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World Bank-financed Xining Water Environment Management Project

Social Assessment Report

Management Office of the World Bank-financed Xining Water

Environment Management Project

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Abbreviations

AH	-	Affected Household
AP	-	Affected Person
FGD	-	Focus Group Discussion
FSR	-	Feasibility Study Report
HD	-	House Demolition
IA	-	Implementing Agency
LA	-	Land Acquisition
M&E	-	Monitoring and Evaluation
MSW	-	Municipal Solid Waste
PMO	-	Project Management Office
RAP	-	Resettlement Action Plan
SA	-	Social Assessment
WWTP	-	Wastewater Treatment Plant

Units

Currency unit	=	Yuan (RMB)
US$1.00	=	RMB6.33
1 hectare	=	15 mu

1. Introduction

1.1 Overview of the Project

With the great support of the Qinghai Provincial Development and Reform Commission, the Xining Municipal Government has begun to prepare for the Xining Flood and Watershed Management Project, the first independent Bank-financed project in Qinghai Province, since the end of 2006. This project broke ground at the end of 2009, and has improved the flood and watershed management system of Xining City to some extent, and promoted awareness improvement and talent training. However, rivers in Xining are still seriously polluted, and their water quality is substandard. In view of this, the Xining Municipal Government plans to apply for a loan of US$150 million (equivalent to CNY920 million, accounting for 60% of gross investment; the remaining 40% will be from domestic counterpart funds) with the Bank to implement the Xining Water Environment Management Project (hereinafter, the “Project”). Through the construction of municipal wastewater collection systems, Beichuan River embankment improvement, municipal wastewater reclamation and reuse, and integrated gully and canal improvement, the Project aims to conduct integrated improvement of the Huangshui River (Xining segment), improve the urban water infrastructure of Xining City, reduce water pollution in Xining City, demonstrate reclaimed water utilization, build a green corridor that integrates the ecological protection, leisure, tourism and cultural display functions, meet the Class-4 water quality standard, and realize the overall goal of “clear water, smooth flow, green banks and beautiful landscape” in the Huangshui River basin.

1.2 Scope of the Project

The Project consists of 4 components: (1) Construction of wastewater collection systems: construction of 128km of wastewater and rain water collection pipes, and associated roads and other municipal facilities; (2) Municipal wastewater reclamation and reuse: construction of the No.5 WWTP and associated reclaimed wastewater transfer pipes, with a capacity of 5,000m³/d; (3) Beichuan River embankment improvement: construction of the LID rainwater collection system, embankment environmental rehabilitation, permeable footways, lighting and sanitation facilities, etc.; and (4) Integrated gully and canal improvement: Integrated improvement of Chaoyangdian Canal, Liujia Gully and Shengou Gully. See Figure 1-1.

The direct service area of the Project is Chengbei District, Xining City; Duoba Town, Huangzhong County; and Changning Xiang and Huangjiazhai Town, Datong County, and the indirect service area is the whole city of Xining. The related projects are the No.5 WWTP and Beichuan River (Core Segment) Integrated Improvement Project, whose service areas are within the direct service area of the Project. Based on the current project design, the service areas of the components are as follows: 1) Construction of wastewater collection systems serves Duoba Town, Huangzhong County, and Changning Xiang and Huangjiazhai Town, Datong County mainly; 2) municipal wastewater reclamation and reuse has no specific beneficiary area or population; 3) Beichuan River embankment improvement serves residents along the Beichuan River; and 4) Integrated gully and canal improvement serves residents along Chaoyangdian Canal, Liujia Gully and Shengou Gully directly.

Table 1-1 Summary of Project Information

No.	Component	Scope and scale	District / county	State or province level poor district / county?	Service area	Beneficiary population
1	Construction of wastewater collection systems	Construction of 128km of wastewater and rain water collection pipes, including construction of 34km of wastewater collection pipes from the Datong WWTP to the Ningda Road toll gate along the Beichuan River, construction of 16km of wastewater collection pipes from Yangjiawan Village to Duoba along the Xichuan River, construction of 34km of wastewater collection pipes in the Beichuan area, and construction of associated roads and 44km of rainwater collection pipes	Chengbei District, Huangzhong County and Datong County	No	Chengbei District, Duoba Town, Huangzhong County, and Changning Xiang, Datong County	295,500
2	Municipal wastewater reclamation and reuse	Construction of the No.5 WWTP and associated reclaimed wastewater transfer pipes, with a capacity of 5,000m³/d	Chengbei District	No	Supply urban sanitation and landscaping water to the Beichuan area	/
3	Beichuan River embankment improvement	1) Construction of the LID rainwater collection system: permeable pavement, habitat establishment, vegetation planting, rainwater collection barrels; 2) Embankment environmental rehabilitation: embankment, slope and vegetation rehabilitation; 3) permeable footways; and 4) Lighting and sanitation facilities, landscaping water supply system, signboards, etc.	Chengbei District	No	Beichuan River basin	23,300
4	Integrated gully and canal improvement	Integrated improvement of 10.4km Chaoyangdian Canal, 0.9km Liujia Gully and 0.9km Shengou Gully	Chengbei District	No	Chaoyangdian Canal, Liujia Gully and Shengou Gully	53,700

The Project complies with the overall construction plan of Xining City and is an integral part of the city's Urban Clean Water Supply Project. Some other projects, such as the World Bank-financed Xining Flood and Watershed Management Project, will support the successful implementation of the Project greatly.

Figure 1-1 Schematic Map of the Project

1.3 Purpose of SA

This SA aims to identify, analyze and evaluate the positive and negative impacts, and potential social risks of the Project through field survey, FGD and in-depth interview in full consultation with all stakeholders, promote the effective participation of all stakeholders in project activities, optimize the project design and construction plan, and evade social risks.

1.4 SA Methods

During March 18-April 1 and July 2013, the SA team collected information by means of literature study, field investigation, key informant interview, FGD, door-to-door interview and questionnaire survey to learn the socioeconomic profile of the project area, positive and negative impacts of the Project, willingness and ability to pay of local residents (including the poor, ethnic minorities, women, etc.), and their needs and suggestions, etc. See Table 1-2.

1. Literature study

Local city and county annals; literatures on social conditions of local ethnic minorities; statistical yearbooks and reports on local economic, demographic and social conditions;

literatures on local women's development and supporting policies for women; literatures on local environmental conditions, urban environmental sanitation, industrial and domestic wastewater discharge, collection and treatment, industrial water consumption, etc.; literatures on the collection of water expenses and wastewater treatment charges from local residents and enterprises, and supporting policies for vulnerable groups; literatures on water source utilization and water quality requirements by enterprises, etc.

2. Field investigation

Through participatory observation, the SA team can have a better understanding of the socioeconomic profile of the project area and the Project, including wastewater discharge, reclamation plant selection, discharge system routing, socioeconomic profile, living conditions, etc.

3. Key informant interview

The social consultants conducted 7 key informant interviews with heads of different agencies and departments on the current situation of environmental protection, water use by different groups, wastewater treatment and drainage, environmental sanitation facilities, and health impacts of water pollution; 5 key informant interviews with heads of enterprises on industrial water use, wastewater treatment and demand for reclaimed water; and 8 key informant interviews with heads of the ethnic affairs commission, civil affairs bureau, poverty reduction office, water resources bureau, women's federation, labor and social security bureau, township governments and village committees on the positive and negative impacts of the Project, and conditions of and policies for local ethnic minorities, the poor and women.

4. FGD

In order to further understand needs, suggestions, and willingness and ability to pay of local residents (including the poor, ethnic minorities, women, etc.), 8 FGDs were held in different local communities, including ordinary FGDs, FGDs with women and FGDs with vulnerable groups. There were 96 participants, including 43 women, accounting for 44.79%.

5. Door-to-door interview

The construction of wastewater collection systems in the Project, and the Beichuan River (Core Segment) Integrated Improvement Project (a related project) involve house demolition and LA. The SA team conducted in-depth interviews with 28 APs, including 13 women, accounting for 46.43%.

These interviews cover: 1) their attitudes to and needs for the Project, and possible impacts of LA and HD on their production and livelihoods; and 2) wastewater treatment, MSW disposal, toilet cleaning with reclaimed water, etc.

6. Questionnaire survey

The respondents were sampled to cover APs of different ages, occupations, income levels, genders and ethnic groups, and reflect different groups' attitudes to and needs for the Project, and willingness and ability to pay. This questionnaire survey was conducted on spot under the guidance and supervision of researchers. 316 copies were distributed in total, with 300 valid copies recovered, accounting for 94.94%. Among the respondents, 58.33% are males and 41.67% females; 91.33% are Han people, 3.33% Hui people, 1.67% Tibetans, 1.57% Tu people, 1.47% Mongolians and 0.63% Salar people. In terms of educational level, 80.34% of the respondents have received junior high school or above education, 13.9% have received junior college or above education, and 19.66%

have received primary school or below education.

The mixed application of the above 6 methods enabled the SA team to learn the practical situation of the project area and collect required information.

Table 1-2 Summary of SA Methods

Method	Time	Arrangements	Participants	Scope
Literature study	Jan. – May 2013	Organizing team members to collect relevant literatures	5 from the SA team	Relevant literatures
FGD	Mar. 23 – Apr. 1, 2013	Holding FGDs with heads of township governments and village committees, and representatives of affected entities and APs	8 FGDs, with 96 participants in total, including 43 women.	Current situation of environmental protection, wastewater treatment and drainage of different groups, current conditions of the Beichuan River and canals, environmental sanitation facilities; learning their attitudes to and needs for the Project, and local women's needs and attitudes, and collecting their suggestions on the Project
Key informant interview	Mar. 23 – Apr. 1, 2013	Interviewing with heads of some enterprises in Dongchuan Industrial Park, environmental protection bureau, women's federation, poverty reduction office, water resources bureau, urban administration, etc.	3 from the SA team, 2 from the PMO, and 20 heads of agencies concerned	Current situation of environmental protection, water use by different groups, wastewater treatment and drainage, environmental sanitation facilities, and health impacts of water pollution; demand of enterprises for reclaimed water; project impacts, and conditions of and policies for local ethnic minorities, the poor and women
Door-to-door interview	Mar. 23 – Apr. 1, 2013	Conducting in-depth interview with low-income households, women-headed households and minority people in the affected villages	3 from the SA team, 4 from the PMO, in-depth interviews with 28 persons, including 13 women (46.43%)	Local residents' livelihoods, possible impacts of the Project on them, their needs for and comments on the Project, etc.
Participatory observation	Mar. 23 – Apr. 1, 2013	Observing the current situation of solid waste and wastewater collection and treatment in the affected villages, and the laying and operation of collection systems at Huaneng and in Dongchuan Industrial Park	5 from the SA team, 4 from the PMO	Socioeconomic conditions of local residents, conditions of wastewater collection systems and reclaimed water in Xining City, and current conditions of the Beichuan River and canals
Questionnaire survey	Mar. 23 – Apr. 1, 2013	Conducting a questionnaire survey in the affected villages	5 from the SA team, 300 valid copies, including 175 females (58.33%)	Collecting basic information, and learning willingness and ability to pay, environmental awareness, and needs for and suggestions on the Project

1.5 Key Concerns of SA

According to the terms of reference of consulting services, this SA will describe the overview of social and economic development of the project area, analyze typhoon impacts on the project area, and develop and implement a typhoon prevention program; identify the primary stakeholders, and analyze their needs and impacts; identify the Project's potential positive and negative impacts, and potential social risks; analyze the development of local women, the Project's impacts on them and their needs for the Project; analyze the situation of local ethnic minorities, and the Project's impacts on them; analyze how to involve the stakeholders in the Project effectively, and propose a public participation plan; and incorporate social factors related to the fulfillment of the project objectives in the project design, and propose measures to avoid or reduce negative

impacts.

According to the field survey, the key social concerns of this SA are:

1. MSW disposal and management pattern;
2. Willingness and needs of potential reclaimed water users (enterprises, residents) to utilize reclaimed water;
3. Willingness to connect to wastewater collection systems, willingness to pay wastewater treatment charges, etc.;
4. Women’s benefits from and participation in the Project; and
5. Public participation mechanism.

2. Overview of the Project Area

2.1 Natural Conditions and Administrative Divisions

1. Qinghai Province—Qinghai Province is located in the northwest of the Qinghai-Tibet Plateau, bordered by Gansu and Sichuan Provinces, Tibet and the Xinjiang Uygur Autonomous Region, with a land area of 722,300 km^2, and governs 6 prefectures, 2 cities and 51 counties.

