	Nitrate	Nitrite	Ammonia nitrogen	Iron	Lead	Total coliforms
			Standard Index	0.99	0.31	0.02	0.56	0.74	0.08	0.06	0.05	0.3	0.5
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅲ standards	Luohandong Village	Monitoring value	444	97	68.1	0.56	3.96	0.003L	0.082	0.05	0.010L	3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.99	0.39	0.02	0.19	0.2	0.08	0.06	0.05	0.3	0.5
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Zhuanglang County Subproject	Category Ⅲ standards	Shiqiao Village	Monitoring value	357	63	15.5	2.74	7.40	0.003L	0.179	0.03	0.010L	3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.79	0.25	0.06	0.91	0.37	0	0.90	0.1	0	0
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅲ standards	Fomen Gully	Monitoring value	310	44	12.6	2.92	4.87	0.003L	0.158	0.03L	0.010L	3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.69	0.18	0.05	0.97	0.24	0	0.79	0	0	0
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Tanchang		Luren Village	Monitoring value	137	21	10L	0.76	1.52	0.001L	0.02L	0.03	0.010L	3

Subproject	Waters		Item	Total hardness	Sulfate	chloride	Permanganate index	Nitrate	Nitrite	Ammonia nitrogen	Iron	Lead	Total coliforms
County Subproject	Category Ⅰ Standards		Standards for assessment	≤150	≤50	≤50	≤1	≤2	≤0.001	≤0.02	≤0.1	≤0.005	≤3
			Standard Index	0.913	0.42	/	0.76	0.76	/	/	0.3	/	/
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅰ Standards	Xinping Village	Monitoring value	143	23	10L	0.83	1.87	0.001L	0.02L	0.03L	0.010L	3
			Standards for assessment	≤150	≤50	≤50	≤1	≤2	≤0.001	≤0.02	≤0.1	≤0.005	≤3
			Standard Index	0.953	0.46	/	0.83	0.935	/	/	/	/	/
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅰ Standards	Guan'e Village	Monitoring value	146	24	10L	0.91	1.75	0.001L	0.02L	0.03L	0.010L	3
			Standards for assessment	≤150	≤50	≤50	≤1	≤2	≤0.001	≤0.02	≤0.1	≤0.005	≤3
			Standard Index	0.973	0.48	/	0.91	0.875	/	/	/	/	/
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Kang County Subproject	Category Ⅲ standards	Zhuangke Village	Monitoring value	50	16	10L	1.12	0.36	0.003L	0.056	0.04	0.03L	3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.11	0.06	0.02	0.37	0.02	0.08	0.28	0.13	0.30	0.50
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard

Subproject	Waters		Item	Total hardness	Sulfate	chloride	Permanganate index	Nitrate	Nitrite	Ammonia nitrogen	Iron	Lead	Total coliforms
	Category Ⅲ standards	Yangba Town	Monitoring value	42	15	10L	0.74	2.04	0.003L	0.025L	0.03L	0.03L	＜3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.09	0.06	0.02	0.25	0.10	0.08	0.06	0.05	0.30	0.50
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅲ standards	Yinbazi	Monitoring value	49	14	10L	0.56	1.76	0.003L	0.025L	0.03L	0.03L	＜3
			Standards for assessment	≤450	≤250	≤250	≤3.0	≤20	≤0.02	≤0.2	≤0.3	≤0.05	≤3.0
			Standard Index	0.11	0.06	0.02	0.19	0.09	0.08	0.06	0.05	0.30	0.50
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
Hezheng County Subproject	Category Ⅱ standards	Songmingyan Scenic Area	Monitoring value	227	67	11.54	0.66	0.44	0.03L	0.025L	0.03L	0.05L	3
			Standards for assessment	≤300	≤150	≤150	≤2.0	≤5	≤0.01	≤0.02	≤0.2	≤0.01	≤3.0
			Standard Index	0.76	0.45	0.03	0.33	0.09	0.15	0.63	0.08	0.5	0.5
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅱ standards	South Songmingyan Town	Monitoring value	258	21.29	10.38	0.64	0.48	0.03L	0.025L	0.03L	0.05L	3
			Standards for assessment	≤300	≤150	≤150	≤2.0	≤5	≤0.01	≤0.02	≤0.2	≤0.01	≤3.0
			Standard Index	0.57	0.09	0.02	0.21	0.02	0.08	0.06	0.05	0.3	0.5

Subproject	Waters		Item	Total hardness	Sulfate	chloride	Permanganate index	Nitrate	Nitrite	Ammonia nitrogen	Iron	Lead	Total coliforms
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard
	Category Ⅱ standards	North Songmingyan Town	Monitoring value	233	21.7	11.47	0.71	0.47	0.03L	0.025L	0.03L	0.05L	3
			Standards for assessment	≤300	≤150	≤150	≤2.0	≤5	≤0.01	≤0.02	≤0.2	≤0.01	≤3.0
			Standard Index	0.52	0.09	0.02	0.24	0.02	0.08	0.06	0.05	0.3	0.5
			Level of Compliance	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard	Up to standard

3.8.2.4 Assessment of Baseline Acoustic Environment Quality

Table 3.8-4 Monitoring and Assessment Results of Baseline Acoustic Environment Quality

Subproject	Monitoring point	Acoustic Environment Function Zoning	Monitoring value				Standard value		Amount exceeding standards dB (A)			
			December 25, 2015		December 26, 2015				December 25, 2015		December 26, 2015	
			Daytime	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime
Kongtong Mountain Subproject	Xiangshan Temple	Category 1	49.6	36.2	48.7	38.2	55	45	-	-	-	-
	Xigou Village	Category 1	50.3	40.9	41.4	39.5	55	45	-	-	-	-
Jingchuan County Subproject	Wanyan Village	Category 2	49.8	41.9	47.2	39.6	60	50	-	-	-	-
	Shuiquansi Village	Category 2	58.3	48.3	54.5	47.2	60	50				
	Luohandong Village	Category 2	51.0	39.8	50.4	38.7	60	50	-	-	-	-
Zhuanglang County Subproject	Yunya Temple National Forest Park	Category 0	34.2	30.1	35.0	31.3	50	40	-	-	-	-
	Qianshanmen Tourist Service Center	Category 1	44.4	35.1	45.3	36.7	55	45	-	-	-	-
	Shiqiao Village	Category 1	35.1	30.2	36.0	32.3	55	45	-	-	-	-
Tanchang County Subproject	Guan'e Village	Category 1	54.7	43.4	53.4	43.7	55	45	-	-	-	-
	Washeping Village	Category 1	53.3	42.9	53.6	43.5	55	45	-	-	-	-

Subproject	Monitoring point	Acoustic Environment Function Zoning	Monitoring value				Standard value		Amount exceeding standards dB (A)			
			December 25, 2015		December 26, 2015				December 25, 2015		December 26, 2015	
			Daytime	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime
	Lijie Village	Category 1	53.4	44.7	54.1	44.5	55	45	-	-	-	-
	Luren Village	Category 1	54.8	42.7	53.1	42.9	55	45	-	-	-	-
	Daheba Village	Category 1	54.5	43.3	54.0	44.1	55	45	-	-	-	-
	Xinping Village	Category 1	53.5	43.3	54.7	42.5	55	45	-	-	-	-
	Yaping Village	Category 1	52.9	41.1	52.1	42.4	55	45	-	-	-	-
	Xinchengzi Village G212 1st floor of the first row of houses in the south	Category 4a	61.5	54.1	64.9	55.0	70	55	-	-	-	-
	Xinchengzi Village inner side 200m from the south of G212	Category 1	53.4	42.8	54.1	41.6	55	45	-	-	-	-
Kang County Subproject	Yangba Village	Category 1	53.9	40	53.4	44.5	55	45	-	-	-	-
	Yinba Village	Category 1	47.4	39.4	47.1	41.6	55	45	-	-	-	-
	Zhengjiahe	Category 1	46.3	39	46.9	39.9	55	45	-	-	-	-

Subproject	Monitoring point	Acoustic Environment Function Zoning	Monitoring value				Standard value		Amount exceeding standards dB (A)			
			December 25, 2015		December 26, 2015				December 25, 2015		December 26, 2015	
			Daytime	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime
	Tuya	Category 1	46.5	37.5	34.3	33.4	55	45	-	-	-	-
	Xiamajia	Category 1	45.7	35.2	34.4	35.8	55	45	-	-	-	-
	Aihewan	Category 1	38.6	37.3	31.7	35.2	55	45	-	-	-	-
	Laojiangba	Category 1	41.3	36.9	31.6	30.3	55	45	-	-	-	-
	Yinbali	Category 1	38.9	37.3	32.8	30.8	55	45	-	-	-	-
	Youfangba	Category 1	35	37.1	30.2	28.7	55	45	-	-	-	-
	Liujiaba	Category 1	33.5	33.6	33.5	28	55	45	-	-	-	-
	Yinbazi	Category 1	42.4	39.3	40.1	41	55	45	-	-	-	-
Hezheng County Subproject	Hongrui Jiayuan Residential Compound	Category 1	55.9	49.1	56.7	48.7	55	45	0.9	4.1	1.7	3.7
	Zhongxin Village	Category 1	52.0	39.0	50.5	38.8	55	45	-	-	-	-
	Diaotan Village	Category 1	43.8	37.8	43.3	37.7	55	45	-	-	-	-

Subproject	Monitoring point	Acoustic Environment Function Zoning	Monitoring value				Standard value		Amount exceeding standards dB (A)			
			December 25, 2015		December 26, 2015				December 25, 2015		December 26, 2015	
			Daytime	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime	Day	Nighttime
	Songmingyan Scenic Area	Category 0	37.1	30.7	38.3	30.3	50	40	-	-	-	-

3.8.3 Assessment Conclusion

(1) According to baseline monitoring results, the daily average amount of PM_{10}, PM2.5 and TSP, and the hourly and daily average amount of SO_2 and NO_2 in the project areas meet corresponding standards of Ambient Air Quality Standards (GB3095-2012). The baseline ambient air quality in the project areasis good.

(2) Baseline surface water environment monitoring results show that as villages and scenic areas in the areas of Tanchang County Subprojecthave no drainage facilities, residents and visitors' sewage have been discharged into the nearest natural environment, causing serious river pollution and water eutrophication, so the surface water there exceeds the standards. With the exception of Kang County Subproject whose three monitoring factors of TN, COD and fecal coliform are above standards, surface water factors of all remaining subprojects meet corresponding standards of Surface Water Environmental Quality Standards (GB3838-2002).

(3) According to the monitoring results, environmental quality of groundwater in the project areas meets Groundwater Quality Standards (GB / T14848-93).

(4) According to the monitoring results, affected by traffic and social life in the surrounding areas, noise in Hongrui Jiayuan Residential Compound exceeds the standard by a certain margin. The other sensitive points meet corresponding standards of Acoustic Environment Quality Standards (GB3096-2008).

Chapter 4 Assessment of Environmental Impacts during Construction

The Project would be implemented mainly in scenic areas and involve nature reserves, scenic areas, protected water source sites, forest parks, geological parks, wetlands and other ecologically sensitive areas. Land occupation by relevant works and noise, waste gas, wastewater and solid waste generated during construction would have some impacts on ecological environment, atmospheric environment, acoustic environment and water environment in the project areas. These impacts are analyzed below.

4.1 Impacts on Ecologically Sensitive Areas

The project areas include nature reserves, scenic areas, protected water source sites, forest parks, geological parks, wetlands and other ecologically sensitive areas. The relationship between six subprojects and ecologically sensitive areas is shown in Table 3.5-1.

4.1.1 Relevant Laws and Regulations

Relevant national and Gansu provincial laws and regulations include the following requirements for the protection of ecologically sensitive areas:

4.1.1.1 Relevant laws and regulations on nature reserves

1. Provisions of Regulations on Nature Reserve Protection

Article 18 Nature reserves can be divided into core areas, buffer areas and experimental areas.

Within the nature reserves, a well-preserved ecological system in natural status and concentrated habitats of rare and endangered animal and plant species shall be classified as core areas, which any organization and individual must not access; except upon approval under Article 27 of these Regulations, scientific research activities are also banned.

A certain area of the peripherals of the core areas can be classified as buffer areas, where only scientific research and observation activities are allowed.

Areas outside of the buffer areas shall be classified as experimental areas, where scientific experiments, teaching and internship, visits and examination, tourism and domestication and breeding of rare and endangered wild animals and plants are allowed.

A certain area in the peripherals of the nature reserves can be classified as peripheral reserves, if considered necessary by the local governments that have approved establishment of the nature reserves.

Article 26 Unless otherwise provided by laws and administrative regulations, it is prohibited to carry out deforestation, husbandry, hunting, fishing, herb gathering, wasteland reclamation, burning, mining, stone collection and sand excavation activities in nature reserves.

Article 27 Individuals are banned from entering core areas of nature reserves. Where access to the core areas is necessary for scientific research, observation and investigations, an application and plan shall be submitted to the administrative authority of the nature reserve and shall be approved by the administrative authority of the people's government on nature reserves at or above the provincial level; access to the core areas of national nature reserves shall be subject to approval by the administrative authority on nature reserves under the State Council.

Where it is necessary for the aboriginal residents of the core areas of nature reserves to move out, these aboriginal residents shall be resettled by the local governments of the nature reserves.

Article 28 It is prohibited to carry out tourism, production or operation activities in the buffer areas of the nature reserves. Where access to the nature reserves is necessary for non-damaging scientific research, teaching and internship and specimen collection, an application and plan shall be submitted to and approved by the administrative authority of the nature reserve. Any organization and individual engaged in the aforesaid activities shall submit a copy of the results of their activities to the administrative authority of the nature reserve.

Article 29 For visits and tourist activities in the experimental areas of national nature reserves, the administrative authorities of the nature reserves shall propose a plan, which shall be submitted to the administrative authority on nature reserves under the State Council after review by the administrative authorities on nature reserves under the people's government at the provincial, municipal and autonomous region levels.

2. Provisions of Regulations of Gansu Province on Nature Reserve Protection

The Regulations of Gansu Province on Nature Reserve Protection has the same division of nature reserves as the Regulations on Nature Reserve Protection. Regulations of Gansu Province include the following additional requirements for nature reserve protection:

Article 17 Residents in the nature reserves shall observe the rules of the nature reserves, engage in production and living activities without damaging the environmental resources, and assist the administrative authority in nature protection.

Article 18 To carry out tourism activities in the experimental areas of nature reserves at provincial, prefecture, municipal (regional), county and municipal (district) levels, the administrative authority of the nature reserve shall propose a plan, which shall be submitted to and approved by the administrative authority on nature reserves under the provincial government.

For visit and tourism in the experimental areas of nature reserves, the administrative authority shall carry out stringent supervision and take effective measures to prevent damage to the natural environment and resources.

Article 19 Domestic and foreign groups, economic entities and individuals may invest in projects related to protection of environmental resources in the experimental areas of nature reserves and shall be entitled to relevant preferential policies. Participation in the said investment activities shall be subject to review by the administrative authority of the nature reserve and submitted to and approved by the administrative authority of nature reserves under the State Council or provincial government.

Article 20 Projects in the peripherals of nature reserves must not impair the environmental quality within the nature reserves.

Article 21 Within nature reserves, it is prohibited to:

1) Carry out deforestation, husbandry, hunting, fishing, herb gathering, wasteland reclamation, burning, mining, stone collection and sand excavation activities, unless otherwise provided by laws and regulations;

2) Dump waste;

3) Discharge sewage.

4.1.1.2 Laws and regulations on scenic area reserves

1. Provisions of the Regulations on Scenic Areas

Article 26 Within scenic areas, it is prohibited to:

1) Carry out activities that damage landscape, vegetation and terrains, such as creation of mountains, quarrying, mining, land reclamation and building of tombs and monuments;

2) Build storage facilities of explosive, combustive, radioactive, toxic and corrosive articles;

3) Scrape and vandalize scenic spots or facilities;

Article 27 **It is prohibited to set development zones or build hotels, guesthouses, training centers, rehabilitation centers and other buildings irrelevant to the protection of scenic spots in the core areas of the scenic spots in violation of the planning of the scenic spots;** any such facilities that have already been built shall be gradually relocated.

Article 30 Construction projects in the scenic areas shall comply with the planning of the scenic areas and be compatible with the landscape, and must not disrupt the landscape, pollute the environment or hinder sightseeing.

Where construction activities are carried out in scenic areas, the owner and the construction contractor shall prepare a plan for pollution prevention/treatment and water/soil preservation and take effective measures to protect the landscapes, waters, forestry/grass/vegetation, wild animals and terrains in the surroundings.

2. Provisions of Gansu Regulations on Scenic Areas

Gansu Regulations on Scenic Areas has the following additional requriemetns for protecting scenic areas:

Article 17 It is prohibited to transfer scenic resources and areas.

Article 21 Collection of species specimen, wild herbs and other byproducts of the forest shall be restricted within scenic areas. Where such collection is necessary, approval of the administrative authority of the scenic areas shall be acquired, and the approval formalities shall be completed as required by relevant laws and regulations of the state; where key protected wild plants are to be collected, the collection license shall be obtained under law, and collection shall be carried out at designated locations to a limited extent.

Article 22 Within scenic areas, it is prohibited to:

1. Use the land in the scenic area without legal permission;
2. Deforest or damage ancient and famous trees;
3. Smoke or use fire in areas where fire use is banned;
4. Hunt or hurt protected wild animals;

5) Engage in husbandry against law;

6)Carry out any other activities that damage the landscape, ecology and environmental health.

4.1.1.3 Relevant laws and regulations on water source protection areas

1. Provisions of the Law of the People's Republic of China on Water Pollution Prevention and Treatment

Article 57 It is prohibited to set sewage outlets in drinking water source protection areas.

Article 58 It is prohibited to build, renovate or expand any facilities irrelevant to water supply and protection of water source protection areas in Category I drinking water source protection areas; for any existing buildings irrelevant to water supply and protection of water source protection areas, the people's government at or above the county level shall order demolition or shut-down. It is prohibited to carry out any activities that may pollute the drinking water in Category I drinking water source protection areas, such as cage culture, sightseeing, swimming or fishing.

Article 59 It is prohibited to build, renovate or expand any facilities that produce pollutants in Category II drinking water source protection areas; for any existing buildings that produce pollutants, the people's government at or above the county level shall order demolition or shut-down.

It is prohibited to carry out any activities that may pollute the drinking water in Category II drinking water source protection areas, such as cage culture and sightseeing, for which measures shall be taken to protect the drinking water source from being polluted.

2. Provisions of the Administrative Regulations Pollution Prevention and Treatment in Drinking Water source protection areas

Law of the People’s Republic of China on Water Pollution Prevention and Control has the following additional requirements for protecting water source sites:

Article 8 Certain water and land areas near the water source intake are classified as category-1 drinking water surface source reserves. The water quality of category-1 reserves must not be lower than the level-II standard in the Environmental Quality Standards of Surface Water and shall comply with the requirements of the Sanitation Standards of Living and Drinking Water.

Article 9 Certain water and land areas outside of the category-1 drinking water source protection areas are classified as Category II drinking water surface source reserves. The water quality of Category II reserves must not be lower than the level-III standard in the Environmental Quality Standards of Surface Water. The water quality of category-1 reserves shall meet relevant standards.

Article 10 Certain water and land areas outside of the Category II drinking water source protection areas are classified as pro-reserves of drinking water surface source. The

water quality standards of pro-reserves shall be such as to ensure the water quality of Category II reserves meet the specified standards.

Article 11 Within the pro-reserves of all categories of drinking water source protection areas, it is prohibited to:

1. Carry out any activity that damages the ecological balance of the water environment or damages the water source forest, protected belt and vegetation related to water source protection;

2. Dump industrial waste, urban waste, excretion and other waste to water bodies

3. In principle, transport vessels and vehicles of toxic/hazardous substances, oil and excretion may not enter the reserves, and where entry is necessary, prior approval of the competent authority shall be obtained, with registration completed and measures taken to prevent penetration, overflow and leakage.

4. Use highly toxic and residual pesticides, or abuse fertilizers, or use explosives and drugs for fishing.

Article 12 Within all levels of drinking water source protection areas and pro-reserves, the following rules apply:

Within Category II reserves, it is prohibited to build or expand facilities that discharge waste to waters. For renovated facilities, discharge of pollutants must be reduced; effluent at the original sewage outlets must be reduced to ensure water quality in the reserves meets the specified standards; it is prohibited to set up wharfs for loading/unloading waste, excretion, oil and toxic substances.

4.1.1.4 Laws and regulations on forest parks

1. Provisions of the Administrative Measures for National Forest Parks

Article 18 Within national forest parks, it is prohibited to:

1) Engage in unauthorized collection of flowers, trees and herb plants;

2) Illegally hunt and kill wild animals;

3) Doodle or taint trees, rocks, relics and tombs;

4) Damage or relocate facilities in the parks without authorization;

5) Discharge domestic sewage and liquid/gaseous waste without treatment, dump garbage, residues, waste and other pollutants;

6) Smoke in areas other than the designated smoking zones, or use fire, burn candles and set fireworks or firecrackers in areas other than the designated zones;

7) Set booths to sell commodities;

8) Encircle, fill, block or intercept natural water systems without authorization;

9) Engage in any other activities prohibited by laws and regulations.

2. Provisions of Administrative Regulations of Gansu Province on Forest Parks

Gansu Provincial Regulations has the same provisions as National Regulations on the Protection of Forest Parks.

4.1.1.5 Laws and Regulations on Geological Parks

Provisions of the Administrative Regulations on Geological Relic Protection

Article 11 Division of degrees of protection: Category-1, Category II and category-3 protection can be provided for the geological relics in the reserves.

Category-1 protection: Category-1 protection is provided for extremely rare international or domestic geological relics with important scientific value, and approval is mandatory for access to such relics. Upon approval of the administrative authority of geological mines under the people's government setting the geological relic reserve, visits, scientific research or international exchange events can be organized.

Category II protection: Category II protection is provided for geological relics with important scientific value in a large area. Upon approval of the administrative authority of geological mines under the people's government setting the geological relic reserve, scientific research, teaching, academic exchange or proper tourism activities are allowed.

Category 3 protection: Category 3 protection is provided for geological relics with certain value. Upon approval of the administrative authority of geological mines under the

people's government setting the geological relic reserve, tourism activities can be organized.

Article 17 No organization or individual may engage in activities that may affect the geological relics in the reserves, such as quarrying, soil borrowing, mining, grazing and deforestation. Without approval of the administrative authority, it is prohibited to collect specimen and fossils in the reserves.

Article 18 It is prohibited to build factories or other structures not related to the protection of geological relics; existing buildings that may pollute or damage the geological relics shall be rectified or relocated within a deadline.

Article 19 The administrative authority may approve scientific research, teaching and tourism activities within the reserves depending on the degree of protection of the geological relics. A copy of the research findings shall be submitted to the administrative authority for archiving.

4.1.1.6 Laws and Regulations on Wetland Reserves

1. Provisions of the Administrative Provisions on Wetland Protection

Article 31 Unless otherwise provided by laws and regulations, it is prohibited to:

1) Reclaim wetland, or engage in husbandry and fishing;

2) Fill or drain wetland or change its purpose without authorization;

3) Use or intercept the water source of the wetland;

4) Excavate sand, borrow soil or build mines;

5) Discharge domestic sewage and industrial wastewater;

6) Ruin the habitats of wild animals and the return passages of fish, collect wild plants or hunt wild animals;

7) Import alien species;

8) Engage in any other activities that damage the wetland and its ecological function.

Article 32 Construction projects shall not occupy or shall occupy little wetland. Where it is necessary to occupy any wetland, the wetland user shall complete relevant formalities and provide compensation.

2. Administrative Measures for National Wetland Parks (Trial)

Article 14 National wetland parks can be divided into wetland culture zones, restoration and reconstruction zones, publicity and exhibition zones, reasonable utilization zones and administrative service zones, which are subject to differentiated administration.

Except necessary administrative activities for protection and monitoring in the wetland nurturing zone, no activities unrelated to the protection and administration of the wetland ecological system are allowed. Only wetland nurturing and restoration activities are allowed in the restoration and reconstruction zone. Ecological exhibition and science popularization education can be carried out in the publicity and exhibition zone. Tourist activities that do not damage the wetland ecological system are allowed in the reasonable utilization zone. Administration, reception and service activities are allowed in the administration and service zones.

3. Provisions of Regulations of Gansu Province on Wetland Protection

Article 9 It is prohibited to carry out human activities that may damage the wetland, such as land reclamation, excavation, hunting, burning, mining and blasting.

It is prohibited to build any non-protective facilities that intercept, collect or discharge water in and outside of the wetland reserve. Without approval of the wetland administrative authority at or above the county level, it is prohibited to build any structures within 50m from the natural waterways in the wetland reserve and the verge of the wetland.

Article 10 It is prohibited to discharge wastewater or dump waste in the wetland reserve or protective peripherals thereof.

It is prohibited to build new production facilities in the wetland reserve. For existing production facilities, the exhaust level shall meet the national standards, otherwise such facilities shall be relocated within a deadline.

Article 11 It is prohibited to put any chemicals that endanger the water and aquatic creatures within 100m from the verge of the wetland.

When placing drugs in the scope of the wetland, the health authority shall take precautionary measures along with the local administrative authority, to prevent damage to the biological resources in the wetland.

Article 12 It is prohibited to introduce any hazardous species into the wetland.

Article 13 In wetland that serves as the habitats of migrants, the scope of protection shall be determined, with special protection measures in specific seasons.

Article 14 Exploitation of wetland resources shall be subject to the plan on wetland resource protection. It is prohibited to change the basic function of the wetland ecological system, or overuse resources beyond their renewal capacity or cause permanent damage to the wild animals and plants, or damage the habitats and living environment of wild animals and plants.

4.1.2 Relationship between Kongtong Mountain Subproject and Ecologically Sensitive Areas

Pursuant to Table 3.5-1, Kongtong Mountain Subproject would involve four ecologically sensitive areas: Kongtong Mountain Nature Reserve, Kongtong Mountain Secnic Area, Kongtong Mountain Geological Park and Yangzi Village Drinking Water Source Protection Area. Relationship betweenthe Subproject and these sensitive areas is indicated in Figure 2.2-1.

Pursuant to Table 3.5-1, no construction activities would be carried out in the core and buffer areas of Kongtong Mountain Nature Reserve and only protection infrastructure would be built in the experimental area of the reserve. Therefore, the subproject complies with the requirements of the Regulations on Nature Reserves and the Administrative Regulations of Gansu Province on Nature Reserves.

Under the subproject, some construction activities would be carried out in Category I, II and III reserves of Kongtong Mountain Geological Park. Construction activities in these reserves would not involve blasting, deep excavation and other activities that may harm the Danxia landform. Therefore, the subproject meets the requirements of the Administrative Regulations on Geological Relic Protection.

The subproject is located in Kongtong Mountain. During construction, there would be no deep excavation, blasting or felling of trees. Therefore, the subproject complies with relevant requirements of the Regulations on Scenic Areas and the Administrative Regulations of Gansu Province on Scenic Areas.

The subproject is adjacent to Yangzi Village Drinking Water Source Protection Area with the nearest distance being about 250m. There would be no construction activities in the area, or activities banned by the Law of the People's Republic of China on Water Pollution Prevention and Control and the Administrative Regulations on Prevention and Management of Pollution in Drinking Water Source Protection Areas. Therefore, the project meets relevant laws and regulations.

4.1.3 Relationship between Jingchuan County Subproject and Water source Protection Area

Pursuant to Table 3.5-1, buried water supply pipeline under the subproject is located in the Yangliuwan Category II groundwater source protection area. There would be no activities prohibited by the Law of the People's Republic of China on Water Pollution Prevention and Control and the Administrative Regulations on Prevention and Management of Pollution in Drinking Water Source Protection Areas.

4.1.4 Relationship between Zhuanglang County Subproject and Ecologically Sensitive Areas

Pursuant to Table 3.5-1, the subproject would involve four sensitive areas, namely, Yunya Temple National Forest Park, Yunya Temple Provincial Scenic Area, Yunya Temple Provincial Geological Park and Zhulinsi Reservoir Water Source Protection Area. See Figure2.2-3 for the locational relationship between the subproject and the above sensitive areas.

All works under the subproject are located in Yunya Temple National Forest Park and Yunya Temple Provincial Scenic Area. The subproject would only include construction of protection infrastructure and there would be no activities prohibited by the Administrative Measures for National Forest Parks and the Administrative Regulations of Gansu Province on Forest Parks or activities prohibited by National Regulations on Scenic Areas and Gansu Provincial Regulations on Scenic Areas. Therefore, implementation of the subproject meets relevant requirements of these regulations.

The subproject is also located in the Category I, II and III protected areas of Danxia landform in the Yunya Temple Provincial Geological Park.There would be no blasting, deep excavation and other activities that may harm Danxia landform. Therefore, the subprojectmeets the requirements of the Administrative Regulations on Geological Relic Protection.

Some works under the subproject are located in the Category IIwater source protection area of Zhulinsi Reservoir, but there would be no construction, improvement and expansion of facilities discharging pollutants. Therefore, the subproject meets the Law of the People's Republic of China on Water Pollution Prevention and Controland the Administrative Regulations on Prevention and Management of Pollution in Drinking Water Source Protection Areas.

4.1.5 Relationship between Kang County Subproject and Ecologically Sensitive Areas

Pursuant to Table 3.5-1, the subproject would involve two sensitive areas, namely, Gansu Giant Salamander Nature Reserve and Meiyuan River Wetland Park. The relationship between the subproject and these sensitive areas is shown in Figure 2.2-4.

Meiyuan River Scenic Area wood patrol access, firefighting access from Yinbazi to the Xiaomomo Mountain are located in the buffer zone of the Giant Salamander Nature Reserve, and therefore do not meet the requirements of the Regulations of the People's Republic of China on Nature Reserves. The reserve is currently undergoing adjustment. After the adjustment, the section of the Yangba River from Liujiaba to Yangba Town and the Taiping River would be located in the experimental area, and therefore the trails and plank road. After adjustment, the above works would be located outside the reserve and would meet the requirements of Regulations of the People's Republic of China on Nature

Reserves.The locational relationship between the subproject and the reserve before and outside the adjustment is shown in Figure 4.1-1.

Under the subproject, Meiyuan River Scenic Area wood patrol access is located in the rational utilization area of Meiyuan River Wetland Park and would meet the requirements of the Administrative Regulations on Wetland Protection, the Administrative Measures for National Wetland Parks (Trial) and the Regulations of Gansu Province on Wetland Protection.

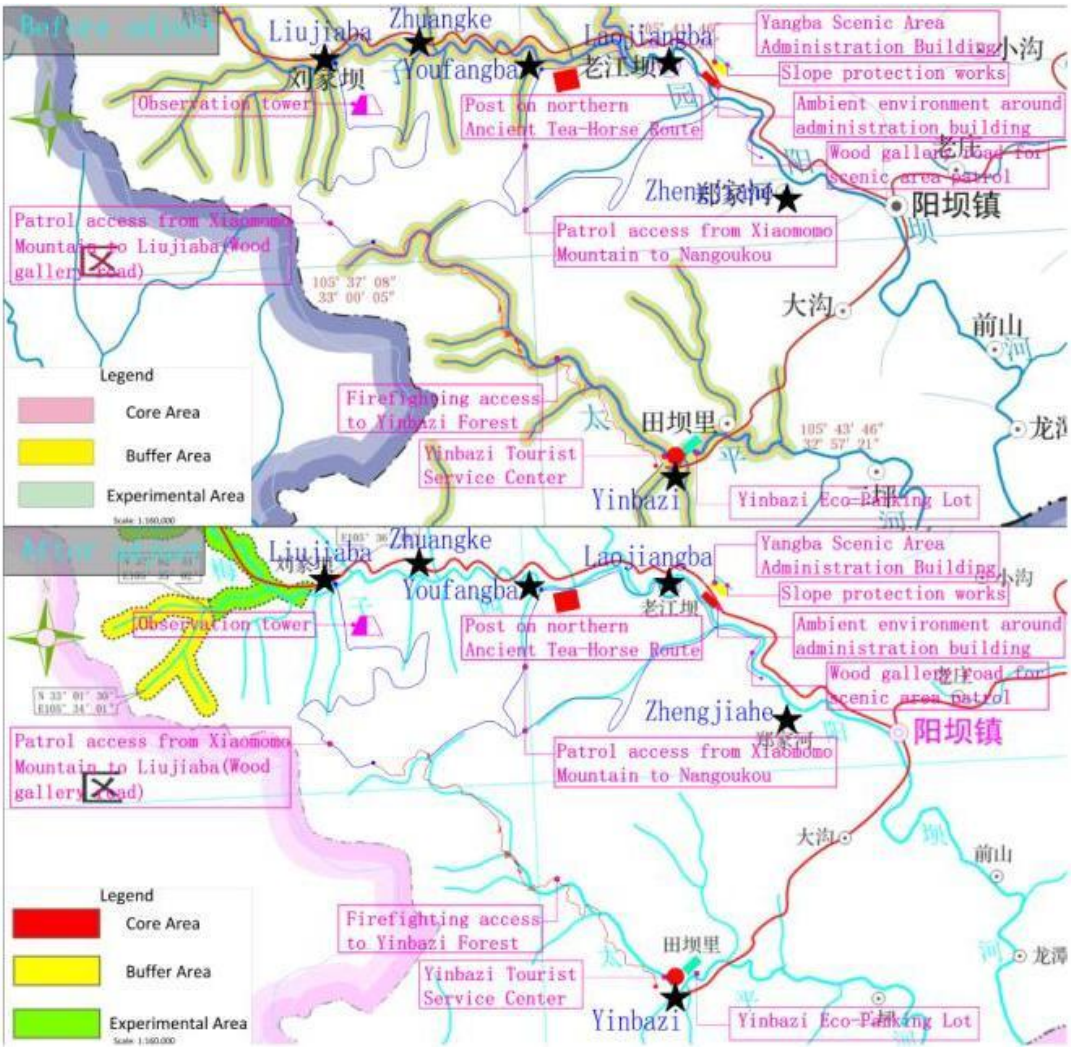

Figure 4.4-1 Relationship between Kang County Subproject and Nature Reserve before and after Adjustment

4.1.6 Relationship between Tanchang County Subproject and Ecologically Sensitive Areas

Pursuant to Table 3.5-1, the subproject would involve three sensitive areas, namely, Gansu Guan'e Gully National Forest Park, Guan'e Gully National Geological Park and Guan'e Gully water source site. The relationship between the subproject and these sensitive areas is shown in Figure 2.2-5.

Additional 21km-long 10KV power cable, Leigu Mountain Trail collapse disaster control and Daheba Zhima River-Eman Tianchi Section landslide disaster control are located in the Category II reserve of the forest park and other construction activities are located in Category III reserve of the park. There would be no blasting, deep excavation and other activities that may harm the landform. Therefore, the subproject meets relevant requirements of Administrative Regulations on Geological Relic Protection.

Under the subproject, the works nearest to the Guan'e Gully water source site is laying of new sewers and is 720m away from the downstream of Guan'e Gully. Therefore, the subpoject meets relevant requirements of Law of the People's Republic of China on Water Pollution Prevention and Control and Administrative Regulations on Pollution Prevention and Control in Drinking Water Source Protection Areas.

4.1.7 Relationship between Hezheng County Subproject and Ecologically Sensitive Areas

Pursuant to Table 3.5-1, the subproject would involve two sensitive areas, namely, Taizi Mountain National Nature Reserve and Gansu Hezheng Ancient Animal Fossil National Geological Park. The relationship between the subproject and these sensitive areas is shown in Figure 2.2-6.

Under the subproject, there would be no construction activities in the core and buffer areas of Taizi Moutain Nature Nature Reserve and only protection infrastructure would be built in the experimental area of the reserve. Therefore, the

subproject meets relevant requirements of National Regulations on the Protection of Nature Reserves and Gansu Provincial Regulations on Protection of Nature Reserves.

The subproject is also locaatedf in the Category IIIreserve of Hezheng Ancient Animal Fossil National Geological Parkand would not involve blasting, deep excavation and other activities that may harm the landform. Therefore, the subproject meets relevant requirements of Administrative Regulations on Geological Relic Protection.

4.2 Impacts on Eco-environment

Main activities of the project destroying eco-environment in the project areas are: subgrade excavation of road works, trench excavation and backfill of pipeline works, building works, landscape works, ancillary works, excavation of subgrade padding field, noise of construction machinery, daily activities of construction personnel, etc. For the road works, excavation of subgrade and subgrade padding field directly causes change of local landform features, soil degradation and stripping of surface weathered zone (detrition belt); construction works and landscape works would directly destroy vegetation within the land scope and in the surroundings; temporary land occupation of trench excavation and backfill of pipeline works would destroy ground vegetation and original ground surface. In addition, treading of staff and rolling of construction machinery would also cause vegetation deterioration and water and soil erosion within a certain area.

4.2.1 Impacts on Landforms and Soil in the Prorject Areas

The proposed subprojects are distributed in different areas of Gansu Province. See the table below for the different landforms involved.

Table4.2-1 Landform Type of Each Subproject

SN	Subproject	Landform Type
1	Kongtong Mountain Subproject	Mountain landforms of Liupanshan Mountains and the landform unit of its eastern Loess Hill
2	Jingchuan County Subproject	Gully areaof Loess Hill

3	Zhuanglang County Subproject	Gully area of Loess Plateau
4	Kang County Yangba Heritage Protection Subproject	Mountain valley
5	Tanchang County Subproject	Mountain valley
6	Hezheng County Subproject	High mountains and valley terrace

During implementation of the project, main activities affecting landform types include: building works, road works (including firefighting access, trail, etc.), pipeline works, etc. Elimination of the surface soil layer and destruction of ground vegetation within the operation area directly affects stripping of surface weathered zone (detrition belt) in the project areas, weakening of the ability to resist external environment disturbance on local land system, and reduction of original surface stability. In addition, during the project implementation, surface occupation would also cause disturbance on landforms. Excavation of earth-rock, rolling of transport vehicles and treading of construction personnel, etc. would cause loss of surface covered layer, increase of surface fragmentation, increase of bare land, destruction of native vegetation, and change of original landform features.

During the construction of new roads works and pipeline works, it would first excavate 10-15cmsurface regolith along the selected line. Nearly all vegetation on the soil surface are destroyed, and surface soil property changes to a certain extent.

Although there is no vegetation in the project areas for construction of buildings and structures, excavation of foundation would destroy the soil.

See Table4.2-2 for land occupation types of all subprojects.

Table 4.2-2 Statistics for Land Occupation Situation of Each Subproject (mu)

Subproject	Woodland	Waste land	Construction land	Grassland	Paddy Field	Total
Kongtong Mountain Subproject	72.17	9.18	43.99			125.34

Jingchuan County Subproject		6.24	36.4	58.35		100.99
Zhuanglang County Subproject	227.98					227.98
Kang County Subproject		3.9	55.74	215.33		274.97
Tanchang County Subproject		1.44				1.44
Hezheng County Subproject	25.68	4.26	41.17			71.11

Based on analysis on the nature and characteristics of the project, potential impacts of subproject implementation on the development and utilization of land resources mainly include:

1. During project implementation, use of various construction machinery and equipment, driving of transport vehicles, activities of construction personnel, etc. would cause treading, rolling and surface excavation on the land, destroy the original land to a certain extent, and change current landforms and land use types in the project areas.

2. After completion of the project, with reconstruction of surface configuration and construction of scenic spot protection facilities in the scenic areas, and buildings and infrastructure in the management service area, land use nature and structure in the project areaswould change.

4.2.2Impacts of Water and Soil Erosion

Water and soil erosion of the project mainly occurs within the construction period of road works and infrastructure, and its degree is mainly controlled by construction period, bare area after surface excavation, wind speed, etc.

Impacts of water and soil erosion of the project construction mainly exists in construction period, earth-rock phase of buildings and structures such as building works, road works (including fire fighting access, trial, etc.), pipeline works and ancillary works, and material obtaining phase of subgrade padding field. See Table4.2-3 for specific water and soil erosion quantity.

Table 4.2-3 Water and Soil Erosion Quantity of Each Subproject during Construction Period

Subproject	Land occupation area/km^2	Construction period	
		Erosion modulus/t/km^2a	Quantity of water and soil erosion /t
Kongtong Mountain Subproject	0.084	1600	133.697
Jingchuan County Subproject	0.067	1600	107.723
Zhuanglang County Subproject	0.152	1600	243.180
Kang County Subproject	0.018	1250	22.914
Tanchang County Subproject	0.0008	1250	1.0
Hezheng County Subproject	0.047	1600	75.851

Possible hazards due to water and soil erosion caused by the project mainly include:

1. Destroying land resources and plant resources: Project construction changes land use structure, meanwhile affects vegetation growth, and changes landform and landscape ecology.