2. Xining City is located in eastern Qinghai Province, and is the provincial capital, the largest city on the Qinghai-Tibet Plateau, the political, economic, cultural and traffic center, and a major industrial base of Qinghai. It governs Chengdong District, Chengzhong District (including Chengnan New District), Chengxi District, Chengbei District and Nanhu New District, a state-level economic development zone, and Datong, Huangzhong and Huangyuan Cities, with a land area of 7,665 km^2.

3. Chengbei District is located in northwestern Xining, with a land area of 137.7 km^2, and governs Dabaozi and Ershilipu Towns, Xiaoqiao, Chaoyang and Mafang Sub-districts, 38 villages and 23 communities, being the largest urban district and traffic hub of Xining.

4. Duoba Town (Huangzhong County) is located north of the Huangzhong county town, with a land area of 148.76 km^2, and governs 44 villages, 235 cooperatives and one community, being a major trading and service center in Huangzhong County.

5. Changning Town (Datong County) is located in southern Datong County, with a land area of 96.65 km^2, and governs 26 administrative villages and 49 natural villages.

Table 2-1 Administrative Divisions in the Project Area (2011)

Division	Area (km^2)	Townships / sub-districts	Towns	Xiangs	Sub-districts	Villages	Communities	Groups
Qinghai Province	722300	/	133	232	/	4164	/	/
Xining City	7649	72	27	23	22	931	143	/
Chengbei District	137.7	5	2		3	38	23	/
Duoba Town	148.76	/	/	/	/	44	1	235
Changning Town	96.65	/	/	/	/	26	/	/

Source: 2012 Statistical Yearbook of Xining City, PMO

2.2 Socioeconomic Profile

1. Qinghai Province—In 2012, the province's GDP was 188.454 billion yuan, up 12.3%, below the national average, where the added value of primary industries was 17.681 billion yuan, that of secondary industries 109.198 billion yuan and that of tertiary industries 61.575 billion yuan, up 5.2%, 14.1% and 11.1% respectively. The ratio of primary, secondary and tertiary industries changed from 9.3:58.4:32.3 in 2011 to 9.4:57.9:32.7 in 2012. Urban residents' per capita disposable income was 17,566.28 yuan, up 12.6%, and rural residents' per capita net income 5,364.38 yuan, up 16.4%; urban residents' Engel coefficient was 37.8%, and rural residents' Engel coefficient 38.87%.

2. Xining City—In 2012, the city's GDP was 85.109 billion yuan, up 15.0%, in which the added value of primary industries was 3.117 billion yuan, that of secondary

industries 43.952 billion yuan and that of tertiary industries 38.04 billion yuan, up 5.3%, 18.3% and 11.8% respectively. The ratio of primary, secondary and tertiary industries changed from 3.56:53.36:43.08 in 2011 to 3.66:51.64:44.70. In 2012, per capita GDP was 38,034 yuan, up 14.0%; urban residents' per capita disposable income 17,633.51 yuan, up 11.3%; and rural residents' per capita net income 7,801.54 yuan, up 17.6%.

3. Chengbei District—In 2011, the district's GDP was 15.907 billion yuan, up 22.10%, in which the added value of primary industries was 153 million yuan, that of secondary industries 11.487 billion yuan and that of tertiary industries 4.267 billion yuan, up -5.45%, 26.06% and 13.69% respectively. Per capita GDP was 35747 yuan, up 18.72%; urban residents' per capita disposable income 14,623 yuan, up 12.54%; and rural residents' per capita net income 10,412 yuan, up 15.18%.

4. Duoba Town (Huangzhong County)—In 2011, the town's GDP was 602.734 million yuan, in which the added value of primary industries was 186.054 million yuan, accounting for 30.8%, that of secondary industries 263.28 million yuan, accounting for 43.6%, and that of tertiary industries 153.4 million yuan, accounting for 25.4%. Rural residents' per capita net income was 5,236 yuan, including agricultural income of 1,123 yuan, accounting for 21%; stockbreeding income of 677 yuan, accounting for 13%; and nonagricultural income (secondary and tertiary industries) of 3,436 yuan, accounting for 66%.

5. Changning Town (Datong County)—In 2011, the town's gross industrial output value was 327.31 million yuan and agricultural output value 20.357 million yuan; the ratio of primary, secondary and tertiary industries 35.2:47.6:17.2, and rural residents' per capita net income 3,712.83 yuan.

Table 2-2 Socioeconomic Profile of the Project Area[1]

Division	GDP (00 million yuan)	Ratio of primary, secondary and tertiary industries	Urban residents' per capita disposable income (yuan)	Rural residents' per capita net income (yuan)
Qinghai Province	1884.54	9.4:57.9:32.7	17566.28	5364.38
Xining City	851.09	3.66: 51.64: 44.70	17633.51	7801.54
Chengbei District	159.07	0.96: 72.21: 26.82	14623	10412
Duoba Town	6.03	30.8: 43.6: 25.4	3436	5236
Changning Town	/	35.2:47.6:17.2	/	3712.83

Source: 2012 Statistical Bulletin on National Economic and Social Development of Qinghai Province, 2012 Statistical Yearbook of Xining City, PMO

2.3 Population

1. Qinghai Province—At the end of 2011, the province had a resident population of 5.6817 million, including 2.8755 million men (50.6%), 2.8062 million women (49.4%), a nonagricultural population of 2.6262 million (46.2%), and an agricultural population of 3.0555 million (53.8%). Minority population was 2.6432 million, accounting for 46.52% of gross population, including 1.3751 million Tibetans (52.02%), 834,300 Hui people (31.56%), 204,400 Tu people (7.73%), 107,100 Salar people (4.05%), 99,800 Mongolians (3.78%), and 22,300 people of other ethnic groups (0.84%).

2. Xining City—At the end of 2011, the city had a resident population of 2.2087 million, including an urban population of 1.4579 million and a rural population of 770,100. Minority population was 578,200, accounting for 25.95% of gross population, including

[1] The data of Qinghai Province and Xining City were those of 2012.

362,300 Hui people (62.65%), 122,600 Tibetans (21,20%), 57,800 Tu people (10.00%), 8,620 Salar people (1.50%), 13,810 Mongolians (2.39%), and 13,101 people of other ethnic minorities (2.27%).

3. Chengbei District—At the end of 2011, Chengbei District the district had a population of 301,000, including a nonagricultural population of 238,100 and an agricultural population of 62,900. Minority population was 29,100, accounting for 9.67% of gross population, including 13,300 Hui people (45.95%), 8,198 Tibetans (28.16%), 597 Salar people (2.05%), 2,760 Tu people (9.48%), 1,546 Mongolians (5.31%) and 2,636 people of other ethnic minorities (9.05%).

4. Duoba Town (Huangzhong County)—At the end of 2011, the town had a population of 63,190, including an agricultural population of 57,695 and a nonagricultural population of 5,495. Minority population was 7,716, accounting for 12% of gross population, including 3,100 Tibetans (40.18%), 4,448 Hui people (57.65%) and 168 people of other ethnic minorities (2.18%).

5. Changning Town (Datong County)—At the end of 2011, the town had a population of 41,076, including an agricultural population of 36,879 and a nonagricultural population of 4,197, and a minority population of 15,822, accounting for 35.82% of gross population.

Table 2-3 Population in the Project Area (2011)

Division	Gross population (0,000)	Minority population (0,000)	Ethnic minorities						Agricultural population (0,000)	Nonagricultural population (0,000)
			Tibetan (%)	Hui (%)	Tu (%)	Salar (%)	Mongolian (%)	Other (%)		
Qinghai Province	568.17	264.32	52.02	31.56	7.73	14.05	3.78	0.84	305.55	262.62
Xining City	222.80	57.82	21.20	62.65	10.00	1.50	2.39	2.27	77.01	145.79
Chengbei District	30.10	2.91	28.16	45.95	9.48	2.05	5.31	9.05	6.29	23.81
Duoba Town	6.32	0.7716	40.18	57.65	/	/	/	2.18	5.77	0.55
Changning Town	4.10	1.58	13.17	60.23	21.02	/	/	/	3.68	2.42

Source: 2011 Statistical Bulletin on National Economic and Social Development of Qinghai Province, 2012 Statistical Yearbook of Xining City, PMO

2.4 Educational Level

1. Qinghai Province—According to the 6th national census, in the resident population of Qinghai Province in 2010, 484,700 people had received higher education, accounting for 8.62%; 586,700 people had received senior high school (secondary technical school) education, accounting for 10.43%; 1.4277 million people had received junior high school education, accounting for 25.37%; and 1.9842 million people had received primary school education, accounting for 35.26%. Compared to the 5th national census in 2000, the population receiving university or above education per 10,000 people rose from 330 to 862; that receiving senior high school education remained at 1,043, that receiving junior high school education rose from 2,166 to 2,537, that receiving primary school education rose from 3,094 to 3,527; and illiteracy rate was 10.23%, down 7.8 percentage points.

2. Xining City—According to the 6th national census, in the resident population of Xining City in 2010, 286,285 people had received higher education, accounting for 12.96%; 316,536 people had received senior high school (secondary technical school) education, accounting for 14.33%; 733,269 people had received junior high school education, accounting for 33.2%; and 644,619 had received primary school education,

accounting for 29.19%. Compared to the 5th national census in 2000, the population receiving university or above education per 10,000 people rose from 564 to 1,296, that receiving senior high school education dropped from 1,464 to 1,433, that receiving junior high school education rose from 2,940 to 3,320, that receiving primary school education dropped from 2,942 to 2,919, and illiteracy rate was 3.44%.

3. Chengbei District—According to the 6th national census, in the resident population of Chengbei District in 2010, 53,229 people had received higher education, accounting for 18.82%; 56,499 people had received senior high school (secondary technical school) education, accounting for 19.97%; 108,531 people had received junior high school education, accounting for 38.37%; and 53,766 people had received primary school education, accounting for 19.01%. Compared to the 5th national census in 2000, the population receiving university or above education per 10,000 people rose from 699 to 1,780, that receiving senior high school education dropped from 2,003 to 1,890, that receiving junior high school education rose from 3,598 to 3,630, that receiving primary school education dropped from 2,238 to 1,798, and illiteracy rate was 3.67%.

Table 2-4 Educational Levels (2010)

Division	Population (0,000)	Percentage of population receiving primary school or above education (%)				Population receiving primary school or above education per 10,000 people			
		University	Senior high school	Junior high school	Primary school	University	Senior high school	Junior high school	Primary school
Qinghai Province	562.67	8.62	10.43	25.7	35.2	/	/	/	/
Xining City	220.87	12.96	14.33	33.2	29.19	1296	1433	3320	2919
Chengbei District	29.9	18.82	19.97	38.37	19.01	1780	1890	3630	1798

Source: 6th national census in Qinghai Province and Xining City

2.5 Urban Utilities

1. Water supply—In 2011, the gross water supply of Xining City was 140.2978 million m^3 and the amount of water sold 118.4778 million m^3, including 59.9218 million m^3 of industrial water, accounting for 50.58% of the amount of water sold. The number of water users was 1.0745 million and water availability 99.97%.

2. MSW collection transfer and disposal—In 2011, the volume of work completed of Xining City was 630,700 tons, including 113,000 tons of MSW, 12,000 tons of feces and 13.2 million m^3 of cleaning water. At the year end, there were 278 environmental sanitation vehicles, 489 public toilets (all being the flushing type), and an environmental sanitation workforce of 1,721.

3. Wastewater treatment—In 2011, the city discharged 105.6323 million tons of wastewater, including 31.8495 million tons of industrial wastewater, accounting for 30.15%, 73.7388 million tons of domestic wastewater, accounting for 69.80%, and 44,000 tons of wastewater discharged from central treatment facilities, accounting for 0.05%. The total length of sewer lines in the urban area is about 469km, and the Xining No.1, No.2 and No.3 WWTP, and Chengnan New District WWTP have been completed and put into operation, with a total design capacity of 250,000 m^3/d, 80% of which has been realized. The current treatment rate of urban domestic wastewater is 89%. In addition, two WWTPs are under construction in Xining City——No.4 and No.5 WWTP, with a design capacity of 30,000 m^3/d each. After their completion, the total wastewater treatment capacity of Xining City will be 310,000 m^3/d.

2.6 Enterprises

1. Qinghai Province—In 2011, there were 386 industrial enterprises above designated size in Qinghai Province, including 79 state-owned or controlled enterprises, 10 central enterprises, 376 local enterprises and 4 collective enterprises; 102 light industry enterprises and 284 heavy industry enterprises; or 21 large enterprises, 100 medium enterprises, 246 small enterprises and 19 micro-enterprises.