2. Intensifyingwater and soil erosion

According to the results of prediction of increased water and soil erosion quantity, disturbed area of the project is small. Construction activities damage ground vegetation, destroy surface crust, and cause water and soil erosion easily in case of strong wind. In order to reduce a series of impacts on eco-environment caused by water and soil erosion, effective measures shall be taken to control water and soil erosion and reduce its adverse environmental impacts.

4.2.3Analysis of Impacts on Vegetation Destruction

Main factors causing destructios to vegetation during project construction include excavation of subgrade, trench excavation of pipeline works, occupied transport road, human activities, etc., and disturbance of various activities on the surface to some extent. The degree of destructive impacts on ecological system depends on different operating intensity and duration.

Excavation surface of subgrade and trench is covered with earth, which affects normal growth of vegetation in the project areas, causes poor growth or death of xerophytes, and reduction of vegetation area in local area.

Vegetation within the disturbed scope of subproject construction is common and widely distributed plant species, rather than rare and endangered species. The degree of vegetation destruction depends on different operating areas and thickness of surface soil. Vehicle rolling, walking and rest and other activities of crowd wouldtrample onand destroy vegetation within the occupation range and in the surroundings, causing poor growth and death.

Vegetation loss area caused by linear works accounts for a very small proportion in the same kind of vegetation form along the line. Therefore, occupation of land of the project has minimal impacts on quantity of vegetation resources along the line, only causing reduction of partial biomass along the line, with little impacts on destruction of regional ecological integrity.

In a word, there is narrow vegetation coverage and scarce plant species in the surroundings of construction scope, and there are no national key protected plant resources, so main environmental impacts of the project after vegetation destruction is destruction of sandy crust, bare surface, increased fugitive dust and new sand-dust source. Plant species affected by the project are widely distributed in

the project areas, and they are common species. Therefore, project construction would only reduce the quantity of the affected species in the area without species extinction. It would not cause reproductive isolation and habitat fragmentation of species, or affect natural connection and spread of them. After the project construction completion, renovate and restore the disturbed land to make vegetation distribution gradually restore to natural state, and gradually restore and improve eco-environment of this region.

4.2.4 Analysis of Impacts on Wild Animals

Road works, pipeline works, landscape works and building works of the projectwould destroy the original natural environment features to some extent, and thus destroy habitats of wild animals. Intensified human activities such as construction activities, machine running and frequent vehicle driving would affect habitat, foraging and other activities of wild animals.

I. Analysis of impacts on habitat of wild animals

Way of construction impacts on protected wild animals mainly includes activity and operating noise of construction teams. Disturbance of these factors would narrow habitat space of wild animals.

All human activities during construction may disturb partial living environments of animal species, and thus obviously reduce habitats of wild animals. In this region, if human activities cause habitat fragmentation, animals around may be forced to migrate to the south of the scenic area.

Therefore, it shall work out the solution for strictly controlling human activity intensity and time arrangement during construction. In the meantime of preventing construction personnel from arbitrarily hunting wild animals, one of the problems that should be solved carefully during project construction is to strive to prevent the construction and operation activities from seriously disturbing normal living of wild animals.

II. Analysis of impacts on foraging of wild animals

Although there are few kinds of valuable and rare and endangered animal species with regionally important protection values in the project areas due to sparse vegetation and distant water sources, the several animal species impose high requirements on habitats. These animal species always need continuous and large low-yielding desert as their foraging fields, need to build dens in quiet areas far away from human activities, and need to drink water in the place with pore water. Project construction activities in the project areaswould disturb living environments of the above animal species to some extent, and thus causing habitat fragmentation.

Land occupation scope of the project construction is small, the impactscope is relatively small, and the impacts on foraging of wild animals are minimal.

III. Impacts on animal diversity

Protected animals of importance in the project construction range are mainly birds and beasts. They are vigilant inherently, and sensitive to the change of living environments. Project construction changes their living environments to some extent. But they have a large range of activity and strong migration abilities, and would look for similar habitats which are widely distributed in surroundings easily. Project construction only affects part of their activity scopes, so species and quantity of wild animals would not be affected obviously, not to speak of the species composition and structure.

4.3 Impacts on Atmospheric Environment

During the construction of the project, main factors polluting ambient air are construction fugitive dust, asphalt smoke, fuel exhaust gas and organic exhaust gas.

1. Fugitive dust

During the construction of the project, dust pollution is mainly from: Dust from earthwork excavation, stacking, clearing and transport, backfill and site leveling, etc.; dust-raised pollution caused in the process of handling, transporting and stacking building materials such as cement and sand due to wind effect; ground dust caused

by driving of transport vehicles; fugitive dust caused by stacking, clearing and transport of construction waste.

During construction, sprinkle water for 4-5 times a day on the road where vehicles pass, to control dust and reduce dust to about 70%, and shorten the TSPpollution distance to 20-50m. Therefore, the effective way to reduce dust raised by vehicles is to limit the driving speed and keep the surface clean, and meanwhile sprinkling water on the road.

The effective way to control this kind of dust is to reduce open stacking of building materials and earthworks, and guarantee a certain moisture content.

2. Asphalt fumes

Asphalt fumes are generated during asphalt pavement construction, with pollutants composed of THC, CO and NO_2. Since the asphalt concrete used for project construction is finished product directly purchased, there is no concrete batching plant and asphalt mixing plant set at the construction site. Thus, asphalt fumes are mainly generated during road pavement in the phase of construction, and asphalt would get solid soon after the pavement. Therefore, the impacts of asphalt fumes is within a limited range mainly surrounding the construction site.

3. Fuel oil exhaust gas

It mainly includes exhaust gas from machinery and equipment used for construction, such as the bulldozer and various transport vehicles, with main pollutants composed of SO2, NO2, NmHc, etc. Pollution is sourced from disorganized emission of distributed point sources. Wherein, transport vehicles have relatively high liquidity with similar exhaust emission characteristics to those of surface sources, but the total emission is just average. According to data from analyses of similar projects, the concentrations of SO2, NO2 and NmHc are generally lower than the allowable emission concentration, having very little impacts on atmospheric environment.

4. Organic exhaust gas

Before the project is completed and put into use, it would go through a short-term phase of concentrated simple decoration and a relatively long-term phase of distributed decoration. Paint exhaust gas would be generated during that time, of which the emission is disorganized.

4.4 Impacts on Acoustic Environment

During the project construction, the noise pollution is mainly sourced from various machinery and equipment at the construction site in the noise level of 75-115dB. Though the construction noise is temporary, if no control measures are taken, it usually leads to relatively severe noise pollution for sensitive points such as surrounding villages because of the long period of project construction and common characteristics of construction machinery, such as strong noise and irregularity.

According to the provisions in Emission Standards of Ambient Noise at Construction Site Boundary (GB12523-2011), the day noise for boundary of construction site is limited to 70dB (A), while the night noise limit is 55dB (A); for sensitive points such as villages within the area, the standard limits of Category I standard in Acoustic Environment Quality Standards (GB3096-2008) shall be observed that the day noise limit is 55 dB (A), while the night noise limit is 45dB (A). See Table 4.4-1 for the predicted results of noise reduction in different construction phases of the project.

Table 4.4-1 Equivalent Sound Level of Noise Caused by Construction Machinery from Different Distance Unit: dB (A)

Construction period	Distance from boundary of construction site (m)								Noise limit at boundary of construction site		Acoustic environment quality standards for sensitive points	
	30	50	80	100	150	200	250	300	Day	Night	Day	Night
Earthworks	90.7	86.2	82.2	80.2	76.7	74.2	72.3	70.7	70	55	55	45
Foundation works	97.0	92.5	88.5	86.5	83.0	80.5	78.6	77.0				
Structural works	83.5	79.0	75.0	73.0	69.5	67.0	65.1	63.5				
Decoration works	93.5	89.0	85.0	83.0	79.5	77.0	75.1	73.5				

Pursuant to the predicted results in Table 4.4-1, if no noise control measures are taken, the noise at boundary of construction site would fail to meet the requirements of Emission Standards of Ambient Noise at Construction Site Boundary

(GB12523-2011) during all construction phases. Within the peripheral range of 300m, the noise during all construction phases, especially at night, shall not exceed the limits of Category I standard in Acoustic Environment Quality Standards (GB3096-2008). It is thus clear that considering the relatively high impacts of noise in various construction phases on sensitive points such as villages within the area, necessary protection measures shall be taken if the noise fails to meet Category I standard.

Since the construction is temporary, the impacts of construction noise would come to an end as soon as construction is completed. In general, the impacts of construction noise on the environment is acceptable as long as necessary anti-noise facilities are provided, and it is ensured that no construction would be implemented at night and during noon breaks.

4.5 Impacts on Water Environment

Impacts on surface water during construction period mainly include impacts of construction wastewater and domestic sewage from construction workers on surface water environment.

1. Construction wastewater

The construction wastewater during construction period is mainly sourced from dirty oil leakage and oil dripping of construction machinery, oily wastewater after washing, wastewater after washing of sand and stone materials at the construction site, etc.

Dirty oil leakage and oil dripping of construction machinery and oily wastewater after washing mainly include petroleum pollutants, which would cause oil pollution of surface water where the project is located in case of direct discharge without treatment. Because of high content of SS in wastewater after washing of sand and stone materials, the discharge without treatment would increase the turbidity of surface water. In addition, the runoff formed by rainwater flowing through the materials and machinery at the construction site also contains pollutants such as SS and petroleum.

The drum and charging bucket of concrete transport vehicles shall be washed once after each shift with water consumption of 2-5m^3 for each time. Construction

machinery and vehicles shall be washed after the completion of construction of each day with water consumption of 0.5-1m^3 for each time for per vehicle. The wastewater contains a large amount of SS at the concentration of 5,000mg/L as estimated. This part of washing wastewater would not be discharged to outside and can be used for blending of materials and repeated utilization after the disposal of sedimentation, oil skimming and organic compounds removal.

According to the characteristics of wastewater, the intercepting ditch shall be set surrounding parking lots and material storage yards for intercepting rainfall runoff. Meanwhile, the oil-separating tank and sedimentation tank shall be set within the construction site for conducting treatment of oil-separation and sedimentation to the collected construction wastewater. Then the treated water having relatively little impacts on the surface water environment where the project is located would not be discharged and would be used for watering dust prevention as well as washing of vehicles and machinery.

2. Domestic sewage

Domestic sewage: Thedomestic sewage is mainly from construction personnel. The construction period is estimated to be 18months. The 6 subprojects are all in the south of Gansu Province, with the rainfall less than the south but more than northwest of Gansu Province. On the basis of similar project, it is finally estimated in accordance with80L/person/d, and the water drainage is calculated as80% of the water consumption, as a result the domestic sewage quantity is 64 L/person/d. See Table 4.5-1 for domestic sewage quantity of each subproject. According to analogy survey, sewage water quality is: COD 300mg/L, BOD_5 180mg/L, SS 220mg/L, NH_3-N 35mg/L. See Table 4.5-1 for total amount of pollutants generated by construction.

Table 4.5.-1 Sewage Generated by Each Subproject (t/d)

SN	Subproject	Number of construction personnel	Construction period (d)	Generated quantity (t/d)	Total quantity during the construction (t)	Treatment method	Purpose
1	Kongtong Mountain Subproject	120	800	7.68	6144	Transfer the sewage with fecal suction truck to the municipal pipelines of Kongtong Town	Pingliang Tianyu Sewage Treatment Plant

SN	Subproject	Number of construction personnel	Construction period (d)	Generated quantity (t/d)	Total quantity during the construction (t)	Treatment method	Purpose
2	Jingchuan County Subproject	80	800	5.12	4096	Treatment by septic-tank and oil-separating tank	Irrigate crops
3	Zhuanglang County Subproject	100	800	6.4	5120	Treatment by septic-tank and oil-separating tank	Irrigate crops
4	Tanchang County Subproject	100	800	6.4	5120	Treatment by septic-tank and oil-separating tank	Irrigate crops
5	Kang County Subproject	100	800	6.4	5120	Treatment by septic-tank and oil-separating tank	Irrigate crops
6	Hezheng County Subproject	100	800	6.4	5120	Treatment by septic-tank and oil-separating tank	Irrigate crops
7	Total			38.4	30720		

According to current arrangements, construction personnel of Jingchuan County Subproject, Zhuanglang County Subproject, Hezheng County Subproject and Tanchang County Subproject would rent nearby houses outside the scenic area, and excavate a septic-tank and an oil-separating tank near the houses. The treated domestic sewage is collected by the villagers for agricultural fertilizer and irrigation, and naturally purified by soil and absorbed by crops, so causing no impacts on surface water environment. It has little impacts on surface water environment in the area.

A septic-tank would be set up for Kongtong Mountain Subproject. The generated domestic sewage is transferred to the inspection well of municipal pipelines of Kongtong Town with fecal suction truck every day. The sewage would be finally drained off into Pingliang Tianyu Sewage Treatment Plant, and would not affect surrounding waters. Manure in septic tanks would be cleaned every six months and would be used as fertilizer or transported to domestic garbabe landfill.

4.6 Impacts of Solid Waste

Solid waste from engineeringconstruction mainly includes spoil, construction waste and domestic waste of construction workers generated in the process of excavation.

1. Spoil: Clearing of ground surface, earth evacuation, laying of foundation and slope cutting would generate spoil. According to the calculation of design scheme, the total earth excavation quantity is about 36,485 tons, and the backfill quantity is about 25,831 tons and the total amount of spoil is 10,654 tons. No spoil grounds should be set up in the project areas as these areas are located in ecologically sensitive areas. The spoil would transported to nearby construction project sites for reuse and the remaining spoil which cannot be reused would be transported to the construction waste landfill for disposal. See Table 4.6-1 for details.

2. Construction waste: Construction waste mainly includes stone, concrete blocks, bricks, broken tiles, sand, lime blocks, cement blocks, etc. The construction waste quantity is related to construction level, building type and other factors in construction process, with big difference among data. The construction waste quantity is directly related to construction level, management level and building type. It is the waste quantity obtained by building area multiplying the unit area. The waste quantity of a unit area is 0.03t/m^2, so the total construction waste quantity is 635t. The construction waste should be conveyed in time, and those not to be conveyed should be covered in time so as to recover the original landform. The waste is not allowed to stack and throw about to avoid secondary pollution.

3. Domestic waste during construction: The domestic waste quantity for each person is calculated according to 0.1 kg/person·day, so the domestic waste quantity during construction is about 39tons. The waste is collected in a unified way, and conveyed in time to nearby domestic waste landfill for disposal. See Table 4.6-1 for details.

Table 4.6-1 Summary of Solid Waste Generation of All Subprojects

SN	Subproject	Spoil (t)	Construction waste (t)	Domestic waste (t)	Destination of Spoil	Disposal of spoil and construction waste	Disposal of domestic waste
1	Kongtong Mountain Subproject	1463	8	9.6	To be used by development projrects of Kongtong Town and the remaining spoil is transported to Pingliang Construction Waste Landfill	Pingliang Construction Waste Landfill	Pingliang city waste disposal site

2	Jingchuan County Subproject	2131	137	6.4	To be used by development projrects around Luohandong and Wanyan villages and the remaining spoil is transported to Jingchuan County Construction Waste Landfill	Jingchuan County Construction Waste Landfill	Jingchuan urban domestic waste landfill site
3	Zhuanglang County Subproject	1764	25	8	To be used by development projrects around scenic areas and the remaining spoil is transported to Zhuanglang County Construction Waste Landfill	Zhuanglang County Construction Waste Landfill	Zhuanglang County waste landfill site
4	Tanchang County Subproject	1540	30	8	To be used by development projrects around scenic areas and the remaining spoil is transported to Tanchang County Construction Waste Landfill	Tanchang County Construction Waste Landfill	Tanchang County domestic waste landfill site
5	Kang County Subproject	1842	18	8	To be used by development projrects around scenic areas and the remaining spoil is transported to Kang County Yangba Town Construction Waste Landfill	Kang County Yangba Town Construction Waste Landfill	Yangba Town waste landfill site
6	Hezheng County Subproject	1914	417	8	To be used by development projrects around scenic areas and the remaining spoil is transported to Hezheng County Construction Waste Landfill	Hezheng County Construction Waste Landfill	Hezheng County waste landfill site
7	Total	10654	635	48			

4.7 Impacts on Cultural Resources

4.7.1 Relevant Laws and Regulations

Requirements of relevant national and Gansu provincial laws and regulations on the protection of cultural resources are described below.

4.7.1.1Law of the People's Republic of China on Protection of Cultural Relics

Article 7 All government departments, organizations and individuals have the obligation to protect cultural relics pursuant to law.

Article 9 People's governments at various levels shall stress the protection of cultural relics, properly handle the relationship between economic construction, social development, and cultural relics protection, and ensure the safety of cultural relics.

Infrastructure constructions and tourism development must comply with the principles for the protection of cultural relics, and shall not damage cultural relics.

Article 14 The local people's governments at and above the county level of the place where the famous cities, streets, villages and towns of historical and cultural value are located shall organize the formulation of plans for protection of those famous cities, streets, villages and towns, and incorporate that planning into the overall city planning.

Article 17 No additional construction projects or operations such as explosion, drilling or excavation, etc. may be undertaken within the scope of protection of a cultural relic protection site. However, if additional construction projects or operations such as explosion, drilling or excavation need to be undertaken within the scope of protection of such a site due to special reasons, the safety of the site must be guaranteed, and approval must be obtained from the people's government which made the original approval and announcement on the designation of the site, with consent first obtained from the department of cultural relics administration of the people's government at the next higher level; If additional construction projects or operations such as explosion, drilling or excavation are to be undertaken within the scope of protection of a major cultural site protected at the national level, approval must be obtained from the people's government of relevant province, autonomous region, or municipality directly under the Central Government, with consent first obtained from the department of cultural relics administration under the State Council.

Article 18 According to the actual needs for the protection of cultural relics and with the approval of the people's government of the province, autonomous region or municipality directly under the Central Government, a certain area for construction control may be delimited around a cultural relic protection site and be announced. Construction projects in such an area shall not damage the historical features of the protected historical and cultural site; the project design scheme must, according to the level of the site, be subject to the consent of the corresponding department of cultural relics administration before it is submitted to the departments of urban and rural construction and planning for approval.

Article 19 Within the scope of protection and the area for construction control of a cultural relic protection site, no facility that pollutes the site and the environment thereof may be constructed, neither may any activity that may affect the safety and environment of that site be carried out. The existing facilities that pollute protected cultural sites and the environment thereof shall be disposed of within the prescribed time limits.

Article 20 Unmovable cultural relics shall be avoided in the choosing construction sites by whatever possible means; if a cultural relic protection site can't be avoided for special circumstances, the original site shall be protected by whatever possible means.

Article 21 Repairing of a protected cultural site shall be submitted for approval to the corresponding department of cultural relics administration according to the site's level; repairing of unmovable culture relics which haven't been determined as protected cultural sites shall be submitted for approval to the department of cultural relics administration of people's governments at the county level which accepted the registration. Repairing, removal and reconstruction of a cultural relic protection site shall be undertaken by an entity with the qualification certificate in this regard. The principle of keeping the cultural relics in their original state must be adhered to in the repairing, maintenance and removal of unmovable cultural relics.

4.7.1.2 Gansu Provincial Regulations on Protection of Cultural Relics

Article 5 People's governments at all levels shall reasonably use cultural relics resources, encourage and support the social groups to participate in cultural relic protection and utilization.

Article 10 Without the approval of cultural relics administration, no building shall be built in the scope of cultural relic protection and controlled region. If such building is indeed needed, the form, height, size and color and other building features shall meet the environment style specified by the cultural relic protection sites.

Article 14 The installation of electric devices and fires for production shall be approved by cultural relic protection administration corresponding to the cultural relic protection sites and local fire protection of public security authorities.

Article 17 If cultural relics are damaged or destroyed due to any natural or man-made reason, the local government shall timely rescue them.

Article 33 Cultural relic protection sites shall take a certain proportion of ticket revenue for repairing, maintaining and managing cultural relics, if applicable. Such expense shall be supervised by the finance administration, and used by the cultural relic protection sites.

Cultural relics protection components under the Project would carry out repair and maintenance of original ancient buildings, stone caves and stone inscriptions, which aim to preserve the integrity and authenticity of cultural relics, rationally utilize and strengthen management of cultural relics and extend the existence of cultural relics. These activities would have positive impacts. Through implementing the Project, the above cultural relics would be improved and protected. Therefore, the Project complies with provisions of relevant laws and regulations.

The impacts of the project during construction on nearby cultural relic protection units mainly involve domestic sewage and production wastewater, construction dust, noise and vibration, solid waste and landscape, etc., including impacts of construction operation on cultural relic protection units and impacts of repair and maintenance work of cultural relics on surrounding environment.

4.7.2 Domestic Sewage and Production Wastewater

It is inevitable to produce certain domestic sewage and production wastewater during construction. The project does not set production site and construction site within the cultural relic protection range during construction, so there is no adverse impacts of domestic sewage and production wastewater on nearby cultural relic protection units during construction.

The domestic sewage produced in the repair and maintenance process of cultural relics is collected and disposed of through environmentally friendly toilets in scenic areas. The production wastewater is reused for landscape planting or road watering after being treated through temporary sedimentation tanks. Therefore, the domestic sewage and production wastewater in the project have little impacts on nearby cultural relic protection units.

4.7.3 Construction Fugitive Dust

Dust absorbs polluted gases and includes pollutants that may harm cultural relics. The nature and composition of dust differ with regions and sizes of particulates.

Falling dust may change or fade colors of cultural relics. Dust is often a good carrier of bacteria and mould. When falling dust in the air combines with moisture and falls on the surface of cultural relics, a film of surface cover that is hard to be cleaned would be fairly suitable for the existence and breeding of microorganism such as bacteria and mould. Thereore, particulates falling on the surface of cultural relics during construction would harm cultural relics. Due to short duration of exposure, such impacts are acceptable for insensitivecultural relics and sites; for sensitive cultural relics and sites, effective protection measures and segregation measures shall be taken during construction to prevent impacts of dust on the surface of cultural relics. Within the protection scope of cultural relics and control area of development activities, construction activities generating large amount of dust are strictly prohibited. Meanwhile, other measures shall be taken to minimize dust, such as strengthening vehicle management, cleaning mud and dust on a periodic basis, keeping road surface clean, spraying water on a periodic basic, and covering up or enclosing transportation vehicles, among others.

4.7.4 Noise and Vibration

In construction, main vibration sources are from vibration of different machines in operation, such as excavation, transport, backfill and mixing. Such vibration has features of impacts, discontinuity, etc.; on construction site; there would be different vibration impacts along with work schedule and replacement of construction procedures. Given aging cultural relics lack repairs and are fragible, the harm of vibration on them would be more significant than that on ordinary modern buildings or structures.

Kongtong Mountain Subproject would protect and repair ancient buildings and ancient towers and Jingchuan County Subproject would protect and repair frescoes. Equipment to be used during repair would be small hand tools with low vibration and would only have minor impacts on cultural reclics. Remaining construction activities of Kongtong Mountain, Jingchuan County and Zhuanglang County subprojects are distant from cultural relics and large and medium machinery would not be used during construction. Therefore, vibration of such machinery would be low and have minor impacts on cultural relics.

4.7.5 Solid Waste

Some domestic waste and construction waste would also be produced in the repair and maintenance process of cultural relics. The domestic waste is collected with waste containers and other methods, and conveyed away regularly; the construction waste is first reused for road bedding in cultural relic scenic spots, and those unable

to be reused are stacked in a unified way and conveyed regularly. Therefore, the solid waste in the project has little impacts on the cultural relic protection units.

Chapter 5 Assessment of Impacts during Operation

Implementation of the Project would not only protect natural heritage in the project areas, but also improve infrastructure in these areas. Nevertheless, rapid increase of tourists to scenic areas and wastewater, solid waste and noise generated by tourists would have some impacts on eco-environment, acoustic environment, water environment and ambient air in the project areas. These impacts are analyzed below.

5.1 Positive Impacts/Induced Impacts

First of all, the environmental protection measures taken during project construction include: Sewage treatment facilities, environmentally friendly toilets, garbage clearing and transportation facilities, etc. After the environmental facilities have been constructed, the scenic area would be able to collect and treat the sewage and solid waste generated by the surging number of tourists, so as to achieve the purpose of effectively controlling the impacts of wastewater and solid waste on the environment of the scenic area, as well as to help improving the ecological environment of the scenic area and its surrounding areas. The environmental protection works of various scenic area projects can effectively reduce the negative impacts of project construction on the environment of scenic area.

Second, as the numbers of tourists to the scenic areas surge, the demands for service industries would also expand accordingly. This would vigorously promote the development of tertiary industry in the project areas, changing the production and living patterns of some scenic areas. The development of scenic area would urge local residents to transfer from traditional nomad lifestyle to a tourism-based new livelihood, reduce the pressure on local natural environment. This is conducive to the recovery and protection of nature reserves and achieving the objective of restoring and recovering ecological environment.

Third, the hardening and construction of community roads facilitate local villagers' production, transportation of farm materials and products, create conditions for the mechanization of rural production, provide favorable conditions for the introduction of advanced agricultural technologies. It is possible to further optimize farming structure, improve the crops yield per unit area and farmers' income, achieve the form conversion of land resources values, stimulate the development of rural industries, and promote the development of rural industrial economy along the roads.

Fourth, the project, after construction, would greatly promote the development of tourism in Gansu Province. Residents of project areas may acquire considerable economic incomes

by taking part in the development of tourism industry. In this way, they may recognize the correlation between protecting the ecological environment of scenic area and increasing their own incomes; this is conducive to improving the enthusiasm of local residents to participate in maintaining the environment of scenic areas.

5.2 Impacts on Important Ecologically Sensitive Areas

5.2.1Impacts on Nature Reserves

Kongtong Mountain Subproject involves Taitong-Kongtong Mountain Nature Reserve; Kang County Subproject involves Giant Salamander Provincial-level Nature Reserve; Hezheng Subproject involves Gansu Taizi Mountain National-level Nature Reserve. For the relationship between all subprojects and nature reserves as well as corresponding impacts, see relevant contents in Sections 4.1.2, 4.1.5 and 4.1.7.Analysis (see detailed analysis in Section 4.1.5) shows that these subprojects only have some components in experiment areas, that there are not any construction content in core areas and buffer areas. At the same time, no construction personnel or tourist is allowed in the core areas of nature reserves during construction period and operation period. Therefore, these subprojects do not have activities that are in violation of relevant requirements of nature reserves. By rationally selecting routes and sites and reasonably configuring construction sites, the constructionactivities of all subprojects have minorimpacts on nature reserves.

5.2.2 Impacts on Scenic Areas

Kongtong Mountain Subproject involves Kongtong Mountain Scenic Area, Zhuanglang Subproject involves Yunya City Scenic Area. For the relationship between these subprojects and scenic areas as well as corresponding impacts, see relevant contents in Sections 4.1.2 and 4.1.5.Analysis shows that these subprojects do not employ deep excavation or explosion techniques, that all trees have been shunned during construction. Therefore, there are not activities such as cutting down trees that are prohibited by laws, regulations and relevant plans. By rationally selecting routes and sites and reasonably configuring construction sites, the construction activities of all subprojects have minior impacts on scenic areas.

5.2.3 Impacts on Geological Parks

Kongtong Mountain, Zhuanglang, Tanchang and Hezheng Subprojects involve 4 geological parks. For the relationship between these subprojects and geological parks as well as corresponding impacts, see relevant contents in Sections 4.1.2, 4.1.4, 4.1.6 and 4.1.7. Analysis shows that these subprojects **prohibit all production and construction activities that may harm the landform of Geological Parks. Implementation of these subprojects would not involve blasting, deep excavation and other activities that may harm the landform. After taking the above-mentioned measures, the impacts of subproject construction activities on Geological Parks would be within the controllable scope.**

5.2.4 Impacts on Forest Parks

Main components works in Yunya Temple National Forest Park and Guan'e Gully National Forest Park are protection of cultural relics and infrastructure construction and there would be no activities prohibited by Measures for the Administration of National Forest Parks and Regulations of Gansu Province for Administration of Forest Parks, and satisfy their requirements. For detailed analysis, see Sections 4.1.4 and 4.1.6.

5.2.5 Impacts on Wetland Parks

Wood patrol access in Meiyuan River Scenic Area under Kang County Subproject would involve Meiyuan River National Wetland Park. For the relationship between all subprojects and wetland parks as well as corresponding impacts, see relevant contents in Section 4.1.5.

Under the subproject, Meiyuan River Scenic Area wood patrol access is located in the rational utilization area of Meiyuan River Wetland Park and would meet the requirements of the Administrative Regulations on Wetland Protection, the Measures for the Administration of National Wetland Parks (Trial) and the Regulations of Gansu Province on Wetland Protection.

5.2.6 Impacts on Drinking Water Source Protection Areas

The proposed components of Kongtong Mountain Subproject are only 250 meters from the closest drinking water source protection area; part of the construction contents of Jingchuan Subproject locates in the Category 2 area of underground water source protection area; the planned trails, firefighting access of Zhuanglang Subproject are located in the Category 2 reserve of underground water source protection area, and Tanchang Subproject is 720m away from the downstream of Guan’e Gully water protection area. For the relationship between all subprojects and nature reserves as well as corresponding impacts, see relevant contents in Sections 4.1.2, 4.1.3, 4.1.4 and 4.1.6. Analysis shows that these subprojects do not have any activity that is in violation of relevant requirements of drinking water source protection areas, and that the construction activities of these subprojects have minor impacts on nature reserves.

In conclusion, the project will not convert or affect significantly any critical natural habitats represented by these officially designated protective areas.

5.3 Analysis of Ecological Impacts

Ecological impacts during the operation period are mainly the impacts of subprojects on ecological environment and the impacts of tourism activities on ecological environment.

Table 5.3-1 List of Subproject Impacts on Ecological Environment

Subproject	Components	Land Area and Type	Impacts on Plants	Impacts on Animals	Impacts on Sensitive Areas
Kongtong Mountain Subproject	Xiangshan Scenic Spot Administration Building, Tourist Collection & Distribution Center	11.25mu/construction land	None	None	None
	Trail	66.78mu/forest land	Occupation	Habitat	Having some impacts on nature reserves and Geological Parks
	Road hardening	37.12mu/construction land	None	None	Not involving sensitive areas
Jingchuan County Subproject	Ecological parking lots of Luohandong Hanjiagou grottoes	9.17mu/waste land	Occupation	None	None
	Trails and plank road of Luohandong-Hanjiagou scenic area	70.3mu/grassland	Occupation	Habitat	None
	Comprehensive administration buildings for Luohandong-Hanjiagou	0.75mu/waste land	Occupation	None	None
Zhuanglang County Subproject	Renovate the scenic area's tourist service center, and newly build the Fogoumen tourist service center	1.26/construction land	Occupation	None	None
	Newly build the Fogoumen ecological parking lot and Dasi electriccar ecological parking lot	3.6/construction land	Occupation	None	None
	Ecological renovation of parking lot	5.4/construction land	Occupation	None	None
	Build new trails or expand existing trails	31.7/forestland	Occupation	Habitat	Yes
	Build new firefighting access from Fogoumen to Yunya Temple	137.4/forestland	Occupation	Habitat	Some impacts on forest park and Geological Park
	Village roads	13.5/construction land	Occupation	None	None
	Rebuild Dianzixia-Yanchangzi firefighting	75.1/construction land	Occupation	None	None

Subproject	Components	Land Area and Type	Impacts on Plants	Impacts on Animals	Impacts on Sensitive Areas
	access, rebuild and repair electric car lanes				
Tanchang County Subproject	Flush toilet	1.2/forest land	Occupation	Habitat	None
Kang County Subproject	Post on northern ancient tea horse route	0.46/construction land	Occupation	None	None
	Patrol access on the right bank of Meiyuan River	29.70/Grassland	Occupation	Habitatt	Some impacts on wetland park
	Trail from Xiaomomo Mountain to Nangou Gully	18.22/Grassland	Occupation	Habitat	None
	Yangba Scenic Area Administration Building	0.60/ construction land	Occupation	None	None
	Sightseeing platform of Yangba Scenic Area	0.15/ construction land	Occupation	Habitat	None
	Yinbazi-Xiaomomo Mountain firefighting access	157.60/Grassland	Occupation	Habitat	Some impacts on nature reserve
	Yinbazi Tourist Service Center	0.75/ construction land	Occupation	None	None
	Trail from Xiaomomo Mountain to Nangoukou	39.51/ Grassland	Occupation	Habitat	None
	Yinbazi ecological parking lot	3.90/wasteland	Occupation	None	None
Hezheng County Subproject	Scenic area trail	29.94mu/forest land	Occupation	Habitat	Some impacts on nature reserve
	Sewage Treatment Plant	16.75mu/waste land	Occupation	None	None

5.3.1 Assessment of Impacts of Land Use Changes

The development and construction of assessment area would definitely lead to changes in land utilization structure, regional environmental quality and other aspects.

The project's buildings would be constructed in villages and towns, and the land type is construction land. Trails and firefighting access are to be constructed with existing roads as possible. After construction, land utilization would change greatly. Forest land, farm land, waste grassland, construction land and other lands would reduce accordingly, but the construction land with tourism service facilities would increase accordingly.

5.3.2Assessment of Impacts on Vegetation

After the planned project has been constructed, forest land, farm land, waste grassland would reduce accordingly. After the project has been constructed and other lands would reduce accordingly, forest land, farm land, waste grassland would reduce accordingly, but the construction land with tourism service facilities would increase accordingly. Some vegetation, like forest and farmland, would be encroached. Rapid growing population would result in a series of environmental problems. For example, vegetation would change as a result of population increase, especially in areas with concentrated tourist activities.

After the roads of subprojects for motor vehicles have been constructed, the number of passing motor vehicles would increase significantly, so would the emission of exhaust. Motor vehicle emissions are mainly particulates. Pollutants with a diameter of less than 10um would do harm to vegetation the both sides of roads. They would be absorbed through pores on the leaf surface of farm crops, reach conduits through the gaps between plant cells, and then be transferred to other parts. Therefore, vegetation's susceptibility to pollutants is closely related to its pore activity rhythm. The pollutant resistance of most vegetation is stronger at night than in daytime. Vegetation is most sensitive to the ambience during blossom period, during which it is also most susceptible.

5.3.3 Assessment of Impacts on Terrestrial Animals

I. Impacts on birds

The development of assessment area, especial the construction of project areas, is a conversion process from relatively natural land to tourism-oriented land. During the process, birds would be impactsed as follows: (1) Artificial scenes such as buildings gradually substitute for some natural scenes; (2) Frequent tourism activities would impact the living environment of birds; (3) The abundance (number of species) of bird groups and species diversity would decrease as the development and tourism activities increase; as a result, some birds would move to locations far away from human beings.

II. Impacts on animal resources

Development of the project areas would not only reduce the diversity of animal species, destroy biological resources, but also result in many ecological environment problems; the change of natural habitats, especially area reduction, segmentation, and quality decline, create a large number of secondary environments; as a result, the numbers of pests (insets and rodents) that are accustomed to secondary environments would increase accordingly.

The increase of tourism activities would affect and destroy the living environment of animals, whose species abundance and biodiversity would also decrease as tourism activities increase.

5.3.4Ecological Impacts of Tourism Activities

When people enter forest tourism areas and enjoy all kinds of exiting activities, they often create negative impacts on the ecological environment, destroying the continuity of some plants and animals growing in forest environment, jeopardizing the material chain of forest ecological system, or even resulting in the deterioration of ecological environment.

I. Ecological environment is destroyed

(1) Destruction to environmental composition structure

After the trails and buildings have been constructed and put into use, the access of tourists would definitely change soil conditions, cause changes in the composition and structure of ecological environment, and influencing the normal growth of various plants. Forest vegetation is the most important condition for developing forest tourism. The treading, collection and destruction by tourists would directly destroy forest vegetation, compromise the abundance, vigor and regeneration capacity of vegetation. If such impacts exceeds forest's carrying capacity, forest vegetation and environment would be destroyed; the tourism and leisure quality would also be compromised, and forest tourism area would also lose its original attraction.

(2) Destruction of soil structure

The activities of tourists, be it walking, lingering or resting, may result in soil hardening and lowering of water/air permeability, physical and chemical performance, fertility, reduction of air and moisture flow in the soil, and limitation of growth and development of soil organisms. The specific mechanism is that repeated treading would compact soil, remove the organic layer on the surface, reduce water permeation, and result in mud clogging in clay. Treading the wet soil would reduce pore gaps, reduce water content, impacts the survival and growth of soil organisms, and change aerobic bacteria to anaerobic bacteria, compromising soil fertility. Compacted soil would also increase runoff, resulting in water and soil erosion, invasion of organic pollutants and some harmful elements; in this way, the soil structure would be destroyed. All these would impact the evolution, replacement and development of forest vegetation.

II. Living habits of organisms would be affefcted

In natural world, organisms are interrelated and interact with surrounding non-biological environment, constituting an ecological environment with certain spaces, structures and functions. In forest tourism areas, plants and animals are interdependent. Various types of forest vegetation form an environment for various kinds of wild animals to live and breed in.

The access and frequent activities of tourists would disrupt the normal life of wild animals, disturbing their feeding and resting. Brooding adult birds may leave their nests under disturbance, resulting in thermal loss and increasing the danger of baby birds, or even loss of their necessary habitat scope ("territory"). For their own safety, some animals have to escape from their original habitats into deeper forests. This narrows their living radius, and squeezes their living spaces and environments.

III. Impacts of tourists' uncivil conducts

Tourists' uncivil conductswould compromise the forest environment quality of assessment area. Some individual tourists may hunt, eat or collect rare wild animals and/or plants. Human intervention poses a serious threat to wildlife. Large numbers of tourists swarm into tourism and scenic areas. The uncivil conducts of some tourists, such as hunting and eating rare animals in the tourism area, reduce the numbers of beneficial birds and animals, driving the species and quantities of animals to the edge of distinction. As a result, plant pests and diseases surge, resulting in the widespread death of vegetation. Some tourists pluck and dig rare plants, break branches, leaves, dig seedlings, fungus and tree roots in the tourism areas. These conducts may hinder the growth of plants, artificially decimate the vegetation, or even push them to distinction, resulting in the changes of plant group structure, and compromising the ecological environment and natural scenes of tourism and scenic areas.

In peak tourism seasons, especially during traditional temple fares and holidays, the noise created by excessive tourist flows, various types of motor vehicles and firecrackers would disrupt and destroy the harmonious environment consisting of pine ruffling, animal calling, bird chirping and insect singing.

IV. Illegal use of fire and discarding of garbage

In forest tourism areas, tourists burn incense, picnic and use fire against the regulation may burn large areas of forests, kill forest animals, drive away small animals. These conducts would deteriorate ecological environment, or even result in the ruin of the forest area.

Some tourists have a poor sense of ecological environment protection. They leave behind plastic bags, plastic bottles, aluminum cans and all kinds of garbage in tourism areas. Garbage generated by tourism activities cannot be disposed of in a timely manner; this would result in the pollution of forest, soil and air.

V. Ecological environment problems due to uneven temporal and spatial distribution of tourists

Affected by climate, holidays and other factors, numbers of tourists to forest tourism areas have seasonal fluctuations. Take Huangshan Mountain for example. Of the tourist flow in 1992-1997, high season (April-October) account for 89.92%, low season(November-March) account for only10.08%; the tourist flow of peak season (May)(17.73%) is 47 times that of bottom month(January)(0.38%). Ecological environment problems due to extremely uneven distribution of tourist in time and space:

The number of tourists surges and concentrated tourism activities in tourism high season would definitely result in changes of forest elements and biological resources. Especially that the uncivil conducts of tourists would compromise the regeneration capacity of trees or even kill them. Since the width of trails cannot meet the demands of extra tourists in high season, a lot of tourists would tread on the both sides of trails. This would not only compromise soil structure and soil development, reduce soil's water permeability, but also accelerate soil erosion and destroy forest's ecological environment.

In tourism high seasons, food debris left behind by tourists in scenic areas improve animals' survival environment, providing ample food and accelerating their breading; while in tourism low seasons with few tourists, animals depending on food discarded by tourists have to eat bark, harming trees. It is obvious that tourist distribution in high and low seasons has impacts on the structure of forest's ecological chain.

5.4 Analysis of Impacts on Water Environment

5.4.1 Impacts of Sewage

The self-developed wastewater pipeline of Tanchang County Subproject would be connected to municipal pipeline after treatment in septic tanks. Domestic sewage of Kongtong Mountain Subproject, Jingchuan County Subproject, Kang County Subproject and Zhuanglang County Subproject would be treated through building new wastewater treatment stations (plants). Hezheng County Subproject would adopt the A/A/O technique

and the other subprojects would adopt the integrated A/O technique. Domestic sewage would be treated at wastewater treatment stations (plants) and would meet relevant standards, which are detailed in Tables 1.4.6 and 1.4.7. Therefore, sewage of subprojects would have minor impacts on the surrounding water environment.