2. Xining City—In 2011, there were 185 industrial enterprises above designated size in Xining City, including 168 domestically funded enterprises and 15 foreign funded enterprises; or 34 sole proprietorships, 5 joint ventures or partnerships, 11 joint-stock limited companies and 135 limited liability companies.

3. Chengbei District—In 2011, there were 42 industrial enterprises above designated size in Chengbei District, including 38 domestically funded enterprises; or one sole proprietorship, one joint venture or partnership and 40 limited liability companies.

3. Stakeholders

3.1 Identification of Stakeholders

Stakeholders mean individuals or groups who can affect or be affected by the objectives of the Project. As an integrated environment management project, the Project involves the construction of wastewater collection systems, embankment improvement, reclaimed water reuse, and integrated gully and canal improvement, which involve common and different stakeholders. The stakeholders of the Project have been identified to include the IA (owner), government agencies concerned, local residents, enterprises, etc. See Table 3-1.

Table 3-1 Identification of Stakeholders

No.	Component	IA	Executive agencies	Residents	Enterprises	Agencies concerned
1	Construction of wastewater collection systems	Project Coordination Leading Group	Huangshui Investment & Management Co., Ltd.	Residents of Chengbei District; Duoba Town, Huangzhong County; and Changning Xiang, Datong County	The affected enterprises	Water resources bureau, environmental protection bureau, urban administration bureau, civil affairs bureau
2	Municipal wastewater reclamation and reuse	Project Coordination Leading Group	Xining Drainage Company	Residents of Xining City	/	Water resources bureau, environmental protection bureau
3	Beichuan River embankment improvement	Project Coordination Leading Group	Huangshui Investment & Management Co., Ltd.	Affected residents	/	Water resources bureau, environmental protection bureau, urban administration bureau
4	Integrated gully and canal improvement	Project Coordination Leading Group	Huangshui Investment & Management Co., Ltd.	Residents living near Liujia Gully, Chaoyangdian Canal and Shengou Gully	/	Water resources bureau, environmental protection bureau, urban administration bureau

3.2 Needs of Stakeholders

Different stakeholders have different needs for the Project. Analyzing the primary stakeholders' needs helps to identify the key social concerns of the Project, avoid potential social risks and promote the successful implementation of the Project. The SA team has conducted adequate communication with all stakeholders and learned their needs by means of questionnaire survey, interview, FGD and observation.

1. IA

In order to ensure successful project implementation, the Xining Municipal Government established the Project Coordination Leading Group in September 2012, which governs a general office and a project implementation office. The General Office is responsible for project organization, management, coordination and M&E, reporting to and communicating with the leading group and the Bank, while the project implementation office is responsible for project implementation.

As the party responsible for all stages of the Project, the IA has to exercise its contractual rights and obligations as the project owner, and solve all technical, financial and environmental issues related to the Project. On the macroscopic level, its need is to

commence the construction of the Project and realize the project objectives, thereby meeting cultural and living needs, and promoting social and economic development to the greatest extent; on the microscopic level, its need is protecting the natural and urban environment, and realizing the effective development and utilization of local resources while reducing operating costs and maximizing project profits.

2. Executive agencies

Huangshui Investment & Management Co., Ltd. and Xining Drainage Company are responsible for the construction of the Project, and are stakeholders closely associated with the Project.

Huangshui Investment & Management Co., Ltd.—This company was founded in 2011, responsible for urban infrastructure construction, operation and management, building a financing and investment platform, and project operation, development and management. In the project, this company involves a number of aspects, including river improvement, the construction of intercepting lines and drainage facilities, land development and utilization, and the construction of leisure and recreational facilities.

Xining Drainage Company—This company was founded in 1999, responsible for the financing, investment, construction, operation and management of urban wastewater collection and drainage facilities, pipelines and associated roads.

The need of the executive agencies is implementing the Project successfully, and minimizing impacts on and conflicts with residents and enterprises.

3. Government agencies

Municipal and district (county) environmental protection bureaus—The Project is part of the duties of the environmental protection bureaus, which can take advantage of the Project to improve public environmental awareness through publicity.

Municipal and district (county) water resources bureaus—The Project is part of the duties of the water resources bureaus, including water functional zoning, giving advice on wastewater discharge limits, monitoring the water quality and amount of rivers, lakes and reservoirs, releasing information and forecasts on water resources, and improving and protecting water areas and embankments.

Municipal and district (county) ethnic affairs commissions and civil affairs bureaus—In Xining City, ethnic minority management is the responsibility of the ethnic affairs commissions. It can be confirmed through institutional interviews that urban and rural MLS management involved in the Project is a responsibility of district/county civil affairs bureaus, which do not participate in the Project directly.

The need of the government agencies concerned is minimizing negative social impacts, giving full play to positive impacts, improving the urban environment and people’s living standard, promoting local economic and social development, and realizing social stability.

4. Enterprises

The enterprises involved in the Project are mainly those involved in the construction of urban wastewater collection systems and Beichuan River embankment improvement.

As makers of industrial wastewater, local enterprises and stores will be included in the urban wastewater collection systems under the Project. Therefore, enterprises and stores are primary stakeholders of the Project. Their needs for the Project include creating a favorable environment for the development of enterprises, and taking measures to reduce negative impacts from construction. After project completion, some

enterprises will be included in the wastewater collection systems and pay wastewater treatment charges, which will add to their operating costs and affect their short-term profits. There need is reducing or exempting wastewater treatment charges through government policies.

5. Residents

Since different components vary in coverage and affected population, the APs have different needs.

Construction of wastewater collection systems: Local residents' needs are: ①improving wastewater collection and treatment services and improving the environment of the Beichuan River; ②paying affordable wastewater treatment charges, and developing preferential policies for poor households; and ③conducting proper resettlement for LA and HD, and restoring production and livelihoods as soon as possible.

Municipal wastewater reclamation and reuse: All residents in the city are involved here. Their needs are: ①protecting the environment and saving water resources to relieve the tight water supply of Xining City; and ②using reclaimed water with guaranteed quality for toilet flushing to prevent diseases.

Beichuan River embankment improvement: These residents are mainly those near the improved river segment. Their needs are: ①improving the surrounding environment, and providing leisure and recreational places to improve residents' quality of life; ②strengthening publicity and training on environmental protection; and ③conducting proper resettlement for LA and HD, and restoring production and livelihoods as soon as possible.

Integrated gully and canal improvement: These residents are mainly those near the improved segments of Liujia Gully, Chaoyangdian Canal and Shengou Gully. Their needs are: ①providing waste bins and other environmental sanitation facilities, and establishing a sound MSW transfer and disposal system to ensure community environmental sanitation; ②strengthening environmental publicity to improve residents' environmental awareness; and ③minimizing residents' production and livelihoods during construction.

Table 3-2 Demand Analysis of Primary Stakeholders

Stakeholder		Needs
IA	Project Coordination Leading Group	1) Meeting cultural and living needs, and promoting social and economic development to the greatest extent; 2) protecting the natural and urban environment, and realizing the effective development and utilization of local resources; and 3) reducing operating costs and maximizing project profits
Executive agencies	Huangshui Investment & Management Co., Ltd. / Xining Drainage Company	Implementing the Project successfully, and minimizing impacts on and conflicts with residents and enterprises
Government agencies	Environmental protection bureau, water resources bureau, urban administration bureau, ethnic and religious affairs bureau, etc.	Minimizing negative social impacts, giving full play to positive impacts, improving the urban environment and people's living standard, promoting local economic and social development, and realizing social stability
Enterprises	Enterprises affected by the construction of wastewater collection systems and Beichuan River embankment improvement	1) Creating a favorable environment for the development of enterprises; 2) taking measures to reduce negative impacts from construction; and 3) reducing or exempting wastewater treatment charges through government policies
Residents	Construction of wastewater collection systems	1) Improving wastewater collection and treatment services and improving the environment of the Beichuan River; 2) paying affordable wastewater treatment charges; 3) developing preferential policies for poor households; and 4) conducting proper resettlement for LA and HD, and restoring production and livelihoods as soon as possible.
	Municipal wastewater reclamation and reuse	1) Protecting the environment and saving water resources to relieve the tight water supply of Xining City; 2) using reclaimed water with guaranteed quality for toilet flushing to prevent diseases
	Beichuan River embankment improvement	1) Improving the surrounding environment, and providing leisure and recreational places to improve residents' quality of life; 2) strengthening publicity and training on environmental protection; and 3) conducting proper resettlement for LA and HD, and restoring production and livelihoods as soon as possible
	Integrated gully and canal improvement	1) Providing waste bins and other environmental sanitation facilities, and establishing a sound MSW transfer and disposal system to ensure community environmental sanitation; 2) strengthening environmental publicity to improve residents' environmental awareness; and 3) minimizing residents' production and livelihoods during construction

4. Social Impact Analysis

4.1 Construction of Wastewater Collection Systems

Construction of wastewater collection systems mainly includes the construction 34km of wastewater collection pipes from the Datong WWTP to the Ningda Road toll gate along the Beichuan River, construction of 16km of wastewater collection pipes from Yangjiawan Village to Duoba along the Xichuan River, construction of 34km of wastewater collection pipes in the Beichuan area, and construction of associated roads and 44km of rainwater collection pipes.

There are already sophisticated wastewater collection systems in the built-up area of Xining City, while there is no wastewater collection system in the suburban Xichuan and Beichuan areas, so that wastewater in these areas is discharged directly into the rivers, resulting in great pollution. In the Project, 3 intercepting lines will be constructed along the rivers in the Xichuan and Beichuan areas (one for the Xichuan River and two for the Beichuan River), thereby collecting wastewater formerly discharged into the rivers to the No.4 and No.5 WWTP for treatment.

4.1.1 Positive Impacts

1. **Improving the wastewater collection systems and wastewater treatment capacity of Xining City**

Currently, the total length of sewer lines in the urban area of Xining City is about 469km. In 2010, the amount of wastewater discharged was 40.52 million tons, in which 36.07 million tons met the discharge standard. The Xining No.1, No.2 and No.3 WWTP, and Chengnan New District WWTP have been completed and put into operation, with a total design capacity of 250,000 m^3/d, 80% of which has been realized. It can be seen that the current situation of wastewater collection and treatment of Xining City is good, but still much wastewater is discharged directly into rivers.

According to the questionnaire surve, 42.5% of the respondents are very dissatisfied and 33.8% dissatisfied, indicating that most local residents expect to improve wastewater treatment facilities and wastewater treatment capacity. The construction of wastewater collection systems will improve the wastewater treatment capacity and urban environment of Xining City greatly.

> 🕮 **Interview with Mr. Guo (male, 54), villager of Shuangsubao Village**
> Wastewater from my family is discharged directly, and the nearby river is seriously polluted and has less fish. Wastewater from some plants is discharged into the river without treatment. Constructing the wastewater collection system is a good thing and will improve water quality.

2. **Improving local water quality and reducing waterborne diseases**

In the questionnaire survey, 93.5% of the respondents think that untreated domestic and industrial wastewater discharged into rivers will give rise to relevant diseases. The Project will improve local water quality and reduce waterborne diseases greatly, thereby improving the physical health of local residents.

🕮 **Interview with Ms Zhang (65), villager of Shuangsubao Village**

The river water is so turbid, and would be smelly in summer. When this water is used for irrigation, crops cannot grow well. Human and livestock would certainly become sick when drinking this water.

3. Improving the local environment and residents' quality of life

In the questionnaire survey, 63.3%, 49.7%, 79.3%, 49.1% and 58.6% of the respondents think domestic wastewater, industrial wastewater, river/lake pollution, groundwater pollution, and water resources waste are serious respectively (see Table 4-1), indicating that the overall environment of the project area needs further improvement.

The construction of wastewater collection systems will eliminate unregulated wastewater discharge and reduce pollutant discharge greatly, thereby reducing the organic load of local water bodies and improve the local environment.

🕮 **Interview with Ms Shi (housewife, 45), villager of Jiujiawan Village**

There is a sewer in my house, but the sewers here are not connected, and dirty water seeps into the ground or flows into canals. The plants in the ecological park also discharge wastewater. Something must be done for proper wastewater treatment, and a good environment will make everyone happy.

Table 4-1 Local Residents' Comments on Environmental Issues (%)

Item	Very serious	Serious	Not serious	No problem	Don't know
Domestic wastewater	25	38.3	30.9	1.5	4.3
Industrial wastewater	20.4	29.3	32.7	2.8	14.8
River/lake pollution	49.7	29.6	19.1	0.6	0.9
Groundwater pollution	14.8	34.3	24.7	10.8	15.4
Water resources waste	21.9	36.7	35.8	3.1	2.5

Source: SA survey

4. Generating job opportunities

In the questionnaire survey, 73.33% of the respondents are willing to get employed or reemployed under the Project, 15% are unwilling and 11.67% don't know, indicating that most local residents and their relatives are willing to get employed or reemployed under the Project to increase income.

The Project has a long construction period and will generate some unskilled jobs, such as stone transport and cooking; at the operation stage, local residents may get network maintenance jobs.

The PMO will make these jobs first available to local and nearby surplus labor, especially the poor, ethnic minorities, women and other vulnerable groups.

4.1.2 Negative Impacts

1. Impact of LA

1.221 mu of land will be acquired permanently and 327.255 mu of land occupied temporarily for the construction of wastewater collection systems, affecting 91 households with 414 persons. The income and livelihoods of these AHs will be affected to varying degrees. The project owner will assist the agencies concerned in conducting LA and

livelihood restoration properly, and paying compensation fees fully and timely to the APs.

2. Risk of connection to wastewater collection systems

Connection to wastewater collection systems is an important indicator of the project outputs. If most local residents are unwilling to connect to wastewater collection systems, the Project will become insignificant.

According to the survey, it is costly and difficult, and less willing for residents within the coverage of the wastewater collection systems to connect to the systems directly. Residents generally expect that wastewater discharge ports be reserved for villages so that wastewater goes into the wastewater collection systems together. In addition, with the progress of new countryside building, connection to the wastewater collection systems can be integrated into new countryside building.

3. Risk of management of wastewater collection systems

The wastewater collection systems will change the discharge mode of domestic and industrial wastewater from direct discharge to discharge to wastewater collection systems. The malfunctioning of wastewater collection systems may affect the wastewater discharge of local residents and connected enterprises, thereby affecting residents' daily lives and enterprises' regular operation.

4. Impact of increased water use costs on vulnerable groups

Residents have to pay wastewater treatment charges to maintain the regular operation of wastewater treatment facilities. For ordinary households, wastewater treatment charges a considerable burden, especially MLS population, thereby potentially impoverishing vulnerable groups. Therefore, subsidization or exemption policies for vulnerable groups should be developed.

4.2 Municipal Wastewater Reclamation and Reuse

4.2.1 Positive Impacts

1. Conserving water resources

The annual water supply of Xining City is 780 million m^3, including 536 million m^3 of surface water and 244 million m^3 of groundwater, with no reclaimed wastewater. In Xining City, river runoffs occur mainly during July-October. Generally, Xining City is relatively short of water resources, and measures should be taken to promote the utilization of reclaimed water in water-depleted areas.

According to statistics, 80% of urban water supply is converted into wastewater, and through centralized treatment, 70% of reclaimed water can be reused. This means that through wastewater reuse, available urban water will increase by at least 50% while existing water supply remains unchanged. In the Project, wastewater mainly includes industrial and domestic wastewater, and reclaimed water from the reclamation plant meets the standard for reuse in production, landscaping and road sprinkling, thereby saving water resources and reducing environmental pollution. The Project will also help improve the awareness of water conservation and environmental protection of local residents.

2. Enhancing social benefits in the project area

Municipal wastewater reclamation and reuse will supply a substantial amount of water for road landscaping and other urban purposes. The use of reclaimed water will save water resources and ensure urban water supply.

3. Improving the pollutant-holding capacity and environmental quality of

rivers

Based on water supply analysis, the overall availability of water resources of Xining City is 70.5%, beyond the generally accepted warning line for river development and utilization of 40%. The high degree of development and utilization water resources has resulted in a low pollutant-holding capacity.

The amount of water replaced in municipal wastewater reclamation and reuse will reduce river water consumption, and improve the pollutant-holding capacity and water quality of rivers, and local environmental quality.

4.2.2 Negative Impacts

1. Potential risk of reclaimed water supply and quality at the operation stage

Municipal wastewater reclamation and reuse needs guaranteed water supply. If water supply is not guaranteed due to pipeline damage, etc., road landscaping and urban water use will be affected, thereby preventing the environmental sanitation department from conducting routine work. On the other hand, landscaping water must meet a certain quality standard, otherwise it may affect the regular growth of plants.

2. Impact of construction

According to the project proposal, reclaimed water pipelines will be laid along roads mainly and involve the construction of bridges, so urban road traffic, and the operation of enterprises and stores on both sides will be affected adversely during construction. It is found that the proprietors of these enterprises and stores support municipal wastewater reclamation and reuse, but have the concern that construction will damage pavements and result in traffic congestion, thereby affecting their production and operating activities temporarily. In addition, dust and noise arising from construction will make residents' traffic inconvenient, and affect their health and safety to some extent.

The project owner will urge the construction agency to take a series of measures to minimize negative impacts during construction, such as construction in stages and construction in non-peak hours.

4.3 Beichuan River Embankment Improvement

4.3.1 Positive Impacts

1. Improving the local environment and residents' quality of life

The 14km-long Beichuan River crosses Xining Higher Education Park and Datong Industrial Park, and is an important ecological corridor in northern Xining. The area east of the Ning-Da Railway and west of the Beichuan River has been a dead spot of urban development, so that the segment of the Beichuan River in the urban area is seriously polluted. The Project aims to improve this area by constructing associated wastewater collection systems, rain pipelines, a reclaimed water network and roads. The Project will help conserve water resources, regulate microclimate, and improve downstream river water quality and residents' quality of life.

2. Promoting the development of secondary and tertiary industries, and expanding employment

The Project will improve the local environment, urban image and investment environment greatly, and promote the development agritainment sites and tourist resources along the river, thereby generating more job opportunities for local residents, including cleaning and restaurant service jobs for women and the poor.

3. Offering leisure and recreational places

After project completion, a structured landscape will be established for the Beichuan River, and the nearby environment will be improved greatly, making the river a good place for leisure and recreation.

4.3.2 Negative Impacts

1. Impact of temporary land occupation

3,356.67 mu of rural collective land will be occupied, residential houses totaling 1.1816 million m^2 and non-residential properties totaling 25,900 m^2 demolished for the Beichuan River (Core Segment) Integrated Improvement Project that is related to Beichuan River embankment improvement, affecting 1,348 households with 6,495 persons in 4 villages. These AHs' income and livelihoods will be affected to varying degrees. The project owner should assist the agencies concerned in conducting LA and livelihood restoration properly, and paying compensation fees fully and timely to the APs.

2. Construction safety risks

During construction, sludge and MSW collection and transport will produce a pungent odor, noise and dust, which will affect local residents' daily lives if not handled properly. Construction vehicles, slag, and wastewater may threaten the safety of local residents, especially old people, children and pregnant women.

> 🕮 **Interview with resident Ms Cai (56)**
> My son and daughter-in-law are working outside. I would take my grandson to and from school by battery tricycle, but I cannot ride it skillfully. There are many big trucks carrying sand and stone, and the road is narrow, so I should pay more attention during riding.

The project owner will pay more attention to such issues at the construction stage, conduct comprehensive publicity and education on construction, and take measures to reduce negative impacts.

4.4 Integrated Gully and Canal Improvement

Xining City is a valley city, surrounded by gullies of varying sizes. Despite of water and soil conservation measures, water loss and soil erosion is still very serious for geological reasons, resulting in unstable loess slopes with sparse vegetation.

This component involves the integrated improvement of 10.4km Chaoyangdian Canal, 0.9km Liujia Gully and 0.9km Shengou Gully. This component will help improve natural ecosystems, and reduce mud, sand and MSW in the canals.

4.4.1 Positive Impacts

1. Reducing water loss and soil erosion, and improving canal ecosystems

The existing canals and gullies in Xining City were mostly completed in the 1980s, and are no longer functioning or have limited capacity. With economic and social development, more spoil, slag and MSW is dumped on both sides of the canals and gullies, which is very likely to result in water loss and soil erosion, and floods.

In this component, MSW and sludge in the canals and gullies will be collected, masonry slopes with a trapezoidal cross section will be built at the canal mouths, and vegetation cultivated along the canals and gullies. These engineering measures will help relieve water loss and soil erosion, and improve the river environment, and restore canal ecosystems.

📖 **Interview with Ms Chen (50), villager of Shuangsubao Village**

There are no MSW collection facilities in the village, such as waste bins, and the nearby river is full of littered MSW and construction waste. The river would be smelly in summer with many flies. Crops irrigated with wastewater grow poorly. The pumped irrigation station once made publicity and set up a signboard on wastewater and MSW littering, but this proved ineffective.

📖 **Interview with Mr. Ma (46), villager of Jiujiawan Village**

Some sewers in the village are connected directly to Liujia Gully, and wastewater from the ecological park nearby is also discharged into the gully. Many families in the village are building houses, producing much construction waste and MSW, which is piled up beside the roads and Liujia Gully. There are many flies here in summer, and the smell is so unpleasant that I even don't dare to open the window.

2. Reducing infectious diseases and improving residents' quality of life

In the SA, nearby residents generally reflected that MSW littering around the canals and gullies was serious, making the watercourses narrower and silted. MSW would rot in summer, producing an unpleasant odor and giving rise to infectious diseases.

Integrated gully and canal improvement will improve the local canals and surrounding environment greatly, reduce infectious diseases, and protect local residents' physical health. Environmental improvement will improve residents' quality of life and environmental awareness, and promote the development of local tertiary industries.

📖 **Interview with Mr. Liu (38), villager of Guojiata Village**

The brigade has hired a waste collection vehicle and would transfer MSW once a week from fixed waste dumps in the village. However, the vehicle comes once a week only and the interval is too long. Some families have too much MSW and cannot wait so long, so they have to dump it directly into Liujia Gully. Moreover, many families are building houses, and produce too much construction waste, which has blocked the roads, so that some residents don't want to go too far and have to litter

3. Enhancing the environmental awareness of local residents

During project construction, local residents' participation in project activities will not only enhance their public participation capacity and level, but also improve their environmental protection and health awareness, thereby promoting the integrated sustainable development of the project area.

4.4.2 Negative Impacts

1. Impact of MSW disposal and transport

In integrated gully and canal improvement, much MSW, construction waste and sludge will drop out during transport and emit odor, posing a risk of secondary pollution.

2. Impact of construction

Flying dust, noise, waste and sludge produced during construction will affect the local environment and residents' daily lives temporarily.

During construction, technicians and workers of different ethnic groups will work on site, who may differ in diet and living customs from the local Hui, Tibetan and Tu people. They should respect local customs and avoid any unnecessary conflict.

5. Willingness for System Connection, and Willingness and Ability to Pay

5.1 Willingness for System Connection

5.1.1 Willingness for Connecting to the Sewer Network

Connection to wastewater collection systems will determine the service range of the Project. It is learned that most enterprises have wastewater collection systems, so that industrial wastewater can be collected easily and effectively after project completion. This chapter describes the willingness of local residents for system connection mainly.

According to the survey, 13.33% of the respondents are willing to connect to wastewater collection systems, 67.34% are unwilling and 19.33% don't care, indicating that local residents are generally less willing to connect to wastewater collection systems. It can be seen from the table below that the willingness of women (14.86%) is higher than that of men (11.20%), which is closely associated with the fact that women do more housework, such as domestic wastewater collection and discharge. See Table 5-1.

Table 5-1 Willingness for Connecting to the Sewer Network

Gender	Willing (%)	Unwilling (%)	Don't care (%)
Female	11.20	67.20	21.60
Male	14.86	67.43	17.71
Total	13.33	67.34	19.33

Source: SA survey, 200 valid samples

Some local residents think it unnecessary to connect wastewater collection systems to their houses, because this cannot bring direct economic benefits to them, and the construction of wastewater collection systems is difficult in the affected villages where roads are narrow and in poor condition. In view of this, the SA team suggests that wastewater intakes are reserved in wastewater collection systems where they pass village drainage canals, so that domestic wastewater can be discharged together. In addition, with the progress of new countryside building, connection to the wastewater collection systems can be integrated into new countryside building.

> 🕮 **Interview with Ms Lu (39), villager of Guojiata Village**
> Constructing the wastewater collection system is a good thing but troublesome. No one is willing to pay for it. My family does not have much domestic wastewater, which can be drained through the sewer easily. Moreover, the roads in the village are narrow and zigzag, and it is not easy to construct the system. Wait until conditions permit!