Toilets under the Project include flush toilets and environmentally friendly toilets with the latter being foam blocked toiles, which consume very small amount of water during operation and do not discharge sewage to outside areas. With the exception of Tanchang County Subproject, sewage discharged by the other subprojects would be discharged to new sewers and treated by new wastewater treatment plants or integrated treatment equipment. Treated wastewater would meet relevant standards. Sewage from toilets under Tanchang County Subproject would delivered to Tanchang County Wastewater Treatment Plant and discharged after meeting relevant standards. Therefore, effluent of flush toilets would have minor impacts on the surrounding water environment.Sewage generated by all subprojects and its destination are given in Table 5.4-1.

Table 5.4-1 Sewage Generated by Subprojects (t/d)

SN	Subproject	Sewage Source	Sewage Collection Scope	Quantity	Destination
1	Kongtong Mountain Subproject	Flush toilets and kitchen wastewater	Domestic sewage from scenic area	1123	New wastewater treatment station
2	Jingchuan County Subproject	Flush toilets and kitchen wastewater	Domestic sewage from villages	70	New wastewater treatment station
3	Zhuanglang County Subproject	Flush toilets and kitchen wastewater	Domestic sewage from scenic area and service centers	190	New wastewater treatment station
4	Tanchang County Subproject	Flush toilets and kitchen wastewater	Domestic sewage from scenic area and villages close to scenic area	534	Tanchang County Wastewater Treatment Plant
5	Kang County Subproject	Flush toilets	Domestic sewage from villages close to scenic area	122	New wastewater treatment station
6	Hezheng County Subproject	Flush toilets and kitchen wastewater	Domestic seweage from urban area and scenic area	500	New wastewater treatment station
7	Total			2539	

Disposal of sludge from wastewater treatment stations is analyzed in Section 5.7.

5.4.2 Impacts of Surface Runoff

The impacts of road works on surface water environment during operation is mainly from road surface rainwater runoff, the major pollutants of which are SS and oil stain. These pollutants would have certain impacts on the water quality of water bodies once they enter the latter with rainwater runoff.

The Project is located in rural areas and would be implemented mainly in scenic areas. The road works mainly includes trunk roads, firefighting access of scenic areas and village roads. Normally, there would be no vehicle driving through firefighting access; and the traffic flows on scenic area trunk roads and village roads are comparatively small; therefore there are comparatively small contents of SS and oil stain on the road surface.

According to researches of South China Environmental Sciences Institute under the State Environmental Protection Administration on the pollution of road surface runoff in Southern China, there are comparatively high contents of suspended solids and oil materials in rainwater during the 30 minutes from start of rain to the formation of runoff; after that, the concentration of pollutants declines quickly as the rain continues. At the beginning of rainfall, when road surface runoff enters water body, it would instantly create high concentration of pollutants in the small area surrounding runoff entry points. But as the water body mixes quickly on the section as it flows downstream, the runoff has negligible contribution to the concentration of pollutants in these rivers. It can be concluded that road surface runoff of the Project would have minimal impacts on water quality of rivers.

5.5Analysis of Impacts on Ambient Air

Odor generated by domestic waste: During the transfer of garbage, some organic garbage, during decomposition, would emit odor, which is the main impacts on the environment. Odorous pollutants, according to national standards, are those gases that stimulate smell organs and create unpleasant experience and harm living environment.

Exhaust of motor vehicles and airborne dust on the road: The main pollutants are CO, NO_X, THC and TSP. The road project mainly includes the trunk links and firefighting access of scenic areas and village roads. Normally, there would be no vehicle driving through firefighting access; and the traffic flows on scenic area trunk lines and village roads are comparatively small, and the vehicle speed is comparatively slow; therefore there are comparatively small exhaust emissions from motor vehicles. Compared with the ambient air monitoring results of similar roads, the daily average concentration

prediction values of NO_2 and TSP on road shoulders are up to the Category I standard value requirements of Ambient Air Quality Standards (GB3095-2012). Therefore, during the operation period the road projects have comparatively small impacts on ambient air.

Odor of sewage treatment plant: Kongtong Mountain Subproject and Jingchuan County Subproject are installed with buried, integrated equipment to prevent the smell of sewage and sludge from emitting to surrounding air; therefore, their impacts on ambient air during operation period can be neglected.

Hezheng County Sewage Treatment Plant receives large quantities of domestic sewage, which includes abundant albumen and other organic matters that would decay easily and generate sensitive smell matters such as hydrogen sulphide and ammonia. This sewage treatment plant would adopt the A/A/O treatment technique; and the sections emitting odors are: Inlet pump room, pre-treatment section (grill, detritus pit) and sludge treatment sections. The main odorous matters are hydrogen sulphide, methanethiol, ammonia and trimethylamine. The most commonly seen are hydrogen sulphide and ammonia.

The subproject adopts biological deodorizing method. Odor sources of such as coarse grill and inlet pump room, fine grill and aeration detritus pit, sludge storage tank, sludge drier, and sludge conveyor would be covered and sealed; and waste gases are collected and sent into biological deodorizing device. According to the plan layout, the subproject includes 2 biological deodorizing devices. One is installed to the southwest of Phase I detritus pit for collecting and treating the odor from coarse grill and inlet pump room as well as fine grill and aeration detritus pit; the other is installed to the north of dehydration workshop for collecting and treating odor from sludge storage tank, sludge drier, and sludge conveyor. Compared to similar deodorizing processes, the collection efficiency of odorous gases is 90%, and the biological deodorizing efficiency is more than 85%.

Odor from toilets: environmentally friendly toilets in scenic areas are foam blocked toilets, which do not emit odor and would have negligible impacts on the ambient environment. Flush toilets would generate some odor and management shall be strengthened on these toilets through cleaning in a timely manner. If such measures are taken, flush toilets would have minimal impacts on the ambient air.

Table 5.5-1 List of Waste Gases Generated by Subprojects (t/a)

Subproject	Location of Air Pollution Source	Category of Air Pollution Source	Pollutant
Kongtong Mountain	Xiangshan Scenic Area Administration Building, Tourist Collection & Distribution Center,	Non-point source	Odor generated by domestic waste

Subproject	Location of Air Pollution Source	Category of Air Pollution Source	Pollutant
Subproject	Religious Personnel Residential Area		
	Xiangshan Mountain ecological parking lot	Non-point source	Motor vehicle exhaust
	Village roads	Linear source	Motor vehicle exhaust
		Non-point source	Fugitive dust on the road
Jingchuan County Subproject	Village roads	Linear source	Motor vehicle exhaust
		Non-point source	Fugitive dust on the road
	Ecological parking lots of Luohandong Hanjiagou grottoes	Non-point source	Motor vehicle exhaust
Zhuanglang County Subproject	Scenic Area Tourist Service Center, Fogoumen Tourist Service Center, Zhuanglang County Comprehensive Tourism Service Center	Non-point source	Odor generated by domestic waste
	Ecological parking lot	Non-point source	Motor vehicle exhaust
	Village roads	Linear source	Motor vehicle exhaust
		Non-point source	Fugitive dust on the road
Tanchang County Subproject	Village Roads	Linear source	Motor vehicle exhaust
		Non-point source	Fugitive dust on the road
Kang County Subproject	Yangba Scenic Area Administration Building and Tourist Center	Non-point source	Odor generated by domestic waste
	Ecological parking lot	Non-point source	Motor vehicle exhaust
	Village roads	Linear source	Motor vehicle exhaust
		Non-point source	Fugitive dust on the road
Hezheng County Subproject	Scenic area main road	Linear source	Motor vehicle exhaust
		Non-point source	Fugitive dust on the road
	Sewage treatment station	Non-point source	Odor

5.6Analysis of Impacts on Acoustic Environment

Main sources of noise during operation of the project are traffic noise, equipment noise, and social life noise.

1. Traffic noise

The main source of noise during road operation period is traffic noise generated by motor vehicles. According to the results of the Test of Road Traffic Noise Emission Sources, the

average radiation sound levels of various types of vehicles at different speeds are shown in Table 5.6-1.

Table 5.6-1Average Radiation Sound Levels of Different of Vehicles

Road Section	Vehicle Type	Calculation Formula	Average Driving Speeds of Various Types of Vehicles (km/h)	Average Radiation Sound Levels Lw, I (dB)
Village roads Scenic area main road	Small-sized Vehicle	$12.6+34.73\lg V_S$	20	53.5
	Medium-sized Vehicle	$8.8+40.48\lg V_M$	20	56.4
	Large-sized Vehicle	$22.0+36.32\lg V_L$	20	64.7
Firefighting access	Small-sized Vehicle	$12.6+34.73\lg V_S$	10	47.3
	Medium-sized Vehicle	$8.8+40.48\lg V_M$	10	49.3
	Large-sized Vehicle	$22.0+36.32\lg V_L$	10	58.3

The Project is located in rural areas, would be implemented basically within scenic areas, and there are no industrial noise and other noise sources in the vicinity. The road project mainly includes the main roads and firefighting access of scenic areas and village roads. Normally, there would be no vehicle driving through firefighting access; and there is almost no traffic at night. Passing vehicles are mainly small-sized ones, and the vehicle speed is comparatively slow. It can be seen from Table 5.6-1that the average radiation sound level of small-sized vehicles at low speed is comparatively low, ranging 47.3-64.7dB.

Compared with baseline acoustic environment monitoring results of similar roads, the acoustic environment on road shoulders are comparatively good, and up to the corresponding requirements of Acoustic Environment Quality Standards (GB3096-2008). Therefore, during operation period the traffic noise of the project's road construction has comparatively small impacts on the acoustic environment.

2. Equipment noise

During the project's operation, the main equipment noise source is fans, water pumps, backup diesel generators and equipment in power distribution rooms, whose noise source intensity is 65-100dB (A). After taking sound-proofing buildings and take shock-absorption and sound-muffling measures, there would be basically no impacts on surrounding environment.

3. Social life noise

Tourists would generate some social noise when sightseeing in scenic areas. Compared to similar projects, such social noise generally ranges 60-70dB (A). The impacts of social life noise can be mitigated by strengthening scenic area administration and reminding tourists.

5.7Analysis of Impacts of Solid Waste on Environment

During the project's operation period, solid waste are mainly domestic waste generated by tourists and solid waste generated by sewage treatment plants.

Domestic waste is collected in a unified way by all sites, and then delivered in a timely manner to nearby domestic waste landfill for disposal. The characteristics of domestic waste: Many types of food waste; abundant organic matters; paper, plastic, metal and glass bottle packages; high recycling rate. After collection, the waste is delivered in a timely manner to municipal waste collection point, so as to reduce the generation and effusion of odor. During project operation period, waste volume is estimated as 0.1kg/d•person, then the domestic waste volume is approximately 556.68t/a;

Sludge generated by 6integrated sewage treatment stations of Kongtong Mountain, Jingchuan County, Kang County and Zhuanglang County subprojects would be returned to front-end treatment section and there would only be a very small amount of solid waste, which would need only 4 months to be cleaned and the amount for each cleaning is about 2-3m^3. Solid waste generated by sewage treatment stations is mainly leftover sludge, captives of trash racks, and sediments of detritus pits.

The solid waste captured by trash racks are mainly plastic bags and waste paper. The project's generation volume is approximately 0.5t/d. The solid waste deposited in detritus pits are mud, sand and suspended matters. The project's generation volume is approximately 0.5t/d. Compared with exiting projects, the project's sludge generation volume is calculated as about 1.64t/d. The project's sludge is mechanically dehydrated with a high-pressure frame filter press; the generated mud cakes are then shipped to the Hezheng County Waste Landfill for disposal.

For solid waste generated by subprojects, see Table 5.7-1.

Table 5.7-1 Solid Waste Generation of All Projects (t/a)

SN	Subproject	Source of Solid Waste	Quantity	Destination	Composition
1	Kongtong Mountain Subproject	Domestic Waste of Scenic Area	400.99	Pingliang City Waste Landfill Site	Food waste, paper, plastic, metal, glass bottle, etc.
		Domestic Waste of Communities	158.78		
		Sludge from wastewater treatment station	36		
2	Jingchuan County Subproject	Domestic Waste of Scenic Area	17.61	Jingchuan County Urban Domestic Waste Landfill Site	
		Domestic Waste of Communities	273.02		
			12		
3	Zhuanglang County Subproject	Domestic Waste of Scenic Area	45.86	Zhuanglang County Waste Landfill Site	
		Domestic Waste of Communities	74.64		
		Sludge from wastewater treatment station	12		
4	Tanchang County Subproject	Domestic Waste of Scenic Area	34.47	Tanchang County Domestic Waste Landfill Site	
5	Kang County Subproject	Domestic Waste of Scenic Area	24.48	Yangba Town Domestic Waste Landfill Site	
		Domestic Waste of Communities	217.91		
		Sludge from wastewater treatment station	12		
6	Hezheng County Subproject	Domestic Waste of Scenic Area	33.27	Songmingyan Town Waste Landfill Site	
		Solid waste of sewage treatment plants	182.5		Plastic bags, waste paper, sludge
		Sludge from wastewater treatment plant	598.6		
7	Total		2134.13		

5.8Impacts on Physical Cultural Resources

5.8.1 Analysis of Impacts on Cultural Relics

According to the actual needs for the protection of cultural relics and with the approval of people's governments of the province, autonomous region or municipality directly under the Central Government, a certain area for construction control may be delimited around a protected historical and cultural site. Within the area for construction control, no facility that pollutes the site and the environment thereof may be constructed, neither may any activity that may affect the safety and environment of that site be carried out. The repair and maintenance of protected cultural sites involved in the project must abide by the principles of not changing the original form of cultural relics; and the work should be undertaken by an entity with the qualification certificate for cultural relic projects.

After the project is completed, it would attract large numbers of tourists, giving play to the role of cultural relic protection sites, improving the reputation of cultural relics sites and scenic areas. It can promote the development of tourism for nearby cultural relic protection sites, deepen tourists' knowledge and understanding of cultural relics protection, greatly enrich people's spiritual life, and expand the funding channels for cultural relics protection. Therefore, the project would have some economic and social benefits.

During operation, the project's impacts on cultural relics mainly include impacts of tourist conducts on scenic areas. Tourists would generate some domestic sewage, solid waste and noise; motor vehicles entering scenic areas would generate small quantities of exhaust. Therefore, the entry of tourists would have certain impacts on scenic areas and surrounding ecological environment. Tourists' sense of cultural relics protection can be improved, civilized tourism can be advocated and the negative impacts of tourists on scenic areas can be minimized by rationally controlling the number of tourists and tour routes and promoting cultural relic protection.

The Project would mainly involve six scenic areas, namely, Hezheng County Songming Rock Scenic Area, Jingchuan County Luohandong-Hanjia Gully Stone Caves Scenic Area, Kongtong Mountain Scenic Area, Tanchang County Guan’e Gully Scenic Area, Kang County Yangba Scenic Area and Zhuanglang County Yunya Temple Scenic Area. The number of tourists to each of these scenic areas is predicted in Table 5.8-1.

Table 5.8-1 Number of Tourists to Scenic Areas

No.	Scenic Area	Predicted Number (10,000 people/year)	Predicted Number (people/day)
1	Hezheng County Songming Rock Scenic Area	79.10	3595
2	Jingchuan County Luohandong-Hanjia Gully Stone Caves Scenic Area	5.34	243
3	Kongtong Mountain Scenic Area	528.12	24005
4	Tanchang County Guan'e Gully Scenic Area	103.71	4714
5	Kang County Yangba Scenic Area	131.60	5982
6	Zhuanglang County Yunya Temple Scenic Area	99.36	4516

5.8.2 Impacts on Other Cultural Resources

Increased number of tourists after project operation would catalyze tourism development of local villages, increase income of local villagers, strengthen links of these villages with the outside world. On the other hand, increased number of tourists would also have greater pressure on village roads, sewagetreatment, waste disposal and other facilities. Tourists shall be diverted to villages with better infrastructure to avoid unnecessary environmental pressure on villages that have not been developed. Meanwhile, efforts shall be taken to strengthen development of villages with weak infrastructure.

5.9 Cumulative Impacts Analysis

The Project would include six subprojects, each of which would generate wastewater and solid waste, whose cumulative impacts are analyzed below:

Waste gas: during its operation, the Project would mainly provide tourist services, all scenic areas will not provide accommodation and catering services to tourists, and the only source of air pollution is a few electric buses used in the scenic areas. Therefore, the Project would only have minimal impacts on ambient air.

Wastewater: after treatment in septic tanks, tsewage from self-built sewer network under Tanchang County Subproject would be discharged to the urban sewer network; domestic sewage from Kongtong Mountain, Hezheng County, Jingchuan County, Kang County and

Zhuanglang County subprojects would be treated at newly built wastewater treatment stations/plants. The standards to be met for sewage treated at these stations/plants are provided in Tables 1.4.6 and 1.4.7. As treated sewage would meet specified standards, it would only have minimal impacts on the surrounding water environment. As shown in Table 5.9-1, total sewage is 445,800 tons/year, cumulative COD in the sewage is 156.03 tons/year and cumulative NH_3-N is 11.17 tons/year.

Solid waste: all solid waste generated under the Project would be transported to domestic waste landfills and can be effectively disposed of. There would be zero solid waste and its impacts on the environment would be negligible.

Table 5.9-1 Total Pollutant Emission (t/a)

Subproject	Item	Pollutant	Amount t/a	Treatment Measures	Emission Standard
Kongtong Mountain Subproject	Wastewater	Wastewater	21000	Construction of new treatment facilities	Urban Wastewater Reuse and Urban Miscellaneous Water Quality Standards (GB/T18920-2002)
		COD	7.35		
		NH_3-N	0.53		
	Solid waste	Domestic waste, sludge	302.63	Pingliang City Domestic Waste Landfill	/
Jingchuan County Subproject	Wastewater	wastewater	21000	New integrated wastewater treatment equipment	Category IA in Discharge Standards Urban Wastewater Treatment Plants (GB18918-2002)
		COD	7.35		
		NH_3-N	0.53		
	Solid waste	Domestic waste, sludge	302.63	County Domest Waste Landfill	/
Zhuanglang County Subproject	Wastewater	wastewater	57000	New integrated wastewater treatment equipment	Category IB of Emission standard for Wastewater Treatment Plants (GB18918-2002)
		COD	19.95		
		NH_3-N	1.43		
	Solid waste	Domestic waste, sludge	132.5	Zhuanglang County Landfill	/
Tanchang County Subproject	Wastewater	wastewater	160200	Discharge toTanchang Wastewater Treatment Plant	Sewer connection standard for Tanchang Wastewater Treatment Plant
		COD	56.07		
		NH_3-N	4.01		
	Solid waste	Domestic waste, sludge	34.47	Tanchang County Landfill	/
Kang County Subproject	Wastewater	wastewater	36600	New integrated wastewater treatment equipment	Greening standard in Urban Wastewater Reuse and Urban Miscellaneous Water Quality Standards (GB/T18920-2002)
		COD	12.81		
		NH_3-N	0.92		

Subproject	Item	Pollutant	Amount t/a	Treatment Measures	Emission Standard
	Solid waste	Domestic waste, sludge	254.39	Yangba Domestic Waste Landfill	/
Hezheng County Subproject	Wastewater	wastewater	150000	New wastewater treatment plant	Category IA standard in Standards for Emission of Pollutants at Urban Wastewater Treatment Plants (GB18918-2002)
		COD	52.5		
		NH_3-N	3.75		
	Solid waste	Domestic waste, sludge	814.37	Songmingyan Landfill	/

Chapter 6 Analysis of Alternatives

Analysis of alternatives aims to optimize project design from resources and environmental dimensions, compare and analyze the scope and level of impacts of different project designs on ecological environment, recommended the project to optimize design during implementation from environmental perspectives, and provide rational evidence for selecting decisions on project implementation. General principles governing analysis of alternatives are:

1. Quantitative comparison and selection: for each alternative, try to quantify impacts of project implementation on the environment;
2. Comprehensive comparison and selection: carry out comprehensive comparative analysis from environmental, technical, economic, social and other dimensions; and
3. Conformity comparison and selection: the selected alternative needs to conform to requirements of relevant development plans and criteria and adapt to local realities.

6.1 With- and Without-Project Analysis

Table 6.1-1 With- and Without-Project Analysis

Item	The Project Alternative	Without-Project Alternative (Zero Alternative)
Main advantages	1. A serious of activities would benefit local residents, including repair of ancient buildings, ancient houses, ancient towers and stone caves; construction of new museums and cultural exhibition centers; and protection of endangered cultural relics, ancient buildins and houses, and geological and cultural sites.	1. Would maintain current situation of the proposed project areas. For example, vegetation would not be destroyed; 2. Would not change land use value in the proposed

Item	The Project Alternative	Without-Project Alternative (Zero Alternative)
	2. Consturction of office structures for scenic area administration, tourist transport centers and ecological vehicle parks would contribute to improve the oveall reputation of scenic areas and enhance tourist reception capacity and service quality; 3. Construction of new tourist trails and imitation wood plank roads would help tap good tourism reosources and create better socioeconomic benefits; 4. Hardened roads would help reduce soil erosion, bring convenient access to local residents and reduce dust generated by vehicles on road; 5. New water supply, drainage, sewage and midwater reuse pipeline, power cables, ponds for firefighting, septic tanks, wastewater treatment stations, public toilets, garbage bins and garbage transfer stations would benefit residents in nearby villages and improve living environment in these villages; 6. Management of spots prone to geological disasters would help mitigate or prevent geological disasters.	project areas (such as no land acquisition); 3. There would be no environmental impacts during infrastructure construction, such as from noise, waste gas, wastewater and solid waste; 4. There would be no wastewater, waste gas, noise and solid waste during infrastructure operation; 5. No increase in ecological load due to increased tourist activities.
Main disadvantages	1. Occupation of large area of land by scenic area office structures, tourist transport centers and vehicle parks and in many cases, such occupation is permanent; 2. Destruction to vegetation during construction, leading to water and soil erosion; generation of dust, noise, wastewater, waste gasses and soild waste, which would adversely affect ambient environment; 3. Significant disturbances by tourists to local residents, which could lead to social conflicts.	1. Some endangered cultural relics, ancient buildings, ancient houses, and geological and cultural sites have been damaged or destroyed by people or due to other factors such as natural erosion; 2. Existing tourism facilities are aging and not repaired and existing equipment is also aging. These and other problems have resulted in lower reception levels and inadequate reception capacity of scenic areas as well as sharly declined social

Item	The Project Alternative	Without-Project Alternative (Zero Alternative)
		and economic benefits; 3. Poor road-related infrastructure does not facilitate access of local residents and vehicles on roads generate dust; 4. Associated environmental protection facilties in scenic areas are inadequate, resulting in some adverse impacts on environment quality in these areas; 5. Local areas are prone to geological disasters.
Overall analysis	From social and environmental perspectives, the project alternative is more optimal than the zero alternative.	

6.2 Optimal Design of EA Items

During the Project's feasibility study, the EA agency, design institute, the Client and other relevant authorities held discussions about a number of alternatives. Based on these discussions, the EA agency optimized the components of some subprojects from environmental perspective. The optimized components are described below.

1. Kongtong Mountain Subproject

During the subproject appraisal organized by local authorities, a number of components were proposed, including repair and expansion of Xiangshan Road, and improvement of roads and water supply pipeline at Zhonghe Village and Gaoling Village. After analyzing the above two components and relevant maps of Kongtong Mountain National Nature Reserve, the EA agency found that they components are located in the core area and buffer area of the reserve and do not comply with (National) Regulations on the Protection of Nature Reserves and Gansu Provincial Regulations on the Protection of Nature Reserves and recommended to drop them. As a result of consultation with relevant parties, the two components have been dropped.

2. Zhuanglang County Subproject

During the subproject appraisal organized by local authorities, a number of components were proposed, including improvement of tourist trails in Yunya Temple Scenic Area. After reviewing the scope of drinking water source protection area of Zhulinsi Reservoir, the EA agency found that the component is located within the Category I protection area and does not comply with the Law of the People's Republic of China on Water Pollution Prevention and Control and Administrative

Regulations on Water Pollution Prevention and Control for Drinking Water Source Protection Areas and recommended to drop the component. After consultation with relevant parties, this component has been dropped.

3. Kang County Subproject

During the subproject appraisal organized by local authorities, some alternatives were proposed, including re-selection of toilet types in the Yangba Scenic Area and realignment of Meiyuan River wood patrol access. The feasibility study agency recommended that flush toilets would be designed. Given surface water bodies of the subproject areas fall under Gansu Giant Salamander Nature Reserve and pursuant to relevant regulations, wastewater cannot be discharged into the nature reserve and if flush toilets were selected, wastewater cannot be discharged. The EA agency recommended to change these toilets to environmentally friendly toilets which do not discharge wastewater to areas outside them. After consultation with relevant parties, the flush toilet alternative has been changed to the environmentally friendly toilet alternative.

After reviewing relevant maps and figures of Meiyuan River National Wetland Park Protection Program, the EA agency found that the alignment of Meiyuan River wood patrol access is partially located in the restoration and reconstruction area of the park and does not comply with relevant provision of Regulations on Wetland Protection, Measures for the Administration of National Wetland Parks (Trial) and Gansu Provincial Regulations on Wetland Protection. The EA agency recommended to drop construction of the access in the restoration and reconstruction area. After consultation with relevant parties, this component has been dropped.

6.3 Comparative Analysis of Site Selection

Two alternative sites are proposed for Jingchuan County Museum: Alternative A is Chengbei New District and Alternative B is the existing Chenghuang Temple. These two alternatives are compared and analyzed below:

Table 6.3-1 Comparative Analysis of Site Selection for Jingchuan County Museum

Relevant Factors	Construction in Chengbei New District	Use of Existing Chenghuang Temple
Social impacts	The site is located in Jingchuan County Dayun Temple Scenic Area with a sports center to its south, Jingchuan County 3rd Middle School to its east and planned land for the temple to its west and north. There are no settlements within 300m to the site.	The site is the existing Chenghuang Temple, which is located in downtown area and has many settlements around it.
Social impacts during construction	No settlements around the site	Located in downtown area and significant impacts from construction on local residents.
Impacts on	700m in straight line distance to	75m in straight line distance to

Relevant Factors	Construction in Chengbei New District	Use of Existing Chenghuang Temple
Groundwater source protection area	groundwater source protection area	groundwater source protection area
Impacts on nearby rivers	450m in straight line distance to the Jing River	650m in straight line distance to the Na River
Conformity to relevant plans	Conforms to the layout of urban master plan	Conforms to the layout of urban master plan
Impacts on cultural relics protection	1. Construction of a new center, which contributes to cultural relics protection; 2. Construction of a new center, which facilitates full display and exhibition.	1. The temple has lower elevation (than that of urban drainage network), which is prone to waterlogging and does not contribute to cultural relics protection; 2. Very small available area for display and exhibition, not allowing foradequatedisplay and exhibition of many pieces of cultural relics.
Impacts on tourism of Jingchuan County	1. Together with the Dayun Temple and the Hall of Great Strength, the new center would shape a landscape center, which facilitates systematic sightseeing of tourists; 2. The new center would allow for use of many modern display and exhibition technologies, offering the most vivid visual experience; 3. As a stand-alone display and exhibition facility, the new center would help improve the “image” of 50km Stone Cave Corridor Scenic Area.	1. Many modern display and exhibition technologies cannot be adequately used; 2. The temple is located in downtown area, making it harder to manage tourists should they stay there for a long period of time; 3. Small area of the temple does not facilitate movement/evacuation of large amount of tourists.
Conclusion	Recommended	Not recommended

Based on the above analysis, this EA recommends Alternative A as the priority alternative.

Covering an area of 87.05 mu, the new center would be located in Dayun Temple Scenic Area with convenient transport, evident locational advantages and beautiful natural environment.

Two alternative sites for integrated wastewater treatment facilities in the scenic area of Zhuanglang County Subproject: alternative A would be in the scenic area and alternative B would be at Fomengou Tourist Service Center, based on which domestic sewage would be discharged via sewers. The two alternatives are analyzed below.

Table 6.3-2Comparative Analysis of Site Selection for Integrated Wastewater Treatment Facilities of Zhuanglang County Subproject

Alternative	In scenic area	At Fomengou Tourist Service Center
Main advantages	1. Short length of sewer system and low investment; 2. Short distance of sewage conveyance and low risk of leakage; 3. Small area of excavation and little damage to vegetation.	1. Located outside water source protection area and minimal impacts on the area; 2. Inclusion of domestic sewage from nearby villages and improvement of village environment; 3. Less stringent requirements for effluent quality and low operation costs.
Main disadvantages	1. Located in Category II reserve of water source protection area and within the upstream catchment area of reservoir; risk of water pollution; 2. More stringent requirements for effluent quality and high operation costs.	1. Long length of sewer system and high investment; 2. Long distance of sewage conveyance and high risk of leakage; 3. Large area of excavation and significant damage to vegetation.
Conclusion	Recommended	Not recommended

6.4 Comparison and Selection of Toilet Alternatives

There are three types of conventional toilets in the scenic areas and local communities: flush toilet, dry toilet and environmentally-friendly toilet (foam-flush). These toilets are compared below.

Table 6.4-1Comparison and Slection of Toilet Alternatives

Item	Flush Toilet	Dry Toilet	Environmentally-friendly Toilet
Main advantages	1. Sanitary and clean and not prone to breeding flies, mosquitoes and	1. Low cost; 2. Simple structure and short construction	1. No need for connection pipes and low water use; 2. Foam can prevent spreading of odor into

	maggots; 2. No visual pollution, effective control of odor and fresh indoor air.	period; 3. No water use during operation; 4. No need for associated sewers.	the air; 3. Movable and location can be adjusted depending on the number of tourists; 4. Small land occupation and can save more land area than conventional toilets.
Main disadvantages	1. High water use; 2. Large amount of wastewater during operation; 3. Need for associated sewers.	1. Unsanitary and prone to breeading flies, mosquitoes and maggots; 2. Risks of polluting groundwater; 3. Not eye-pleasing and generating odor.	1. Operation costs and need for designated staff to clean solid waste on a periodic basis; 2. Significant investment.
Conclusion	Not recommended	Not recommended	Recommended

Based on the above analysis, environmentally-friendly toilets are the most feasible and preferred alternative. As these toilets would be located in scenic areas where wastewater is not allowed to be discharged to places outside these areas, flush toilets or dry toilets are not recommended.

6.5Comparision and Selection of Wastewater Treatment Techniques

Except for the Songmingyan Scenic Area under Hezheng County Subproject, which needs to take into consideration the needs of nearby resident population, scenic areas under other subprojects would produce small amount of wastewater, which needs to be treated using small integrated equipment. Normally, the integrated equipment uses two types of techniques: AO technique and membrane-biology reactor technique, which are compared in Table 6.5-1.

Table 6.5-1Wastewater Treatment Equipment Comparison and Selection

Item	**Small Buried AO Treatment Equipment**	**Burried Membrane-Biology Reactor Equipment**
Introduction of techniques	The AO technique includes anaerobic process, which is used to remove nitrogen and phosphorus, and oxic process,which is used o remove organic matters in wastewater.	A membrane-biology reactor use membrane separation equipment to intercept acticated sludge and large-molecule organic matters in a bio-chemical reactor.

Scope of application	Small wastewater treatment stations	Small wastewater treatment stations
Advantages	1. Buried AO biological treatment technique would be used for secondary treatment via a plug-flow biological contact oxidation pond, which is more effective than a fully mixed biological contact oxidation pond or a two-cascaded or three-cascaded fully-mixed biological contact oxidation pond; is more adaptative to inlet water quality, more shock resistant, has more stable outlet water quality, and would not lead to sludge expansion. Gravel filtering technique would be used for tertiary treatment, which can ensure outlet water quality meets the need of reuse; 2. Occupation of small land area and compact placement of equipment; 3. Treated water quality is lower than that of Alternative B.	1. Membrane filtration technique brings higher outlet water quality and occupies small area of land with no need for secondary semidentation pond; 2. Being flexible, can meet different water quality needs and not constrained by network. Easy modularization and upgrading.
Disadvantages	1. Need for large area of land for faeces disposal; 2. Risks of spreading livestock and poultry diseases and zoonoses.	1. Heavy energy consumption of equipment, high investment cots, difficulties in cleaning membrane pollution; membrane lifespan and replacement would lead to high operation costs. Lifespan of membrane components is normally five years, beyond which membrane needs to be replaced; 2. Higher requirements for equipment operation and management.
Conclusion	Recommended	Not recommended

Chapter 7 Public Disclosure and Consultation

7.1 Objevctive and Methods

Government departments or project implementation agencies shall consult with potentially affected local groups and local NGOs, relevant experts and other stakeholders on environmental and social impacts of the proposed project. Stakeholders that shall be consulted include groups and individuals that could be affected by the proposed project, such as public institutions, village committees and residents; groups and individuals that could provide knowledge and information for environmental assessment, such as non-government environmental organizations and consultants, who could use their knowledge and expertise to provide information on potential environmental impacts of the proposed project.

Public consultation shall be conducted for at least two rounds: the first round at the project preparation stage before the EA outline is finalized, which is to provide information on project overview and potential environmental issues to the affected people; the second round at the time when the EA draft is ready, which is to disclose to the general public relevant environmental information of the project and the disclosure duration shall last for at least 10 working days, after which all relevant materials shall be provided to the affected groups, in forms and languages accessible to these groups. The full text of the EA shall be disclosed at publicly accessible places and announcements shall be made via local media (newspaper, radio, TV or website), keeping the public informed of disclosure duration, venue and methods of feedback. Adequate duration shall be ensured for disclosure to allow time for the public to understand the information and give meaningful comments and suggestions.

The EA agency shall properly document public consultation processes, indicating consultation approaches (such as questionnaire survey, discussion meeting and assessment meeting), consultation date, venue, contents, methods, number, occupation, sex, age and address of participants, as as well as summary of public consultation, including comments and suggestions and how the EA would address these comments and suggestions.

Survey methods: to learn about views of local people and entities through distributing questionnaires and holding discussion meetings.

7.2 First Round Public Consultation

7.2.1 First Round Informationt Disclosure

The first round of information disclosure was conducted mainly through online disclosure, newspaper disclosure and on-site disclosure. Information was disclosed via websites of six county/district governments under the Project, via newspapers of three cities/prefectures under the Project and via announcements and posters at townships/towns and village committees in the project areas.

The first round of website disclosure is summarized in Table 7.2-1 and a screenshot of website disclosure is provided in Figure 7.2-1.

Table 7.2-1 Summary of First Round Online Disclosure

Subproject	Duration of Disclosure	Website
Kongtong Mountain Subproject	October 29, 2015 – November 11, 2015	Gansu Kongtong District Government website http://www.kongtong.gov.cn/gskt/zf/gzdt/ggtz/webinfo/2015/10/1438778416666145.htm
Jingchuan County Subproject	October 28, 2015 – November 10, 2015	Jingchuan County People's Government website http://www.jingchuan.gov.cn/html/news/gonggao/2015/1028/10123.html
Zhuanglang County Subproject	November 2-13, 2015	Gansu Zhuanglang County Yunya Temple tourism website http://www.yunyasitour.com/wzgg/content_10030_177502.html
Tanchang County Subproject	October 28, 2015 – November 10, 2015	Tanchang County People's Government website http://www.Tanchang.gov.cn/city.asp?ClassID=131&ArticleID=17172
Kang County Subproject	October 29, 2015 – November 11, 2015	Kang County People's Government website http://gskxzf.gov.cn/show-45-4786-1.html
Hezheng County Subproject	October 27, 2015 – November 9, 2015	Hezheng County People's Government website http://www.hezheng.gov.cn/show.asp?id=1052

Figure 7.2-1 Screenshot of First Round Online Disclosure

First round disclosure through newspapers is summarized in Table 7.2-2 and an image of first newspaper disclosure is given in Figure 7.2-2.

Table 7.2-2 Summary of First Round Disclosure via Newspapers

City (Prefecture)	County (District)	Subproject	Date of Disclosure	Newspaper	Page
Pingliang City	Kongtong District	Kongtong Mountain Subproject	December 25, 2015	Pingliang Daily	2
	Jingchuan County	Jingchuan County Subproject			
	Zhuanglang County	Zhuanglang County Subproject			
Longnan City	Tanchang County	Tanchang County Subproject	December 29, 2015	Longnan Daily	3
	Kang County	Kang County Subproject			
Linxia Prefecture	Hezheng County	Hezheng County Subproject	December 25, 2015	Minzu Daily	2

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◆新华社记者 李放 王新明 史林静 刘骥 孟昭丽

中央深改组@您：

2015年哪些改革红利落在您头上？

2015年是全面深化改革的关键之年，也打近平总书记部署的全面深化改革顶层设计和总体框架的三年行动计划、重点改革方案、时间表路线图的关键一年。这一年，全面深化改革将有哪些新进展？老百姓关心的教育、医疗等改革究竟如何？哪些改革成果离我们最近？

中央深改组@13亿人：进一步解决看病贵的问题

有哪明有病，没哪明没钱。

当贵州兴仁县城南办事处居民董大姐得知母亲患了脑梗塞时，感觉天都要塌了，“不治肯定不行，治疗又不知道要花多少钱，家里条件本来就不好，当时怎得我整夜睡不着觉。”

董大姐的“愁”并不让人意外。多年来，看病贵、看病难是国人最担心的事，一场大病就足以让一个家庭负债累积。

“仅是用药一项，一年就是10多万元。”贵州省兴义市桔山镇的村民郭欢愿本有一个小康之家，但2011年查出慢慢性脾动脉瘤最深毒症后，不仅家里的积蓄花光了，还欠了10多万元的高利息借款。

在山西省吕梁山连片特困区，一个不足7万人的小县就有近1万人因病，因残致贫，占到贫困人数的28%。

2015年4月1日，中央全面深化改革领导小组第十一次会议审议通过《关于进一步加强农村贫困人口大病救治和保障工作的意见》，提出把农村贫困人口大病救治和保障工作作为全面深化改革的重要举措，着力解决好群众看病就医问题。

国家卫生计生委体制改革司司长梁万年说，公立医院改革的关键环节是破除以药养医机制，核心就是控制药品、耗材与医院及医务人员的经济利益。

2015年，在北京启动“医药分开”试点的5家医院，门诊次均医疗费用减少754.44元，次均药品费用（门诊看一次病的用药费用）减少了82.85元；在福建省三明市第一医院，医院收费处视频窗口上张贴着“药品零差率销售”告示，住院某用从每点637元降到136元。头孢菌肟从每盒256元降到60元……

“医保报销，大病保险，大病医疗二次保险，‘不光报销的多，药价也降低了很多。”重大组织者蒋了一笔母亲的“治病账”：晚来脑梗从每盒近1000元降到600多元，青霉他酶从每盒400多元降到200多元……“原本以为要花10多万，现在一共只交了5000元。”

当然医改并非如此简单，破除以药养医的核心应该是破除公立医院逐利性，单纯实行药品零差率，而并非机制。近日机制考配套机制如果没有建立，就会出现以药养医、以检查养医的现象。但在2015“深改关键年”，为解决看病贵、看病难，深改组已经边进边第一步。

中央深改组@2.45亿流动人口：积分落户让“北上广相信实干”

“大学毕业后找工作，我是用尖了脑袋想找那些挣得多的，能让我实现梦想的城市，而最终留下我的，也是不上这房价涨得虚度。”这是电视剧《辣妈时代》主人公刘易阳的独白。

对于全国2.45亿流动人口而言，刘易阳的独白可能是他们北生最大的梦想。2015“深改关键年”，梦想开始照进现实。

2015年12月9日，习近平主持召开中央全面深化改革领导小组第十九次会议，要求完善户口登记政策，推动每个公民依法登记常住户口的权益，提高无户口人员数量，分布及产生原因等，分类实施无户口人员登记政策，全面解决无户口人员登记户口问题。

截至7月底，河北、江苏、山东、贵州等22个省区和新疆生产建设兵团已正式印发《国务院关于进一步推进户籍制度改革的意见》具体实施意见。截至12月，北京、上海、广州、深圳市区常住人口超千万的中国四个超大城市，也均已提出或实施各自的积分落户指标体系。

“今年不仅落了户，通过当地政策的优惠政策，31万就买到了一套136平方米的安置房，”原籍四川资中县的雷宏权在福建晋江打拼了12年，户口和房子，两块石在他心头的石头终于在2015年落了下来，“以前一家三口挤在公司巴掌大的宿舍，转个身都困难，最让人爽心的还是孩子，没有户口，想上学都困难。”

“要逐行户口登记本身并不困难，关键在于背后的配套措施如何保障。”国家发改委宏观经济研究所副研究员万解说。

2015年，住房城乡建设部积极推动将符合条件、有稳定收入的农民工纳入城镇住房保障体系，年初承诺保障性安居工程新安排740万套，全年基本建成480万套；前十个月，全国城镇保障性安居工程已开工747万套，基本建成688万套，均超额完成年度目标任务。

虽然困难起步，一些大城市落户条件也十分苛刻，但从2015“深改关键年”开始，随着改革的不断深化，和信“北上广”不相信里泪”的故事会越来越少，“北上广相信实干”的故事会越来越多。

中央深改组@“雇状者”让保护者受益，让损害者受罚

小马是北京市某街道办的一名普通公务员，今年是他在北京的第六个年头。这位来自浙江的“90后”女孩每年不回两年，但频频的雾霾天让她有些吃不消。还要在北京继续生活的小马，希望天蓝水净。

“视线雾”空调是2015年北京人最欢迎的颜色，但是这样的颜色并没有成为常态化。不达标的城市空气质量时常牵动着百姓的神经。

我国是雾霾影响的数亿人依然要时不时戴上口罩，他们在数百万平方公里“若隐若现”的国土上追问，何时才能蓝天归云？

2015年7月1日，习近平主持召开中央全面深化改革领导小组第十四次会议，审议通过《环境保护督察方案（试行）》。《生态环境监测网络建设方案》等环保改革方案，要求建立环保督察工作机制，强化环境保护“党政同责”和“一岗双责”的要求，对问题突出的地方追究有关单位和个人责任，让保护者受益，让损害者受罚。

环保部部长陈吉宁表示，2015年要在雾霾治理问题上有实质性进展，PM2.5浓度要比2013年下降5%以上的京津冀及周边地区，要下决心解决地方政府责任不落实、不到位、不作为”。

虽然治霾需要不断一蹴而就，但是“深改关键年”，环保改革还是在持续发力。

12月9日，北京市启动自2015年《北京市空气重污染应急预案》通过以来首个空气重污染红色预警。中小学、幼儿园停课，企事业单位弹性工作；机动车单双号限行，政府公车进一步停驶；北京市将限产企业2100家，3500多个工地停止室外施工……

“深改关键年”的环保蓄力吐，让群众对蓝天白云有了更多的期盼；孩子们期盼能正常在户外游戏，上班族期盼不再“望雾兴叹”，“大妈们”期盼戴广场舞不再像“复静种”……如果改革能释放更多的环保红利，那就让改革来的再猛烈一些吧。

教育部坚决打击组织考试作弊等违法犯罪行为

新华社北京电 2016年全国硕士研究生统一入学考试初试已平稳结束。记者28日从教育部获悉，近日报载举报称，有考生收到个别科目部分试题的作答与考题内容相关。教育部表示，将考虑依法犯罪行为严重破坏考试秩序，指责教育公平公正，教育部将会同公安等有关执行严格取证，《刑法修正案（九）》等法律法规，严厉打击国家教育考试用事犯罪。决不姑息。

据介绍，《刑法修正案（九）》已于今年11月1日起施行，其中明确相关考试作弊行为将被追究刑责。此外，为他人提供作弊器材或者其他帮助，向他人非法出售或者提供考试的试题、答案，也将被追究刑责。

◀12月28日，由中央电视台、英国埃姆森公司等单位联合摄制的纪录片《孔子》国际版首播新闻发布会在北京举行。主创团队宣布该片将于2016年1月1日21时在中央电视台科教频道首播。纪录片《孔子》国际版时长90分钟，历时两年多摄制而成，主要展示孔子的生平理想、思想体系以及对后世的深远影响。

新华社记者 金良快 摄

难题 新华社发 徐衡 作

中国银行业监督管理委员会陇南监管分局关于颁发、换发《中华人民共和国金融许可证》的公告

2015年第15号

下列机构经中国银行业监督管理委员会甘肃监管局批准，核准，颁发、换发《中华人民共和国金融许可证》，现予以公告。

甘肃礼县农村商业银行股份有限公司

机构编码：B0797H362120001

许可证流水号：00477301

业务范围：许可资机构经营中国银行业监督管理委员会依照有关法律、行政法规和其他规定批准的业务，经营范围以批准文件所列的业务为准。

批准成立日期：2015年12月14日

住所：甘肃省礼县城关镇十字街

发证机关：中国银行业监督管理委员会陇南监管分局

发证日期：2015年12月16日

中国银行业监督管理委员会陇南监管分局关于颁发、换发《中华人民共和国金融许可证》的公告

2015年第15号

下列机构经中国银行业监督管理委员会甘肃监管局批准，核准，颁发、换发《中华人民共和国金融许可证》，现予以公告。

甘肃西和农村商业银行股份有限公司

机构编码：B0798H362120001

许可证流水号：00477302

业务范围：许可资机构经营中国银行业监督管理委员会依照有关法律、行政法规和其他规定批准的业务，经营范围以批准文件所列的业务为准。

批准成立日期：2015年12月14日

住所：甘肃省西和县祁山镇

发证机关：中国银行业监督管理委员会陇南监管分局

发证日期：2015年12月16日

Figure 7.2-2 Image of First Disclosure via Newspapers

Pictures of first on-site disclosure are given in Figure 7.2-3.