5.1.2 Willingness for Connecting to the Reclaimed Water Network

According to the project proposal, reclaimed water in municipal wastewater reclamation and reuse is used mainly for toilet flushing and road landscaping. It is necessary to learn local residents' willingness for toilet cleaning with reclaimed water and local enterprises' willingness to utilize reclaimed water.

1. Willingness of residents to connect to the reclaimed water network

90.38% of the respondents think that municipal wastewater reclamation and reuse is important, 2.96% think it is unimportant, and 6.66% don't care. Some respondents said that the project area was short of water resources, and municipal wastewater reclamation and reuse helped save water resources and promote sustainable social development.

According to the questionnaire survey, 36.29% of the respondents are willing to connect to the reclaimed water network for toilet cleaning with reclaimed water, 41.48% are unwilling and 22.23% don't care. The overall willingness of local residents to connect to the reclaimed water network is low because most toilet flushing pipelines in residential areas have been completed, and it is costly to lay additional reclaimed water pipelines through extensive removal and installation. It is more feasible to lay reclaimed water pipelines in new areas where no pipeline has been laid.

> 🕮 **Interview with resident Ms Li (42)**
> I collect information on reclaimed water reuse by newspaper, TV and the Internet. I support municipal wastewater reclamation and reuse, but this will have no benefit in the short run but may take effect 50 years later. This is a project for people's well-being and should not be judged by economic indicators only. Reclaimed water may be used for toilet flushing, flowering and cleaning. For me, paying for a reclaimed water pipeline is acceptable. However, from the perspective of the government, this is complex, costly and difficult to implement.

Table 5-2 Awareness of the Importance of Municipal Wastewater Reclamation and Reuse (%)

Gender	Very important	Important	Somewhat important	Unimportant	Don't care
Female	34.67	40.00	16.00	2.67	6.66
Male	36.67	38.33	15.00	3.33	6.67
Total	35.56	39.26	15.56	2.96	6.66

Source: SA survey, 135 valid samples

Table 5-3 Willingness for Connecting to the Reclaimed Water Network

Gender	Willing (%)	Unwilling (%)	Don't care (%)
Female	36.00	41.33	22.67
Male	36.67	41.67	21.66
Total	36.29	41.48	22.23

Source: SA survey, 135 valid samples

2. Willingness of enterprises to connect to the reclaimed water network

To learn the willingness of enterprises to connect to the reclaimed water network, the SA team has investigated 8 enterprises, including Huaneng, the South and North Mountain Landscaping Headquarters and potential reclaimed water users in Dongchuan Industrial Park. All these enterprises support municipal wastewater reclamation and reuse, because it will mitigate the local shortage of water resources, save water resources, increase the utilization rate of water resources, and ensure the continuity of their production.

The project owner says that in municipal wastewater reclamation and reuse, the reclaimed water network will be extended to the vicinity of enterprises. 6 sample

enterprises (75%) are willing to connect to the reclaimed water network to utilize reclaimed water for production, while the other two sample enterprises have complex water supply networks in which industrial and domestic water is mixed, so that constructing a new reclaimed water network for them would be costly.

> 🕮 **Interview with the head of CPI Solar Power Xi'an Co., Ltd.**
> This company was founded in 2010, with a floor area of 100 mu and a workforce of over 830. Its daily consumption of industrial and domestic water is 1,800 m^3. There is a storage tank in the plant that stores water for one day. We want to use reclaimed water eagerly, so that even if our output is higher, we don't have to worry about water. There is only one pipeline for industrial and domestic water in the plant, and it would be costly to lay two pipelines. We should have done this at the beginning.

5.2 Willingness to Pay

Willingness to pay is a subjective mental state of APs of being willing or not to pay expenses incurred by the Project, including wastewater collection system connection charges and wastewater treatment charges, and reclaimed water connection charges network and reclaimed water expenses. Since reclaimed water users are mainly enterprises, whose wastewater collection system connection charges will be paid by their proprietors, the willingness to pay wastewater treatment charges will be discussed below.

The data for the model analysis of willingness to pay is from the survey on willingness and ability to pay. 300 valid copies of the questionnaire were recovered, including 165 for the Beichuan River area and 135 for the Xichuan River area.

5.2.1 Willingness to Pay of Residents in Different Areas

According to the survey, the mean of monthly wastewater treatment charges that local residents are willing to pay is 15.26 yuan, 16.65 yuan for the Beichuan River area and 13.56 yuan for the Xichuan River area (see Table 5-4).

Table 5-4 Willingness to Pay Wastewater Treatment Charges of Residents in Different Areas (Monthly)

Division	N	Mean	Standard deviation	95% confidence interval		Interval span
				Upper limit	Lower limit	
Beichuan River area	165	16.6473	15.03258	19.736572	13.527198	6.209374
Xichuan River area	135	13.5644	12.11372	17.015939	9.263825	7.752114
Total	392	15.2599	13.98762	17.633159	13.392726	4.240433

Source: questionnaire survey on willingness and ability to pay

5.2.2 Household Income and Willingness to Pay

Household income affects willingness to pay wastewater treatment charges to some extent. According to the survey on willingness and ability to pay, the most intensive annual income group in this respect is 20,001-30,000 yuan, with a confidence interval span of 5.95 yuan (see Table 5-5). It can also be seen from Table 5-2 that local residents' willingness to pay is positively correlated to income – the higher annual household income is, the stronger willingness to pay will be, but the correlation is not strong. This may be attributed to the small amount of wastewater treatment charges and their low

proportion to annual household income.

Table 5-5 Willingness to Pay Wastewater Treatment Charges by Annual Income (Monthly)

Annual household income	N	Mean	Standard deviation	95% confidence interval		Interval span
				Upper limit	Lower limit	
≤5,000 yuan	15	7.2873	6.85372	11.587926	3.299531	8.288395
5,001-10,000 yuan	16	10.6758	11.28965	14.715385	6.311567	8.403818
10,001-20,000 yuan	34	11.3268	16.63289	16.553621	7.253311	9.30031
20,001-30,000 yuan	107	13.1663	12.56712	16.398322	10.452138	5.946184
≥30,000 yuan	97	15.8321	16.91835	20.133158	11.023735	9.109423
Don't know	31	15.7633	13.27653	18.534569	12.965433	5.569136
Total	300	13.8573	14.35671	16.298318	11.537281	4.761037

Source: questionnaire survey on willingness and ability to pay

5.2.3 Educational Level and Willingness to Pay

According to the survey on willingness and ability to pay, residents' educational level is positively correlated to willingness to pay wastewater treatment charges in generally – the higher educational level is, the stronger willingness to pay will be. Residents with the highest ability to pay wastewater treatment charges are those having received university or above education, averaging 17.37 yuan, and those with the lowest ability to pay wastewater treatment charges are of having received primary school or below, averaging 10.38 yuan. The most intensive educational level in this respect is junior high school, with a confidence interval span of 5.63 yuan. It should be noted that the willingness to pay of the junior high school group is slightly higher than that of the senior high school group (see Table 5-6).

Table 5-6 Willingness to Pay Wastewater Treatment Charges by Educational Level (Monthly)

Educational level	N	Mean	Standard deviation	95% confidence interval		Interval span
				Upper limit	Lower limit	
University or above	13	17.3719	14.6227	21.455056	14.827117	6.627939
Junior college	28	15.3927	16.4417	18.926803	12.215612	6.711191
Senior high school/ secondary technical school	87	12.8762	13.8066	16.382357	8.051391	8.330966
Junior high school	114	14.5831	12.2605	17.558672	11.933036	5.625636
Primary school or below	58	10.3783	15.2219	15.628489	5.791401	9.837088
Total	300	14.7658	13.9873	18.357953	11.265539	7.092414

Source: questionnaire survey on willingness and ability to pay

5.2.4 Occupation and Willingness to Pay

According to the survey on willingness and ability to pay, the occupations with higher willingness to pay wastewater treatment charges are civil servant, public institution worker, self-employer, etc., while those with lower willingness are farmer, migrant worker and freelancer. Except "other", the interval span of the willingness to pay wastewater treatment charges of farmers is the smallest. Generally, since there are many farmers and migrant workers in the project area, willingness to pay is relatively intensive, and different occupations differ in willingness to pay, but differences are insignificant (see Table 5-7).

Table 5-7 Willingness to Pay Wastewater Treatment Charges by Occupation (Monthly)

Occupation	N	Mean	Standard deviation	95% confidence interval		Interval span
				Upper limit	Lower limit	
Civil servant	10	19.5372	25.76632	28.893571	-10.721472	39.615043
Public institution worker	14	18.9286	26.98166	32.275601	-9.389613	41.665214
Enterprise employee	38	15.5526	32.33782	35.847336	17.067064	18.780272
Self-employer	40	16.8750	29.57738	29.129301	12060499	17.068802
Freelancer	16	14.3750	18.26278	33.463257	9.9343432	23.5289138
Farmer	79	14.7848	17.32176	26.473378	8.710022	17.763356
Migrant worker	81	15.4938	23.94278	29.875733	7.818267	22.057466
Student	4	21.2500	16.76289	36.869193	12.547607	24.321586
Retiree	8	14.6250	28.63216	38.093636	7.961163	30.132473
Other	2	17.5000	30.13768	38.850761	23.746239	15.104522
Total	300	15.3866	22.76543	30.896895	12.257305	18.63959

Source: questionnaire survey on willingness and ability to pay

5.2.5 Age and Willingness to Pay

According to the survey on willingness and ability to pay, age is also strongly correlated to willingness to pay wastewater treatment charges. Among the respondents aged 20 years or above, younger ones have higher willingness to pay while older ones have lower willingness to pay. This is due to the stronger environmental awareness and stronger ability to earn money of young people, so the proportion of wastewater treatment charges to their expenditure is low.

5.2.6 Government Support and Willingness to Pay

Identifying the willingness to pay of residents entitled to government support[2] helps to protect the interests of certain vulnerable groups, especially MLS households during project implementation. Statistics show that the groups entitled to government support are willing to pay 9.29 yuan on average, lower than the average amount that the groups not entitled to government support are willing to pay by 5.68 yuan (see Table 5-8).

Table 5-8 Willingness to Pay Wastewater Treatment Charges by Government Support (Monthly)

Entitled to government support	N	Mean	Standard deviation
Yes	38	9.2917	8.83529
No	262	14.9737	14.20781
Total	300	14.6328	13.62557

Source: questionnaire survey on willingness and ability to pay

It can be seen that local residents' willingness to pay is correlated to place of residence, household income, age, educational level, and entitlement to government support, in which household income, age and educational level affect willingness to pay wastewater treatment charges greatly.

5.3 Charging Modes

The mode of collection of wastewater treatment charges affects not only the amount of wastewater treatment charges collected, but also people's mode of water use and awareness of water conservation. Currently, there are 3 modes of collection: 1) based on

[2] Population entitled to government support includes: 1) population entitled to minimum living security; and 2) population entitled to five-guarantee support

actual water consumption; 2) based on household population; and 3) equal sharing among households. According to the questionnaire survey, 78.33%, 4% and 6% of the respondents choose the first, second and third modes respectively (see Table 5-9).

Based on a comprehensive consideration of residents' expectations and the current modes, it is feasible and reasonable to collect wastewater treatment charges based on actual water consumption.

Table 5-9 Statistics of Collection Modes of Wastewater Treatment Charges

Mode of collection	N	Percent (%)	Valid percent (%)	Accumulated percent (%)
Based on household population	12	4.00	4.00	4.00
Based on actual water consumption	235	78.33	78.33	82.33
Equal sharing among households	18	6.00	6.00	88.33
Don't know/Never thought of	35	11.67	11.67	100.00
Total	300	100.00	100.00	

Source: questionnaire survey on willingness and ability to pay

5.4 Ability to Pay

According to the research findings of the World Bank and some international lending agencies, it is feasible that household water expenses account for 3-5% of household income. The Research Report on Urban Water Shortage released by the Ministry of Construction in 1995 thinks that it is appropriate that urban domestic water expenses account for 2.5-3% of household income. In this SA, the line of residents' ability to pay fixed in this SA is 3% based on the socioeconomic profile of Xining City.

According to the prevailing policy on the collection of wastewater treatment charges of Xining City, a wastewater treatment charge of 0.82 yuan is collected per 1 m^3 of water consumed. In order not to reduce the living standard of MLS households, the civil affairs bureau would grant a price subsidy for 4 m^3 of water per month to MLS households in the urban area of Xining City together with the finance bureau.