(1)Bulletin Board of Kongtong Mountain Tourism Administration Bureau

(2) Disclosure at Xigou Village of Kongtong District

Figure 7.2-3 First On-site Disclosure

7.2.2 First Round Public Consultation

Total 582 questionnaires for individuals were issued for the first round public consultation and all of them were returned; total 75 questionnaires were issued for entities and all of them were returned. Respondents of survey of individuals include residents, teachers and students and shop owners along sensitive spots of the Project and respondents of survey of entities include village committees, schools and enterprises along sensitive spots. Based on survey of ethnic minorities, there are mainly Qiang and Tibetan ethnic groups in the Tanchang Subproject areas and Hui ethnic group in the Hezheng Subproject areas. During the survey, individuals of these ethnic groups and their entities were adequately consulted. Composition of these respondents is detailed in Table 7.2-3.

Before the first round public consultation, the project related information was disclosed on local newspapers, government websites and bulletin boards of villages and towns and at entities of stakeholders. During this round of public consultation, individual respondents did not know much about the project due to their poverty and educational levels. However, thanks to on-site communication, questionnaire survey, discussion meetings and other approaches to disseminate project related information, these individuals in the project areas gained some understanding of the project.

Table 7.2-3 Composition of Survey Respondents

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Item		No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share
Feedback	Agree	73	79.35%	87	91.58%	57	80.28%	98	97.03%	114	99.13%	104	96.30%
	Conditionally agree	16	17.39%	8	8.42%	13	18.31%	3	2.97%	1	0.87%	3	2.78%
	Neutral	3	3.26%	0	0	1	1.41%	0	0	0	0	1	0.93%
	Oppose	0	0	0	0	0	0	0	0	0	0	0	0
Sex	Male	80	86.96%	62	65.26%	58	81.69%	87	86.14%	99	86.09%	77	71.30%
	Female	12	13.04%	33	34.74%	13	18.31%	14	13.86%	16	13.91%	31	28.70%
Ethnicity	Han	92	100%	95	100%	71	100%	38	37.62%	115	100%	14	12.97%
	Other ethnic minorities	0	0	0	0	0	0	63	62.38%	0	0	94	87.03%
Age	Below 25	5	5.43%	9	9.47%	3	4.23%	5	4.95%	10	8.69%	25	23.15%
	26-35	15	16.30%	23	24.21%	28	39.44%	12	11.88%	31	26.96%	48	44.44%
	36-45	27	29.35%	32	33.69%	16	22.53%	37	36.64%	32	27.83%	25	23.15%
	46-55	29	31.52%	16	16.84%	16	22.53%	34	33.66%	34	29.56%	7	6.48%
	56-65	15	16.30%	9	9.47%	7	9.86%	11	10.89%	8	6.96%	3	2.78%
	Above 66	1	1.10%	6	6.32%	1	1.41%	2	1.98%	0	0	0	0
Occupation	Farmer	45	48.91%	49	51.58%	52	73.24%	97	96.04%	111	96.52%	24	22.22%
	Worker	7	7.61%	4	4.21%	0	0	0	0	1	0.87%	19	17.59%

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Item		No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share
	Official	11	11.96%	8	8.42%	18	25.35%	2	1.98%	2	1.74%	18	16.67%
	Other	29	31.52%	34	35.79%	1	1.41%	2	1.98%	1	0.87%	47	43.52%
Educational level	Primary education	12	13.04%	11	11.58%	37	52.11%	87	86.14%	55	47.83%	6	5.56%
	Secondary education	54	58.70%	51	53.68%	15	21.13%	14	13.86%	58	50.43%	59	54.63%
	Higher education	26	28.26%	33	34.74%	19	26.76%	0	0	2	1.74%	43	39.81%

7.2.3 Results

The results of survey of individuals are summarized in 7.2-4.

Table 7.2-4 Results of Survey of Individuals

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Questions and Answers		No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share
Are you satisfied with the environmental quality of the	Highly satisfied	19	20.65%	50	52.63%	47	66.20%	74	73.27%	105	91.30%	48	44.44%
	Satisfied	55	59.78%	39	41.05%	11	15.49%	22	21.78%	10	8.70%	55	50.93%
	Unsatisfied	17	18.48	5	5.26%	12	16.90%	4	3.96%	0	0	5	4.63%

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Questions and Answers		No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share
Project?	Highly unsatisfied	1	1.09%	1	1.05%	1	1.41%	1	0.99%	0	0	0	0
Are you aware of the Project?	Unaware of	24	26.09%	17	17.89%	8	11.27%	6	5.94%	4	3.48%	2	1.85%
	A little	57	61.96%	50	52.63%	25	35.21%	64	63.37%	7	6.09%	94	87.04%
	Clearly aware of	11	11.96%	28	29.47%	38	53.52%	31	30.69%	104	90.43%	12	11.11%
Based on your experience and information, what level of harm/impactsof the Project would have on environmental quality?	Severe	2	2.17%	1	1.05%	1	1.41%	1	0.99%	0	0	5	4.63%
	Significant	22	23.91%	10	10.53%	17	23.94%	21	20.79%	0	0	10	9.26%
	Minor	52	56.52%	67	70.53%	50	70.42%	75	74.26%	114	99.13%	81	75.00%
	Do not know	16	17.39%	17	17.89%	3	4.23%	4	3.96%	1	0.87%	12	11.11%
Do you think whether implementation of the Project would promote local economic development?	Yes	81	88.04%	89	93.68%	55	77.46%	88	87.13%	113	98.26%	106	98.15%
	No	3	3.26%	0	0	1	1.41%	9	8.91%	0	0	1	0.93%
	Do not know	8	8.70%	6	6.32%	15	21.13%	4	3.96%	2	1.74%	1	0.93%
What do you think the sources of environmental impacts of the Project?	Waste gas	16	17.39%	2	2.11%	5	7.04%	19	18.81%	32	27．83%	15	13.89%
	Wastewater	37	40.22%	24	25.26%	25	35.21%	28	27.72%	31	26．96%	31	28.70%
	Noise	22	23.91%	50	52.63%	29	40.85%	41	40.59%	5	4.35%	34	31.48%
	Solid waste	71	77.17%	46	48.42%	40	56.34%	24	23.76%	47	3086%	1	0.93%
What’s your	Agree	73	79.35%	87	91.58%	57	80.28%	98	97.03%	114	99.13%	104	96.30%

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Questions and Answers		No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share
attitude towards the Project?	Conditionally agree	16	17.39%	8	8.42%	13	18.31%	3	2.97%	1	0.87%	3	2.78%
	Neutral	3	3.26%	0	0	1	1.41%	0	0	0	0	1	0.93%
	Oppose	0	0	0	0	0	0	0	0	0	0	0	0

The survey form for individuals is provided in Table 7.2-5.

Table 7.2-5 Survey Form for Individuals

<table>
<tr><td colspan="10">Basic Information of Survey Respondent (Please provide authentic information and your information would be kept confidential. Thank you for your cooperation)</td></tr>
<tr><td>Name</td><td></td><td>Sex</td><td></td><td>Age</td><td></td><td>Occupation</td><td></td><td>Educational Level</td><td></td></tr>
<tr><td colspan="2">Entity or residence address</td><td colspan="3"></td><td>Tel.</td><td colspan="4"></td></tr>
<tr><td colspan="10">Overview of the Project:

The Project would be implemented in six counties (districts) of three cities (prefectures) in southeastern Gansu. The six counties are Kongtong, Jingchuan, Zhuanglang, Tanchang, Kang and Hezheng and the three cities are Pingliang, Longnan and Linxia. The Project would select six scenic areas: Kongtong Mountain, 50-km Stone Cave Corridor, Yunya Temple, Guan’e Gully, Yangba and Songmingya-Ancient Animal Fossil Geological Park, which respresent the Silk Road culture, Yellow River Culture and ethnic and folk culture, respectively.

Main components of the Project would include: 1) heritage protection and development: building an inheritance base for non-physical cultural resources; protection endangered cultural relics, ancient buildings, ancient houses, geological and cultural sites, constructing museums and exhibition centers; building offices for guard, management and protection; managing environment around heritage sites and controlling geological disasters; building new roads, car parks and tourist service centers, building necessary water supply and drainage, power, telecommunication, sanitation, tour guide and information systems; 2) construction of community public services facilities: building rural roads, water supply and drainage, garbage collection and treatment and wastewater treatment facilities; and 3) institutional capacity building and “soft ” activities: providing training to relevant staff at various levels; providing multiple training to community residents and tourism practitioners in scenic areas, assisting local communities in developing local economy and improving residents’ living conditions; strengthening training for technical staff engaging in heritage protection, inheritance, project implementation and management.

Total estimated investment of the Project is RMB1,0273.269 million; implementation period: 5 years (2016-2020).</td></tr>
<tr><td colspan="10">Questions and Answers (Please √ the answer you think appropriate)</td></tr>
<tr><td colspan="5">Are you satisfied with the environmental quality of the Project?</td><td colspan="5">Highly satisfied ( )Satisfied ( )Unsatisfied ( )Highly unsatisfied ( )</td></tr>
<tr><td colspan="5">Are you aware of the Project?</td><td colspan="5">Unaware of ( )A little ( )Clearly aware ( )</td></tr>
<tr><td colspan="5">Based on your experience and information, what level of harm/impacts of the Project would have on environmental quality?</td><td colspan="5">Severe ( )Significant ( )Minor ( )Do not know ( )</td></tr>
<tr><td colspan="5">Do you think whether implementation of the Project would promote local economic</td><td colspan="5">Yes ( )No ( )Do not know ( )</td></tr>
</table>

development?		
What do you think the sources of environmental impacts of the Project?		Waste gas ( ) Wastewater ( )Noise ( )Solid waste ( )
What's attitude towards the Project?		Agree ( )Conditionally agree ( )Neutral ( )Oppoose ( )
Your other comments and suggestions	What do you think the major environmental issues are in the region? What suggestions and requirements do you have on environmental protection activities during project construction and operation stages?	
Contact information of the client and EA agency (please contact us using the following information for any issues)		
Executing agency: Gansu Provincial Development and Reform Commission Address: 1, Central Square, Lanzhou Contact person: Yang Gong Tel.: 0931-8839048 E-mail: gansupmo@126.com		EA agency: Beijing Zhongzi Huayu Environmental Technology Co., Ltd Address： 9, Disheng Nanjie, Beijing Economic and Technology Development Zone Postcode: 100176 Tel.: 15195962577 E-mail: 377496257@qq.com

Results of survey of entities are provided in Table 7.2-6

Table 7.2-6 Results of Survey of Entities

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
Kongtong Mountain Subproject	Xigou Primary School of Kongtong Town, Kongtong District	13830357762	Agree
	Xigou Village Committee of Kongtong Town, Kongtong District	13993383177	Agree
	Kongtong District Tourism Bureau	0933-8217282	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Pingliang City Administration Committee for Kongtong Mountain Ecological and Cultural Tourism Demonstration Zone	0933-8714314	Agree
	People's Government of Kongtong Town	0933-8711504	Agree
	Kongtong District Development and Reform Bureau	0933-8215713	Agree
	Kongtong District Transportation Bureau	0933-8213349	Agree
	Kongtong District Culture, Sports, Radio and TV Bureau	0933-8252530	Agree
	Kongtong Mountain Key National Scenic Area Administration Bureau	0933-8711212	Agree
	Kongtong District Water Bureau	0933-8213509	Agree
Jingchuan County Subproject	Wangcun Town People's Government, Jingchuan County	0933-3480308	Agree
	Wanyan Primary School, Wangcun Town, Jingchuan County	15294033969	Agree
	Wangmu Palace Scenic Area Administration Bureau, Jingchuan County	0933-3321517	Agree
	Jingchuan County Environmental Protection Bureau	0933-3329638	Agree
	Jingchuan County Transportation Bureau	0933-3321232	Agree
	Jingchuan County Water Supply Company	0933-3321485	Agree
	Jingchuan County Tourism Bureau	0933-3321348	Agree
	Luohandong Township Education Office	0933-3440157	Agree
	Luohandong Vilage Committee	15193338128	Agree
	Luohandong Middle School, Jingchuan County	0933-3440149	Agree
	Jingchuan County Culture, Sports, Radio and TV Bureau	18793333299	Agree
	Jingchuan County Museum	0933-3321950	Agree
	Jingchuan County Finance Bureau	0933-3326591	Agree
	Jingchuan County Vocational Education Center	0933-3308249	Agree
	Jingchuan County No. 3 Middle School	0933-3306088	Agree
	Wanyan Village Committee, Jingchuan County	13993329259	Agree
Zhuanglang County Subproject	Guoman Village Committee, Handian Town, Zhuanglang County	13689461145	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Handian Town People's Government, Zhuanglang County	0933-6913132	Agree
	Shiqiao Village Committee, Handian Town, Zhuanglang County	15390538772	Agree
	Zhuanglang County Yunya Temple Tourism Administration Bureau	0933-6618129	Agree
	Zhuanglang County Tourism Bureau	0933-6820880	Agree
Tanchang County Subproject	Xinchengzi Tibetan Township People's Government, Tanchang County	15393285247	Agree
	Tanchang County Water and Soil Conservation Bureau	0939-6121539	Agree
	Tanchang County Culture and Radio Bureau	15293916046	Agree
	Longnan City Minjiang Foretry Farm	0939-6127112	Agree
	Tanchang County Transportation Bureau	0939-6121556	Agree
	Daheba Village Committee, Xinchengzi Tibetan Township	18093905814	Agree
	Xinping Village Committee, Xinchengzi Tibetan Township	18294691442	Agree
	Luren Village Committee, Chengguan Town, Tanchang County	13830978018	Agree
	Lijie Village Committee, Chengguan Town, Tanchang County	15009393155	Agree
	Washeping Village Committee, Chengguan Town, Tanchang County	15809343496	Agree
	Guan'e Village Committee, Chengguan Town, Tanchang County	13993903193	Agree
	Tanchang County Environmental Protection Bureau	0939-6123667	Agree
	Tanchang County Guan'e Tibetan Primary School	13909395196	Agree
Kang County Subproject	Yangba Town People's Government, Kang County	0939-5141072	Agree
	Kang CountyYangba Scenic Area Administration Office	0939-5141266	Agree
	Yinbazi Village Committee, Yangba Town, Kang County	13519392840	Agree
	Kang County Environmental Protection Bureau	0939-5125938	Agree
	Kang County Water Bureau	0939-5121648	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Kang County Housing and Rural-Urban Development Bureau	0939-5121384	Agree
	Kang County Tourism Bureau	0939-5122398	Agree
	Kang County Development and Reform Commission	0939-5128114	Agree
	Kang County Chinese Giant Salamander Nature Reserve Administration Bureau	0939-5126209	Agree
	Kang County Forestry Bureau	0939-5121376	Agree
	Tuya Village Committee, Yangban Town, Kang County	13993933696	Agree
	Laojiangba Village Committee, Yangban Town, Kang County	13919573568	Agree
	Youfangba Village Committee, Yangban Town, Kang County	13649394014	Agree
	Liujiaba Village Committee, Yangban Town, Kang County	13649394049	Agree
	Zhuangke Village Committee, Yangban Town, Kang County	13649394840	Agree
Hezheng County Subproject	Hezheng County Development and Reform Bureau	0930-5521049	Agree
	Hezheng County Culture, Radio, Film and TV Bureau	0930-5521069	Agree
	Hezheng County Forestry Bureau	0930-5521067	Agree
	Hezheng County Water and Hydropower Bureau	0930-5521068	Agree
	Hezheng County Tourism Bureau	0930-5523709	Agree
	Hezheng County Power Company	0930-5521065	Agree
	Hezheng County Planning Bureau	0930-5522108	Agree
	Hezheng County Environmental Protection Bureau	0930-5521203	Agree
	Hezheng County Energy Conservation and Supervision Center	0930-5523939	Agree
	Hezheng County Leading Group Office for “Work-for-Relife” and Relocation Project		Agree
	Hezheng County Transportation Bureau	0930-5521098	Agree
	Hezheng County Songming Town People’s Government	0930-5570014	Agree
	Hezheng County Songming Rock Scenic Area Administration Bureau	0930-5580181	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Songming Town Hospital	0930-5570378	Agree
	Diaotan Village Committee, Songming Town	13519309559	Agree
	Dashanzhuang Village Committee, Songming Town	13993074678	Agree

A picture of first round public consultation meeting is given in Figure 7.2-4.

Figure 7.2-4 First Round Public Consultation Meeting

7.3 Second Round Public Consultation

7.3.1 Second Round Information Disclosure

The second round of information disclosure was conducted mainly through online disclosure, TV disclosure, newspaper disclosure and on-site disclosure. Information was disclosed via websites of six county/district governments under the Project, via newspapers of three cities/prefectures under the Project and via announcements and posters at townships/towns and village committees in the project areas.

The second round of website disclosure is summarized in Table 7.3-1 and a screenshot of online disclosure is provided in Figure 7.3-1. Second round TV disclosure is summarized in Table 7.3-2 and a screenshort of TV disclosure is provided in Figure 7.3-2.

Table 7.3-1 Summary of Second Round Online Disclosure

Subproject	Duration	Website
Kongtong Mountain Subproject	January 20 - February 12, 2016	Gansu Kongtong District Government website http://www.kongtong.gov.cn/plkt/xwdt/ggtz/webinfo/2016/01/1452762083898416.htm
Jingchuan County Subproject	January 20 - February 12, 2016	Jingchuan County People's Government website http://www.jingchuan.gov.cn/html/news/gonggao/2016/0120/11046.html
Zhuanglang County Subproject	January 21 - February 12, 2016	Zhuanglang County portal http://www.gszhuanglang.gov.cn/zwgk/content_56_183918.html
Tanchang County Subproject	January 20 - February 12, 2016	Tanchang County People's Government website http://www.Tanchang.gov.cn/city.asp?ClassID=131&ArticleID=17366
Kang County Subproject	January 20 - February 12, 2016	Kang County People's Government Information website http://www.517kx.com/html/zw/chengxingongshi/2016/0120/727.html
Hezheng County Subproject	January 20 - February 12, 2016	Hezheng County People's Government website http://www.hezheng.gov.cn/show.asp?id=1240

Table 7.3-2 Second Round TV Disclosure

Subproject	Date	TV Station	Program (Form)
Kongtong Mountain Subproject	January 20, 2016	Kongtong District TV	Inserted news
Jingchuan County Subproject	January 21, 2016	Jingchuan TV	Jingchuan News
Zhuanglang County Subproject	January 19, 2016	Zhuanglang TV	Zhuanglang News
Tanchang County Subproject	January 21, 2016	Tanchang TV	Tanchang News
Kang County Subproject	January 20, 2016	Kang County TV	Inserted news
Hezheng County Subproject	January 19, 2016	Hezheng County TV	Hezheng News

Figure 7.3-1 Screenshot of Second Round Online Disclosure

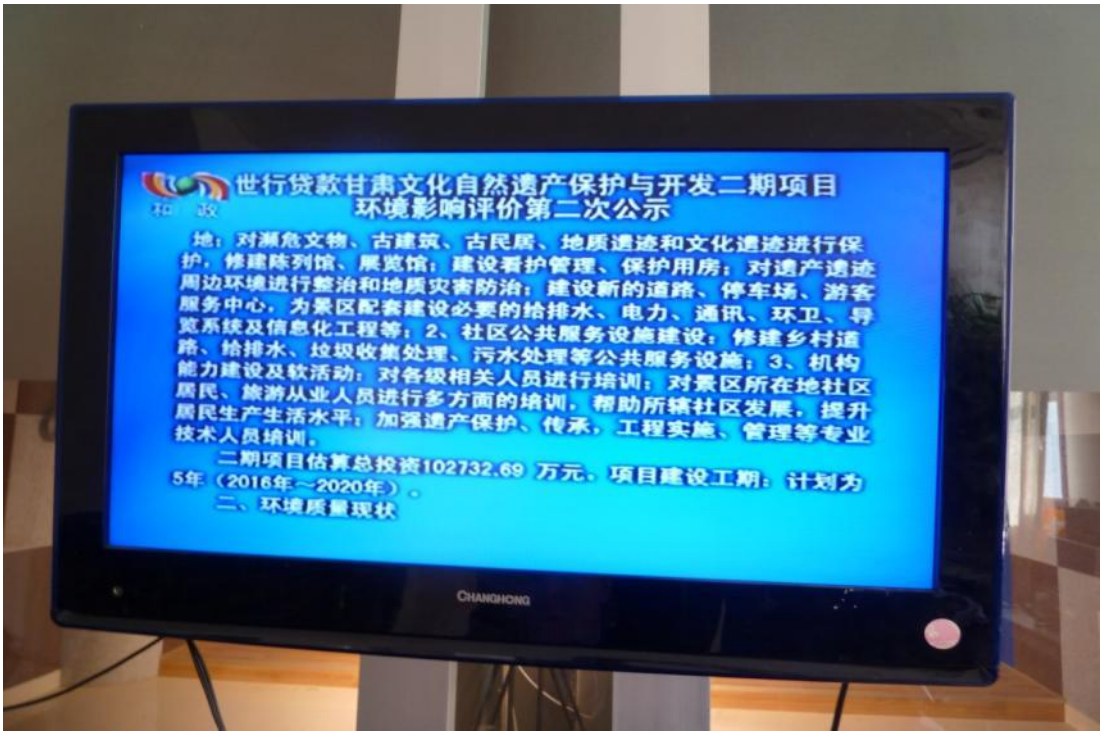


Figure 7.3-2 Second Round TV Disclosure

Second round newspaper disclosure is summarized in Table 7.3-3 and images of second newspaper disclosure are provided separately in Figure 7.3-3 and Figure 7.3-4.

Table 7.3-3 Summary of Second Newspaper Disclosure

City (Prefecture)	County (District)	Subproject	Date	Newspaper	Page
Pingliang City	Kongtong District	Kongtong Mountain Subproject	January 20, 2016	Pingliang Daily	4
	Jingchuan	Jingchuan County Subproject			
	Zhuanglang	Zhuanglang County Subproject			
Longnan Cijty	Tangchang County	Tanchang County Subproject	January 20, 2016	Longnan Daily	3
	Kang County	Kang County Subproject			
Lixia Prefecture	Hezheng County	Hezheng County Subproject	January 20, 2016	Minzu Daily	3
Gansu provincial level newspaper			January 20, 2016	Gansu Legal News	4

引领新常态 发力供给侧

——一论习近平总书记在省部级学习贯彻十八届五中全会精神专题研讨班重要讲话

新华社评论员

新华社北京1月18日电 新的时代高张，期待新的书写。站在“十三五”开局起步的历史节点，用新发展理念实现新跨越，是全面小康的梦想召唤，也是国家中国的责任担当。

“深入学习领会党的十八届五中全会精神，特别是要深入学习领会创新、协调、绿色、开放、共享的新发展理念，推动‘十三五’时期我国经济社会持续健康发展，确保如期实现全面建成小康社会各项目标。”习近平总书记在省部级主要领导干部学习贯彻十八届五中全会精神专题研讨班开班式上的重要讲话，从党和国家发展全局高度，从理论和实践、历史和现实相结合的角度，对重大发展问题作出深刻阐述，对落实好新发展理念提出明确要求，为开创发展新境界指明了重要遵循。

“世界则事异，事异则备变。”进入“十三五”时期，我国经济发展的基本特征就是进入新常态，呈现速度变化、结构优化、动力转换等特点。新常态是一个客观状态，是我国经济由粗放走高强、分工走优化、结构更合理的阶段演进的必经过程。实现这样广泛而深刻的变化，既符合事物发展螺旋式上升的运动规律，也是新的巨大挑战。只有起适应、起引领新常态作为贯穿发展各局和全过程的大逻辑，才能同事构谋、同势而动、同频共振，牢牢抓住发展主动权。

“治天下之动者，乃能见理而知变。”进入新常态，越是艰苦的人认识进步深入，适应更加主动，引领已经开始；但也有人认识还不到位，一知半解，还有的未能抓取“速度换挡”、“换挡加速”，行动上自觉不自觉地逆向而行“一个干明，一味等高”，从计划经济到改革开放，从加入世贸组织到成为世界第二大经济体，我国经济发展每每取得新成绩、新格局，新阶段总是在不断形成，我们总是在新与旧的格局中探索前行。实践证明，变中求新、新中求进、进中定破，才能始终引领时代潮流，立于不败之地。

适度要宽裕，圆周要抓到。适应和引领新常态，必须抓住关键问题，给住“衣领子”，牵住“牛鼻子”。当前，制约我国经济发展的因素，供给和需求两侧都有，但矛盾的主要方面在供给侧。比如，产能过剩已经成为一大顽疾，如果这个结构性矛盾得不到解决，工业品价格就会持续下降，企业效益就不可能提升，经济增长也就难以持续。进入发展新阶段，必须深刻洞察新的事物不能再手了，就要没四指挥，产品没市场的项目不能再上了，绝看粗放型发展方式急需用不较，必然会走进死胡同。只有用发展的办法推进结构调整，才能让结构的力量打造动力引擎，成中无效和低端供给，扩大有效和中高端供给，才能让结构调风顺浆畅，不断培育发展新动力，厚植发展新优势。从这个意义上说，推进供给侧结构性改革，是适应和引领经济发展新常态的重大创新，也是适应我国经济发展新常态的必然要求。

供给侧结构性改革是个新课题，坚持系统思维，用好辩证法，才能稳中求进。既要调供给又关注需求，既实施发展社会生产力又注重完善生产关系，既发挥市场在资源配置中的决定性作用又更好发挥政府作用，既着眼当前又立足长远。从生产端入手，重点是促进产能过剩有效化解，促进产业优化重组。降低企业成本，发展战略性新兴产业和现代服务业，增加公共产品和服务供给，才能让供给结构有效对接需求变化，提高供给体系质量和效率。

新常态要有新状态，新理念可喻新作为。向党中央关于新常态“怎么看”“怎么干”的判断和决策看齐，向供给侧结构性改革这块硬骨头发力，认识上更加到位，行动上更加自觉，工作上更加有为，我们就一定能推动发展取得新成效，经济社会发展就始终蓬勃前行，实现“十三五”良好开局。

2015年居民收入增幅“跑赢”GDP增速

新华社北京1月19日电 （记者 安蓓 王小广）国家统计局19日发布的2015年经济数据显示，去年全国居民人均可支配收入21966元，比上年名义增长8.9%，扣除价格因素实际增长7.4%，超过同期6.9%的GDP增速。

其中，城镇居民人均可支配收入31195元，比上年增长8.2%，扣除价格因素实际增长6.6%；农村居民人均可支配收入11422元，比上年增长8.9%，扣除价格因素实际增长7.5%。全国居民人均可支配收入中位数19281元，比上年名义增长9.7%。

2015年城乡居民收入差距进一步缩小。城乡居民人均收入倍差2.73，比上年缩小0.02。

数据显示，2015年全国居民收入基尼系数为0.462。全年农民工总量27747万人，比上年增加352万人，增长1.3%。农民工月均收入水平3072元，比上年增长7.2%。

我国科学家首次揭示南亚季风对青藏高原地面加热的抑制作用

新华社北京1月19日电 （记者 吴晶晶）记者近日从中科院大气物理研究所获悉，该所研究员邹捍和南京大学教授周天军领导的研究团队对青藏高原气候研究取得新发现，首次揭示出南亚季风对青藏高原地面加热具有抑制作用。

邹捍介绍，我国著名气象学家叶笃正先生提出青藏高原是重要的大气热源，影响着亚洲乃至北半球的天气、气候和环境过程。过去的研究认为，青藏高原的地面加热作用对南亚季风的发生和发展具有重要的驱动作用；但由于高原地貌山脉走向作用，南亚季风对青藏高原地面加热过程影响甚微。

邹捍和国立波领导的团队采用先进设备对青藏高原南部喜马拉雅山区地面加热过程进行长期观测研究，发现高原山地地面加热具有特殊性，导致南亚季风对高原地面加热具有负反馈作用，即抑制高原地面加热。

他们研究发现，主要分布在青藏高原南部的高原山地具有复杂的地形，能够大量接收太阳能，形成独表高温；其热能向大气输送，使高原山地地面加热效率远高于相对平坦的其他高原表面。这一地面加热过程对太阳辐射变化非常敏感，强太阳辐射可大量增加地面热能，反之亦然。南亚夏季风环流带来的高空云量可以有效遮蔽太阳辐射，降低高原南部山区地面热能吸入，从而减少该地区地面向大气的热能输送，形成对青藏高原山地地面加热过程的抑制作用。

这一研究结果，对于正确认识青藏高原大气热源及其与邻近气候系统间的相互作用有重要意义。系列成果发表于美国《地球物理研究》和《地球物理研究快通讯》等国际学术刊物。

辽宁发现141座汉魏墓葬群

新华社沈阳1月19日专电 （记者 赵洪尚）辽宁省文物考古研究所于日前完成了对辽阳唐墓地2015年的阶段性考古发掘，共发掘各类墓葬141座，墓地主体为汉魏时期墓葬，其中包括部分珍贵的壁画墓。

辽宁省文物考古所副所长李新全介绍，辽阳唐墓地2015年度的考古工作从4月中旬始，至11月中旬结束，共发掘各类墓葬141座，在之前对辽阳唐墓地2014年度的阶段性考古发掘中，共发现92座汉魏墓葬群，“辽阳唐墓地是目前已发现的最大汉魏墓葬群，也因此被评为2015年度辽宁考古十大发现之一。”

此次考古发掘的墓地主体为汉魏时期墓葬，依据形制可分为土坑竖穴墓、石椁墓、石室墓、砖室墓4类，部分石室墓墓室内还残留有彩绘壁画图案及刻画图案，出土遗物有陶器、铜器、铁器、玉器、金银器和钱币等1500余件。

此外还发现存在少量辽金时期墓葬，依据形制可分为石椁墓、砖室墓和砖石混筑墓3类，出土遗物有陶器、瓷器、铜器、玉器、铁器和钱币等约50件。其中，发掘出土瓷器的辽宁艺与辽宫屯窑址出土瓷器风格相近，且墓地与辽宫屯窑址距离较近，推测该批墓葬出土瓷器由辽宫屯窑址烧造。

李新全说，辽阳汉魏壁画墓埋葬的时代早，历史跨度大，从东汉晚期至魏晋时期前后延续两三百年时间，尤其是丰富多彩的壁画和棺椁更反映了当时社会生活状况，是了解和研究汉魏时期辽东历史的珍贵资料。

山东聊城：制作花糕迎春节

1月19日，在山东省聊城市阳谷县侯卫镇街道北关村，村民王容在展示蒸熟的花糕。

进入腊月以来，山东省聊城市阳谷县不少农户开始制作花糕，以祛福纳祥到来的春节。在鲁西一带，当地居民有过年蒸花糕、做花馒头的习俗，寓意生活一年比一年好。 新华社发 赵玉国 摄

联合国表示仍力争按期举行叙利亚和谈

新华社联合国1月19日电 （记者 倪红梅）联合国秘书长副发言人哈克19日说，目前各方就叙利亚反对派哪些派别将受邀参加下周的和谈未达成一致，联合国仍致力于推动和谈按期举行。

哈克当天在例行发布会上说，推动叙和平进程的叙利亚国际支持小组有关国家正就叙反对派哪些派别应参加和谈这一问题努力达成一致，联合国随后将向受邀各方发放邀请函。联合国秘书长潘基文等呼吁各方尽快就此问题达成一致。当前联合国的目标仍是力争按期于1月25日在日内瓦举行叙利亚各派和谈。

联合国安理会当天举行闭门磋商，听取联合国秘书长叙利亚问题特使德米斯图拉从日内瓦通过视频介绍和谈的准备情况。

安理会本月轮值主席、乌拉圭常驻联合国代表埃尔雅奥·罗塞利在磋商后对媒体说，安理会听取了德米斯图拉的汇报，仍在努力促成按期举行和谈。俄和谈是否可能推迟的问题，他没有正面回答，仅表示“当天的磋商中没有提及其他日期”。

2015年12月18日，联合国安理会就叙为解决叙利亚问题一致通过决议，力争2016年1月初启动由联合国斡旋的叙利亚各派正式和谈。德米斯图拉此后表示，他计划于2016年1月25日在日内瓦召集叙利亚各派和谈。

本月初，沙特阿拉伯和伊朗这两个地区国家关系急剧恶化，引发国际社会对也门、叙利亚两国和平进程可能受阻的担忧。德米斯图拉随后访问了沙特、叙利亚和伊朗，以寻求各方对叙利亚和谈的支持。

和政县前川新区集中供热工程项目环境影响评价工作第二次公示

一、建设项目概况

项目总投资1.68亿元，新建热源厂1座，购置安装2台14MW和2台28MW的燃煤热水锅炉，新建热力站12座，建设一级供热管网2×8.8km。锅炉供热能力达到120万m2，配套建设锅炉房、引风机房、煤库、值库、办公楼、地磅房、传达室、大门、干保棚及其它附属设施等，总建筑面积4450m2，用地面积6666.67m2。工程拟定2015年内将土地征用，项目前期工作完成，2016年开始进行锅炉房土建工程、设备安装、外部管网安装、供热管网安装、热热站设备安装，2016年10月设备调试全部完成，2016年11月开始供暖。

二、施工期主要环境影响及污染物防治措施

废气：本项目在施工期主要产生了无组织扬尘，为了减小对周围环境的影响，本项目采取了洒酒降尘、设置围挡等措施；废水：施工期的生活污水经沉淀处理后用于洒酒降尘；施工废水经沉淀后回用于施工作业；固废：生活垃圾集中收集后运至最近的生活垃圾填埋场填埋处置，土石方用于低洼地区填埋，建筑垃圾运至就建部门指定地点处置；噪声：施工期产生的噪声主要是施工机械噪声，通过采取设置围挡、合理安排施工时间等措施，可减小其对周围环境产生的不利影响；生态：减小施工扰动面积，严格控制施工活动范围，严禁随意扩大施工用地范围等措施，可减小对生态环境产生的不利影响。

三、运营期主要环境影响及污染物防治措施

废气：本项目运营期大气污染物主要为锅炉产生的废气，通过采取一定的可行性措施以后，项目对周围的环境不会产生一定的影响；废水：本项目生活污水经过化粪池预处理后排入市政下水管网，锅炉排污水全部回用于经沉淀池处理后作为除尘器用水、水力除渣用水和煤场、灰场洒水回用，软化水排水为清净水，直接排入城市下水管网；固废：本项目生活垃圾定期清运外运至和政县垃圾填埋场集中处置，锅炉灰渣用于水泥混凝土路面修和料、制砖、铺路，脱硫石膏储存于石膏间，定期出售给附近建材公司进行综合利用；噪声：本项目对于噪声采取降噪措施，并适当进行绿化。

四、环境影响评价结论

本项目的建设符合国家产业政策，虽然在施工期及运营期将会对环境产生一定的不利影响，但通过环评提出的治理、管理及监控措施后，这些不利影响可控制在可接受程度之内。因此，从环境保护角度考虑，本项目的建设是可行的。

五、征求公众意见的具体方式

可通过电子邮件、电话、信件等方式与建设单位、环境影响评价机构联系，如需进一步了解项目情况，请联系建设单位或环评单位的联系人。

六、公众提出意见的起止日期

自本公告之日起10个工作日内。

七、联系方式

建设单位：和政县富强供暖有限公司

联 系 人：李国志　　联系电话：18893306888

地　　址：城关镇前川佳宅小区

环境影响评价机构：天津市环境影响评价中心（国环评证　甲字第1102号）

通讯地址：甘肃省兰州市城关区金昌南路101号

联 系 人：高女士　　电话：18093188594

世行贷款甘肃文化自然遗产保护与开发二期项目环境影响评价第二次公示

甘肃省发展和改革委员会委托北京中咨华宇环保技术有限公司开展“世行贷款甘肃文化自然遗产保护与开发二期项目”的环境影响评价工作，根据《中华人民共和国环境影响评价法》、《环境影响评价公众参与暂行办法》等有关规定，现将该项目环境影响报告书全本主要信息公示，欢迎项目沿线公众从国家利益和切身利益出发，提出环境保护方面的宝贵意见。公示内容如下：

一、项目概况

世行贷款甘肃文化自然遗产保护与开发二期项目概况如下：

二期项目拟在陇东南地区的平凉、陇南、临夏3　个州(州)，崆峒、泾川、庄浪、岩昌、康县、和政6个县(区)实施，线段的崆峒山、百里石窟长廊、云崖寺、官鹅沟、阳坝、松鸣岩-古动物化石地质公园6　个景区分别代表丝路文化、黄河文化和民族民俗文化。

主要建设内容有：遗产保护与开发，建设非物质文化遗产传承基地；对濒危文物、古建筑、古民居、地质遗迹和文化遗迹进行保护，修建陈列馆、展览馆；建设景护管理、保护用房；对遗产遗迹周边环境进行整治和地质灾害防治，建设新的道路、停车场、游客服务中心，为景区配套建设必要的给排水、电力、通讯、环卫、导览系统及信息化工程等；2、社区公共服务设施建设：修建乡村道路、给排水、垃圾收集处理、污水处理等公共服务设施；3、机构能力建设及软活动：对各级相关人员进行培训；对景区所在地社区居民、旅游从业人员进行多方面的培训，帮助其脱社区发展，提升居民生产生活水平；加强遗产保护，传承，工程实施、管理等专业技术人员培训。

二期项目估算总投资102732.69　万元。项目建设工期：计划为6年(2016年~2020年)。

二、环境质量现状

现状监测结果表明，项目所在的PM10、PM2.5、TSP日均值、SO2、NO2小时均值、日均值均满足《环境空气质量标准》(GB3095-2012)中的相应标准，项目所在地环境空气质量现状良好；岩昌县子项目区域现状村庄及景区等均无排水设施，居民和游客的生活污水就近排入自然环境，严重污染现状河流，水体富营养化严重，导致地表水超标，其余子项目所有地表水水质因子均满足《地表水环境质量标准》(GB3838-2002)所对应的标准；项目所在区域地下水环境质量均符合《地下水质量标准》(GB/T14848-93)所对应的标准；受施边交通噪声、社会生活噪声的影响，和政子项目中的峰堆生态小区的噪声有一定超标，其它敏感点均满足《声环境质量标准》(GB3096-2008)中相应的标准值。

三、项目对环境的可能影响及减缓对策和措施

项目在施工中将产生如工程占地，地表植被损失、施工机械噪声、施工废水废料污染、各类噪声和烟气等影响。施工期采取加强施工管理，减小植被破坏与野生动物惊扰，实施防护绿化工程等措施控制施工生态影响；通过合理设置施工场地位置，采取场地洒水、运输散料车辆加盖篷布、拌和设备密封等措施降低大气污染；要求施工营地生活污水经入环保厕所后由当地卫生部门清运处理；用低噪设备、临时降噪及隔声措施减小噪声污染。

项目营运期影响主要为生活污水、景区产生的生活垃圾以及交通噪声等。生活污水采用一体化设备进行处理达标后回用或直接进入市政管网，经污水处理站处理后排放；景区产生的生活垃圾采用人工收集至垃圾收集点，定期由环卫部门运送至垃圾填埋场进行集埋处理；针对交通噪声主要采用限速及装行等方式。通过以上措施，项目建设与营运对评价范围内环境的负面影响能得到有效控制。

四、项目环境影响评价结论要点

项目建设期影响主要为生活污水、景区产生的生活垃圾以及交通噪声等。生活污水采用一体化设备进行处理达标后回用或直接进入市政管网，经污水处理站处理后排放；景区产生的生活垃圾采用人工收集至垃圾收集点，定期由环卫部门运送至垃圾填埋场进行集埋处理；针对交通噪声主要采用限速及装行等方式。通过以上措施，项目建设与营运对评价范围内环境的负面影响能得到有效控制。

四、项目环境影响评价结论要点

项目建设期和营运期在采取相应的保护和恢复措施的前提下，可以使工程建设对环境的不利影响得到有效控制，并能为环境所接受。从环评技术角度出发，项目建设基本可行。

五、报告书全本查阅方式

项目环境影响报告书、环境管理计划全本存放于当地项目办、乡镇及村委，并在当地政府网站中进行公示并提供全本下载与查阅。

六、征求公众意见的范围

(1)对项目的看法和态度，以及具体要求和建议；

(2)项目建设对当地经济和所在地居民从事行业的影响；

(3)项目建设对当地居民生活质量和饮业生产影响；

(4)对项目环境保护措施的意见及建议。

七、征求公众意见的具体形式及补充信息的索取方式和时限

任何单位或个人对建设项目的意见或者建议，可于本公告发布之日起10个工作日内通过电子邮件、电话、信函、来访等方式与建设单位或评价单位联系提出。评价单位将于本公告发布10个工作日以后在项目沿线广泛征集公众对本建设项目的意见。

八、建设单位联系方式

建 设 单 位 名 称：甘肃省发展和改革委员会

联系人：杨工　　联系电话：0931-8839048

E-mail:gansuipmo@126.com　　通信地址：兰州市中央广场1号

九、环境影响评价单位联系方式

环 评 单 位：北京中咨华宇环保技术有限公司

联系人：张工　　联系电话：010-87162828

E-mail:hpgs@huafangroup.com

地址：北京经济技术开发区地盛南街9号

※ 请在本公示发布之日起10个工作日内提出您的宝贵意见或建议。

Figure 7.3-3 Second Round Newspaper Disclosure – Minzu Daily

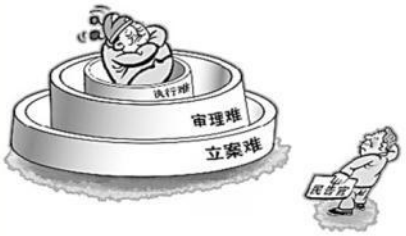
政府“零败诉”背后的法治新期待

“民告官”式的行政诉讼,如今正变得稀松平常,据新成立的上海市第三中级人民法院新近透露,2015年,上海三中院受理的行政诉讼案件中,市政府成为被告的有242件;而在2014年,全市法院系统中告市政府的案件仅为13件。在这242件案件中,作为被告的市政府,最终无一败诉。

上海三中院是司法改革试点的产物,而行政相对人同行政主体间的争议更多通过司法渠道解决,也是全面依法治国的题中之义。在这个意义上,从几年前区县层面出现“民告官”案,到后来多个区县、委办一把手出庭应诉,再到如今市政府多次坐上“被告席”,这样的演进非但没有什么丢脸,反而是一件好事——“原告”和“被告”本无好坏高下之分,将争议纳入司法轨道,本就是法治社会的常态,自然也是法治政府应有的担当。

然而,市政府的“零败诉”,却招致网上种种猜测和质疑,“242比0”的悬殊比例,让不少人觉得背后“必有故事”,于是推测这些诉讼都是“做做样子”,或议“没什么好说”,甚至断言“告得赢才怪”。一句话,政府与法院出自“一个体系”,政府出庭应诉,“稳有不胜之理”。

这样的怀疑论逻辑,看上去很有市场,却显然不符合法治精神。任何进入司法程序的案件,最终谁赢谁输,只能由事实、法律和证据说话,政府说了不算数,网友也说了不算数。“民告官”案自然概莫能外。就这242起案件,上海三中院行政庭庭长张文忠明确回应媒体:“我们审理案件不看原被告,判决书政府是否败诉,是要看法律依据和事实的。”换言之,不掌握事实和法律依据而作出的推论,或是预设“××不该赢”、“××不会输”,都属于某种“有罪推定”。



但换个角度,这些毫无根据的怀疑论,既应当驳斥,也需要重视。举凡公共事件总有各种各样的怀疑论调,其中有的是刻意为之,有的则是出于本能,从中能够提炼出的一种“正能量”,就是倒逼司法机关和行政机关愈加严格地监视自身的工作程序——司法机关审理“民告官”案,需要百分百做到“不看原被告,只看法律和证据”;只要判决结果是严格据此形成的,就不必害怕外界的“流言蜚语”,而行政机关,也需要百分百地依法行政,尽可能不留漏洞空白,由此即便坐上被告席,也能保证“经得起告”。

在这方面,“零败诉”的结果给政府画上的,就不是一个句号。上海三中院副院长缘富荣直言,不是说市政府没有败诉,其行政行为就没有瑕疵,但这些瑕疵尚不足以否定原行政行为的合法性。这是一个颇为严谨的判断:行政行为不违法,也就不会败诉;但不违法,只是依法行政的底线,绝不意味着高枕无忧。

就依法行政而言,“不败诉”只是基础性一步,就在上周,市政府法制办独家了《上海市依法行政状况白皮书(2010-2014)》有关情况,其中在全国范围内首创了可做纵向比较的政府“法治GDP”指标体系,这个由制度健全度、公众参与度、信息透明度、行为规范度、高效便民度、行为可问责度等六个二级指标及其下20余个三级指标构成的指标体系,测评出2015年上海的“法治GDP”为83.74分,较2010年增加了5.64分,这表明,上海依法行政状况总体良好、较过去趋好,但同满分之间尚存的16.26分重距,也意味着依法行政还未到功成之时。

在经济领域破除“唯GDP论”之后,用“法治GDP”作为检验政府工作的新的“指挥棒”,顺应了全面依法治国的大方向,折射出治国理政的新理念,而242起胜诉的“民告官”案,同这个“GDP”之间也有着微妙的内在关联。“零败诉”也好,“GDP”也罢,本质上都是对政府依法行政水平的一种反映,也是一次赋策。不妨期待,有朝一日政府克服执法不规范、界面不清晰等问题,让依法行政水平再上新台阶,届时非但“法治GDP”的指数会更加可观,“败诉率”甚至“被诉率”,也会有一个更完美的结果。 据《解放日报》

转变作风解诉求 情法交融暖民心

——武威市领导包抓化解信访积案工作纪实

本报首席记者 王建庆
通讯员 谯修全

蔡民情、解积案,疏民困、化积怨,2015年,结合“三严三实”专题教育,武威市委、市政府将集中化解信访积案作为“三严三实”专题教育的一个重要抓手,引导信访工作重心下沉,突出解决群众反映强烈的民生重难点问题,让群众切实感受到专题教育活动实实在在的成效,有力维护了群众的合法权益和社会的和谐稳定。

领导包案,以上率下。按照中央“要梳理一批信访积案纳入‘三严三实’专题教育推动化解”的指示精神和省委“关于分解信访积案化解责任,在‘三严三实’专题教育中切实化解并强调追踪落实”的批示要求,武威市将梳理出的23件信访积案,分解落实到市委、市政府班子成员和各县区党政主要负责同志,即行即抓化解,限期办结,通过市委、市政府主要领导和班子成员带头包案,变群众上访为领导干部带案下访,带动全市干部以严的标准、实的作风,把涉及民生和稳定的信访积案解决好。

明晰标准,压实责任。武威市“两办”下发《关于做好全市信访积案集中化解工作的通知》,对23件信访积案进行了责任分解,逐案明确了责任单位、包抓领导、责任领导和办理时限,严格落实“一个案件、一名领导、一套班子、一个方案、一抓到底”的工作要求,逐案剖析问题成因、找准问题症结、确定化解方案,落实化解措施。包抓领导和责任单位主要领导亲自上手、实地调研、掌握案情;综合运用法律、政策、经济、行政、社会救助及思想教育等手段,及时就地推动“事要解决”;主动承担解决诉求、教育疏导、息诉息访责任,全力抓好信访积案调处化解工作,使“五包”(包案握情况、包解决困难、包教育转化、包稳控管理、包依法处理)责任制落到实处。

因案施策,多措并举。梳理出的23件信访积案,均是全市经济社会新常态下民生领域反映出的重点信访问题,历时较长、化解难度大,各责任单位在化解过程中,坚持做到“五不欠账”,即司法程序走完,不欠法律账;严格落实现有政策,不欠政策账;对诉求合理且能使用信访专项资金的,不欠经济账;对无理过高诉求耐心疏导,不欠感情账;对问题已解决到位但反复信访的老户做好教育稳控,不欠工作账。切实做到“五个更加关注”,即在关注政策落实的同时,更加关注政策设计,对一些政策不完善、不延续的问题,及时出台解决策,从政策层面解决问题;在关注现实利益的同时,更加关注长远保障,加大对民生领域的投入,多办保民生、促发展、稳增长的民生实事;在关注生产生活的同时,更加关注干部作风,教育引导各级干部把联系服务群众当做核心任务,把做好群众工作作为基本功;在关注经济发展的同时,更加关注环境保护,让良好的生态环境在群众生活幸福指数中的比重日益提高;在关注个人权益的同时,更加关注公共利益,进一步加大经济、社会、文化、生态、廉政等方面的建设。

综合治理,助推和谐。在开展积案化解的同时,对全市2014年以来发生的42件进京非正常上访和赴省集体访事项,由市综治办、维稳办、信联办、公安局联合下发文件,严格按照“五个一”工作要求和“五包”责任制,一律实行县区党政主要领导包案化解。化解过程中,因部门组成联合督查组,重点围绕劳动保障、农村土地征用、城镇房屋拆迁、惠农政策落实等问题,组织开展2次实地督查,督促基层严格依法行政,切实依法维护群众权益。市综治办、市信联办又下发《关于进一步加大进京非正常上访问题治理工作问责力度的通知》,对县区发生的进京非正常上访问题,发生一起,通报一起,问责一起;对发生问题的县区、部门和单位,严格按照省、市关于信访工作绩效问责相关规定,既追究责任单位的主体责任,又追究具体责任人的责任,通过集中整治活动的长效开展,全市信访形势平稳向好,整体实现了“六个下降”,即信访总量下降、进京非正常上次下降、赴省上访总量下降、来市上访总量下降、县区上访总量下降、重信重访率下降。

“小升初”有多少花样翻新的骗局?

近日,广州市一所知名中学向公安机关报案,称有机构假冒学校名义组织学生招录考试,并希望受骗家长提供证据线索。

这是近三个月来广州市通报的第三起社会机构冒用学校名义违规组织招生行为。

一些社会机构的行骗手法并不高明,缘何总能吸引许多家长趋之若鹜?

骗局套路不断翻新

2016年初,一条“秘闻”在广州不少家长中口耳相传,称广州大学附中将利用元旦假期对六年级学生进行小升初模拟考试,成绩优异者将能进入内定招生名单,对名校和优质学位的追求让不少家长决心一试。

1月2日上午,广州市教育局工作人员到广州城市职业学院实地调查,发现有300多人参加考试,6至7名“工作人员”在广州城市职业学院大门外约30米处,当场向每位学生家长收取100元,收费无发票和收据。

据广州市教育局基础教育一处主任科员梁多介绍,在收取考试费用后,这些工作人员就向考生发放准考证,组织考试的方式严密。有家长反映,考试结束后成绩前300名的学生接到了该机构的电话通知,声称考生进入下一个环节的考核。

经查,广州传识科技公司向广州城市职业学院租赁校舍,后又将其转租给某教育咨询机构作为考试场地,该机构假借学校名义违规组织考试,其行为属超范围经营、侵权并涉嫌诈骗。目前,公安、工商、教育部门对此案进行调查追踪。

无独有偶,广州市另一所小升初热门学校广州育才试验学校也在新年前最后一天发出严正申明,指出办学以来学校没有跟任何教育辅导机构合作招生,请家长不要轻信谣言,切勿上当受骗。

根据规定,广州市义务教育阶段无论公民办学校均严格实施免试入学,就近入学,严禁设置点班,但产今之下,仍有社会机构顶风作案,冒用学校名义自办“名校报考专场”,近三个月来广州市教育局已通报了三起此类案件。

谎称名校内定

利用学校教室作为考场,严密的组织考试程序,一切都装扮得像模像样,再加上言之凿凿的各种“门路”和“保证”,让焦虑而迫切希望给孩子争取好学校的家长不断上当受骗,究竟骗子是如何包装自己而布下迷雾阵的?

第一,伪装身份。

据育才实验中学介绍,某机构工作人员“曾老师”利用学校十五周年校庆大典,用类似学校老师身份在朋友圈发布大量校庆照片并附上“感谢所有人的帮忙,大家辛苦啦!!”等文字,误导人们以为是育才实验老师说出来的话语,并借此诱导家长加入微信群以牟取私利。

第二,空头支票。

根据义务教育阶段学校招生工作安排及沿袭惯例,每年2至3月,广州市教育局会统一发布招生政策,但是,各种社会机构会利用政策发布前的空白期“吹歪风”,广州市教育局基教一处处长侯静敏说,这些机构谣传某名校已经圈定了部分2016年初一新生,忽悠家长说,只有通过他们的推荐,才能获得报读名校的资格,要推荐就要交钱,或者谎称有关系去某名校,要求家长先交十万元,保证入读。

第三,“暗考”诈骗。

最为普遍的一种方式就是“暗考”,一些社会机构宣称在某机构考试中前多少名就可以保送到某所名校。业内人士指出,“暗考”在过去真实存在,因此最容易诱惑家长入局。

就是要“不公平”

虽然有众多受骗先例,但为何家长们仍愿意冒着上当受骗的风险去尝试?其背后,是家长为孩子渴求优质教育资源和发展平台的焦虑心理。

广州市教育局副局长江东说,2015年是广州市小升初免试招生的第一年,免试招生的政策该怎么解读、招生流程该如何规范等问题仍在进一步探索和规范,与传统的考试招生相比,家长会对免试招生心存疑虑,也对政策的执行存有不信任,因此容易被社会机构利用。随着免试招生政策的成熟,招生制度的规范,这个问题可迎刃而解。

广州市义务教育阶段民办学校2016年招生将实行网上报名,至此,广州市义务教育阶段所有公、民办学校全部实现网上招录,以信息化、公开化的方式规范招生,以此推进教育公平。

报录手段的阳光化是破解小升初骗局的利刃,但解决问题的根本仍是促进教育资源的均衡发展。广州市教育局表示,把公办学校办好是政府责任所在,广州市将继续加大公办中小学建设和优质资源投入,进一步促进义务教育均衡优质发展。同时,广州市政府督导室已建立责任区督学制度,每校都安排督学,监督、规范学校办学行为。 据新华网

世行贷款甘肃文化自然遗产保护与开发二期项目环境影响评价第二次公示

甘肃省发展和改革委员会委托北京中咨华宇环保技术有限公司开展“世行贷款甘肃文化自然遗产保护与开发二期项目”的环境影响评价工作,根据《中华人民共和国环境影响评价法》、《环境影响评价公众参与暂行办法》等有关规定,现将该项目环境影响报告书全本主要信息公示,欢迎项目沿线公众以国家利益和切身利益出发,提出环境保护方面的宝贵意见。公示内容如下:

一、项目概况

世行贷款甘肃文化自然遗产保护与开发二期项目概况如下:

二期项目拟在陇东南地区的平凉、陇南、临夏3个市(州),崆峒、泾川、庄浪、宕昌、康县、和政6个县(区)实施,选择的崆峒山、百里石窟长廊、云崖寺、官鹅沟、阳坝、松鸣岩-古动物化石地质公园6个景区分别代表丝路文化、黄河文化和民族民俗文化。

主要建设内容有1.遗产保护与开发:建设非物质文化遗产传承基地;对濒危文物、古建筑、古民居、地质遗迹和文化遗迹进行保护,修建陈列馆、展览馆;建设看护管理、保护用房;对遗产遗迹周边环境进行整治和地质灾害防治;建设新的道路、停车场、游客服务中心,为景区配套建设必要的给排水、电力、通讯、环卫、导览系统及信息化工程等;2.社区公共服务设施建设:修建乡村道路、给排水、垃圾收集处理、污水处理等公共服务设施;3.机构能力建设及软活动:对各级相关人员进行培训;对景区所在地社区居民、旅游从业人员进行多方面的培训,帮助所辖社区发展,提升居民生产生活水平;加强遗产保护、传承,工程实施、管理等专业技术人员培训。

二期项目估算总投资102732.69万元,项目建设工期:计划为5年(2016年~2020年)。

二、环境质量现状

现状监测结果表明,项目所在的PM10、PM2.5、TSP日均值、SO_2、NO_2小时均值、日均值均满足《环境空气质量标准》(GB3095-2012)中的相应标准,项目所在地环境空气质量现状良好;宕昌县子项目区域现状村庄及景区等均无排水设施,居民和游客的生活污水就近排入自然环境,严重污染现状河流,水体富营养化严重,导致地表水超标,其余子项目所有地表水水质因子均满足《地表水环境质量标准》(GB3838-2002)所对应的标准;项目所在区域地下水环境质量均符合《地下水质量标准》(GB/T14848-93)所对应的标准;受周边交通噪声、社会生活噪声的影响,和政子项目中的鸿瑞佳苑小区的噪声有一定超标,其它敏感点均满足《声环境质量标准》(GB3096-2008)中相应的标准值。

三、项目对环境的可能影响及减缓对策和措施

项目在施工中将产生如工程占地、地表植被损失、施工机械噪声、施工废水废料污染、各类噪声和尾气等影响。施工期采取加强施工管理、减小植被破坏与野生动物惊扰、实施防护绿化工程等措施控制施工生态影响;通过合理设置施工场地位置,采取场地洒水、运输散料车辆加盖篷布、拌和设备密封等措施降低大气污染;要求施工营地生活污水接入环保厕所后由当地卫生部门清运处理;用低噪设备、临时降噪及隔声措施减小噪声污染。

项目营运期影响主要为生活污水、景区产生的生活垃圾以及交通噪声等。生活污水采用一体化设备进行处理达标后回用或直接进入市政管网,经污水处理站处理后排放;景区产生的生活垃圾采用人工收集至垃圾收集点,定期由环卫部门运送至垃圾填埋场进行填埋处理;针对交通噪声主要采用限速及禁行等方式,通过以上措施,项目建设与营运对评价范围内环境的负面影响能得到有效控制。

四、项目环境影响评价结论要点

项目建设期和营运期在采取相应的保护和恢复措施的前提下,可以使工程建设对环境的不利影响得到有效控制,并能为环境所接受。从环评技术角度出发,项目建设基本可行。

五、报告书全本查阅方式

项目环境影响报告书、环境管理计划全本存放于当地项目办、乡镇及村委,并在当地政府网站中进行公示并提供全本下载与查阅。

六、征求公众意见的范围

(1)对项目的看法和态度,以及具体要求和建议;
(2)项目建设对当地经济和所在地居民从事行业的影响;
(3)项目建设对当地居民生活质量和农业生产影响;
(4)对项目环境保护措施的意见及建议。

七、征求公众意见的具体形式及补充信息的索取方式和时限

任何单位或个人对建设项目的意见或者建议,可于本公告发布之日起10个工作日内通过电子邮件、电话、信函、来访等方式与建设单位或评价单位取得联系。

评价单位将于本公告发布10个工作日以后在项目沿线广泛征集公众对本建设项目的意见。

八、建设单位联系方式

建设单位名称:甘肃省发展和改革委员会
联系人:杨工 **联系电话:**0931-8839048
E-mail:gansupmo@126.com
通信地址:兰州市中央广场1号

九、环境影响评价单位联系方式

环评单位:北京中咨华宇环保技术有限公司
联系人:张工 **联系电话:**010-87162828
E-mail:hpgs@huafangroup.com
地址:北京经济技术开发区地盛南街9号

※ 请在本公示发布之日起10个工作日内提出您的宝贵意见或建议。

Figure 7.3-4 Second Round Newspaper Disclosure – Gansu Legal News

Pictures of second round on-site disclosure are given in Figure 7.3-5.

(1)Zhuangke Village, Yangba Town, Kang County (2) Kongtong Town, Kongtong District

Figure 7.3-5 Second Round On-site Disclosure

7.3.2 Second Round Public Consultation

Total 870 questionnaires for individuals were issued for the second round public consultation and all of them were returned; total 106 questionnaires were issued for entities and all of them were returned. Respondents of survey of individuals include residents, teachers and students and shop owners along sensitive spots of the Project and respondents of survey of entities include village committees, schools and enterprises along sensitive spots. Composition of these respondents is detailed in Table 7.3-4.

As a result of the first round information disclosure, the more comprehensive second round disclosure and on-site public consultation, questionnaire survey and discussion meetings, individual respondents are fully aware of the Project and environmental impacts of its implementation and have suggested operable mitigation measures.

Table 7.3-4 Composition of Survey Respondents

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Item		No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share	No. of People	Share
Feedback	Agree	152	100%	116	94.31%	110	100%	145	94.77%	167	98.82%	144	88.34%
	Neutral	0	0	7	5.69%	0	0	8	5.23%	2	1.18%	19	11.66%
	Oppose	0	0	0	0	0	0	0	0	0	0	0	0
Sex	Male	105	69.08%	111	90.24%	81	73.64%	122	79.74%	139	82.25%	141	86.50%
	Femal	47	30.92%	12	9.76%	29	26.63%	31	20.26%	30	17.75%	22	13.50%
Ethnicity	Han	152	100%	123	100%	110	100%	56	36.60%	169	100%	18	11.04%
	Other ethnic minorities	0	0	0	0	0	0	97	63.40%	0	0	145	88.96%
Age	25 and below	9	5.92%	5	4.07%	4	3.64%	7	4.58%	6	3.55%	8	4.91%
	26-35	26	17.11%	19	15.45%	19	17.27%	30	19.61%	29	17.16%	29	17.79%
	36-45	40	26.32%	35	28.46%	21	19.09%	38	24.84%	45	26.63%	37	22.70%
	46-55	43	28.29%	31	25.20%	36	32.73%	47	30.72%	49	28.99%	46	28.22%
	56-65	29	19.08%	30	24.39%	24	21.82%	24	15.69%	40	23.67%	40	24.54%
	66 and above	5	3.29%	3	2.44%	6	5.45%	7	4.58%	0	0	3	1.84%
Occupation	Farmer	81	53.29%	102	82.93%	62	56.36%	89	58.17%	138	81.66%	125	76.69%
	Worker	15	9.87%	2	1.63%	6	5.45%	11	7.19%	9	5.33%	12	7.36%
	Official	18	11.84%	3	2.44%	9	8.18%	13	8.50%	6	3.55%	9	5.52%
	Other	38	25.0%	16	13.01%	33	30.0%	40	26.14%	16	9.47%	17	10.43%
Educational level	Primary	70	46.05%	40	32.52%	58	52.73%	72	47.06%	60	35.50%	55	33.74%
	Secondary	59	38.82%	62	50.41%	40	36.36%	63	41.18%	92	54.44%	76	46.63%
	Tertiary	23	15.13%	21	17.07%	12	10.91%	18	11.76%	17	10.06%	32	19.63%

7.3.3Results

The results of survey of individuals are summarized in Table 7.3-5.

Table 7.3-5Results of Survey of Individuals

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Questions and Answers		No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share
What do you think the level of harm/impacts of the Project on the environment is?	Significant	8	5.26%	12	9.76%	2	1.82%	18	11.76%	0	0	12	7.36%
	Moderate	15	9.87%	26	21.14%	9	8.18%	32	20.92%	18	10.65%	39	23.93%
	Minor	126	82.29%	70	56.91%	98	89.09%	95	62.09%	151	89.35%	96	58.90%
	Do not know	3	1.97%	15	12.20%	1	0.91%	8	5.23%	0	0	16	9.82%
What do you think the impacts of the Priject during its construction are?	Waste gas	29	19.08%	19	15.45%	28	25.45%	11	7.19%	0	0	20	12.27%
	Wastewater	69	45.39%	20	16.26%	36	32.73%	75	49.02%	32	18.93%	15	9.20%
	Noise	26	17.11%	19	15.45%	25	22.73%	24	15.69%	48	28.40%	26	15.95%
	Solid waste	17	11.18%	28	22.76%	14	12.73%	27	17.65%	45	26.63%	42	25.77%
	Inconvenient access	9	5.92%	30	24.39%	5	4.55%	9	5.88%	44	26.04%	28	17.18%
	Landscape	2	1.32%	7	5.69%	2	1.82%	7	4.58%	0	0	32	19.63%
What do you think the environmental	Noise	46	30.26%	17	13.82%	21	19.09%	11	7.19%	48	28.40%	25	15.34%
	Wastewater	7	4.61%	15	12.20%	36	32.73%	69	45.10%	28	16.57%	57	34.97%

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Questions and Answers		No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share
concerns of the Project during its operation are?	Vehicle exhaust	29	19.08%	21	17.07%	32	29.09%	13	8.50%	17	10.06%	17	10.43%
	Solid waste	67	44.08%	32	26.02%	16	14.55%	31	20.26%	15	8.88%	41	25.15%
	Traffic segregation	3	1.97%	38	30.89%	5	4.55%	29	18.95%	61	36.09%	23	14.11%
Mitigation measures that you hope to take during construction of the Project	Strengthening management	106	69.74%	55	44.72%	79	71.82%	95	62.09%	114	67.46%	107	65.64%
	Temporary cover-up	16	10.53%	28	22.76%	11	10.0%	32	20.92%	18	10.65%	18	11.04%
	Traffic organization	19	12.50%	26	21.14%	9	8.18%	19	12.42%	25	14.79%	26	15.95%
	Spraying water	11	7.24%	43	34.96%	11	10.0%	7	4.58%	12	7.10%	12	7.36%
Mitigation measures that you hope to take during operation of the Project	Strengthening planning and control	86	56.58%	62	50.41%	46	41.82%	96	62.75%	75	44.38%	79	48.47%
	Greening	46	30.26%	48	39.02%	41	37.27%	41	26.80%	48	28.40%	56	34.36%
	Sound proof measures	18	11.84%	32	26.02%	19	17.27%	11	7.19%	46	27.22%	28	17.18%
	Other	2	1.32%	0	0	4	3.64%	5	3.27%	0	0	0	0
What do you think the positive impacts of the Project on reginal development are?	Promoting economic development	76	50.00%	68	55.28%	45	40.91%	84	54.90%	72	42.60%	85	52.15%
	Improving living environment	23	15.13%	36	29.27%	16	14.55%	19	12.42%	45	26.63%	32	19.63%

Subproject		Kongtong Mountain Subproject		Jingchuan County Subproject		Zhuanglang County Subproject		Tanchang County Subproject		Kang County Subproject		Hezheng County Subproject	
Questions and Answers		No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share	No.of people	Share
	Increasing income	53	34.87%	31	25.20%	39	35.45%	50	32.68%	81	47.93%	46	28.22%
Do you think whether the measuers as proposed in the EA are feasible?	Yes	152	100%	123	100%	110	100%	153	100%	169	100%	163	100%
	No	0	0	0	0	0	0	0	0	0	0	0	0
What's your attitude towards the Project?	Agree	152	100%	116	94.31%	110	100%	145	94.77%	167	98.82%	144	88.34%
	Neutral	0	0	7	5.69%	0	0	8	5.23%	2	1.18%	19	11.66%
	Oppose	0	0	0	0	0	0	0	0	0	0	0	0

The survey form for individuals is provided in Table 7.3-6.

Table 7.3-6Survey Form for Individuals

<table>
<tr><td colspan="10">Basic Information of Survey Respondent (Please provide authentic information and your information would be kept confidential. Thank you for your cooperation)</td></tr>
<tr><td>Name</td><td></td><td>Sex</td><td></td><td>Age</td><td></td><td>Occupation</td><td></td><td>Educational Level</td><td></td></tr>
<tr><td colspan="2">Entity or residence address</td><td colspan="3"></td><td>Tel.</td><td colspan="4"></td></tr>
<tr><td colspan="10">Overview of the Project:

The Project would be implemented in six counties (districts) of three cities (prefectures) in southeastern Gansu. The six counties are Kongtong, Jingchuan, Zhuanglang, Tanchang, Kang and Hezheng and the three cities are Pingliang, Longnan and Linxia. The Project would select six scenic areas: Kongtong Mountain, 50-km Stone Cave Corridor, Yunya Temple, Guan’e Gully, Yangba and Songmingya-Ancient Animal Fossil Geological Park, which respresent the Silk Road culture, Yellow River Culture and ethnic and folk culture, respectively.

Main components of the Project would include: 1) heritage protection and development: building an inheritance base for non-physical cultural resources; protection endangered cultural relics, ancient buildings, ancient houses, geological and cultural sites, constructing museums and exhibition centers; building offices for guard, management and protection; managing environment around heritage sites and controlling geological disasters; building new roads, car parks and tourist service centers, building necessary water supply and drainage, power, telecommunication, sanitation, tour guide and information systems; 2) construction of community public services facilities: building rural roads, water supply and drainage, garbage collection and treatment and wastewater treatment facilities; and 3) institutional capacity building and “soft ” activities: providing training to relevant staff at various levels; providing multiple training to community residents and tourism practitioners in scenic areas, assisting local communities in developing local economy and improving residents’ living conditions; strengthening training for technical staff engaging in heritage protection, inheritance, project implementation and management.

Total estimated investment of the Project is RMB1,0273.269 million; implementation period: 5 years (2016-2020).</td></tr>
<tr><td colspan="10">Questions and Answers (Please √ the answer you think appropriate)</td></tr>
<tr><td colspan="2">What’s attitude towards the Project?</td><td colspan="8">Agree ( )Neutral ( )Oppoose ( )</td></tr>
<tr><td colspan="2">What do you think
the level of harm/impacts of the Project on the environment is?</td><td colspan="8">Significant ( )Moderte ( )Minor ( ) Do not know ( )</td></tr>
<tr><td colspan="2">What do you think the impacts of the Prioject during its construction are?</td><td colspan="8">Waste gas ( )Wastewater ( )Noise ( )Solid waste ( ) Incovenient access ( ) Landscape ( )</td></tr>
<tr><td colspan="2">What do you think the impacts of the</td><td colspan="8">Noise ( )Wastewater ( )Vehicle exhaust ( ) Solid waste ( ) Traffic</td></tr>
</table>

Prioject during its construction are?	segregation
What do you think the sources of environmental impacts of the Project?	Waste gas ( ) Wastewater ( )Noise ( )Solid waste ( )
Mitigation measures that you hope to take during construction of the Project	Strengthening management ( ) Temporary cover-up ( ) Traffic organization ( ) Spraying water ( )
Mitigation measures that you hope to take during operation of the Project	Strengthening planning and control ( ) Greening ( ) Sound proof measures ( ) Other ( )
What do you think the positive impacts of the Project on reginal development are?	Promoting economic development ( )Improving living environment( )Increasing income ( )
Do you think whether the measuers as proposed in the EA are feasible?	Yes ( ) No ( )
Your other comments and suggestions	What do you think the major environmental issues are in the region? What suggestions and requirements do you have on environmental protection activities during project construction and operation stages?
Contact information of the client and EA agency (please contact us using the following information for any issues)	
Executing agency: Gansu Provincial Development and Reform Commission Address: 1, Central Square, Lanzhou Contact person: Yang Gong Tel.: 0931-8839048 E-mail: gansupmo@126.com	EA agency: Beijing Zhongzi Huayu Environmental Technology Co., Ltd Address： 9, Disheng Nanjie, Beijing Economic and Technology Development Zone Postcode: 100176 Tel.: 010-87162828 E-mail: 377496257@qq.com

The results of survey of entities are provided in Table 7.3-7.

Table 7.3-7Results of Survey of Entities

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
Kongtong Mountain Subproject	Xigou Primary School of Kongtong Town, Kongtong District	13830357762	Agree
	Xigou Village Committee of Kongtong Town, Kongtong District	13993383177	Agree
	Kongtong District Tourism Bureau	0933-8217282	Agree
	Pingliang City Administration Committee for Kongtong Mountain Ecological and Cultural Tourism Demonstration Zone	0933-8714314	Agree
	People's Government of Kongtong Town	0933-8711504	Agree
	Kongtong District Development and Reform Bureau	0933-8215713	Agree
	Kongtong District Transportation Bureau	0933-8213349	Agree
	Kongtong District Culture, Sports, Radio and TV Bureau	0933-8252530	Agree
	Kongtong Mountain Key National Scenic Area Administration Bureau	0933-8711212	Agree
	Kongtong District Water Bureau	0933-8213509	Agree
	Kongtong District Forestry Bureau	0933-8223719	Agree
	Kongtong Mountain National Nature Reserve Administration Bureau	0933-8711775	Agree
	Kongtong Office of Pingliang City Land Resources Bureau	0933-8214115	Agree
	Kongtong District Environmental Protection Bureau	0933-5938305	Agree
Jingchuan County Subproject	Wangcun Town People's Government, Jingchuan County	0933-3480308	Agree
	Wangmu Palace Scenic Area Administration Bureau, Jingchuan County	0933-3321517	Agree
	Jingchuan County Environmental Protection Bureau	0933-3329638	Agree
	Jingchuan County Water Supply Company	0933-3321485	Agree
	Jingchuan County Tourism Bureau	0933-3321348	Agree
	Luohandong Vilage Committee	15193338128	Agree
	Jingchuan County Culture, Sports, Radio and TV Bureau	18793333299	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Jingchuan County Museum	0933-3321950	Agree
	Jingchuan County Finance Bureau	0933-3326591	Agree
	Jingchuan County Vocational Education Center	0933-3308251	Agree
	Wanyan Village Committee	13993364249	Agree
	Luohandong Township Power Supply Station	0933-3440145	Agree
	Luohandong Township Hospital	0933-3440269	Agree
	Luohandong Township People's Government	0933-3440147	Agree
	Zhangbasi Village Committee, Luohandong Township	15319336097	Agree
	Wanyan Village Primary School	13919532164	Agree
	Jingchuan County Transportation Bureau	0933-3321232	Agree
Zhuanglang County Subproject	Guoman Village Committee, Handian Town, Zhuanglang County	13689461145	Agree
	Handian Town People's Government, Zhuanglang County	0933-6913132	Agree
	Shiqiao Village Committee, Handian Town	13830315325	Agree
	Zhuanglang County Yunya Temple Tourism Administration Bureau	0933-6618129	Agree
	Zhuanglang County Tourism Bureau	0933-6820880--	Agree
	Shiqiao Forest Farm	0933-6913135	Agree
	Zhuanglang County Water Bureau	0933-6621642	Agree
	Zhuanglang County Water and Soil Conservation Bureau	0933-6621681	Agree
	Zhuanglang County Forestry Bureau	0933-6621071	Agree
	Zhuanglang County Environmental Protection Bureau	0933-6820905	Agree
Tanchang County Subproject	Xinchengzi Tibetan Township People's Government, Tanchang County	0939-6126332	Agree
	Tanchang County Culture and Radio Bureau	0939-6121317	Agree
	Longnan City Minjiang Foretry Farm	0939-6127112	Agree
	Tanchang County Transportation Bureau	0939-6121556	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Daheba Village Committee, Xinchengzi Tibetan Township	18193933753	Agree
	Xinping Village Committee, Xinchengzi Tibetan Township	13659393271	Agree
	Luren Village Committee, Chengguan Town, Tanchang County	13993913364	Agree
	Lijie Village Committee, Chengguan Town, Tanchang County	15009393155	Agree
	Washeping Village Committee, Chengguan Town, Tanchang County	18193933391	Agree
	Guan'e Village Committee, Chengguan Town, Tanchang County	13993903193	Agree
	Tanchang County Environmental Protection Bureau	0939-6123667	Agree
	Tanchang County Guan'e Tibetan Primary School	13909395196	Agree
	Yuezangfu Village Committee, Xinchengzi Tibetan Township	13321393774	Agree
	Lugangtou Village Committee, Xinchengzi Tibetan Township		Agree
	Xinchengzi Village Village Committee, Xinchengzi Tibetan Township	15193906652	Agree
	Tanchang County Housing and Rual-Urban Development Bureau	0939-6121341	Agree
	Chengguan Town People's Government, Tanchang County	0939-6123490	Agree
	Tanchang County Guan'e Gully Tourism Development Limited Company	0939-6115188	Agree
	Tanchang County Land Resources Bureau	0939-6121300	Agree
	Tanchang County Tourism Bureau	0939-6127379	Agree
Kang County Subproject	Yangba Town People's Government, Kang County	0939-5141072	Agree
	Yinbazi Village Committee, Yangba Town, Kang County	15809341160	Agree
	Kang County Environmental Protection Bureau	0939-5125938	Agree
	Kang County Water Bureau	0939-5121648	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Kang County Tourism Bureau	0939-5122398	Agree
	Kang County Forestry Bureau	0939-5121376	Agree
	Tuya Village Committee, Yangban Town, Kang County	18993905911	Agree
	Laojiangba Village Committee, Yangban Town, Kang County	15393285733	Agree
	Youfangba Village Committee, Yangban Town, Kang County	13689373615	Agree
	Liujiaba Village Committee, Yangban Town, Kang County	13649394049	Agree
	Kang County Transportation Bureau	0933-5121971	Agree
	Longnan City Kangnan Forestry Farm	0933-5128296	Agree
	Kang County Land Resources Bureau	0939-5121225	Agree
	Kang County Planning Bureau	0939-5123080	Agree
	Yangba Village Committee, Yangba Town	13830992233	Agree
	Kang County Culture and Sports Bureau	0939-5151366	Agree
	Kang County Museum	0939-5939370	Agree
	Zhenghe Village Committee, Yangba Town	0939-5197120	Agree
	Meiyuan Village Committee, Yangba Town	18293976527	Agree
	Shangba Village Committee, Yangba Town	13519393925	Agree
	Tianba Village Committee, Yangba Town	13519393683	Agree
	Yangba Town Finance Office	13519393834	Agree
	Yinba Village Committee, Yangba Town		Agree
Hezheng County Subproject	Hezheng County Development and Reform Bureau	0930-5521049	Agree
	Hezheng County Forestry Bureau	0930-5521067	Agree
	Hezheng County Water and Hydropower Bureau	0930-5521068	Agree
	Hezheng County Tourism Bureau	0930-5523709	Agree
	Hezheng County Power Company	0930-5521785	Agree
	Hezheng County Planning Bureau	0930-5522108	Agree
	Hezheng County Environmental Protection Bureau	0930-5521203	Agree

Subproject	Name of Entity	Telephone	Attitude towards the Subproject
	Hezheng County Energy Conservation and Supervision Center	0930-5522771	Agree
	Hezheng County Leading Group Office for “Work-for-Relife” and Relocation Project	0930-5521049	Agree
	Hezheng County Songming Town People’s Government	13884032212	Agree
	Hezheng County Songming Rock Scenic Area Administration Bureau	0930-5580181	Agree
	Diaotan Village Committee, Songming Town	13519309559	Agree
	Dashanzhuang Village Committee, Songming Town	18793087724	Agree
	Hezheng County Poverty Alleviation Office	0930-5521193	Agree
	Hezheng County Animal Fossil Museum	0930-5522792	Agree
	Hezheng County World Bank Project PMO	0930-5522805	Agree
	Hezheng County Land Resources Bureau	0930-5521271	Agree
	Hezheng County Housing and Rural-Urban Development Bureau	0930-5521169	Agree
	Zhongxin Village Committee, Songming Town	15293902448	Agree
	Bianpo Village Committee, Songming Town	13830117002	Agree
	Keqian Village Committee, Songming Town	18093032558	Agree
	Cheba Village Committee, Songming Town	18093022698	Agree

A picture of second round public consultation meeting is given in Figure 7.3-4.