According to the survey on willingness and ability to pay, the average monthly water consumption of ordinary residents in the project area is 12.75 tons. In 2011, the water rate for residents in Xining City was 2.5 yuan/ton and average resident population 4.14 per household. Based on calculation, the annual average amount of water expenses of ordinary residents in the project is 382.5 yuan, accounting for 1.18% of annual household income, which is below the international warning line, indicating that the prevailing water rate is affordable for ordinary local households. Their monthly average amount of wastewater treatment charges is 10.45 yuan, and their annual wastewater treatment charges account for about 0.38% of annual household income. These data indicate that wastewater treatment charges account for a very low proportion to household income, and local residents are able to pay 0.82 yuan per month in wastewater treatment charges.

MLS and five-guarantee households that are entitled to government support differ slightly from ordinary households. Since January 1, 2012, the urban MLS standard of Xining City has risen from 238 yuan to 313 yuan per month, and the rural MLS standard has risen from 1,325 yuan to 1,865 yuan per annum. According to the survey on willingness and ability to pay, the average monthly consumption of ordinary local residents is 7.85 tons. Based on calculation, annual water expenses of local MLS

households account for 1.84% of household income, and wastewater treatment charges account for 0.6% of household income, indicating that the level of annual water expenses of MLS households is lower than the international warning line but higher than the proportion of ordinary households. See Table 5-10.

Table 5-10 Ability to Pay of Ordinary and MLS Households

Type	Monthly water consumption (ton)	Annual water consumption (ton)	Water rate[3] (yuan /ton)	Annual water expenses / wastewater treatment charges (yuan)	Per capita annual income (yuan)	Average population per household	Average annual income per household (yuan)	Percentage to household income[4] (%)
Ordinary households	12.75	153	2.5/0.82	382.5/125.46	7811.03	4.14	32337.66	1.18/0.38
MLS households	7.85	94.2	/	115.5/37.88	1865	3.37	6285.05	1.84/0.6

Source: 1) questionnaire survey on willingness and ability to pay; 2) 2012 Statistical Yearbook of Xining City; 3) Xining Water Supply Company

It can be seen from the above analysis that: 1) Since people's income will further increase and their environmental awareness will improve with the economic development of Xining City in the next few years, wastewater treatment charges will be affordable for ordinary residents; 2) The collection of wastewater treatment charges affects the poor more greatly than ordinary residents, and has already imposed a great living pressure on the poor; 3) The reduction and exemption policies for low-income households can help mitigate the financial burden of such households; and 4) The Xining Municipal Government should continue to reduce or exempt wastewater treatment charges for vulnerable groups, and consider increasing the subsidy rate for vulnerable groups.

[3] Water rate includes wastewater treatment charges.
[4] Percentage to household income = annual household water expenses or annual wastewater treatment charges / annual average household income *100%

6. Affected Ethnic Minorities

This chapter is written to identify the interactions between ethnic minorities and the Project, minimize the Project's potential social risks to ethnic minorities, and ensure that all ethnic groups benefit equally from the Project. The concerns of this chapter are: 1) overview of ethnic minorities in the project area; 2) ethnic minorities' needs for the Project; and 3) the Project's impacts on ethnic minorities.

6.1 Overview of Ethnic Minorities in the Project Area

6.1.1 Ethnic Composition in the Project Area

Xining City is located in eastern Qinghai Province, and is the provincial capital, the largest city on the Qinghai-Tibet Plateau, the political, economic, cultural and traffic center, and a major industrial base of Qinghai.

Xining City is inhabited by 34 ethnic groups, including Han, Zhuang, Hui, Manchu, Salar, Tujia, Mongolian, etc., and minority population accounts for a high proportion. According to the 2012 Statistical Yearbook of Xining City, at the end of 2011, the city had a minority population of 578,200, accounting for 25.95% of gross population. In the minority population, there are 362,300 Hui people, accounting for 62.65%; 122,600 Tibetans, accounting for 21.20%; 57,800 Tu people, accounting for 10.00%; 8,620 Salar people, accounting for 1.50%; 13,810 Mongolians, accounting for 2.39%; and 13,101 people of other ethnic minorities, accounting for 2.27%.

In Chengbei District where the Project is located, the proportion of minority population (9.67%) is the lowest among the districts and counties in Xining City. In its minority population of 301,000, there are 13,300 Hui people, accounting for 45.95%; 8,198 Tibetans, accounting for 28.16%; 597 Salar people, accounting for 2.05%; 2,760 Tu people, accounting for 9.48%; 1,546 Mongolians, accounting for 5.31%; and 2,636 people of other ethnic minorities, accounting for 9.05%. In the directly affected area, there is a minority population of 964, accounting for 2.33% of gross population. See Table 6-1.

Table 6-1Distribution of Ethnic Minorities in the Direct Service Area

District / county	Township / sub-district	Village / community	HHs	Population	Minority population	Percent of ethnic minorities, %	Minority composition	Minority village?	Central minority area?
Chengbei District	Ershilipu Town	Mojiazhuang	381	1495	214	14.31	Hui	No	No
		Sunjiazhai	378	1511	192	12.71	Hui	No	No
		Shitoulei	426	3011	223	9.23	Hui, Tibetan	No	No
		Ershilipu	654	2501	22	0.88	Hui	No	No
		Jiujiawan	208	752	0	0	/	No	No
		Guojiata	278	1264	12	0.95	Hui	No	No
		Shuangsubao	430	1835	0	0	/	No	No
		Weijiazhuang	145	558	0	0	/	No	No
	Mafang Sub-district	Sanqi	1471	4153	5	0.12	Tibetan	No	No
Huangzhong County	Duoba Town	Chengxi	547	2209	23	1.04	Hui, Tibetan	No	No
		Chengzhong	468	1930	27	1.44	Hui, Tibetan	No	No
		Chengdong	637	2870	8	0.29	Hui	No	No
		Xiaozhaicun	704	3168	41	1.29	Hui	No	No
		Shuangzhai	572	2232	21	0.89	Hui	No	No

District / county	Township / sub-district	Village / community	HHs	Population	Minority population	Percent of ethnic minorities, %	Minority composition	Minority village?	Central minority area?
		Weijiazhuang	712	3188	0	0	/	No	No
Datong County	Changning Town	Shangsunjiazhaicun	510	3290	53	1.61	Hui, Tibetan	No	No
		Hetancun	130	596	0	0	/	No	No
		Songjiazhuang	210	1107	12	1.08	Hui	No	No
		Wanjiahzuang	92	414	9	2.17	Hui	No	No
		Daijiazhuang	242	1092	41	3.75	Hui, Tibetan	No	No
		Shuangmiaocun	235	1057	39	3.69	Hui, Tibetan	No	No
		Gangoumen	338	1817	22	1.21	Hui, Tibetan	No	No
Total			**9817**	**41455**	**964**	**2.33**			

27 minority residents participated in the questionnaire survey, including 10 Hui people, 5 Tibetans, 5 Tu people, 4 Mongolians and 3 Salar people, covering the 5 ethnic minorities to be assessed by the SA team. See Table 6-2.

Table 6-2Results of Participatory Questionnaire Survey for Ethnic Minorities

Feature	Statistics
Gender	Males 41.67%; females 58.33%
Age	<60 years: 80.7%; 60-70 years: 14%; 70 years or above: 5.3%; middle aged (31-59): 65.5%; young adult (0-20): 15.2%
Educational level	University or above: 4.41%; Junior college: 9.49%; senior high school : 29.49%; junior high school: 36.95%; primary school or below: 19.66%
Occupation	Civil servant: 3.33%; public institution worker: 4.67%; enterprise employee: 12.67%; self-employer: 13.33%; freelancer: 5.33%; farmer: 26.33%; migrant worker: 27%; unemployed: 2.67%; student: 1.33%; retiree: 2.67%; other: 0.67%
Government support	Yes 12.67%; no 87.33%
Annual household income (2012)	≤5,000 yuan: 5%; 5,000-10,000 yuan: 5.33%; 10,001-20,000 yuan: 11.33%; 20,001-30,000 yuan: 35.67%; ≥30,000 yuan: 32.33%
Attitude to the Project	Supportive 87.35%; against 3.39%; don't care 9.26%

Source: SA survey

6.1.2 Characteristics of Ethnic Minorities

According to OP4.10, "ethnic minority" means a unique and vulnerable social and cultural group identified as follows:

1. Self-identified as members of an ethnic cultural group, which is recognized and respected by others.
2. Attached collectively to residential areas or ancestral territories with unique geographic characteristics in the project area, and also to natural resources in such residential areas;
3. Having traditional cultural, economic, social or political institutions different from those of mainstream society and culture; and
4. Often having a minority language different from the national or local official language.

The SA team has identified the local ethnic minorities according to the above criteria. In the project area, minority residents benefiting from the Project live together with the local mainstream ethnic group (Han), and have entered the project area by marriage or employment. These ethnic minorities do not have a sense of identification, and there is no ethnic boundary in social intercourse and marriage. These ethnic minorities do not have

their unique residential areas or ancestral territories, and their economic, social or political institutions different from those of mainstream society and culture. All ethnic groups maintain their respective traditional cultures, and interact with one another during social intercourse. See Table 6-3.

Table 6-3 Key Features of Ethnic Minorities Affected by the Project

No.	Ethnic group	Key features
1	**Hui**	①History: The Hui ancestors lived in Qinghai in the Tang and Song dynasties, and a large number of Hui people migrated to the Hehuang region in the Yuan dynasty. Since the Ming and Qing dynasties, Hui people migrating to Qinghai from Arab, Persia, Xinjiang, Gansu and Shaanxi have been increasing for complex social and historical reasons, and got along with other local ethnic groups. ②Language: Hui people usually speak mandarin Chinese, but they maintain Arabic and Bosnian words. ③Religion: The Hui people believe in Islam. There is a mosque in every village inhabited by the Hui people. ④Economy: The Hui people deal mainly with agriculture, and also with commerce and handicraft. Their agricultural economy is focused on crop cultivation, and has a big component of stockbreeding. In urban areas, the Hui people mostly engage in catering, handicraft, fur processing, commerce and trade, etc. ⑥Other: The Hui people celebrate the 3 major Islamic festivals – Fast-Breaking Festival, Corban Festival and Maulid al-Nabi.
2	**Tu**	①History: Their ancestors were the Tuguhun people, who have evolved over a long time, and fused with Mongolians, Tibetans, and Han and Hui people. ②Language: They have their own spoken language, which belongs to the Mongolian branch of the Altaic family. The written Tu language was created in 1979, and is being put into practice and promoted. ③Religion: The Tu people believed in the primitive religion of Shamanism in history, and have begun to believe in the Gelug sect of Tibetan Buddhism since the late Ming dynasty. They are also influenced by Taoism. ④Economy: The Tu people have turned from nomads to farmers since the Ming dynasty. Currently, they deal with the cultivation of wheat, highland barley and potato, and also with stockbreeding. ⑤Other: Except the Spring Festival and Dragon Boat Festival that are the same as those of the Han people, the Tu people have their own festivals and temple fairs.
3	**Salar**	①History: The Salar people originated from the Turkmenians, Turkish, Tartars and Azerbaijani in Central Asia, and have fused with local Mongolians, Tibetans, and Han and Hui people. ②Language: The Salar language belongs to the Uygkus group, west Hunnish branch, Turki sub-family, Altai family. Many Salar people can also speak Chinese and Tibetan. ③Religion: The Salar people believe in Islam. Although there are many sects, the basic faith is the same, and they differ mainly in doctrine or etiquette only. ④Economy: The Salar people have turned from hunting, lumbering and stockbreeding to farming gradually since the early Qing dynasty, and later developed handicrafts and horticulture. ⑤Other: The Salar people celebrate the 3 major Islamic festivals – Fast-Breaking Festival, Corban Festival and Maulid al-Nabi, and also have some own festivals.
4	**Tibetan**	①History: The Tibetans in Qinghai originated from the ancient nomadic Qiang people, who have fused with other local tribes. ②Language: The Tibetans have their own spoken and written language. Tibetan belongs to the Tibetan branch, Tibetan- Burmese sub-family, Chinese-Tibetan family, divided into the 3 dialects of Tibet, Kang and An. The Tibetans in Qinghai mostly speak the An dialect. Commonly used written Tibetan was created in the 7th century AD. ③Religion: The Tibetans believe in Tibetan Buddhism. ④Economy: The local Tibetans have no economic difference from the Han people. ⑤Other: The main festivals celebrated by the Tibetans include the Spring Festival, New Year's Day in the Tibetan calendar, Ghee Lamp Festival, Shoton Festival, etc.

No.	Ethnic group	Key features
5	**Mongolian**	①History: This ethnic group was formed by Genghis Khan and entered Qinghai in the early 13th century. ②Language: Mongolian in Qinghai is the Oirat dialect of Mongolian, and the written language is “Hutumu”. ③Religion: The Mongolians believe in the Gelug sect of Tibetan Buddhism. ④Economy: They deal with farming and stockbreeding mainly. ⑤Other: Their folk festivals include New Year’s Day in the Tibetan calendar, Butter Lamp Festival, Buddha's Birthday, Spring Festival and Nadam Fair.

It is learned that there is no ethnic conflict in the project area, and all conflicts are attributed to other reasons, such as financial disputes. This is a very important point in the ethnic features of Xining City different from other areas.

In Xining City, a major feature of fusion among ethnic groups is that all ethnic groups speak Mandarin Chinese in daily communication, and the local Hui, Tibetan, Tu, Mongolian and Salar people write in Chinese. Another major feature is that all ethnic groups celebrate some major festivals, such as the Spring Festival of the Han people. A third major feature is that all ethnic groups interact closely and do not pay particular attention to their ethnic identity, and intermarriage is very common. All ethnic groups take on a trend of all-round economic, social and cultural fusion, which lays a good social foundation for the successful implementation of the Project.

6.2 Participation of Ethnic Minorities in the Project

6.2.1 Participation Process

The SA team conducted free, prior and informed consultation with the affected ethnic minorities through the following procedure:

1. Training: The members were trained on PRA before the survey to master the PRA method, and learn the purpose and requirements of the survey.
2. Literature review: Before the survey, the members collected literatures on local ethnic minorities, history and culture, economic and social development, water use, wastewater treatment, physical health, etc.
3. FGD: The SA team held FGDs with agencies concerned, enterprises and residents to learn local conditions, especially residents’ willingness to participate.
4. Door-to-door survey: The SA team conducted a door-to-door questionnaire survey or in-depth interviews.
5. Summary: The members analyzed and summed up the survey findings, and prepared interview minutes to prepare for the SA report.
6. Feedback: The SA team submitted the survey results to the project owner with actions proposed to address potential issues, and gave feedback to the project area.

6.2.2 Modes of Participation

The local ethnic minorities are enthusiastic about community participation, and the number of minority officials is equivalent to the proportion of minority population. The SA team designed the ethnic minority participation program using the participatory rural appraisal method. The SA team ensures the participation of minority stakeholders in project decision-making by means of FGD, door-to-door interview, etc.

1. Institutional FGD

Most participants of the institutional FGDs are officials responsible for ethnic minority affairs. These FGDs covered the Project’s possible impacts on local minority residents,

and local officials' suggestions or comments on the Project. The agencies involved include the municipal ethnic affairs commission, water resources bureau, environmental protection bureau, and civil affairs bureau.

In the sample villages/communities, the SA team held FGDs with residents of different ethnic groups, genders, ages, income levels and places of residence, disclosing project information, collecting information related to the Project (e.g., amount of LA, HD area, willingness and ability to pay wastewater treatment charges), and addressing issues together.

2. Door-to-door interview

Door-to-door interviews were designed to learn minority residents' attitudes to existing wastewater treatment facilities, needs for and suggestions on the Project, willingness and ability to pay, willingness to participate in the Project, current livelihoods, land use, and expectations for compensation for LA and HD, with special focus on ideas of the poor and women.

3. In-depth interview

In-depth interviews were held with minority residents with insights into the Project to discuss relevant issues, including some local officials who have a deep understanding of local customs and practices. Their suggestions are often critical to the successful implementation of the Project. Through in-depth interviews, the SA team collected much valuable information, and further understood potential issues, thereby ensuring the depth of participation of minority residents in project decision-making.

4. Questionnaire survey

The SA team conducted a questionnaire survey to learn the production and living conditions of local minority residents affected by LA and HD, and their ideas about and suggestions on the Project.

6.2.3 Needs for the Project

Through free, prior and informed consultation with the ethnic minorities, the SA team learned their expectations, needs and suggestions, and the Project's possible impacts on them.

1. Needs of local ethnic minorities

The local ethnic minorities have the same needs for the project as other local residents. However, focus should be placed on the following aspects: 1) The traditional customs of the local ethnic minorities should be respected during construction, and environmental protection and civilized construction should be stuck to; and 2) Resettlement housing should be designed in consultation with the ethnic minorities to suit their customs.

2. Participation of ethnic minorities in the Project

Among the 300 valid minority samples, 91.4% support the Project, 3% do not support it and 5.5% don't care. Those not supporting the Project are mainly those affected greatly by LA and HD in the Project. 90.3% of the respondents expect or strongly expect the implementation of the Project, 2.3% do not expect, and 6.1% don't care.

Generally, minority residents support and strongly expect the Project.

6.3 Impacts of the Project on Ethnic Minorities

6.3.1 Positive Impacts

1. The construction of wastewater collection systems will improve the wastewater

treatment capacity of Xining City, and ensure healthy and safe water use by local minority residents, thereby reducing waterborne infectious diseases and improving their physical health.

2. The Project will reduce the amount of discharge of pollutants substantially, reduce the organic load of the local aquatic environment, regulate microclimate, and improve the quality of life and living environment of ethnic minorities.

3. During the long construction period of the Project, some unskilled jobs will be generated, such as carrying stone materials to the site and cooking for workers; at the operation stage, local minority residents can get such jobs as network maintenance, landscaping and cleaning.

4. The Project will improve the local environment and urban image greatly, and promote investment and the development of local tourist resources, thereby generating more job opportunities for local minority residents.

5. After the completion of the Project, the surrounding environment and landscape of the Beichuan River will be improved greatly, thereby creating a good leisure place for ethnic minorities.

6. The Project will also help improve the awareness of water conservation and environmental protection of local residents.

6.3.2 Negative Impacts

1. For low-income households, sewage treatment charges are a heavy burden, which may also bring poverty to vulnerable ethnic minorities.

2. Any malfunction in wastewater collection systems would affect wastewater discharge in the project, cause inconvenience to the daily life of minority residents and affect the regular operation of enterprises adversely.

3. Flying dust, noise and MSW during construction will affect the local environment and the daily life of minority residents temporarily. Vehicles, and MSW, sludge and wastewater on the construction site may threaten the personal safety of local minority residents, especially old people, children and pregnant women.

In general, the positive impacts of the Project on minority residents are much greater than negative impacts, which can be evaded through regulatory provisions and alternatives. Based on free, prior, and informed consultation, most minority residents think that the Project will improve their living environment and is positive for them in general.

6.4 Conclusion

Ethnic minorities account for a vast majority of the direct beneficiary population of the Project. Based on free, prior and informed consultation with the affected minority communities, the Project is supported extensively by these communities.

The Project ensures that the affected ethnic minorities receive social and economic benefits in a culturally appropriate manner. When it is determined that the Project will have potentially negative impacts on ethnic minorities, measures will be taken to avoid or minimize such impacts, or such impacts will be compensated for. Ethnic minority planning has been incorporated directly into the project design, so no separate ethnic minority development plan has to be developed. During FS stage, the locations of some pipeline haven't been confirmed finally, the project might have potential influence on the local ethnic minority groups, so an ethnic minority development framework was prepared. (See the **Ethnic Minority Development Framework**.)

7. Public Participation

7.1 Participation at the Preparation Stage

This report and the Social Action Plan are based on such public participation activities as institutional interview, community committee FGD, enterprise FGD, questionnaire survey and personal in-depth interview. In order to involve all stakeholders fully in the Project, the Bank mission and SA team conducted participatory surveys and interviews with community residents on project impacts, and needs for and suggestions on the Project, and held FGDs that involved the PMO, departments concerned of Xining City, heads of township governments and village committees, and representatives of the affected enterprises and APs.

This report is based on the questionnaire survey, in-depth interviews, institutional interviews and other public participation activities. See Table 7-1.

1. Project information disclosure

1) From December 2012 to March 2013, CSCEC AECOM Consultants Co., Ltd. introduced the background and purpose of the project to 52 APs, village officials and technicians (28 men and 24 women), solicited their comments, and paid a site visit to prepare for the feasibility study report.

2) In March 2012, Hohai University conducted a socioeconomic survey, covering project awareness and attitudes, distribution of LA compensation fees, expected resettlement modes for HD, livelihood and production restoration measures, etc.

3) From September 2012 to March 2013, project information was disclosed on government websites, municipal TV and radio stations, and newspapers.

4) In May 2013, the IA conducted the first round of disclosure on the EIA by distributing 49 copies of the questionnaire and holding a FGD with local residents.

5) In July 2013, the feasibility study agency investigated Liujia Gully, Shengou Gully and Chaoyangdian Canal to disclose project information and solicit comments from nearby residents.

6) In September 2013, the feasibility study agency solicited comments from residents on the change of the box culvert design in integrated gully and canal improvement.

2. Participation in resettlement

1) At the resettlement preparation and implementation stages, the project management agencies solicited comments from the APs by means of FGD and consultation to improve the project design and resettlement programs.

2) During March-June 2013, the IA, township governments and village committees conducted a number of detailed resettlement willingness surveys to communicate the compensation and resettlement policies, and consult preliminary resettlement programs.

3) In November 2013, the resettlement policies and RAP were disclosed by means of municipal TV and radio stations, newspapers, government websites, etc. The IA will conduct extensive consultation on compensation programs, restoration measures, etc.

3. Field survey: During March 21-April 1, 2013, the agencies concerned conducted a field survey on the proposed project site to learn the existing wastewater collection systems and water reclamation of Xining City, and the current environment of the

Beichuan River and canals, conferred with the competent authorities of Xining City, determined the project implementation schedule preliminarily and solicited comments from the APs.

4. FGD: FGDs include ordinary FGDs, FGDs with women and FGDs with vulnerable groups. 7 ordinary FGDs, 3 FGDs with women and two FGDs with vulnerable groups were held, with 96 participants in total, including 43 women (44.79%), in order to learn the background of the affected villages, and learn local residents' attitudes to and needs for the Project.

5. Questionnaire survey and in-depth interview: During March 18-April 1, 2013, the SA team conducted a door-to-door questionnaire survey on residents within the service area of the Project in Shuangsubao Village, Ershilipu New Village and Jiujiawan Village, with 300 valid copies recovered, including females (58.33%). The survey was designed to learn local residents' awareness of the Project, modes of wastewater and MSW disposal, environmental perceptions and suggestions. During this period, in-depth interviews were conducted with 28 persons, including 13 women (46.43%).

6. Institutional interview: During March 18-April 1, 2013, the SA team interviewed the heads of the Xining PMO, development and reform commission, statistics bureau, civil affairs bureau, poverty reduction office, ethnic and religious affairs bureau, women's federation, etc. to learn the socioeconomic profile of Xining City, women's development, poverty, minority distribution, relevant policies and ongoing projects, suggestions on the Project, etc.

7. Enterprise interview: During March 18-April 1, 2013, the SA team interviewed the heads of 9 enterprises, including Huaneng, Asia Silicon and Yellow River New Energy, to learn their current wastewater discharge modes and networks, attitudes to and suggestions on water reclamation, etc.

In addition, local residents participated in project preparation by giving opinions and appeals to the PMO, township governments and village committees.