Figure 7.3-4 Second Round Public Consultation Meeting

Chapter 8 Social Impact Assessment

The Project would be implemented in 6 scenic areas, i.e. Kongtong Mountain Scenic Area, 50km Stone Cave Corridor Scenic Area, Yunya Temple Scenic Area, Guan'e Gully Scenic Area, Yangba Scenic Area as well as Songming Rock-Ancient Animal Fossil Geopark, which are locatedrespectivelyin 6 counties/district, i.e. Kongtong District, Jingchuan County, Zhuanglang County, Tanchang, County, Kang County and Hezheng County in 3 cities/prefecture, i.e Pingliang City, Longnan City and Linxia Prefecture, which are located in southeastern Gansu Province.

The Project would include the following three components:

Component 1: Heritage Conservation and Tourism Services Improvement
Component 2: Community Basic Services Delivery
Component 3: Capacity Building for Project Sites, Institutional Strengthening, and Project Management Support

8.1 Social Assessment Methodology

Yishan Yishui Environmental and Social Development Center is the SA agency for the project, formed a 12-person research team and had carried out SA by three groups at30 communities in six counties (district). As a result of public consultation and participatory rural appraisal(PRA), which include field survey, participatory monitoring and evaluation and literature review, the team collected baseline data and information needed for developing the SA report, which was prepared based on consolidation and analysis of the data and information. The report meets the requirements of the World Bank and those inGuidelines on Performance Evaluation of Projects Financed by International Financial Organizations.

8.2 Key Findings of Social Assessment

8.2.1 Key Stakeholders of the Project

The World Bank has developed the concept of "stakeholder" in its assistance strategies and divided them into groups. The stakeholder refers to "the people who have influence on or are influenced by the operations and strategies of the World Bank" (World Bank 1994:1). With the premise of poverty alleviation as its target, the SA team divided the stakeholders into the following groups:

(1) Community residents, which refer to the targets of developing project, especially those who lack access to information and power and who are excluded from the process of development. The group includes the poor, unemployed women and ethnic minorities.

(2) Government departments associated with culture protection and tourism, i.e. agencies that are responsible for the project or implement the project.

(3) Private institutions, which mainly include enterprises engaging in service provision, commodity deals, self-employed business owners and vendors in the project areas and adjacent areas.

According to the definition above, the SA team drew their conclusion based on the field investigation and identified “stakeholders” and “key stakeholders” of the project (See Table 9.2-1).

Table 9.2-1 Stakeholder Analysis

Administrative Area	Scenic Area	Key Stakeholders		
		Government Organization	Community	Private Sector
Kongtong District Pingliang City	Kongtong Mountain	Tourism Bureau of Pingliang City Tourism Bureau of Kongtong District Administration Committee of Kongtong Mountain Scenic Area	Xigou Village Jiaju Village Gaoling Village Qihe Village Zhonghe Village	Farmer Inns Hotels nearby scenic area Catering companies nearby scenic area Souvenir sales companies nearby scenic area stalls
Zhuanglang County Pingliang City	Yunya Temple	Tourism Administration Bureau of Yunya Temple	Luohan Dong Wanyan Village Gongchi Village Yanfeng Village Tianchi Village	Farmer's homestay Hotels nearby scenic area Catering companies nearby scenic area Souvenir sales companies nearby scenic area stalls
Jingchuan County Pingliang City	Baili Grottoes	Wangmu Palace Scenic Area Administration Bureau	Guoman Village Shiqiao Village	Farmer's homestay Hotels nearby scenic area Catering companies nearby scenic area Souvenir sales companies nearby scenic area stalls
Tanchang County Longnan City	Guan'e Gou	Tourism Development Company	Luren Village Xinping Village Yuezangpu Village Guan'e Village Lijie Village Washeping Village Daheba Village Xinchengzi Village	Farmer's homestay Hotels nearby scenic area Catering companies nearby scenic area Souvenir sales companies nearby scenic area stalls

Kang County Longnan City	Yangba	Yangba Scenic Area Administration Bureau	Yinbazi Village Laojiangba Village Zhuangke Village Liujiaba Village	Farmer's homestay Hotels nearby scenic area Catering companies nearby scenic area Souvenir sales companies nearby scenic area stalls
Hezheng County Linxia Prefecture	Songmingyan and Palaeotherium Fossils Museum	Songmingyan Scenic Area Administration Bureau Hezheng Palaeotherium Fossils National Geopark Administration Committee	Diaotan Village Zhongxin Village Cheba Village Dashanzhuang Village Bianpo Village Ketuo Village	Farmer's homestay Hotels nearby scenic area Catering companies nearby scenic area Souvenir sales companies nearby scenic area stalls

★Village is the lowest level of administrative unit in China. Generally speaking, one administrative village is composed of several natural villages. The village mentioned in the report refers to administrative village, which is the same as "community" or "rural community" under the project.

8.2.2 Poverty in the Project Areas

According to figures released by Gansu Poverty Reduction Office, Gansu province had 4.17 million poor population in 2014, including 1.4697 million poor population in the three cities (prefecture) where the project would be implemented, accounting for 23.68% of the region's rural population. In addition, rural population in the six scenic areas located in 6 counties (district) amount to 3.1986 million, including 707,000 poor people with poverty incidence being 22.1% (See Table 9.2-2).

Table 9.2-1 Poverty in the Project Areas

Administration Area	Rural Population (10,000)	Poor population (10,000)	Poverty Incidence (%)	Project Area	Rural Population (10,000)	Poor Population (10,000)	Poverty Incidence (%)
Pingliang city	194.48	40.60	20.87	Kongtong District	32.86	3.38	10.30
				Jingchuan County	32.04	4.85	15.15
				Zhuanglang County	41.52	11.11	26.75
				Subtotal	106.42	12.34	17.4
Longnan city	247.25	64.37	26.04	Kang County	17.23	4.82	28.00

				Tanchang County	28.36	2.32	32.87
				Subtotal	45.59	14.14	30.44
Linxia Hui Autonomous Prefecture	174.13	42.00	24.12	Hezheng County	15.84	3.74	23.64
Total	615.86	146.97	23.68	**Total**	312.86	70.7	22.10

There are 30 rural communities in the 6 scenic spots. The farmer households in the 30 rural communities total 6,690 with population of 32,019, of whom poverty households amount to 1,860 with population 7,381. The poverty incidence rate is as high as 23%.

According to China's poverty reduction strategy, to ensure thatfarmers' per capita disposable income growth rate inpoor regionsis higher than the national average by 2020, ensure that the rural poor is out of poverty based on current poverty line, all poor counties should resolve regional poverty. Hence, all poor people in poor counties are supposed to be out of poverty by 2020 when the proposed project is completed. According to conservative estimation, the project would directly help 7,381 poor peoplein 30 project communities get rid of poverty, and indirectly help 110,715 poor people out of poverty by 2020. The project would contribute 15.66% to poverty reduction in southeastern Gansu.

8.2.3 Ethnic Minorities in the Project Areas

Tanchang County Guan'e Gully Subproject would involve three ethnic minority villages: Luren Village, Xinping Village and Yuezangfu village, among which Tibetan people are the majority. There are 833 people in 186 households in Luren Village. Among which, 90 households, 422 people are ethnic minorities, accounting for 84.3% of total population. After implementation of the policy returning farmland to forest, the village community residents have lost almost all farmland they had before. There are 208 households, all together 832 people in Xinping Village. All the community residents are Tibetan, who only own 632 mu of farmland. Yuezangfu Village has 125 households or 622 farmers, among which 90 households or 458 farmers are ethnic minorities, accounting for 73.6% of the total. The area of farmland in the village is 685 mu.
In the Hezheng County Songming Rock Scenic Area Subproject, four villages have Dongxiang minority and Hui ethnic minority people. The Dashanzhuang Village has 529 households and 2,709 farmers. Among them, 2,318 farmers in 468 households are Dongxiang minority people, accounting for 85.6% of the total; 391 farmers in 61 households are Hui ethnic minority, accounting for 14.4% of the total. There are 2,428 farmers in 468 households in Cheba Village. Among them, 1,208 farmers in 320 households are Dongxiang minority, accounting for 65% of the total. Hui minority has 300 farmers in 150 households,accounting

for 12.4% of the total. There are 1,812 farmers in 335 households in Bianpo Village. Among which, Dongxiang minority has 450 farmers in 110 households, accounting for 33% of the total. Hui Minority has 1,010 farmers in 200 households, accounting for 55.8% of the total. Ketuo Village has 1,935 farmers in 389 households. Among which, Dongxiang minority has 298 households or 1,202 farmers, accounting for 77%. Hui minority has 200 farmers in 50 households, accounting for 10.3% of the total.

8.2.4 Women in the Project Areas

Due to unbalanced social and economic development in the project areas, most farmers leave home for migrant work, resulting in an imbalanced loacl labor structure. As a result, the community labor force mainly comprises left-behind women and the elderly. Women have much lower educational level than men, which causes them to lack rights to participation rights, expression, decision-making and the rights to be heard in community affairs. Therefore, in designing the components of the project, adequate consideration shall be given to gender sentivity, community development and gender equality, as well as capacity building so as to promote synergized development of communities and scenic areas.

8.2.5 Land Acquisition and Involuntary Resettlement

It has been confirmed that all project activities supported by the Bank would be implemented on the existing farmland; therefore, the project would not involve land acquisition or involuntary resettlement. However, in case where the project implementation would use some land that is voluntarily provided by farmers who would be compensated through land adjustment through “ad hoc” villagers’ representative meeting, or in case where the project implementation may need new civil works or involve land acquisition, the Resettlement Policy Framework shall be developed. This would ensure that the area and quality of farmland of affected farmers are not lower than those before such adjustment. Therefore, the SA team prepared a RPF for the project (see the section of Social Management Plan for details).

8.2.6 Main Social positive impacts of the Project

(1) The southeastern region of Gansu province and its surrounding areas are rich in cultural and natural resources, but lacks behind in terms of economic and social development. It lacks funds, ideas, technology and international cooperation in conservation and development. Implementation of the project would play an important role in the protection and development of cultural and natural heritage as well as in non-physical cultural resources.

(2) Implementation of the project would contribute to improving infrastructure inside and outside scenic areas, improving tourist facilities and increasing jobs during and after the project implementation.

(3) Implementation of the project would contribute to improving the management capacity of scenic areas, improving protection of cultural relics and enhancing the overall

qualifications of practitioners in the tourism sector, Besides, it would also enhance local residents' awareness of cultural and natural heritage protection.

(4) The project would cover rural poor. Therefore, the project would pay close attention to ethnic minorities, women, the elderly and children in the project areas, and to improving their living environment and creating participation channels for them.

(5) Based on conservative estimation, the project would directly help 30 beneficiary communities with 7,381 people to get rid of poverty, indirectly help 110,715 people out of poverty by 2020 when the project is completed, which would contribute 15.66% of poverty reduction to southeastern Gansu.

(6) After its completion and by 2023, the project would directly benefit 5.6944 million tourists and community residents, including 5.5833 million tourist and 111,100 community residents. Of beneficiary community residents, female beneficiaries would amount to 62,216.

8.2.7 Potential Social Risks of the Project

(1) Risk of lower level of community participation. Civil society organizations of regions where the six scenic areas are located are developing slowly. Only Kongtong District has several associations or organizations that are related to the protection and development of cultural and natural heritage; Songmingyan Town has one cooperative, but there are no community organizations in other subproject areas. In the risk assessment of six subprojects, five subproject areas have the highest risk of non-participation by communities. It is obvious that non-participation by communities may thaw the "twin goals" of the World Bank. This is also one of the biggest social risks of the project.

(2) Risk of heritage damage. Apart from Kongtong Mountain Scenic Area, other scenic areas have risk of heritage damage in different degrees. Among them, the Jingchuan County 50-km Stone Cave Scenic Area suffers the most severe damage. Therefore, it is highly necessary to protect cultural and natural heritage in a rescue manner.

(3) Risk of large share of poor people. Southeastern Gansu Province, where the 6 project counties (districts) are located, is one of China's poorest regions, as well as the region with the largest poverty-stricken population in Gansu Province. It is of low regional social and economic development level, extensive and deep poverty, fragile ecological environment, frequent geological disasters, backward protection and development of heritage. There is stark contrast between poor communities and prosperous scenic areas. How to coordinate the common development of communities and scenic areas, and let poor communities share the development outcomes of scenic areas; all these have posed challenges and provided opportunities to the project.

(4) Risk of lagging development of ethnic minority communities. The ethnic minority groups of Gansu Province are mostly in the Southeast Gansu Region. Affected by geographical locations, natural conditions, infrastructure, education and other factors, the regions in which ethnic minority groups live are the poorest regions in Southeast Gansu Province. These regions have long lagged behind in social and economic development, and there are big challenges of poverty alleviation due to a large number of poverty-stricken

population. Therefore, it is dire necessary to formulate community development plans, provide World Bank loan support, establish community organizations, offer capacity building, and develop suitable and characteristic projects for the ethnic minority groups in the project areas. Therefore, on the basis of demand assessment, the social assessment team designed community development and capacity building projects for ethnic minority groups. Tanchang County and Hezheng County should design and implement projects in reference to the Report on Development Plans for Ethnic Minority Groups developed by the social assessment team.

(5) Risk of gender inequality. Due to imbalanced social and economic development, many residents of project areas have gone working in other places. As a result, the structure of community labor force is imbalanced. The remaining residents are mostly women, old people and children. And the education level of women is far lower than that of men, and they lack the rights of participation, expression, decision-making and being listened to in community affairs. Therefore, project design should take into full consideration of social gender composition, give priority to community development and gender equality, and design a series of capacity building activities to promote synergized development of communities and scenic areas.

8.2.8 Mitigation measures for social impacts

A RPF and two EMDPs have been prepared to address the social risks and impacts based on the social assessment. Selection of civil work sites have avoided damage to local village buildings and special design of scenic facilities such as tourist information centre, cultural exhibition centre, museum, will be consistent with ethnic minority culture and styles. Therefore, impacts on buildings and landscape will be insignificant, and, to some extent, even enhanced. Construction camps will adopt closed management approach, as commonly adopted in China, and workers will receive sensitivity training to respect and value ethnic minority cultures and customs. Therefore, cultural conflict impacts from construction workers can be managed, and the negative impact will be mitigated. The EMDP and SA action plan recommend actions to mitigate the adverse impacts and enhance positive impacts on affected ethnic minority communities. Main measures include that project activities shall be fairly offered to all the 7 ethnic communities in a culturally appropriate way and promote benefits and participation of ethnic minority people (both men and women) in the project. Arrangement for community development budget and support to establishing 31 tourism service-driven community organizations. Priorities will be given to the ethnic and vulnerable people in project villages in terms of jobs, livelihood development or restoration and other economic opportunities resulting from the project. In particular, project resources of technical expert advisory services, incubating of community organizations and budgets will be provided, including those for ethnic intangible cultural heritage protection and promotion via development of local performing arts and tourism-oriented souvenirs.

(1) Land Acquisition and Resettlement.

By project appraisal, through optimization of design and selection of location, the project civil works will be constructed on existing land in scenic areas which are already state owned land or ready-for-use collective land for village level infrastructure. However, some of the specific locations of land to be used for the project may be adjusted during project implementation, such as new paths and small bridges, small scale of local cultural exhibition centre, and tourism facilities. A Resettlement policy Framework is prepared to provide guidance on dealing with the issues of land acquisition and resettlement if it occurs in the implementation stage of the project, so as to ensure the OP 4.12 Involuntary Resettlement is properly considered and complied with.

(2)Ethnic minority.

The proposed project will significantly promote the social and economic development of 7 ethnic minority villages with about 6900 ethnic people in Hezheng and Tanchang counties. To address the impacts on ethnic minority people, two separate Ethnic Minority Development Plans (EMDP) have been prepared for these two counties. The project will provide convenient accessibility to and from outside their villages and scenic areas, stimulating tourism, improving infrastructure and creating employment opportunities and income generation. There is broad support from all ethnic minority areas for the project, as the project is seen as a unique and indeed rare opportunity for much needed economic development.

Chapter 9 Environmental and Social Management Plan

The objectives of this Environmental and Social Management Plan (the Plan) are to provide evidence and basis for environmental management, ensure environmental protection laws and regulations are strictly complied with and environmental protection measures specified in the EA are implemented by project implementation agencies during project design, construction and operation, hence achieving the win-win target of development and environmental protection.

9.1 Key Experience and Lessons

The World Bank financed Gansu Cultural and Natural Heritage Protection and Development Project (the Phase I Project) was completed in 2015 and is very similar to the Project in terms of project component. Therefore, reviewing the experience and lessons learned of the Phase I Project would significantly contribute to environmental management of the Project.

9.1.1 Key Experience

Implementation of the Phase I Project has played a catalytical and demonstration role from a range of dimensions to other relevant projects within the province.

1. The project has brought in new paradigm of cultural and natural heritage protection and management

Implementation of the project has significantly improved the capacity of all participants, enhanced living quality and cultural and natural heritage protection awareness of residents in the project areas and improved tourism infrastructure and service capacity. A few subprojects have demonstrated the international concept of services. Incorporating the new concept of management in future operations is a leading experience of the project.

2. Sound management institutions are the organizational guarantee for project implementation

Albeit challenges such as lack of professionals and temporary changes in the management structure during project implementation, PMOs at all levels have overcome difficulties, engaged experts with expertise in different sectors from both inside and outside the province to guide operations of implementing agencies and identify and address new issues/problems during project implementation, and employed professionals to strengthen the capacity of PMOs at different levels. As a result, the project has been implemented smoothly. The Provincial PMO clearly understands that sound management institutions are both the strong support for sustained project implementation and organizational guarantee for smooth project implementation.

3. Standardized and rigid management approaches are effective tools for achieving implementation progress

In order to strengthen project management, the province established comprehensive and systematic management approaches. The Provincial PMO developed a series of rules and regulations governing project management, financial management, procurement management, contract management, staff training, resettlement, environmental assessment and loan withdrawal. Relevant laws and regulations governing cultural and natural heritage protection have been strictly complied with and approval systems have been implemented. For construction programs and bidding documents with total investments exceeding U$1 million as well as complex activities, review and no-objection were sought for from the World Bank before they were implemented. For key cultural heritage of national level protection, we have strictly followed the Cultural Relics Protection Law and approvals were sought for from the State Cultural Relics Administration before bidding and construction activities were initiated. The tendering agent and supervision agency for the project were selected through public bidding. During project implementation, the Provincial PMO focused

on strengthening cooperation with the tendering agent, strengthening training of staff responsible for bidding, engaging experienced professionals to prepare bidding documents, technical specifications and bill of quantities. As a result, quality of bidding documents was improved and bidding and procurement processes were expedited. To ensure supervision agencies to effectively fulfill their roles and responsibilities, the Provincial PMO requested them to make commitments to construction quality, good governance and self-discipline before they entered into the sites. In addition, the province employed local “self-taught” experts to provide technical guidance on and “supervision” over protection, inheritance and comprehensive utilization of ancient buildings, historical sites and non-physical cultural heritage. This approach has maintained the original landscape of ancient buildings and effectively addressed issues/problems relating to project management through establishing and implementing the follow-up and reporting mechanisms.

9.1.2 Key Lessons

Overall, implementation of Phase I Project is successful, but there are also some lessons learned, which mainly include:

1. Affected by reforms of government institutions and project agencies and prolonged preparation and implementation periods, staff of some project agencies changed frequently and lacked work continuity;
2. Cultural heritageprotection plans must be developed and approved first before the implementation of corresponding protection activities, but in reality, approval of these plans took a much longer period than expected. In future operations, this risk needs to be avoided;
3. Most project facilities lacked regular maintenance and management, staff were not arranged or lacked capacity;
4. Roles and functions of city and county PMOs have not been adequately enabled during project operation. During daily work, PMOs of scenic areas reported directly to the Provincial PMO and this has somewhat streamlined communication procedures and enhanced work efficiency. But during project completion acceptance, the acceptance was delayed due to the lack of participation by city and county PMOs in the necessary processes.

The above experience and lessons have been drawn upon in developing the Plan.

9.2 Institutional Arrangements and Responsibilities

Environmental management for the Project is the responsibility of Gansu Provincial Development and Reform Commission and PMOs of six counties are responsible for implementing specific

environmental management activities. Institutional arrangements and responsibilities for environmental management are detailed in Table 9.2-1 and Figure 9.2-1.

Table 9.2-1 Institutional Arrangements and Responsibilities for Environmental Management under the Project

Stage	Project Stakeholders	Responsibilities
Design and preparation	Project owner and/or PMO	1. Carrying out design, supervision, construction, equipment and materials procurement; 2. Carrying out project tendering and submitting project-related matters to higher level authorities for approval; developing EA and EMP and submitting them for approval.
	Design institute and EA agency	The design institute shall do a good job on engineering survey and design and revise environmental protection measures in accordance with the EA while the EA agency shall do a good job on environmental assessment.
	Development and reform bureaus and quality supervision bureaus	Supervising and inspecting over the rationality of engineering design, carrying out tendering and approval, engineering supervision, quality assurance and construction safety.
	Construction bureaus and cultural heritage administration bureaus	Supervising and inspecting over the compliance of engineering design with relevant laws and regulations governing cultural heritage and scenic areas and approving the feasibility of project components.
	Forestry bureaus	Supervising and inspecting over the compliance of engineering design with relevant laws and regulations governing nature reserves, forest parks and wetland parks and approving the feasibility of project components.
	Water bureaus and environmental protection bureaus	Supervising and inspecting over the compliance of engineering design with relevant laws and regulations governing protection of water source sites and approving the feasibility of project components.
	Environmental protection bureaus	Examining whether pollution control facilities are in place and the design meets relevant criteria.
Construction	Project owner and/or PMOs	1. Supervising over implementation of mitigation measures in the EMP during construction; 2. Carrying out dissemination and training of mitigation measures in the EMP during construction; 3. Proactively coordinating with other relevant authorities to safeguard legitimate rights and benefits of villagers and supervising over construction activities.
	Development and reform bureaus	Supervising over implementation of various measures during infrastructure construction and safety production rules.
	Land resources bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during construction of geological parks.
	Construction bureaus and cultural heritage	Guidance on and supervision over implementation of mitigation measures in the EMP during construction of cultural heritage and

Stage	Project Stakeholders	Responsibilities
	administration bureaus	scenic areas.
	Forestry bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during construction of nature reserves, forest parks and wetland parks.
	Water bureaus and environmental protection bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during construction, especially measures targeting at drinking water source protection areas.
	Contractors and construction teams	Implementation of mitigation measures in the EMP during construction.
	Supervision engineers	Control over construction quality, cost and progress and fulfillment of legally designated roles and responsibilities for ensuring construction safety.
Operation	Project owner and operation units	1. Implementation of mitigation measures in the EMP during operation; 2. Ensuring environmental protection, construction progress, quality and safety during operation; 3. Organizing environmental monitoring; 4. Reporting to the PMO and the Bank on implementation status on a periodic basis.
	Scenic area administrative committees	1. Implementation of mitigation measures in the EMP during operation; 2. Project supervision: protecting the environment and reducing use of relevant materials.
	Development and reform bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during project operation.
	Land resources bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during operation of geological parks.
	Construction bureaus and cultural heritage administration bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during operation of cultural heritage and scenic areas.
	Forestry bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during operation of nature reserves, forest parks and wetland parks.
	Water bureaus and Environmental protection bureaus	Guidance on and supervision over implementation of mitigation measures in the EMP during operation of drinking water source protection areas.

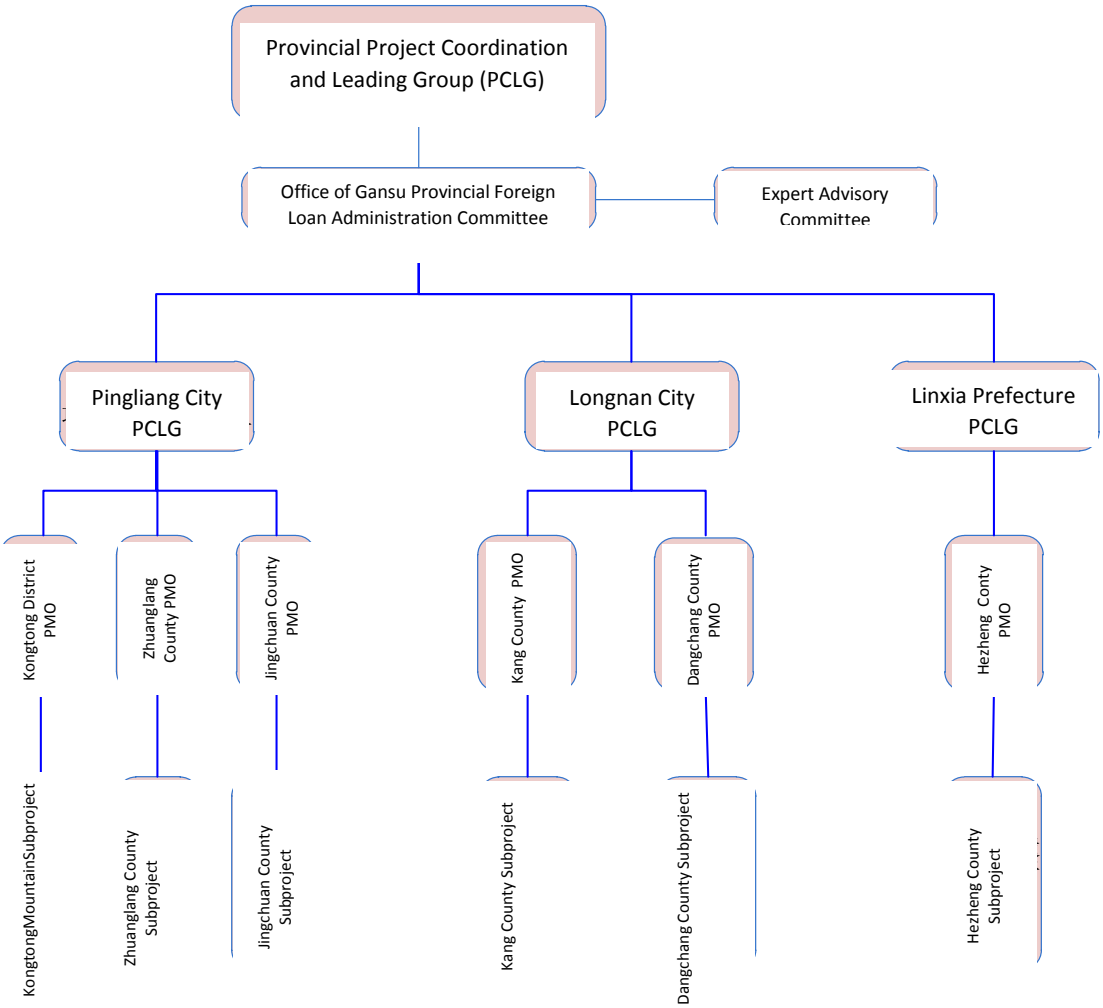


Figure 9.2-1 Structure of Institutional Arrangements and Responsibilities for Environmental Management under the Project

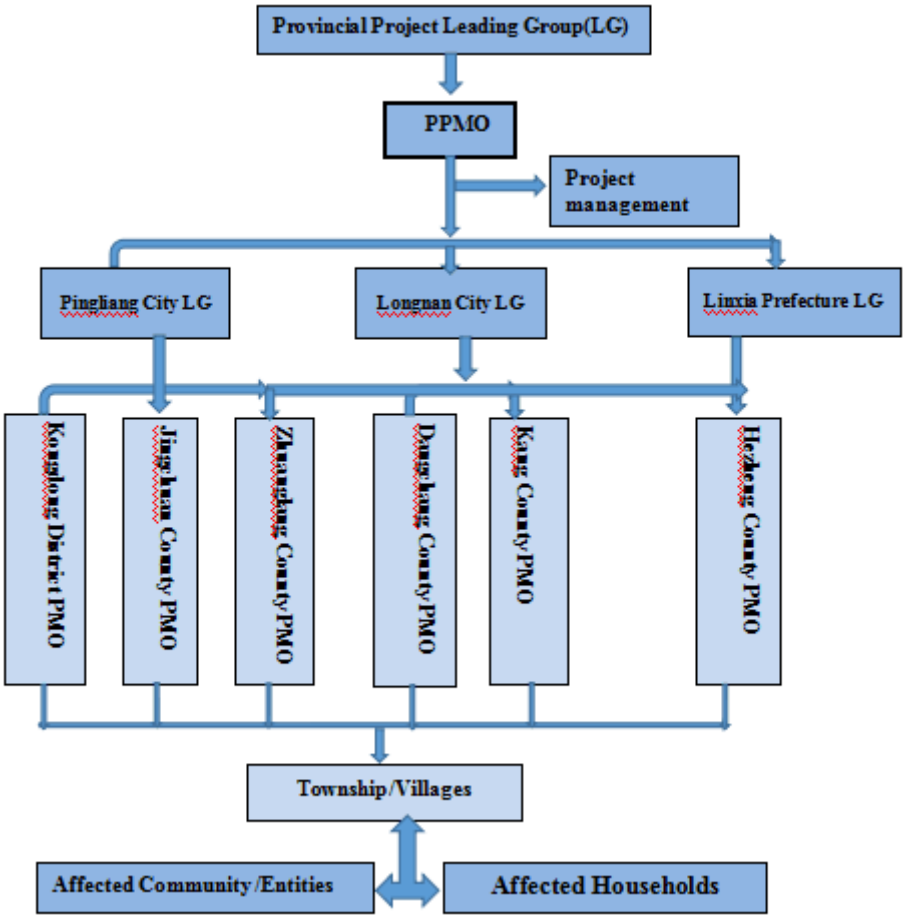


Figure 9-2-2 Structure of Institutional Arrangements and Responsibilities for social Management under the Project

9.3 Environmental Codes of Practice and Mitigation Measures

In order to minimize or eliminate potential negative impacts of the Project on natural environment and ensure expected ecological and environmental benefits of the Project are fully achieved, the following environmental protection measures and environmental codes of practice (ECOP) have been developed.

The ECOP and mitigation measures have been developed in accordance with relevant laws, regulations, standards and norms of China and Gansu Province while making reference to the Bank's Environmental, Health and Safety Guidelines. The ECOP and mitigation measures are described below.

9.3.1 ECOP During Construction

The Project would involve construction of roads, water and sewage works. Given these works would have similar environmental impacts during their construction, their mitigation measures are similar. These common measures constitute the ECOP and are summarized in Table 9.3-1.

9.3.2 ECOP during Operation

In addition to common measures in Table 9.3-1, specific measures during operation are listed in Table 9.3-2.

9.3.3 Specific Measures for Activities in Special Sensitive Areas

Specific measures targeting at special ecologically sensitive areas for the design and construction periods are listed in Table 9.3-3 and those for the operation period are given in Table 9.3-4.

9.3.4Specific Measures for Sewage Treatment

In addition to common measures in Table 9.3-1, specific measures for sewage works are listed in Table 9.3-5.

Table 9.3-1 Environmental Codes of Practice for Infrastructure Works during Construction

Activity	Potential Impacts	Mitigation/Control Measures	Estinmated Cost (RMB 10,000)	Implementer	Supervisor
Preparation Period					
Tendering and bidding	——	1. Incorporation of EMP into bidding documents; 2. Incorporation of EMP into contracts with contractors, construction supervisors and environmental supervisors to facilitate EMP implementation.	-	Project owner	-
Comparison and selection of alternatives	——	1. Optimization and adjustment of construction scheme: remove components proposed during the pre-appraisal by the client that do not meet requirements in relevant laws and regulations governing the protection of nature reserves, drinking water source protection areas and wetland and have severe harmful environmental impacts, such as repair and expansion of Xiang-Yan Highway, improvement of roads and water supply pipeline in Zhonghe Village and Gaoling Village, and improvement of trails to Yunya Temple; 2. Site selection results: recommended site for Jingchuan County Museum: Chengbei New District; recommended site for domestic sewage treatment facilities: Fumengou Tourist Service Center; 3. Recommended toilet alternative: flush toilets are recommended for those inside buildings and environmentally-friendly toilets are recommended for new stand-alone toilets; 4. Recommended alternative for wastewater treatment: buried small AO treatment equipment.	-	Project owner	-
Construciton Period					
Earth-rock excavation, site leveling, spoil disposal and other activities	Destroying vegetation, affecting farming activities and landscape, disturbing activities of wild animals, leading to soil erosion, inducing geological disasters, and resulting in other ecological destructions and ecological impacts	. Efforts would be taken to rationally arrange construction sites, minimize land occupation, select appropriate construction periods and minimize earth-rock excavation during rainy seasons or on rainy days. Fences would be set up at construction sites to prevent construction materials and construction waste from entering into surface water; . Depending on topographical conditions of construction sites, earth-based drainage ditches may need to be set up around the sites and earth-based sedimentation tanks may need to be set up at outlets of these ditches to slow down water flow and allow for sand settlement in sedimentation tanks; . Efforts shall be taken to combine key water and soil conservation measures with surface protection measures, and 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 for water and soil conservation, which can play a role in ensuring long-term water and soil conservation and in greening and beautifying the environment in the project areas; . Measures shall be taken to strengthen public communication and education, ban illegal and	1200	Construction units and project owner	County EPBs, housing and rural-urban development bureaus, forestry bureaus, animal husbandary bureaus, water bureaus, township sanitation administration offices

Activity	Potential Impacts	Mitigation/Control Measures	Estinmated Cost (RMB 10,000)	Implementer	Supervisor
		arbitrary felling of trees and hunting and killing of wild animals. If rare and endangered plants, famous and ancient trees and unique local plants are found during construction, relevant authorities shall be kept informed of and on-site protection measures shall be taken immediately. Construction noise shall be controlled to reduce disturbances to animals; . During construction, top soil shall be excavated and piled up in a stratified manner and upon construction completion, temporary facilities shall be demolished in a timely manner, hardened soil shall be loosened and consolidated, and top soil shall be backfilled in a stratified manner to allow for vegetation restorationees. Appropriate vegetation species shall be selected according to local climate features, side slope degrees and geological conditions; . Efforts shall focus on fire risk monitoring of construction sites; construction units shall also need to strengthen survey of key plants and famous and ancient trees. Construction activities that may lead to forest fire shall be strictly managed and use of open fire in mountainous areas shall be banned during fire prevention period of mountain forest; . Slopes at key sections shall be selected for artistic processing through plant landscaping to demonstrate unique local cultural features. In addition, slope top shall be cut into a circular arc so that it can naturally integrate with mountains. A one-size-fits-all approach shall be avoided for slope cutting.			
Sand and gravel processing, concrete mixing, materials transport and other activities;	Dust and exhaust emitted by trucks would have impacts on ambient air	1. Adopt advanced construction techniques. Adopt the wet crushing method in sandstone and concrete system. Provide dust collection equipment, control vehicle speed, exhaust, and coal emission. Spraying water on construction access. Construction teams shall use clean energy such as liquefied gas and electricity. Strengthen afforestation and construction worker protection to minimize environmental and air impacts; 2. The washing platform shall be installed in the entrance for vehicles shipping materials and spoil. The equipment shall meet the following requirements: The spill-proof device shall be installed around the platform to prevent wastewater from spilling over. The wastewater collection pits and desilting basin shall be set up. Before the vehicle leaves the site, the vehicle body and tyre shall be washed and the sludge shall be removed. For vehicles shipping materials and spoil, the height of materials and spoil shall not exceed the outer edge of the vehicle. The loading compartment shall be covered by the cloth or use sealed compartment; 3. No concrete and asphalt mixing station shall be set up at the construction site.	120	Construction units and project owner	County EPBs, housing and rural-urban development bureaus, township sanitation administration offices
Construction waste (earth-rock and construction spoil)	Soil erosion, riverway blockage and water pollution	**I. Earthwork:** 1. If the site needs to be excavated at the beginning of construction period, the construction team shall fully use natural elevation difference of landform, avoiding digging deep pits; 2. The earthwork dug out shall be used for leveling land. Rockwork shall be used as foundation rocks	60	Construction units and project owner with assistance from projecet villages	County EPBs, township sanitation administration offices, health bureaus

Activity	Potential Impacts	Mitigation/Control Measures	Estinmated Cost (RMB 10,000)	Implementer	Supervisor
		for irrigation and side gully works. The earthwork and rockwork shall not be placed randomly; 3. The temporary storage yard shall be arranged reasonably, and shall be set up far away from sensitive spots (such as settlements and schools) and at sites at downwind or side-wind direction of dominant summer wind direction. The earthwork shall be crushed and covered by cloth. Fencing walls and drainage facilities shall also be established around the earth piles; 4. Earth drainage ditch shall be set up around temporary soil storage sites. Desilting basin shall be set up at the exit of drainage ditch to precipitate out sludge in slow flow. **II. Constructionspoil:** **1.** Classify and recycle recyclable waste (waste iron, waste steel and package materials would be sold to salvage station and wast bricks would be used as road foundation); **2.** Building waste that could not be recycled shall be piled at the designated places. The loading compartment shall be sealed during the shipping; **3.** Water and wind-proof measures shall be taken for temporary piling building waste.			
Domestic waste from construction camps	Domestic wasteeasily gets rotten, emits disgusting odor, provides breeding grounds for flies, pests and bacteria, damages landscape, and even emits poisonous gasses	Trash cans shall be placed for collecting household garbage. Staff shall be appointed to clean, collect and sort out garbage everyday and deliver to nearby landfill sites for disposal.	12	Construction units and project owner	County EPBs, township sanitation administration offices, health bureaus
Arbitrary discharge of construction wastewater and domestic sewage	Pollution to surface water	1. Wastewater generated from sand processing system: sand sedimentation pool + flocculating settling pond, wastewater after treatment shall be used for mixing concrete and spaying for dust prevention and shall not be discharged to areas outside the construction site; 2. The construction team shall use environmentally-friendly toilets or dry toilets in nearby villages. Domestic sewage shall not be discharged to areas outside the consruction site; 3. In designing the location of a construction site, adequate considerations shall be given to drainage and the site shall be far away from rivers. No construction activities shall be carried out within the catchment area of surface water.	120	Construction units and project owner with assistance from projecet villages	County EPBs, township sanitation administration offices, water bureaus
Domestic waste leechate seepage and construction of foundation works		1. Observe the subsidence of surrounding surface and building. In case of any abnormalities found, stop to drain groundwater and constructionimmediately; 2. Keep the operation section clean during the construction process, avoid sewage and pollutants from entering excavation trench to cause sewage seepage; 3. If fuel needs to be stored onsite, the warehouse shall go through anti-seepage treatment,	30		

Activity	Potential Impacts	Mitigation/Control Measures	Estinmated Cost (RMB 10,000)	Implementer	Supervisor
		preventing oil leakage to pollute water body; 4. The storage room for household garbage shall adopt anti-seepage measures; 5. The infrastructure construction shall select in the non-flood period to reduce the impacts of construction on groundwater depth.			
Noise from construction machinery, transportation vehicles, sand and gravel processing systems and other construction activities	Impacts on acoustic environment in nearby villages and on construction workers	1. No-horn sign shall be set up in sensitive spots and measures shall be adopted to reduce noise, such as using low-noise equipment, control noise source, transmission and traffic noise and preparing noise-proof earplugs for workers, and reasonably arranging construction schedule. 2. According to Emission Standards of Ambient Noise at Construction Site Boundary (GB12523-2011), reasonably arrange the construction schedule and do not arrange construction or arrange low-noise construction at night. The machines with loud noise (e.g. pile engine) shall not work at night (22:00-6:00). If close to the sensitive points, do not arrange construction or arrange low-noise construction at night. Also adopt de-noise measures to minimize the impacts of noise on residents. If the continuous construction is needed, the construction enterprise shall seek the approval of related authorities and communicate with residents in advance.	60	Construction units	County EPBs, housing and rural-urban development bureaus, township sanitation administration offices

Table 9.3-2 Environmental Impacts and Mitigation Measures during Operation

Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implemengter	Supervisor
Contruction of barrier dams, diversion dikes, slope foot retaining walls, rock-bolts and lattices, anti-slippery pole at slope foot, drainage canals; slope surface greening	Reoccurrence of landslides, sector collapse and mud-rock flow	Measures shall be taken to monitor, manage and analyze spots with hidden risks of geological disasters, enhance geological disaster waning capacity and prevent geological disasters from taking place.	Included in total project investment	Scenic area administration committees	County governments, county land resources bureaus
Water storage tanks and water tanks for firefighting operations	People get drowned when they swim in water storage tanks or water tanks for firefighting operations and animals get drowned after	Measures shall be taken to 1. heighten walls of water tanks and place glass fragments on the top of these walls to prevent people and animals from entering the tanks;	20	Scenic area administration committees	County governments, county EPBs, township sanitation administration offices

Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implemengter	Supervisor
	falling into these tanks.	2. build stairs within the tanks to facilitate their maintenance and rescue efforts in case of accidents; 3. strengthen management and public communication and set up waning signs to prevent accidents from happening.			
Midwater reuse pipes and sewage pipes	Surface water and groundwater are polluted due to broken pipes.	1. Markers and warning signs shall be set up at sections where the pipeline crosses the river; 2. Public commucation about protection of pipeline and relevant facilties shall be strengthend; sewage collection facilties such as accident tanks shall be set up near main spots where the pipeline crosses the river; 3. A special emergency preparedness plan shall be developed and adequate emergency repair facilities and rescue facilities shall be provided.	20	Scenic area administration committees	County EPBs, urban development bureaus
Offices for scenic area administration, museums, cultural exhibition rooms, tourist transport centers, car parks and residential areas in scenic areas	Impacts of waste gas and odorous pollutants on ambient air	1. Vehicle exhaust: measures shall be taken to strengthen traffic management and reduce vehicle idling to reduce generation of vehicle exhaust; 2. Oil smoke from restaurants: restaurants are banned in scenic areas; 3. Odor control: set up garbage dumps and transfer stations; arrange designated staff to do cleaning and spray disinfectants and transport garbage in a timely manner to reduce odor from garbage; strengthen sanitation management of public toilets, reduce faeces storage and use sealing covers to reduce impacts of odor on regional environment.	80	Scenic area administration committees	County EPBs, township sanitation administration offices, health bureaus, industrial and commercial administration bureaus
	Impacts of accidentalsewage discharge on surface water	1. An online monitoring instrument would be provided for the master sewage outlet of Hezheng County Subproject. Sewage discharge must be suspended immediately if sewage fails to meet the standard, reasons be identified and equipment be checked and repaired within 24 hours. Sewage shall be stored in the regulation tank during the accident; 2. For Kongtong Mountain, Jingchuan County, Zhuanglang County and Kang County subprojects, staff shall be designated to mintor sewage discharge. In case of abnormalities with the discharge, the outlet valve shall be closed and sewage be stored in the regulation tank. Sewage shall be tested and when sewage is not up to standard, equipment shall be checked and repaired. If the repair lasts for a long period, sewage	Included in total project investment	Scenic area administration committees	County EPBs, township sanitation administration offices

Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implemengter	Supervisor
Operation of self-built sewage treatment facilities		shall be transported to local wastewater treatment plants for treatment.			
	Impacts of noise from tourists, equipment and vehicles	1. The impacts of social life noise shall be mitigated by strengthening scenic area administration and reminding tourists; 2. Vehicle noise: Horn shall be prohibited when vehicles enter/exit to/from parking lots. Minimize the frequency of boosting and idle speed of motor vehicles; 3. Equipment noise: Low-noise equipment shall be used in water pump room, fan room and power distribution room to reduce noise and prevent noise pollution.	110	Scenic area administration committees	County EPBs, township sanitation administration offices, industrial and commercial administration bureaus
	Feces	1. Feces from flush toilets under Tanchang County Subproject shall be discharged into septic tanks for initial treatment and then delivered via sewage network to Tanchang County Wastewater Treatment Plant for further treatment. Feces from flush toilets under other subprojects shall be discharged into septic tanks for initial treatment and then delivered via sewage network to new wastewatertreatment plants or integrated wastewater treatment equipment for further treatment. Septic tanks shall be cleaned at least twice a year; 2. Biogas generated by septic tanks shall be diverted via pipes to nearby forest to eliminate impacts of odor; 3. Environmentally-friendly toilets do not discharge sewage and feces shall be collected and transported to municipal domestic waste landfill for disposal; 4. During transportation, feces shall not pollute water bodies and construction sites. Feces shall not be accidentally sprayed on grounds around feces loading spots.	30	Scenic area administrative committees	County EPBs, township sanitation administration offices, industrial and commercial administration bureaus

Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implemengter	Supervisor
	Domestic waste	Domestic waste shall be collected at garbage collection spots, transported to garbage transfer stations and finanly to municipal garbage landfills for processing; arrange designated staff to clean garbage collections spots and transfer stations, spray disinfectants and transport the garbage to landfills; catridges and used batteries that could be included in office garbage shall be mixed with domestic waste and shall be collected separately to avoid pollution of heavy metals to soil and groundwater.	50	Scenic area administration committees	County EPBs, township sanitation administration offices, health bureaus, sanitation departments, industrial and commercial administration bureaus
Arterial roads, rural roads, community roads and bridges	Surface water pollution due to road surface runoff	1. Strengthen maintenance and management of side ditches, road embankments and protection slopes to ensure unblocked drainage of water; 2. Arrange designated staff to clean road surface and bridge roads; 3. Rationally plan for flow directions of road surface runoff and strictly ban the runoff to be discharged directly into sensitive water bodies such as drinking water source sites, fish ponds and aquaculture areas.	100 (cost for drainage design is included in total project investment)	County transportation bureaus, township transportation administration stations, scenic area administration committees	County EPBs, township sanitation administration offices, water bureaus, transportation bureaus
	Vehicle exhaustand road dust	1. Increase greening along both sides of roads to increase exhaust absorption and reduce spread of dust and exhaust; 2. Arrange designated staff to clean road surface and bridge roads and spray water to control dust.	80	County transportation bureaus, township transportation administration stations	County EPBs, township sanitation administration offices, water bureaus, transportation bureaus
	Traffic noise pollution	1. Set up no-horn signs and green belts to reduce noise impacts; 2. Monitor sensitive spots on a periodic basis and take corresponding noise control measures according to monitoring results.	100	County transportation bureaus, township transportation administration stations	County EPBs, township sanitation administration offices, water bureaus, transportation bureaus
	Environmental impacts due to traffic accidents, transportation of dangerous goods and other environmental risks	1. Passage of dangerous goods transportation vehicles is forbidden; 2. Safety awareness and ethics education of drivers shall be strengthened to reduce incidence of traffic accidents; 3. Consecutive crash bearers shall be set up on both sides of the bridge	80	County transportation bureaus, township transportation administration stations	County governments, County EPBs, township sanitation administration offices, water bureaus, transportation bureaus

Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implemengter	Supervisor
		road to prevent vehicles from falling into the river; 4. Speed limit signs, no-overtake signs and other warning signs shall be set up at easy-to-notice places on both sides of the bridge to remind drivers and passengers to pay attention to safety; 5. Relevant warning signs shall be set up at road sections with more and sharp curves to remind drivers to slow down at these sections; 6. The Law of People's Republic of China on Road Traffic Safety shall be strictly implemented and an emergency preparedness plan developed for road transportation. The plan shall include roles and responsibilities of commanding agencies, selection of emergency preparedness techniques and emergency processing steps, provision of equipment and appliances, assurance and dispatch of human and physical resources, and mechanisms for dynamic monitoring of accidents.			
Uncivil conducts of tourists	1. Trampling on and destroying vegetation, felling trees, collecting and digging fungus lead to reduced vegetation or even complete loss of vegetation; 2. Excessive hunting and eating rare animals result in reduced number of rare aninals and even extinction of these animals; 3. Randomly disposed waste which is not managed in a timely manner leads to vegetation, soil and air pollution.	1. Signs shall be set up at appropriate locations of major tour sites and trails to remind tourists not to tread on or destroy vegetation, fell tress, collect and dig fungus, hunt birds and other animals, and randomly dispose waste; 2. Scenic area introduction leaflets, tourist manuals, tour maps, entrance tickets and packs of some tour souvenirs shall include contents reminding tourists to protect eco-environment of scenic areas; 3. Tour guides shall include environmental protection regulations of scenic areas in their introductions to tourists.	90	Scenic area administration committees	County EPBs, township sanitation administration offices, industrial and commercial administration bureaus

Table 9.3-3 Mitigation Measures during Design and Construction for Special Ecologically Sensitive Areas

Sensitive Area	Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (RMB10,000)	Implementer	Supervisor
All ecologically sensitive areas	Constructionpreparation and organization	— —	1. Efforts shall be taken to conduct education campaigns for construction workers before construction initiation, strengthen protection of ecologically sensitive areas, and ban artificial destructions to trees, forest and grass, poaching and illegal hunting of wild animals and other activities destroying eco-environment; 2. Construction drawings shall be strictly followed during construction to avoid expansion of construction scope. Construction boundaries shall be clearly defined and workers are banned to enter non-construction areas. Construction processes and design of construction spots shall be optimized to minimize surface disturbances and destructions to vegetation; 3. Setup of borrow pits, spoil grounds, materialyards, mixing grounds and construction camps shall be banned in ecologically sensitive areas. Construction activities shall be carried out mainly by local construction workers and non-locals shall rent local houses. Construction accesses shall avoid crossing and occupation of consecutive forestland and existing roads or waste land shall be used as much as possible; 4. Construction designs of all facilities shall be coordinated with scenic area planning and surrounding environment to avoid changes or damages to the original historical and cultural styles and atmosphere of scenic areas.	45	Construction units, project owner	County EPBs, forestry bureaus, land resources bureaus, water bureaus
1. Nature Reserve (3 reserves)						
1. Gansu Giant Salamander Nature Reserve	Meiyuan River Scenic Area patrol plank road, Yinbazi-Xiaomomo Mountain firefighting access	Land occupation, changes in land use patterns, destructions to vegetation, soil erosion, impacts on animal habitats and activities and landscape	1. Warning signs shall be set up, banning construction workers and vehicles to enter into core area and buffer area of the reserve; 2. Tree felling, rock and sand excavation, waste dumping, wastewater discharging and other activities are banned in the reserve; 3. Original and adaptive tree species and grass seeds shall be selected for vegetation restoration after construction completion to prevent invasion of alien species; 4. Measures shall be taken to strengthenconstruction management, ensure proper handling of construction materials, spray water in construction areas to control dust, reduce generation of dust from construction activities and transportation, prevent impacts of dust from construction and transportation on growth of plants. Fencing walls shall be set up around the construction site to mitigate impacts of construction noise on wild animals and prevent construction materials and construction waste from entering into surface water sources;	45	Construction units, project owner	County EPBs, forestry bureaus
13. Gansu Taitong-Kongtong Mountain National Nature Reserve	Tourist trails and wastewater treatment station					

Sensitive Area	Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (RMB10,000)	Implementer	Supervisor
14. Gansu Taizi Mountain National Nature Reserve	Improvement of main roads and tourist trails, building new trails and laying power cables		5. During construction, administrative authorities shall designate staff to increase patrol activities and combat illegal activities such as poaching of animals and illegal felling of trees and collection of forest products; 6. Building styles shall follow local natural building styles with beautiful building shapes and coordinated colors being coordinated with surrounding environment; 7. Construction workers shall help drive wild animals entering into construction sites back to the reserve, and send injured wild animals to wild animal rescue station or report to the reserve's staff; 8. Construction noise shall be strictly controlled and high-noise equipment shall be banned to enter into the construction site. If such equipment must be used, sound barriers shall be set up around the site at places 50m away from the site and limit use of such equipment in non-breeding seasons of wild animals; 9. An 1m-high and 0.8m-wide access for small animals shall be set up every 500m on tourist trails to allow for passage of wild animals; 10. As giant salamanders live in caves at daytime and go out of caves at nighttime, construction at night shall be banned in the giant salamander nature reserve; 11. Construction activities in the Yangba River and Taiping River in the giant salamander nature reserve shall be carried out during the dry season and construction activities shall be banned in catchment areas of rivers. After sedimentation, construction wastewater shall be used for spaying to reduce dust and shall not be discharged to surface water bodies; construction waste and mineral building materials shall be transported to designated disposal sites away from riverways; 12. Given the musk deer is a coward and lonely animal which rests at daytime and goes out of its habitat in early morning and late afternoon, construction activities in the Xiangshan Mountain area shall be carried out before 7am and after 7pm.			
15. Geological Park (4 parks)						
1. Gansu Pingliang City Kongtong Mountain National Geological Park	Tourist trails, wastewater treatment staion	Land occupation, changes in land use patterns, destructions to vegetation, soil erosion, impacts on animal habitats and activities and landscape, geological disasters	1. Same as measures 2-9 for nature reserve; 2. Warning signs shall be erected and construction workers and vehicles shall be banned from entering into Category I protected areas of geological parks; 3. Activities destroying geological sites shall be banned in geological parks, such as blasting, high slope cutting and major excavation; 4. Inspection and maintenance of construction equipment shall be strengthened to reduce noise from equipment vibration of equipment and minize impacts of such noise on geological sites;	60	Construction units, project owner	County EPBs, land resources bureaus
6. Gansu Hezheng County Ancient Animal Fossil Natinoal Geological	Improvement of main roads and tourist trails, building new trails and laying power cables					

Sensitive Area	Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (RMB10,000)	Implementer	Supervisor
Park			5. Engineering measures (such as retaining walls and interception/drainage ditches) and botanical measures shall be taken to avoid geological disasters and soil erosion due to instability of man-made side slopes.			
7. Yunya Provincial Geological Park	All components of Zhuanglang County Subproject (see Table 2.2-3 for details)					
8. Gansu Tanchang County Guan'e Gully Geological Park	All components of Tanchang County Subproject (see Table 2.2-1 for details)					
9. Forest Park (2 parks)						
1. Yunya Temple National Forest Park	All components of Zhuanglang County Subproject (see Table 2.2-3 for details)	Land occupation, changes in land use patterns, destructions to vegetation, soil erosion, impacts on animal habitats and activities and landscape; increased fire risks due to increased construction machinery, electrical appliances and construction staff	1. Same as measures 2-9 for nature reserve; 2. Vehicles shall be banned from entering into Category I protected areas of wetland parks; 3. Use of fire in construction areas shall be banned, education on fire prevention shall be strengthened, systems for forest fire prevention and fire risk alarm and management shall be established and management of fire sources for construction activities and living of construction workers shall be strengthened; 4. Disturbances of construction activities to animal habitats shall be minimized and young or injured animals shall be handed over to professionals of forestry bureaus; 5. Warning signs about animal protection shall be erected in construction areas and designated staff shall be arranged to be responsible for supervision and administration of animal protection activities.	30	Construction units, project owner	County EPBs, forestry bureaus,
6. Gansu Guan'e Gully National Forest Park	New power cables, management of collapse sections of Leigu Mountain tourist trail, and management of landslide sections of road between Daheba Zhimahe and E'mantianchi					
7. Wetland Park (1 park)						

Sensitive Area	Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (RMB10,000)	Implementer	Supervisor
Meiyuan River Wetland Park	Meiyuan River Scenic Area patrol plank road	Impacts on water quality, habitats and activities of birds and amphibious animals	1. Solid waste dumping, wastewater discharge, fishing and bird catching are banned in and around protected areas of wetlands; diversion of water from or interception of water to wetlands is also banned; 2. Drainage ditches and sedimentation pools shall be built around construction sites, construction wastewater after sedimentation shall be used for spraying to control dust and rainwater from outside construction sites shall be diverted via drainage ditches; 3. Construction activities shall be conducted in dry seasons and fencing walls shall be set up around construction sites to prevent construction materials and construction waste from entering into water bodies. Construction waste and mineral building materials shall be transported to designated disposal sites away from riverways.	15	Construction units, project owner	County EPBs, forestry bureaus
4. Scenic Area (2 areas)						
1. Gansu Kongtong Moutain Scenic Area	Tourist trails, wastewater treatment staion	Land occupation, changes in land use patterns, destructions to vegetation, soil erosion, impacts on landscape and tourist activities	1. Same as measures 2-9 for nature reserve; 2. Construction activities in scenic areas shall be suspended during high seasons, especially on holidays; 3. Construction vehicles and tour vehicles shall be used at different time periods and construction; 4. Construction workers entering into core areas of scenic areas must have received professional training and shall be supervised by construction management staff and supervision staff.	30	Construction units, project owner	County EPBs, construction bureaus
5. Yunya Temple Provincial Scenic Area	All components of Zhuanglang County Subproject (see Table 2.2-3 for details)					
6. Drinking Water Source Protection Area (4 areas)						
1. Pingliang City Kongtong District Drinking Water Source Protection Area	No construction activities in the protection area and the nearest distance between construction site and the area is 250m	Pollution to drinking water sources	1. Same as measures 2-3 for wetland park; 2. Dupming waste and discharging wastewater are banned in surface water source protection areas. Construction sites shall be far away from surface water bodies and construction activities are banned in surface water catchment areas; 3. Use of seepage pits and wells to discharge wastewater and other hazardous waste is strictly banned and digging wells to exploit groundwater is also strictly banned in water source protection areas; 4. During pipeline excavation and backfill, oil and other chemical substances shall not be discarded or buried in the trenches to avoid pollution to groundwater.	60	Construction units, project owner	County EPBs, water bureaus
5. Zhuangla ng County Drinking Water Source Protection Area	Firefighting access, tourist trails, electric bicycle lanes					
6. Jingchuan County Yangliuwan Drinking Water Source Site	Water supply pipeline and toilets					

Sensitive Area	Activity	Potential Impacts	Mitigation/Control Measures	Estimated Cost (RMB10,000)	Implementer	Supervisor
7. Guan'e Gully Drinking Water Source Site	No construction activities in the water source site and the nearest distance between construction site and the water source site is 720m					
8. Ancient and Famous Trees						
Ancient and famous trees	Construction activities	Destructions anddamages to trees	1. Fences shall be set up around original sites of ancient and famous trees and construction vehicles and equipment shall keep a distance from these trees; 2. Scracthing, postering or hanging articles on these trees and breaking or climbing tree branches are prohibited; 3. Piling up goods and materials within 5m from the vertical shade of tree crown is prohibited and scaffolds shall maintain a distance from the tree. Using trees around the construction site as support or fixing aid is prohibited during construction.	15	Construction units, project owner	County EPBs, forestry bureaus

Table 9.3-4 Mitigation Measures during Operaiton for Special Ecologically Sensitive Areas

Sensitive Area	Potential Impacts	Mitigation/Control Measures	Estimated Cost (RMB10,000)	Implementer	Supervisor
1. Nature Reserve (3 reserves)					
1) Gansu Kang County Giant Salamander Nature Reserve; 2) Gansu Taitong-Kongtong Mountain National Nature Reserve; 3) Gansu Taizi Mountain National Nature Reserve	1. Passing of vehicles: increased exhaust and dust, which would impact vegetation growth; 2. Increased tourist activities: (1) impacts on bird habitats and forcing some birds to migrate to places far away from the crowd; (2) impacts on and destructions to habitats of beasts and reducing richness and diversity of their species; (3) noise from too many tourists and noise and vibration from vehicles during high seasons, destroying and disturbing the natural and synergized sound of pine trees, beasts, birds and worms; widths of tourist trails cannot meet the needs of tourists during over-capacity periods with large groups of tourists trampling grounds on both sides of trails, leading to hardened soil and affecting soil structure and fertility, reducing water penetration of soil, and restricting growth of organism in soil.	1. Trees and vegetation shall be planted on both sides of roads to control spread of dust and more automatic air monitoring stations shall be set up in scenic areas to strength route air monitoring; 2. Use of high-frequency loudspeakers to attract tourists is banned in scenic areas; 3. Signs shall be set up at appropriate locations of major tour sites and trails to remind tourists not to shout out, or destroy habitats of birds, beasts and other wild animals, or tread on vegetation; 4. During high seasons, the number of tourists shall be controlled through controlling the number of tickets sold; 5. During high seasons, tourists shall be guided to take garbage out of scenic areas, when convenient. Garbage that cannot be taken out shall be disposed of properly in accordance with relevant regulations and rules of scenic areas; 6. The number of tour routes and the scope of tourist activities shall be controlled during preparation; unauthorized opening of new routes and damaging and trampling of vegetation shall be strictly banned. Management of tour vehicles shall be strengthened to avoid pollution of exhaust on sensitive plants and avoid frightening to animals and provide them with a peaceful living environment; 7. Technical staff shall be arranged to conduct periodic monitoring of growth status of trees, soil, fertility and pests so that relevant problems can be identified and addressed in a timely manner and a good living environment can be created for trees; 8. Protection facilities shall be built for rare plants close to tour routes, such as protective rails and warning signs to prevent tourists from collecting tree leaves and seeds, touching trees, inscribing on trees and trampling on vegetation.	45	Scenic area administrative committees	County EPBs, forestry bureaus
9. Geological Park (4 parks)					

1) Gansu Pingliang City Kongtong Mountain National Geological Park; 2) Gansu Hezheng Coumty Ancient Animal Fossil National Geological Park; 3) Yunya Provincial Geological Park; 4) Gansu Tanchang County Guan'e Gully Geological Park	1. Same as impacts 1-2 for nature reserve; 2. Impacts of vibration on geological sites.	1. Same as measures 1-8for nature reserve; 2. Speed shall be controlled and horning be banned for all vehicles entering into scenic areas to effectively reduce vibration and noise of these vehicles.	60	Scenic area administrative committees	County EPBs, land resources bureaus
3. **Forest Park (2 parks)**					
1) Yunya Temple National Forest Park; 2) Gansu Guan'e Gully National Forest Park	1. Same as impacts 1-2 for nature reserve; 2. Fire accidents due to arbitrary burning of incense or picnic by tourists, burning trees, killing animals in forest, driving away some small animals, leading to eco-environment deterioration or even destroying the entire forest area.	1. Same as measures 1-8 for nature reserve; 2. Smoking and use of fire are strictly banned in forest parks and education campaigns on fire prevention shall be strengthened.	30	Scenic area administrative committees	County EPBs, forestry bureaus,
3. **Wetland Park (1 park)**					
Meiyuan River Wetland Park	Frequent disturbances of tourist activities to habitats of birds and amphibious animals, forcing some birds and animals to migrate to places far away from the crowd.	1. Dumping of domestic waste and discharging of domestic sewage are banned in the protected areas and their adjacent areas of wetlands; 2. Use of vehicles transporting hazardous chemical articles is banned on roads within scenic areas; 3. Garbage cleaning and floating substances removing systems shall be established and improved to ensure timely collection and removal of garbage dumped by tourists.	15	Scenic area administrative committees	County EPBs, forestry bureaus
4. **Scenic Area (2 areas)**					
1) Gansu Kongtong Mountain Scenic Area; 2) Yunya Temple Provincial Scenic Area	New buildings/structures do not coordinate with landscape in scenic areas, change or destroy original historical and cultural styles and atmosphere of scenic areas.	Landscape resources and trash cans consistent with themes of scenic areas (such as those imitating bamboo and wood along both sides of forest paths) shall be arranged or placed in intervals at major tourist activity grounds in scenic areas.	30	Scenic area administrative committees	County EPBs, construction bureaus
5. Drinking Water Source Protection Area (4 areas)					

1) Kongtong Disrict ; 2) Zhuanglang County ; 3) Guan'e Gully ; 4) Jingchuan County	Pollution to drinking water sources	1. Sightseeing boats are banned in Category I & II protected areas of drinking water source sites; 2. Dumping domestic waste and discharging domestic sewage are banned in drinking water source protection areas; 3. Same as measures 2-3 for wetland park.	60	Scenic area administrative committees	County EPBs, water burueas
4. Ancient and Famous Trees					
Ancient and famous trees	Adverse impacts on growth of trees	1. Protection signs shall be set up for ancient and famous trees; 2. Files shall be kept and sign boards shall be erected for protecting ancient and famous trees. These files shall include a range of information, such as geographical information, growth status, water supply and fertilizer application, pest prevention and control, among others; 3. Tourists shall be prohibited to scracth, poster or hang articles on these trees, break or climb tree branches, collect fruits and seeds or pull of tree bark; 4. Safety protection fences shall be set up for ancient and famous trees without such fences and protection shall be upgraded for existing rare tree species in the scenic areas.	15	Scenic area administrative committees	County EPBs, foresty bureaus

Table 9.3-5 Mitigation Measures during Design, Construction and Operation of Wastewater Treatment Facilities

Stage	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implementer	Supervisor
Design	Land acquisition/ occupation, wet operation and impacts on surrounding sensitive spots	Site selection: 1. Occupation of new land shall be minimized and use of original maximized; to the largest possible extent, land occupation shall avoid basic farmland, fertile land, forestland and nature reserves, scenic areas, forest parks, drinking water source protection areas, protected cultural relics sites, historical or cultural heritage sites, villages, schools and other sensitive areas. Use of original land shall be maximized. For example, roads under the Project would be paved based on the original roads and no additional land would be occupied; 2. Attention shall be paid to integrated management of mountainous areas, water bodies, farmland, forestland and roads to minimize occupation of cultivated land; 3. Route selection shall be combined with countryside planning to minimize house demolition and reduce project cost and social instability factors. 4. Integrated wastewater treatment equipment and Hezheng County Wastewater Treatment Plant shall be placed at low-lying land to reduce earth-rock excavation; the number of lifting stations shall be minimized; and the low-lying land shall not be prone to inundation in rainy seasons; 5. Integrated wastewater treatment equipment and Hezheng County Wastewater Treatment Plant shall be set up and at sites at downwind or side-wind direction of dominant summer wind direction while keep sanitary protection distance from sensitive targets; 6. Site selection of Hezheng County Wastewater Treatment Plant shall consider sludge transportation and disposal and the selected site shall be close to a road or a river. Considerations shall be given to near- and long-term needs and possibility of expansion. Water and power supply facilities shall be ensured; 7. Selected sites of integrated wastewater treatment equipment shall not have adverse impacts on geological sites and landscape; 8. The site of Hezheng County Wastewater Treatment Plant shall be close to a water body and at downstream of drinking water source protection area. Occupation of farmland and forestland by the plant shall be minimized and the selected site shall have better geological conditions.	Already included in design cost	Provincial and county development and reform commissions, project townships and villages, design institutes	housing and rural-urban development bureaus, land resources bureaus, forestry bureaus, water bureaus, EPBs
Construction	Environmental impacts	Environmental protection measures in Table 8.3-1 would be implemented.	/	/	/

Stage	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implementer	Supervisor
Operation	Odor	1. Management of integrated wastewater treatment equipment shall be strengthened. In case of strong odor around the equipment, the equipment shall be checked and repaired; 2. Safety management. After works are completed and put into operation, workers shall be trained on addressing accidents; all monitoring instruments shall be maintained periodically to ensure their normal operation and enable them to monitor and contol odor; 3. Land use plan. Based on the defined health protection distance, planning authorities shall conduct replanning of land within the scope, clearly ban building of residential buildings, schools, health facilities and other sensitive facilities within the scope; 4. Expand greening area. As wastewater treatment plant would inevitably generate odor, plant area greening design shall be completed in parallel with construction drawings. Flowers, grass and trees shall be planted extensively in the plant area to cover all open ground. Shrubs and pine trees can be planted on both sides of roads within the plant while high and big trees such as poplar and Chinese scholar trees can be planted at plant boundaries to reduce odor impacts.	5	Wastewater treatment stations	County EPBs, water bureaus
	Tail water, domestic sewage of staff and wastewater from sludge washing	1. Measures shall be taken to strengthen management of project implementation and operation, ensure that wastewater treatment facilities and efficiency reach the design standards and requirements and ensure long-term and reliable operation of these facilities. Tail water shall be discharged after up-to-standard treatment; 2. Environmental management rules and systems shall be established and improved and on-the-job training programs shall be implemented for all staff; 3. All equipment shall be adequately maintained and abnormalities be reduced and removed in a timely manner to avoid above-standard discharge and prevent accident risks; 4. Wastewater outlets of Hezheng County Wastewater Treatment Plant shall be closely monitored with automatic volume measurement devices and automatic sampling devices at end outlets. Online monitoring devices shall be installed to monitor key water quality indicators such as pH, temperature and COD; 5. Monitoring of effluent of integrated equipment shall be strengthened. Sewage discharge must be suspended immediately if sewage fails to meet the standard and equipment be checked and repaired. during the repair, sewage shall be transported to local wastewater treatment plants.	15	Wastewater treatment stations	County EPBs, sanitation departments
	Sludge disposal, domestic waste of staff	1. Solid waste, especially sludge from Hezheng County Wastewater Treatment Plant cannot be arbitrarily disposed of and must be properly collected, stored and transported to sanitary landfills; 2. Integrated wastewater treatment stations shall be cleaned every 4 months and sludge be transported to the local sanitary landfill; 3. Sludge cannot be discharged to surface water bodies, valleys, gullies, karst caves, farmland and other non-designated solid	10	Wastewater treatment stations	County EPBs,sanitation departments

Stage	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implementer	Supervisor
		waste dumps; 4. Anti-seepage, anti-washing by rainwater and anti-odor measures shall be set up at temporary sludge storage sites within the plant to prevent erosion and secondary pollution; 5. Responsibilities shall be clearly defined for sludge management with management rules being developed and implemented. A monitoring department or full-time (or part-time) staff shall be designated to ensure proper disposal of sludge. Arbitrary dumping, piling and leaking of sludge is strictly prohibited; 6. Sludge treatment shall follow the principle of "reduction, stability and doing no harm"; sludge treatment facilities shall be planned, constructed and operated together with wastewater treatment facilities; 7. Wastewater treatment plants shall establish sludge management accounts to document the amounts of sludge generation, transfer and treatment/disposal, as well as their destinations; 8. Entities engaging in sludge transportation shall have relevant road transportation qualifications. No individuals or entities without relevant qualifications are allowed to engage in sludge transportation. During sludge transportation, anti-seepage, water-proof and sealing measures shall be taken; 9. Awaning shall be placed on the top of the sludge shelter within the plant and the ground must be hardened. Weirs, drainage ditches and collection wells shall be built around the shelter and wastewater discharged from sludge piling and storage shall be conveyed to the wastewater treatment system for treatment; 10. Sludge shall be transported by pipeline or closed vehicles; 11. To reduce sludge amount, priority shall be given to selecting sludge dewatering equipment to reduce water in the sludge to below 60%.			
	Equipment noise	1. Low-noise equipment shall be selected for wastewater and sludge pump houses, bollower and dewatering machine rooms and other workshops with lounder noise; 2. Soundproofing materials shall be used for walls, doors and windows of equipment rooms/houses to reduce impacts of noise on human health; 3. The "sound distance" theory shall be used to reduce noise impacts, i.e. maximizing the distance between sound sources and structures to provide a good working environment for wastewater treatment plant workers; 4. Vegetation and trees such as big and high arbor trees and shrubs shall be planted to reduce noise.	10	Wastewater treatment stations	EPBs
	Ecological impacts	1. Arbor trees, shrubs and grass shall be planted in appropriate proportions in the plant area. Local species shall be used to the largest possible extent and alien species shall be reduced; 2. Staff shall be designated to be responsible for greening and management while relevant rules and systems shall be	15 (included in infrastructure cost)	Wastewater treatment stations	Forestry bureaus, EPBs

Stage	Potential Impacts	Mitigation/Control Measures	Estimated Cost (10,000 Yuan)	Implementer	Supervisor
		developed to protect green land and ecological environment; 3. Wastewater pipelines within urban areas shall be recovered with soil and hardened and those in the open land shall be restored with vegetation. Key areas shall be fenced with iron wire nets and properly managed to prevent animals or people from entering; 4. Inspection and management of wastewater pipelines shall be strengthened to identify and address leakages in a timely manner and avoid potential pollution of leakages to groundwater.			
	Risks	1. Backup equipment shall be provide and emergency preparedness plan shall be developed to address potential accidents; 2. Staff entering into anaerobic digesters shall pay attention to ventilation and before entering, poisonous gasses such as H_2S and NH_3 shall be detected to prevent harms of these gases to human health; 3. Staff walking on top of the digesters shall prevent from falling into the digesters.	5	Wastewater treatment stationsIm	Safety bureaus, EPBs

9.4 Physical Cultural Resources Manangement Plan

Three subprojects under the Project would involve cultural relics and ancient buildings, namely, Kongtong Mountain Subproject, Jingchuan County Subproject and Zhuanglang County Subproject; Jingchuan County's Wanyan Folk Customs Village, Tanchang County's Luren Village and Xinping Village would involve ancient villages and traditional houses. This Physical cultural resources (PCR) Management Plan is developed to ensure increased eco-environmental benefits during project implementation, minimize or eliminate potential adverse impacts of project implementation on natural environment, and ensure all expected ecological and environmental targets of the Project are achieved.

This PCR plan is developed for managing impacts of the project activities on physical cultural resources, complementing to theso-called PCR Conservation plans which would be developedseparately for the repair, conservation and maitainance of these physical cultural resources. Agencies with qualification in cultural relics protection would be engaged to develop these detailed PCR conservation plans for different categories of protected cultural relics before the initiation of construction activities. These plans would be implemented only after they are assessed and cleared by cultural relics specialists and approved by corresponding cultural relics authorities.Construction activities shall be carried out by construction units having received qualification certificates issued by cultural relics authorities and construction authorities.

9.4.1 Main Regulations and Specifications

In developing this plan, adequate considerations have been given to lessons learned from the World Bank financed Gansu Cultural and Natural Heritage Protection and Development Project and the requirements of the following legal documents have been drawn on:

1. World Bank Operational Policy on Physical Cultural Resources (OP4.11);
2. Cultural Relics Protection Law of the People's Republic of China (2013);
3. Regulations for Implementing Cultural Relics Protection Law of the People's Republic of China (2015);
4. Administrative Procedures for Cultural Relics Proteciton Projects (2003);
5. Criteria of China for the Protection of Cultural Relics and Ancient Sites (2015);
6. Administrative Procedures for the Conservation and Restoration of Monuments, Ancient Buildings and Stone Cave Temples (2003);
7. Guidelines on the Design of Fire Prevention Facilities for Cultural Relics and Buildings (Trial);

8. Gansu Provincial Regulations on the Protection of Cultural Relics (Amended in 2010);
9. Opinion of Gansu Provincial Government on StrengtheningImplementation of Activities Protecting Non-physical Cultural Heritage (Document 99, 2012).

9.4.2 Protection Measures for Cultural Resources

The Project would protect and repair cultural relics under Kongtong Mountain and Jingchuan County subprojects; improve infrastructure at Wanyan folk culture village in Jingchuan County and reinforce and repair "wood board roofed" houses at Luren and Xinping villages in Tanchang County. Specific protection measures are listed below.

1. Design and preparation

Repair plans and engineering designs for all involved cultural relics need to be approved by their respective corresponding level of cultural relics administration while the design and construction of works shall be carried out by qualified entities with certificates on cultural relic protection issued by corresponding level of cultural relics administration and construction certificates issued by corresponding level of construction administration.

2. Protection of cliffs where stone caves are located

To prevent and reduce harm of wind erosion on cliffs where stone caves are located, seepage proof drainage facilities shall be built on the cliff top, change the flow direction and location of surface water and cut off links between links between surface water and stone caves; identify trends and scope of cracks and prevent seepage of surface water into stone caves along the cracks; adopt surface drainage technique in front of stone caves and lower groundwater table; remove moisture inside stone caves, prevent abrupt changes in dry and wet conditions and prevent erosion to cultural relics. In addition, stone cave eaves can be built to avoid direct erosion of sunlight, rainwater, wind and sand on cultural relics.

Collapse sections close to cliffs and trees growing on these sections shall be removed and removed earth shall be piled up at stable spots behind the cliffs. After removal, cracks on the top shall be enclosed through injecting filling materials.

Cracks of stone cave temples shall be reinforced with rivets or filling materials and seeping and leaking water shall be diverted and intercepted. Wind eroded surfaces of stone cultural relics such as stone sculptures and stone inscriptions shall be protected with organic siliconpolymer materials.

(3) Drainage

Drainage ditches need to be built to divert rainwater and avoid erosion of stone caves and cliffs where they are located, hence protecting these caves and cliffs. Locations of these ditches shall be at certain distance from cultural relics so as not to affect their foundations. Pursuant to the Cultural Relics Protection Law of the People's Republic of China, Gansu Provincial Regulations on Cultural Relics Protection and other relevant laws and regulations while taking into account realities of cultural relics protection sites, the distance between a drainage ditch and a piece of cultural relics shall not be shorter than 10m.The alignment, slope and section of a drainage ditch should be designed in line with topographic maps to prevent rainwater catchment from immersing or softening original foundation soil. Materials and construction practices used for building a drainage ditch shall be consistent with the surrounding environment. Proper devices shall be provided against blocking. In addition, protective devices shall also be provided.

(4) Fire prevention, power use and safety measures

Following fire prevention measures in Guidelines for Fire Prevention Design of Cultural Relic Building (Trial), protected area and control area for fire prevention shall be demarcated and fire extinguishers shall be provided. Power use in cultural relic buildings shall be strictly managed; short circuit and overload protection facilities shall be installed for power distribution lines and electrical fire monitoring system shall be set up; N line and PE line of power lines entering into cultural relic buildings shall be clearly separated; cold-light source shall be used for lighting; and switches shall be enclosed.

(5) Protection measures for accidentally found cultural relics

It is prohibited to move or collect historical and cultural relics that are found during construction without approval. The site shall be protected to prevent them from losing, and construction activities shall be suspended. Relevant information shall be immediately reported to local cultural relics protection authorities.

(6) Foundation reinforcement

Given aging and not repaired cultural relics are relatively fragile, impacts of vibration on them are much greater than ordinary modern buildings, it is necessary to reinforce their respective foundation.

1. In cultural relics protection areas, environmentally-friendly hole-formation equipment and filling compactors with low noise and vibration shall be used;
2. Hole-formation compaction shall be conducted in batches at an interval. Formed holes shall be compacted promptly to prevent collapse and shrinkage;
3. Integrated planning shall be conducted for discarded dreg and soil during construction and regulations and rules of local environmental protection authorities shall be followed;
4. Appropriate sites shall be planned in advance for discharging and disposing of construction waste, machinery oil stain, domestic sewage and garbage. Polluting local water source and environment is strictly prohibited.

(7) Maintenance and reinforcement of cultural relics

Pursuant to the Criteria of China for Historical and Cultural Relics Protection and Technical Specifications for Wood Structure Maintenance and Reinforcement of Ancient Buildings, for repair and reinforcement of ancient buildings, proper protection technologies shall be adopted, disasters shall be prevented and reduced, and intervention of historical and cultural relics shall be minimized to maintain their authenticity and integrity. Based on the structure reliability test results, every damaged part that has been confirmed in need of treatment shall be properly treated in the order of priority according to different requirements. In case of deterioration or if structural safety is greatly affected, top support or reinforcement shall be provided promptly. For wood structure maintenance and reinforcement, comprehensive consideration shall be given to the following requirements:

1. On-site checking shall be conducted according to the geological survey report for buildings. The characteristics to be maintained during repair shall be specified;
2. An elaborate repair plan shall be worked out according to the damage condition and complete set of surveying and mapping drawings prepared during the geological survey. In addition, specified application for official approval shall be submitted according to the building's cultural relic protection category;

3. Replacement of original structuralcomponentsshall be cautious. Whenever repair and reinforcement are possible, great efforts shall be made to retain original components. When imitating structural components are used, the intensity of motar body shall not be less than MU10 and the intensity of motar shall not be lower than M10; when traditional repair techniques are used, the replacement date (dd, mm, yy) shall be marked in a covert place;

4. Original articles and components that are replaced during repair shall not be disposed of without permission. Instead, they shall be handled by cultural relics authorities in a unified manner;

5. Construction records shall be kept and detailed surveying and mapping shall be conducted for covert structures. Complete sets of technical documents on repair and reinforcement shall be filed for future reference;

6. During repair operations, impacts of vibration on cultural relics shall be mitigated and construction noise and dust shall be controlled.

(8) Setup of signboards and instruction plates

1. Signs must include the category, name, publishing entity and date, and sign erection entity and date of the cultural relic protection site. The sign erection authorities could be people's governments of provinces, autonomous regions or municipalities directly under the Central Government;

2. Signs could be in the form of horizontal tablet with writing from left to right. Signboards must be in a proportion of 3 (horizontal):2 (vertical). Signboard sizes range from 60×40cm to 150×100cm. All characters must be Imitation Song style except that the name of cultural relic protection site could be Imitation Song style, regular script or official script;

3. Stone for protection signs shall be sturdy and durable, in serious, plain, distinct and harmonious color;

4. Description of national cultural relic sites of importance could be in the back of signboards. Separate description boards are allowable. The descriptive text includes name, times, nature, contents, value and protection range of cultural relic protection units. Its contents shall be reviewed by the cultural relic administration departments of provinces, autonomous regions and municipalities directly under the Central Government;

5. Signboards shall be complete in function and appearance, and clear and vivid in text and pattern;

6. Material, appearance and style of signboards shall be in harmony with cultural relic type and features as well as surrounding environment and landscape.

1. Maximum tourist carrying capacity

With their increasing living standards, people have higher demand for cultural and tourism activities. During the peak season, tourists to the scenic areas would surge. To maintain the balance between the reception capacity of scenic areas and the number of tourists so that these scenic areas can serve more tourists and pursuant to relevant requirements in the Code for Scenic Area Planning, tourist capacity of a scenic area is calculated based on its area and the number of tourists to a scenic area shall be controlled based on 1 person/500m^2. The maximum tourist capacitycalculated based on the area of each of the six scenic areas under the project is provided in Table 8.4-1. When the number of tourists reaches the maximum capacity of a scenic area, it is suggested that the Project manage and control the number of tourists through a number of approaches, such as appointment, peak shifting and two-way monocirculation.

Table 9.4-1 Maximum Tourist Capacity of Scenic Areas under the Project

No.	Scenic Area	Prediction (People/day)	Effective Tour Area (m2)	Daily Maximum (Peole)	Annual Maximum (10,000 people)
1	Hezheng County Songming Rock Scenic Area	3595	2160000	4320	95.04
2	Jingchuan County Luohandong-Hanjia Gully Stone Caves Scenic Area	243	149000	298	6.56
3	Kongtong Mountain Scenic Area	24005	13850000	27700	609.40
4	Tanchang County Guan'e Gully Scenic Area	4714	2870000	5740	126.28
5	Kang County Yangba Scenic Area	5982	3650000	7300	160.60
6	Zhuanglang County Yunya Temple Scenic Area	4516	2820000	5640	124.08

Tables 8.4-1 and 5.8-1 provide the predicted numbers of tourists (based on the feasibility study) for 2030. The daily maximum tourist capacity and the annual maximum capacity in Table 8.4-1 are worked out to protect physical cultural resources and natural resources. The

maximum carrying capacity for tourists for each scenic area is estimated in accordance with relevant codes and the total area of the scenic area. These maximum numbers facilitate scenic areas to limit, manage and control the number of tourists.

2. Measures preventing human destructions

To minimize man-made destruction to stone caves and frescoes, in front of the cliffs in the stone cave areas, simple railings should be provided and warning signboards of cultural relic protection should be installed in conspicuous places, so as to prevent tourists from scratching, scrawling or carving them. Cultural relic education should be given for shamans living in stone caves, so that they can realize the cultural relic importance and behave well and would not damage cultural relics. In addition, safety facilities should be provided.

3. Other measures

Main impacts of construction activities on nearby protected cultural relics would be from domestic sewage and wastewater from production, construction dust, smell of paint, some waste gases from construction machinery, noise and vibration and solid waste. To address the above impacts, the following measures would be taken. Specific measures are provided in Table 9.3-1.

9.4.3Acceptance and Post Evaluation

The project organizations in charge shall take the above measures to protect and repair different cultural relic protection sites. Cultural relic protection departments shall promptly organize relevant personnel to accept cultural relic protection units, and assess their repair quality and effect. Those meeting relevant requirement can pass acceptance. Those failing to meet relevant requirements shall be ordered to conduct repair again. And then they shall be subject to acceptance again until passing the acceptance. Upon the acceptance, the acceptance data and documents shall be collected and filed for future reference.

9.5 Social Impact Management Plan

To minimize negative impacts of World Bank Financed Second Gansu Cultural and Natural Heritage Protection and Development Project and ensure equal benefits for main stakeholders, corresponding actions and suggestions are proposed for special social risks facing the project. The following measures are to be taken:

9.5.1 Strengthening Targeted Management

(1) Establishment of the Provincial PMO. It is suggested to establish a provincial level project management agency, i.e. theForeign Loan Financed Projects Execution Office ofGansu Provincial Development and Reform Commission, which will be responsible for organizing, coordinating, guiding and supervising the project related activities. Specifically,the office would have the following roles and responsibilities: provision of operational guidance, staff training, project supervisionto project management organizations at city (prefecture) and county levels during project preparation and early project implementation; timely coordination with central ministries and the World Bank in preparing annual procurement plans, project progress reports and monitoring reports. TheProject involves three cities/prefectures (Pingliang city, Longnan cityand Linxia Hui Autonomous Prefecture), whose development and reform bureaus would set up their respective project coordination office to be responsible for communicating with and reporting to higher-level administrations and for providing operational guidance to lower-level authorities. The Project includes 6 counties/districts, namely, KongtongDistrict,Zhuanglang County, Jingchuan County, TanchangCounty, Kang Countyand Hezheng County, which have established their respective project management office (PMO). These local PMOs would carry out relevant activities under the guidance of the Foreign Loan Financed Project Projects Execution Office and would be responsible project implementation. Their major tasks include preparing annual procurement plans, organizing tendering for civil works and preparing monitoring reports and submitting them to higher-level authorities and the World Bank, organizing community training, submitting implementationprogress reports in time, and taking overall responsibilities for project construction and contract management.
(2) Establishment of implementation agencies. The subproject owner would be responsible for the designing and construction of works under the subproject, consolidating subproject reports, producing reimbursement applications and carrying out financial management and for maintenance of facilities and other specific activities after subproject completion, or for handing over the subproject to the operation and maintenance unit. TheForeign Loan Financed Projects Execution Office is a provincial level implementation agency while Kongtong District PMO, Jingchuan County PMO and Zhuanglang County PMO of Pingliang City, Tanchang County PMO and Kang County PMO of Longnan City, and Hezheng County PMO of Linxia Prefecture are county level implementation agencies.

(3) Establishment of supervision agencies. These agencies would be responsible for exercising supervision in compliancewith relevant national and local procedures and regulations. Internal monitoring groups would comprise social media organizations and community organizations.

9.5.2 Development of Project Implementation Plan

The proposed project would have construction sites scattering in different areas and would involve a range of works and large amount of funding. During project implementation, balanced considerations would be given to arranging different types of construction

activities, whose implementation areas and initiation dates would be rationally defined based on preparation status and the overall requirements for heritage protection and development and taking account of implementation conditions and nature of works. The Project would last for six years from January 2016 when project preparation was initiated to end 2022 when the Project would be completed.

9.5.3 Implementation of Community Development Activities

(1)Incubation of Community Organizations

The community organization is an important carrier in achieving community participation. Therefore,establishing community organizations can create a platform for community participation. The SA team recommends that the six scenic areas incubate 31 community organizations, 12 of which would be given priority in incubation and be registered with relevant government departments.

(2) Implementation of Community Capacity Building

Concrete capacity building was designed for each subproject area based on community needs assessment. Capacity building wouldddirectly 22,220 people and indirectly benefit 111,100people in the project areas.

(3) Implementation of Community Development Projects

It is recommended to implement community development projects of community characteristics by focusing on the World Bank's twingoals of "reducing extreme poverty and promoting shared prosperity".The budget for community development projects in the 6 scenic areas amounts to RMB12,449,600, of which the budget for community development amounts to RMB9,549,600, that for monitoring and evaluation is RMB 1,800,000, that for monitoring and evaluation is RMB300,000, and that for community co-management research and demonstration is RMB 800,000.

(4) Development and implementation of Ethnic Minority Development Plan (EMDP)

People benefiting from Tanchang County Subproject and Hezheng County Subproject include ethnic minorities, namely, Qiang and Tibetan ethnic groups of Tanchang Guan'e Gully Scenic Area and Dongxiang and Hui ethnic groups of Hezheng County Songming Rock Scenic Area. The preparation of the action plan for minority development aims to promote ethnic minorities to participate in the project preparation and implementation, ensure they can benefit from the project, relieve their poverty to a maximum degree and minimize negative impacts of the project. The action plan would describe population and social and cultural characteristics of ethnicminorities in the project areas, their demand, impacts of the project on them, measures for ensuring their equal benefits and reducing adverse impacts, and action plan proposed for mitigating negative impacts. To this end, the SA team has prepared

the Report on Tanchang County Tibetan Ethnic Group Development Plan and the Report on Hezheng County Dongxiang Ethnic Group Development Plan.

9.5.4Carrying out Relevant Thematic Studies

Given potential risks and protection and development challenges facing six scenic areas, thematic studies would be designed to provide decision-making recommendations and theoretical support for sustainable protection and development. Proposed studies include: study and pilot of community participation mechanisms and community co-management mechanisms (estimated cost: RMB800,000).

9.5.5Implementation of Monitoring and Evaluation

it is suggested that the PPMO employ an independent community development agency(ies) or a senior specialist(s) to carry out periodic monitoring and evaluation of implementation status of community development activities to identify issues/problems and potential risks during implementation and monitor whether attention has been paid to the development of the poor, women, children and ethnic minorities during implementation of these activities.

9.6 Environmental and Social Training Program

Environmental and social training aims to provide training of environmental and social management knowledge and skills to project management staff at various levels and communities and tourists in the project areas so that they can fully understand positive and negative environmental impacts of project implementation as well as measures and requirements in the EMP, enhance their environmental protection awareness, improve their management techniques and skills, and effectively implement environmental protection measures, thereby minimizing negative environmental impacts.

Environmental and social training would be targeted at three levels of participants, namely, project management staff at different levels (provincial, city, county and township levels), technical staff (including contractors' construction teams, supervision engineers and operators), community residents and tourists.

Environmental and social training would be concentrated at project initiation and combined with other activities. The purpose of the training is to enable all participants to be fully aware of their respective responsibilities in implementing environment-related activities and better understand the reasons for implementing environmental monitoring plan.

Environmental and social training aiming to enhance environmental awareness needs to include PMO staff and participating communities, enable them to better understand the relationship between

Environmental impacts and their conducts, especially understand how environmental impacts can be mitigated during project operation and how environmental monitoring plan and project implementation would have positive impacts on their production and livelihoods. A proposed training program is provided in Table 9.6-1.

Table 9.6-1 Training Program for Environmental and social Staff

Participants	Contents	Number of People	Duration (Day)	Cost (10,000 Yuan)
City and county project management staff, scenic area managers and technicians	Understanding and application of environmental protection laws, regulations, standards and codes of practice of the World Bank and Chinese Government applicable to the Project. Social development regulations, World Bank social policies, social instruments of EMDP and RPF of the project.	10 people from each subproject , total 60	10	30
	Scenic area administration cases, cultural relics protection and development, ancient building conservation and reconstruction techniques from renowned domestic scenic areas			
	ESMP and its mitigation measures, including environmental codes of practice, social management plan, and organization, implementation and supervision of environmental and social management for the Project			
	Environmental and social monitoring plan and its implementation, including setup of monitoring points,selection of monitoring factors and definition of monitoring frequency.			
	Environmental management and monitoring mechanisms, supervision arrangements and preparation of environmental monitoring reports			
Management and technical staff from townships and communities (including natural villages)	ESMP requirements and measures, including for construction and operation stages.	3 people from each village, total 81	6	20
	ESMP and its implementation, including setup of monitoring points, selection of monitoring factors and definition of monitoring frequency.			
	Environmental and social management and monitoring mechanisms, supervision arrangements and preparation of			

Participants	Contents	Number of People	Duration (Day)	Cost (10,000 Yuan)
	environmental monitoring reports			
Contractors and their construction site environmental management staff and group leaders	Mitigation measures in the ESMP during construction; in combination with on-the-job training on environment al protection and safety.	2 people from each construction section	2-3	30
	China's relevant codes of environmental practice and requirements for construction activities	2 people from each construction section	2-3	
	Cultural relics protection and development, ancient building conservation and reconstruction techniques, and issues for attention to accidentally found cultural heritage during construction	2 people from each construction section	2-3	
	Simple noise and dust monitoring methods and noise control measures (self monitoring) during construction	2 people from each construction section	2-3	
	Procedures and issues for attention for addressing pollution accidents	2 people from each construction section	2-3	
Supervision engineers	Relevant measures and requirements in the EMP; environmental protection laws and regulations relating to construction, construction planning and detailed supervision rules.	1-2 people from each construction section	2-3	20
	Ambient air and noise monitoring and control techniques	2 people from each construction section	2-3	
Client/operation entities and their environmental management staff	All of the above, ESMP and operation and maintenance of environmental protection facilities.	200 (estimated)	2-3	20
General public in scenic areas (lectures, distribution of leaflets and other approaches)	Importance of heritage protection and its relations with individuals	18,000 (estimated)	5-6 times	60
	1. Methods for correct use of sanitary facilties (such as waste collection, discharge of sewage to pipeline and			

Participants	Contents	Number of People	Duration (Day)	Cost (10,000 Yuan)
	use and cleaning of toilets); 2. Basic knowledge about cultural relics protection and fire prevention; 3. Methods for effective participation in scenic area protection and tourism development			
	Basic knowledge about heritage and environmental protection			
Education for tourists	Education on environmental and cultural relics protection in scenic areas	24,000	200	60
Total		/	/	240

9.7 Environmental Monitoring Plan

Environmental monitoring aims to fully and timely track pollution developments of the proposed project, learn about implementation and actual effectiveness of environmental management measures of the project, feed relevant information back to relevant authorities and provide a sound basis for the project's environmental management.

Environmental monitoring during project construction and operation would be conducted by qualified entities engaged by implementation agencies in the project cities and counties. These entities should have national certificates in environmental, cultural relics, ecological, soil erosion monitoring, a complete set of monitoring equipment and strong monitoring expertise, and complete monitoring tasks in a satisfactory manner.

Sensitive spots with potentially substantial pollution would be listed as monitoring points to track and monitor pollution developments during construction and operation. Selected components of monitoring would be acoustic environment, atmospheric environment, surface water environment and ecological environment. Factors to be monitored would be defined according to pollution features of project activities. National standards as confirmed in environmental assessment for each of the subprojects would be applied for evaluation of environmental monitoring. Specific environmental monitoring plans are given in Table 8.7-1 and Table 8.7-2.

Impacts on physical cultural resources are normally estimated and supervised by supervision engineers specializing in cultural relics protection.

Table 9.7-1 Environmental Monitoring Plan during Construction

Subproject	Monitoring Item	Monitoring Factor	Monitoring Point	Monitoring Duration and Frequency	Estimated Cost (10,000 Yuan)	
					Unit Cost	Total
Kongtong Mountain Subproject	Acoustic environment	Leq(A)	Xigou Village, Xiangshan Taoist Temple	(1) Acoustic environment: self monitoring; in case of complaints, a qualified entity shall be engaged to conduct monitoring; (2) ambient air: in case of complaints, a qualified entity shall be engaged to conduct monitoring; (3) surface water: self monitoring; in case of complaints, a qualified entity shall be engaged to conduct monitoring; (4) ecological environment: self monitoring; investigations conducted when necessary	1.2	18.6
	Ambient air	TSP	Xigou Village, Jingle Palace		11	
	Surface water	pH, SS, petroleum	Nearby Wangmu Palace on northern bank of Tanzheng Lake, Xigou Village section of Yanzhi River		2.4	
	Ecological environment	Water and soil conservation, survival of animals and plants	Along construction site of tourist trails between Houzhigou and Xiangshan in Kongtong Mountain National Nature Reserve		4	
Jingchuan County Subproject	Acoustic environment	Leq(A)	Wanyan Village, Luohandong Village		1.2	17.4
	Ambient air	TSP	Wanyan Village, Luohandong Village		11	
	Surface water	pH, SS, petroleum	Luohandong Village section of Jing River		1.2	
	Ecological environment	Water and soil conservation, survival of animals and plants	50-km Stone Cave Corridor Scenic Area		4	
Zhuanglang County Subproject	Acoustic environment	Leq(A)	Shiqiao Village, Dianyan Firefighting Access		1.2	19.8
	Ambient air	TSP	Shiqiao Village, Dianyan Firefighting Access		11	
	Surface water	pH, SS, petroleum	Shiqiao Village section of Shuiluonan River, dam section of Zhulinsi Reservoir, Yunya Cave section of Yunya River		3.6	
	Ecological environment	Water and soil conservation, survival of animals and plants	Along construction site of Foyun firefighting access		4	
Tanchang County	Acoustic environment	Leq(A)	Guan'e Village, Xinping Village		1.2	18.6

Subproject	Monitoring Item	Monitoring Factor	Monitoring Point	Monitoring Duration and Frequency	Estimated Cost (10,000 Yuan)	
					Unit Cost	Total
Subproject	Ambient air	TSP	Guan'e Village, Xinping Village		11	
	Surface water	pH, SS, petroleum	Sections crossing Guan'e Gully and Daheba Gully		2.4	
	Ecological environment	Water and soil conservation, survival of animals and plants	Along construction site of power cables in Guan'e Gully National Forest Park		4	
Kang County Subproject	Acoustic environment	Leq(A)	Yangba Village, Laojiangba		1.2	17.4
	Ambient air	TSP	angba Village, Laojiangba		11	
	Surface water	pH, SS, petroleum	Section where Youfangba Village road crosses with the Yangba River		1.2	
	Ecological environment	Water and soil conservation, survival of animals and plants	Along construction site of Meiyuan River Scenic Area patrol plank road and construction site of firefighting access between Yinbazi and Xiaomomo Mountain in Gansu Chinese Giant Salamander Nature Reserve		4	
Hezheng County Subproject	Acoustic environment	Leq(A)	Diaotan Village, Songming Rock Scenic Area		1.2	18.6
	Ambient air	TSP	Diaotan Village, Songming Rock Scenic Area		11	
	Surface water	pH, SS, petroleum	Xiaoxia River, Nancha River (wastewater treatment plant outlet)		2.4	
	Ecological environment	Water and soil conservation, survival of animals and plants	Songming Rock Scenic Area		4	

Table 9.7-2 Environmental Monitoring Plan during Operation

Subproject	Monitoring Agency	Monitoring Item	Monitoring Factor	Monitoring Point	Monitoring Duration and Frequency	Estimated Unit Cost (Yuan/Time)
Kongtong Mountain	Pingliang City Environmenta	Ambient air	$PM_{10,}$ $PM_{2.5}$, $NO_{2,}$	Xigou Village, Jingle Palace	1. Acoustic environment:	

Subproject	Monitoring Agency	Monitoring Item	Monitoring Factor	Monitoring Point	Monitoring Duration and Frequency	Estimated Unit Cost (Yuan/Time)
Subproject	l Monitoring Station		SO_2		self monitoring; a qualified agency would be engaged to conduct monitoring in case of complaints; 2. Ambient air: a qualified agency would be engaged to conduct monitoring in case of complaints; 3. Surface water: a qualified agency would be engaged to conduct monitoring in case of complaints; 4. Ecological environment: self monitoring; investigations would be carried out when necessary.	11000
		Outlets of wastewater treatment facilities	pH, SS, COD, BOD_5 and NH_3-N	Reuse water tanks at Huangcheng, Zhongtai and Xiangshan treatment stations		1200
		Ecological environment	Water and soil conservation, survival of animals and plants	Kongtong Mountain National Nature Reserve		1000
Jingchuan County Subproject		Ambient air	$PM_{10,}$ $PM_{2.5}$, $NO_{2,}$ SO_2	Wanyan Village, Arhat Cave		11000
		Outlets of wastewater treatment facilities	pH, SS, COD, BOD_5 and NH_3-N	Reuse water tank		600
		Ecological environment	Water and soil conservation, survival of animals and plants	50-km Stone Cave Corridor Scenic Area		1000
Zhuanglang County Subproject		Ambient air	$PM_{10,}$ $PM_{2.5}$, $NO_{2,}$ SO_2	Shiqiao Village, Dianyan Firefighting Access		11000
		Outlets of wastewater treatment facilities	pH, SS, COD, BOD_5 and NH_3-N	Outlets at Shuiluonan River		1800
		Ecological environment	Water and soil conservation, survival of animals and plants	Yunya Temple National Forest Park		1000
Tanchang County Subproject	Longnan City Environmental Monitoring Station	Ambient air	$PM_{10,}$ $PM_{2.5}$, $NO_{2,}$ SO_2	Guan'e Village, Xinping Village		11000
		Connection with sewer	pH, SS, COD, BOD_5 and NH_3-N	Terminal of designed sewer		1200
		Ecological environment	Water and soil conservation, survival of animals and plants	Guan'e Gully National Forest Park		1000

Subproject	Monitoring Agency	Monitoring Item	Monitoring Factor	Monitoring Point	Monitoring Duration and Frequency	Estimated Unit Cost (Yuan/Time)
Kang County Subproject		Ambient air	$PM_{10,}$ $PM_{2.5}$, $NO_{2,}$ SO_2	Yangba Village, Laojiangba		11000
		Outlets of wastewater treatment facilities	pH, SS, COD, BOD_5 and NH_3-N	Reuse water tank		600
		Ecological environment	Water and soil conservation, survival of animals and plants	Gansu Chinese Giant Salamander Nature Reserve		1000
Hezheng County Subproject	Linxia Hui Autonomous Prefecture Environmental Monitoring Station	Ambient air	$PM_{10,}$ $PM_{2.5}$, $NO_{2,}$ SO_2	Diaotan Village, Songming Rock Scenic Area		11000
		Outlets of wastewater treatment facilities	pH, SS, COD, BOD_5 and NH_3-N	Reuse water tank		1200
		Ecological environment	Water and soil conservation, survival of animals and plants	Songming Rock Scenic Area		1000

9.8 Supervision andReporting Mechanisms

9.8.1 Purpose and Methods

Implementation period of the Phase II Project would be four years. Pursuant to China's relevant environmental management regulations for development projects and the World Bank's relevant operational policies, the Borrower (or the client at the subproject level) is responsible for preparing the Monitoring and Evaluation Report on Environmental Management Plan (EMP)Implementation (normally twice a year) with the purpose to ensure all approved requirements and measures in the EMP are implemented, identify, and analyze and review issues/problems in a timely manner so as to control adverse environmental impacts during follow-up activities.

Environmental management requires necessary information exchange within different departments of county (city) PMOs, clients, contractors and operators, and requires disclosure of relevant information to external stakeholders and the general public.

Internal information exchange can be conducted in a range of forms such as meetings and internal newsletters. A formal meeting must be held every month. All exchanged information shall be documented and archived.

External information exchange is conducted once every six or twelve months. Information exchange with collaborators shall be documented and archived.

9.8.2 Supervision and Reporting

During project implementation, the Provincial PMO, county (city) PMOs, clients and environmental supervision agencies shall document implementation progress, EMP implementation status and results of environmental quality monitoring and report them to relevant authorities in a timely manner. Specifically,

1. The supervision engineer is responsible for routine supervision over implementation of environmental protection measures, documents EMP implementation status in the daily supervision records and the monthly report and submits weekly and monthly reports to the client and local county (city) PMO in a timely manner. Weekly and monthly reports shall include implementation status of environmental protection measures;
2. Based on implementation status, the PMO organizes periodic patrol of the project, inspects and supervises over EMP implementation, addresses and documents issues/problems identified, and incorporates these issues/problems and their solutions into the six-month report;
3. The external monitoring agency is responsible for supervising over the implementation of mitigation measures during construction and operation and construction progress of environmental protection facilities, supervising over and coordinating the addressing of issues/problems identified to ensure smooth implementation of environmental protection measures, and assisting the PMO in data analysis and reporting;
4. After completing its monitoring tasks, the monitoring agency submits the monitoring report to the client, the PMO and the external monitoring agency, provides clear conclusions on compliance and briefly analyzes reasons for non-compliance based on monitoring data;
5. Based on items 1)-4) above, the county (city) PMO prepares a progress report in a timely manner, submits a copy of the report to the Provincial PMO and city EPB. The report shall include EMP implementation status and effectiveness, especially environmental monitoring results;
6. In case of environmental complaints, the external agency, county (city) PMOs and the Provincial PMO shall keep local environmental protection agencies informed of these complaints and report them to higher levels, when necessary;

7. EMP implementation status can be included in the half-year progress report as a separate chapter, which shall be submitted to the World Bank on a regular basis. The chapter mainly includes the following:

1. Project implantation status and brief description of main components at this stage;
2. Implementation of the training program, project variation and adjustments, implementation of necessary EA procedures;
3. Implementation status of environmental protection/mitigation measures, issues/problems and their reasons, as well as follow-up remedial measures;
4. Status of environmental monitoring, key monitoring results, data analysis, and clarification on non-compliance and proposed remedial actions;
5. Whether they are public grievances; if yes, these grievances, their solutions and degree of public satisfaction shall be documented;
6. Overall evaluation of and conclusion on implementation status of the current EMP and suggestions and implementation plan for next year's EMP.

9.8.3 Grievance Redress and Variation Mechanisms

1. Grievance Redress Mechanism (GRM)

To better safeguard the interests of communities and residents, the project will establish a convenient and effective public grievance redress mechanism (GRM). The affected people can lodge his/her complaints at any time. The mechanism is suitable for all people including ethnic minority groups in the project areas. Please refer to the EMDP for specific grievance redress mechanism for ethnic minorities.

Principles governing the GRM include:

(1) The mechanism should ensure that a framework for community participation and consultation is established and operated during project implementation, that people in the project areas benefit from the project, action plans to avoid or mitigate negative impacts are implemented, and problems or social risks are minimized.
(2) Based on the World Bank's views on the project and the Chinese Government's requirements for the complaint reporting system, along with successful domestic and international experience, the project should make adequate use of the current complaint reporting system, and establish, improve and operate the mechanism for expressing views and complaints about the project at PMOs and relevant government departments.
(3) Village committee leaders in the project areas should enhanceand improve their awareness of policies and the general public and approaches to serving the general public in a democratic manner, be open to public opinion, solve issues/problems and disputes in a fair

and rational manner, or report these issues/problems and disputes to higher level authorities to seek for their timely responses.
(4) Each administrative village should establish a community organization (CO) and a unit specializing in addressing public grievances. This unit shall comprise the village committee and the CO and carry out relevant activities with the support from the CO and the village committee.

The GRMcomprises:

1.Institution of Complaint Acceptance

The primary institution of complaint acceptance should be the community organizations and the village committees that principally address residents' problems during project implementation. When encountering the problem beyond their capability, the village committees and community organizations should hand it over to the township government and the Tourism Bureau, which can report the problem to the county government to seek for its assistance.

2.Complaint handling Procedure

Stage 1

When they have comments about or dissatisfaction with the project, villagers and households in the project areas can orally or in print complain to community organizations and village committees. After getting oral complaints, the village or community level organization should address them and make written records. In general, reasonable suggestions or complaints should be addressed within 2 weeks.

Stage 2

If the complainant is not satisfied with the decisions or solutions of community organizations and village committees, he/she can appeal to the county PMO, which shall addressthe complaint within 2 weeks.

Stage 3

If the complainant is still not satisfied withthe responses or decisions of the county PMO, he/she can appeal to city/prefecture PMO.

Stage 4

If the complainant is still not happy about the decisionsthe county PMO or city/prefecture PMO, he/she can to appeal to the provincial PMO.

State 5

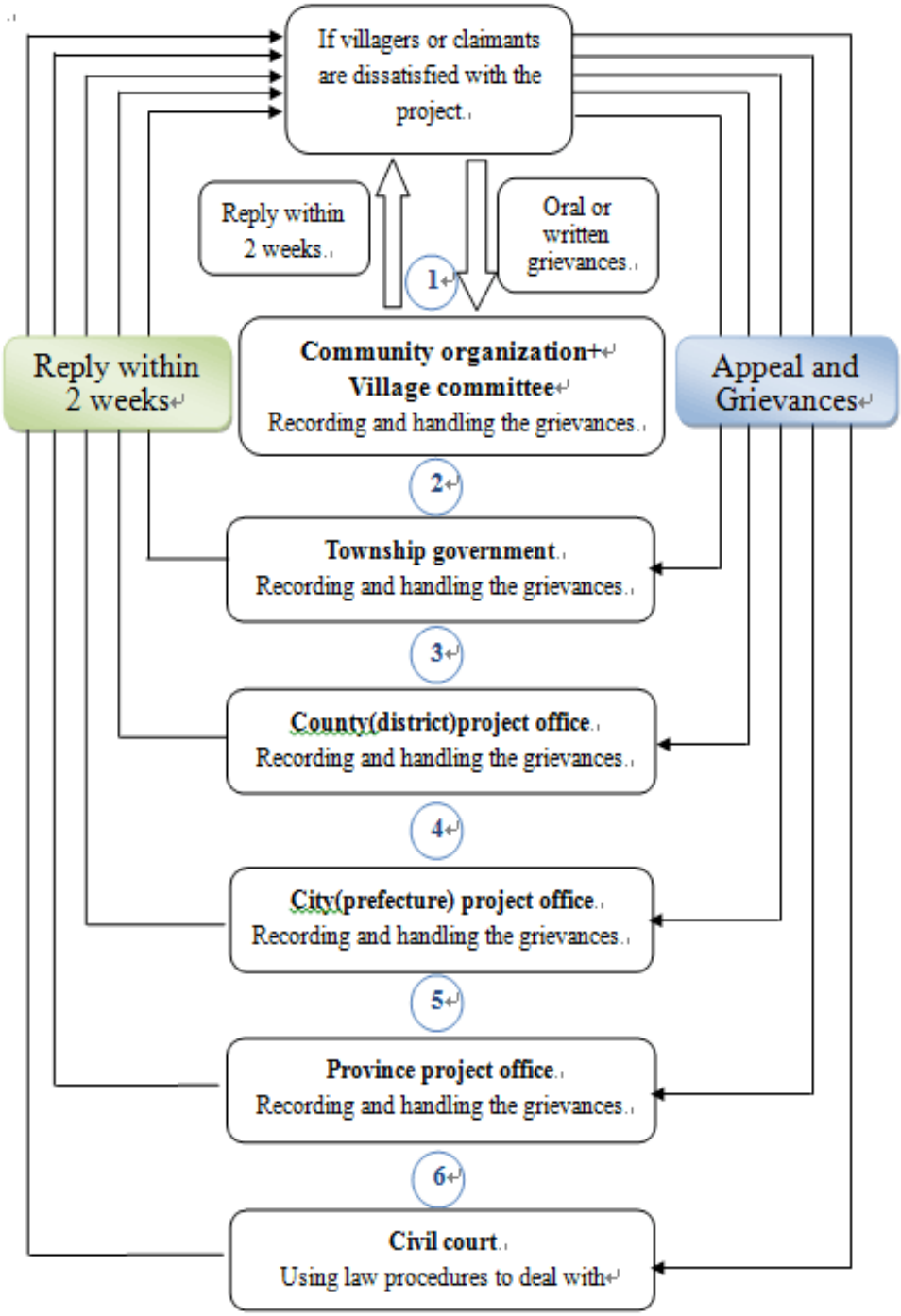
If the complainant is still not happy about the decisions of the provincial PMO, he/she can appeal to a civil court.

Stage 6

The complainantappeals to the civil court according to the civil procedural law.

Villagers in the project areas shall be kept informed of the complaint procedure illustrated above through meetings and other approachesso that they are aware of their rights to complain. At the same time, the media would be engaged to publish and disseminate the procedure. In addition, different opinions and suggestions on the project should be summarized into information items, which should be timely studied and addressed by governments at all levels. The agency acceptingcomplaints acceptance is not allowed to charge fees.

Figure 9.8-1 shows the grievance and appeal procedure.



III. Complaint Feedback Mechanism

The mechanism of complaint feedback is the internal monitoring mechanism established in the process of complaint by the project. The significance of establishment of such a mechanism is as follows:

(1) The complainant shall get the feedback as early as possible, implying the project implementation agency's attention to the affected families. As a result, residents' legititate rights and interests can be well protected and their enthusiasm of participation can be maintained.

(2) Reflecting problems and deficiencies in the development plan, timely feedback would reach the project owner and operators, who would pay close attentionto the problems and deficiencies and make improvements.

The effective mechanism of complaint feedback consists of the standardized system of recording, tracking and regular reporting.

(1) The standardized system of recording. A standardized record is the precondition of the collection, classification and organization of the information. The complaint record primarily includes the basic information of the complainer, his/her complaints, the responder and situation checking.

(2) The system of tracking. Chances are that a complaint covers many a situation, which cannot be fully solved by the members of the community organization. Therefore, the complaint should be assigned to the relevant professionals to reply. The assignment results in the tracking which is an assurance of the reply reaching to the complaint before the official deadline.

(3) The system of regular report. The report is the final step in the procedure of feedback. In fact, the tracking mentioned above has basically ensured the feedback to reach the project owner and operators. But the basic feedback just covers every single complaint without a whole picture. As a result, it is significant to analyze, summarize and report the whole situation of all complaints within the specified timeframe. The report shall cover the current status of unaddressed complaints, key problems identified by the complainant, recommended solutions and rectification measures, among others. These items can be consolidated into a single report or be included in the regular internal monitoring report.

II. Environmental requirements in case of project variation

Building on the environmental monitoring report and inspection by the monitoring agency, the EMP would make targeted adjustments to mitigation measures to further improve environmental management activities.

Based on the distribution of pollution sources and construction activities, relevant agencies would conduct periodic inspection of implementation activities, address identified issues/problems and documents the addressing process.

In case of significant deviation to the EMP identified during the inspection, or significant adverse environmental impacts due to project variations, or significant increase in the number of adversely affected people, the PMO shall immediately consults with environmental authorities and the World Bank and establish an environmental assessment team to carry out additional environmental assessment, and to conduct additional public consultation, if necessary. The revised EA which includes the EMP must be submitted to the local EPB for approval and to the World Bank after its approval. The implementation agency and the contractor must also be informed of and implement the revised EMP.

Chapter 10 Conclusion

The World Bank-financed Second Gansu Cultural and Natural Heritage Protection and Development Project (the Project) falls under the “encouraged projects” in the Guiding Catalogue for Industrial Restructuring (2011 version) (revised in 2013) and its implementation would be in line with requirements in relevant plans of the province, Pingliang City, Longnan City and Linxia City as well as counties and districts where the Project’s subprojects would be implemented. Implementation of the Project would be supported by local people. After its completion, the Project, while protecting cultural and natural heritage, would promote tourism development, address regional poverty, promote social prosperity and enhance environmental protection awareness of local residents. Although the Project would involve ecologically sensitive areas, such as nature reserves, drinking water source protection areas, scenic areas, forest parks and geological parks and it construction and operation would have some negative impacts on local environment, local environment quality after its completion would meet needs of environmental functions, pollutants would be discharged up to relevant standards and ecological impacts would be minimized so long as implementation agencies truly and effectively implement environmental protection measures proposed in the EMP and strengthen environmental management and monitoring during different stages of the Project.

Therefore, from the perspective of environmental protection, implementation of the Project would be feasible.

Annext 1.1. Proposed 31 Community Organizations for 6 Scenic Spots in Gansu Province

Project Area	Project Village	Name of community organizations proposed to be set up
Pingliang city: Kongtong Mountain Scenic spot	Qihe	Qihe Village Farmers' co-operatives of tourism (agricultural and sideline products)
	Zhonghe	Zhonghe Village Farmers' co-operatives of tourism (Chinese medicine herbs)
	Gaoling	Gaoling Village Farmer's cooperative of tourism (agricultural and sideline products)
	Jiazui	Jiazui village Farmer's cooperative of tourism (livestock development)
	Xigou	Xigou village tourism association (farmers' home-stay and catering services) Kongtong Martial Arts Association
Baili Grottoes in Jingchuan county	Luohandong	Luohandong village Committee for community co-management; Luohandong village association for tourism (including farmers' home-homestay)
	Wanyan	Wanyan Cultural & Tourism Association (including a Performance Mission, development of cultural arts and crafts
	Yanfeng	Yanfeng Village Association for Tourism (including development of cultural arts and crafts with grottoes characteristics, Farmers' Home-stay, etc.)
	Gongchi	Gongchi Village Farmers' Co-operatives for Tourism
	Tianchi	Tianchi village Farmers' Co-operatives for Tourism
Yunya temple in Zhuanglang county	Shiqiao	Shiqiao village tourism service association (including development of Chinese medicine herbs, a performance team and local specialty products)
	Guoman	Guoman village tourism service association (including development of Chinese medicine herbs, a performance team and local specialty products)
Longnan City: Yangba in Kangxian county	Yinbazi	Yinbazi Association for Tourism Service (including Farmers' Home-stay,Chinese Medicine Herbs development and Special Arts and Crafts Design and Development)
	Laojiangba	Yangba Culture & Art Performing Troupe
	Kezhuang	Kezhuang Village Association for Tourism Service (including development of Chinese Medicine Herbs, local specialty products) p
	Liujiaba	Farmers' Tea Garden Tourism Service Association
Guan'e gou in Tanchang County	Luren	Luren Village Tourism Association (including bee keeping, embroidery and farmers' home-stay) Luren Village Qiang Tibetan Folk Cultural Performance Troupe
	Guan'e	Guan'e Village Association for Tourism (including Farmers' Home-stay, and root carving art)

	Washeping	Washeping Village Association for Tourism (including Farmers' Home-stay, local specialty products and dancing performance)
	Lijie	Lijie Village Association for Tourism (including Farmers' Home-stay, local specialty products and dancing performance)
	Xinping	Xinping village Association for Tourism (including Farmers' Home-stay, local specialty products and Qiang Tibetan Folk cultural performance troupe)
	Daheba	Daheba village Association for Tourism (including Farmers' Home-stay, local specialty products and dancing performance)
	Xinchengzi	Xinchengzi village Association for Tourism (including Farmers' Home-stay, local specialty products and dancing performance)
	Yuezangfu	Yuezangfu village Association for Tourism (including Farmers' Home-stay, local specialty products and dancing performance)
Linxia Hui Autonomous Prefecture:	Diaotan	Diaotan village Association for Tourism Service
	Zhongxin	Zhongxin village Tourism Service Association
Songmingyan	Dashanzhuang & Cheba	Dashanzhuang and Cheba Association for Tourism and Community Development
	Ketuo	Ketuo Village Hua'er Performance Troupe

Annex 1.2 CO Development Project Budget in the 6 scenic spots

Project Area		CO Development Project Budget(Yuan)
Pingliang City	Kongtong District	1,700,000
	Jingchuan County	1,700,000
	Zhuanglang County	540,000
Longnan City	Kang County	1,160,000
	Tanchang County	2,639,600
Linxia Hui Autonomous Prefecture	Hezheng County	1,810,000
Total		9,549,600

Annex 2. CO incubation and development budget

City (Prefecture)	Project Area	Budget	Total (RMB'1000)
Linxia Hui Autonomous Prefecture	Songmingyan	RMB60,000/CO*5 COs=RMB300,000.	300
Pingliang City	Kongtong Mountain	RMB60,000/CO*5 COs=RMB300,000.	300
	Baili Grottoes	RMB60,000/CO*5 COs=RMB300,000.	300
	Yunya Temple	RMB90,000/CO*2 COs=RMB180,000.	180
Longnan City	Yangba	RMB60,000/CO*4 COs=RMB240,000.	240
	Guan'e Ditch	RMB60,000/CO*8 COs=RMB480,000.	480
Total (Yuan1000)			1800

Annext 3. An estimation of the number of beneficiary people through community capacity building in the project area

Project Area	Households	Number of people	Capacity Building directly beneficiary	Capacity Building indirectly beneficiary
Kongtong District	614	2378	1064	11140
Jingchuan County	2010	8881	1044	29100
Zhuanglang County	408	1879	1244	9080
Kang County	226	838	1304	5260
Tanchang County	1424	6554	1305	18740
Hezheng County	2278	11499	1305	37780
Total	6,960	32,019	7246	111,100