Table 7-1 Summary of Public Participation Activities at the Preparation Stage

Item	Date	Agencies involved	Participants	Remarks
Information disclosure	Sep. 2012 – Mar. 2013	Affected villages	CSCEC AECOM Consultants Co., Ltd., APs, village officials, technicians	Introducing project background, soliciting their comments, visiting the site, and preparing for FSR writing
	Mar. 2012	Affected villages	Hohai University, Xining PMO, AHs	Conducting public consultation to learn local residents' needs, and compensation for LA and HD
	Sep. 2012 – May 2013	Government website, municipal TV and radio stations	AHs	Disclosing project information
	May 2013	Affected villages	Xining PMO, AHs	Conducting the first round of disclosure on the EIA
	Jul. 2013	Affected villages	CSCEC AECOM Consultants Co., Ltd., APs, village officials, technicians	Disclosing project information, and soliciting comments from nearby residents
	Sep. 2013	Affected villages	CSCEC AECOM Consultants Co., Ltd., APs, village officials, technicians	Soliciting comments from residents on the change of the box culvert design in integrated gully and canal improvement
Participation in resettlement	Mar. 2013	Affected villages	Xining PMO, Chengbei District Resettlement Office, AHs	Soliciting comments from the APs by means of FGD and consultation
	Mar. – Jun.	Affected villages	IA, township governments,	Resettlement willingness survey,

Item	Date	Agencies involved	Participants	Remarks
	2013		village committees, Hohai University	publicity on compensation and resettlement policies, preliminary resettlement programs
	Nov. 2013	Government website, municipal TV and radio stations, newspaper	AHs	Disclosing resettlement policies
Field survey	Mar. 21 – Apr. 1, 2013	Proposed project site	Bank mission, FSR agency, RAP agency, SA team, EIA agency, etc.	Learning conditions of wastewater collection systems and reclaimed water in Xining City, and current conditions of the Beichuan River and canals, and communicating with community residents
FGD	Mar. 18 – Apr. 1, 2013	Heads of township governments and village committees, representatives of affected enterprises and residents	12 FGDs, with 96 participants in total, including 43 women	Learning the background of the affected communities/villages, learning their attitudes to and needs for the Project, and local women's needs and attitudes, and collecting their suggestions on the Project
Questionnaire survey and in-depth interview	Mar. 18 – Apr. 1, 2013	Residents in the project area, including low-income households, women-headed households and ethnic minorities	300 valid copies, including 175 females (58.33%) and 125 males; in-depth interviews with 28 persons, including 13 females (46.43%)	Learning local residents' awareness of the Project, modes of wastewater and MSW disposal, environmental perceptions and suggestions
Institutional interview	Mar. 18 – Apr. 1, 2013	Xining PMO, municipal agencies concerned, Xining Drainage Company, Xining Drainage Company, Administrative Committee of Dongchuan Industrial Park, South and North Mountain Landscaping Headquarters	Heads of agencies concerned	Learning policies related to the Project and their implementation
Enterprise interview	Mar. 18 – Apr. 1, 2013	9 enterprises, including Huaneng, Asia Silicon and Yellow River New Energy	Heads of enterprises	Learning their current wastewater discharge modes and networks, attitudes to and suggestions on water reclamation

At the preparation stage, various issues related to the Project were further defined through public participation, such as the construction of wastewater collection systems (pipeline management, construction safety, etc.), municipal wastewater reclamation and reuse (water quality and amount, etc.), Beichuan River embankment improvement (involuntary resettlement, environmental impacts of construction, construction safety, etc.), and integrated gully and canal improvement (construction waste littering, domestic wastewater discharge, etc.), and all stakeholders proposed suggestions on and expectations for the Project through public participation, which will help improve the project design and facilitate project implementation.

7.2 Subsequent Participation Plan

In order to maximize the project benefits and evade potential risks, it is necessary to take measures at the construction and operation stages to ensure public participation.

1. During construction, make 40% of unskilled jobs first available to local women and the poor, minimize noise construction, and ensure that the construction staff respect to local cultural and living customs.
2. At the operation stage, the PMO and other agencies concerned should be

represented by women. All construction safety and traffic training should be flexible in mode and time to cater for women's characteristics and needs.

3. During and after construction, environmental sanitation supervisory teams will be established in the affected communities under the leadership of community committees, and their members should include women and minority residents. A certain subsidy will be granted to team members under the Project to enhance public environmental awareness.

4. At the construction and subsequent operation stages, project and policy information should be disclosed to the public by various means, and a grievance redress mechanism established to cover on-site inquiry, hotline and Internet. See Table 7-2.

Table 7-2 Summary of Public Participation Activities at Different Stages

Stage	Activity	Description	Method	Participants	Agencies responsible
Preparation	Project optimization	1) Disclosing project information; 2) Collecting local residents' comments and suggestions on pipeline laying and construction safety, etc.; 3) Feeding back such comments and suggestions to the PMO, feasibility study agency, etc.	Questionnaire survey, FGD, door-to-door interview, etc.	Local residents, PMO, other agencies concerned	PMO, feasibility study agency, IA, other agencies concerned
Implementation	Participation in project construction	1) Coordinating all parties and reporting local residents' comments; 2) Establishing criteria for unskilled jobs; 3) Supervision the payment of LA and HD compensation fees; 4) Training and publicity on environmental awareness; 5) Participating in project construction	Collection of comments via village committees	Participants in project construction, APs, PMO, IA	PMO IA Agencies concerned
Operation	M&E; grievance redress	Establishing a feedback system for local residents	Complaint hotlines; official websites of the government	PMO village committees	PMO IA Agencies concerned
Project management	Participation in project maintenance	Xining Drainage Company, Xining Drainage Company, Huangshui Administrative Committee, development and reform commission	Publicity, TV, broadcast, Internet	Xining Drainage Company	IA

7.3 Public Participation Strategy

At the construction and operation stages, it is very necessary to establish a sound public participation mechanism, and apply the participatory concept to all tasks at all project stages. The participatory concept means the empowerment of self-decision-making to local people, and involves a series of activities that enable the primary stakeholders to influence and control resource utilization and decision making. At the planning stage, the participatory concept has to be converted from a planner-oriented one to a community-oriented one. See Table 7-3.

Table 7-3 Summary of Public Participation Activities in Integrated Gully and Canal Improvement

Item	Duration	Participants	Scope
Socioeconomic survey	Aug. 20 – Sep. 8, 2013	Chengbei District Government, biotechnology park, Huangshui Administrative Committee	Learning the socioeconomic profile of the nearby area
Discussion of member agencies of the Project Coordination Leading Group	Aug. 20-25, 2013	Chengbei District Government, biotechnology park, Huangshui Administrative Committee	Identifying the scope of integrated gully and canal improvement, and discussing long-term management and supervision mechanisms

Discussion of agencies in the project area	Aug. 26 – Sep. 1, 2013	Chengbei District Government, biotechnology park, Huangshui Administrative Committee, township governments, sub-district offices, village committees	Notifying the preliminary project design, and discussing the long-term management mechanism
Public consultation in the project area	Sep. 2-8, 2013	Chengbei District Government, biotechnology park, Huangshui Administrative Committee, township governments, sub-district offices, village committees	Disclosing the project design and long-term management mechanism to nearby residents, and soliciting comments and suggestions

Source: PMO

The SA team has learned local residents' expectations and needs in depth, and found that in Shuangsubao, Guojiata and Jiujiawan Villages affected by integrated gully and canal improvement, the needs for public participation relate to MSW collection and disposal, and canal environmental improvement. A sound public participation strategy will be developed for these villages to improve the level of public participation.

7.3.1 Establishing Township Volunteer Leading Groups

The volunteer leading group of a sub-district or township is established under the leadership of the sub-district office or township government, responsible for leading and evaluating the work of community volunteer service teams, and accepting grievances and appeals from community residents.

The volunteer leading group would hold a joint meeting semiannually to study how to establish long-term organizational, coordination, supervision, evaluation, reward and punishment mechanisms to plan and evaluate the work of community volunteer service teams. Community volunteer service teams would report work progress to the group monthly, and be responsible specifically for planning, guidance, inspection and evaluation.

During the establishment of township volunteer leading groups, a management pattern involving different stakeholders should be established under the leadership of the Xining Municipal Government, Biotechnology Park Administrative Committee, Chengbei District Government, and environmental protection bureaus, with the assistance of Bank experts and other relevant experts, and under the supervision of residents, volunteer service teams, NGOs and news media.

7.3.2 Establishing Community Volunteer Service Teams

1. Establishment

1) Composition: At least one community volunteer service team will be established in each of Shuangsubao, Guojiata and Jiujiawan Villages affected by integrated gully and canal improvement, composed of 2-3 members each, and headed by a member of the village committee.

2) Competencies: Volunteers should be enthusiastic and responsible, and have a certain educational level, good organizing and coordinating abilities, and more leisure time.

3) Selection process: The village committee organizes a public election and discloses the list of electees.

4) Selection principles: ①Residents of different ages and genders should be covered; ②Minority residents should participate equally; and ③The election process should be fair, open and transparent.

2. Responsibilities

The main duties of community volunteer service teams are:

1) Assisting the work of the PMO, assisting the township urban administration section in giving publicity on MSW collection and disposal, directing residents in MSW collection and disposal, and accepting inquiries on MSW collection and disposal, environmental protection, etc.;

2) Assisting the village committee in designing reasonable modes of MSW collection, transport and disposal, and regulating environmental behavior;

3) Supervising environmental and canal improvement in the Project, supervising the collection and disposal of MSW and construction waste, conducting environmental quality inspections regularly, disclosing monitoring results and submitting them to the sub-district/township volunteer leading group;

4) Soliciting comments on site selection for wastewater collection systems, and the setup of health facilities and safety signs;

5) Supervising project construction, and making 30% of the unskilled jobs generated by the Project first available to vulnerable groups;

6) Disclosing appeal channels to the APs (see Figure 7-1), soliciting their comments, disclosing the supervision hotline, handling appeals related to the Project by on-site, letter, telephone, SMS, e-mail or online means, and giving a reply on spot or within 15 days; and

7) Developing a community reward and punishment mechanism for integrated environmental improvement.

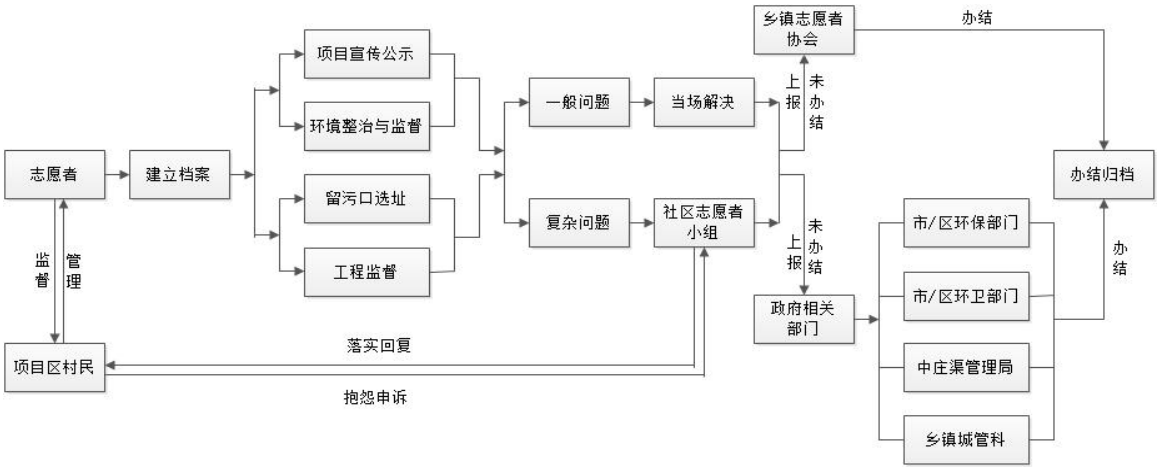

Figure 7-1 Grievance Redress Flowchart

3. Workflow

1) Community volunteers establish resident information files, covering age, family background, health status, project impact, labor skills, intent of employment, etc., so as to participate their community participation;

2) Community volunteers carry out community activities, including project information disclosure, local labor employment, community environment improvement, construction quality supervision, etc.;

3) Community volunteers solve ordinary issues on spot and report to the community volunteer service team, or refer complex issues to the community volunteer service team;

4) Community volunteers manage and are supervised by community residents; and

6) The community volunteer service team discloses its appeal hotline, and

residents may file appeals to the team by telephone, mail, SMS and e-mail. The community volunteer service team should give a reply immediately or within 15 days, or refer to the sub-district/township volunteer leading group.

4. Funds

Funds for community volunteer service teams will be provided by environmental protection bureaus and other departments concerned.

8. Social Gender and Development

8.1 Overview of Women in the Project Area

8.1.1 Female Population in the Project Area

At the end of 2011, Qinghai Province had a population of 5.6817 million, including 2.8755 million males, accounting for 50.6%; and 2.8062 million females, accounting for 49.4%. Male-to-female ratio was 102.5.

At the end of 2011, Xining City had a population of 2.228 million, including 1.145 million males, accounting for 51.4%; and 1.083 million females, accounting for 48.6%. Male-to-female ratio was 105.7.

At the end of 2011, Chengbei District had a population of 301,000, including 156,000 males, accounting for 51.83%; and 145,000 females, accounting for 48.2%. Male-to-female ratio was 107.6. See Table 8-1.

Table 8-1 Female Population in the Project Area (2011)

Division	Population (0,000)	Female population (0,000)	Percent (%)	Gender ratio
Qinghai Province	568.17	280.62	49.4	102.5
Xining City	222.80	108.30	48.6	105.7
Chengbei District	30.10	14.50	48.2	107.6

Source: 2012 Statistical Yearbook of Xining City

8.1.2 Women in the Project Area

To learn local women's development in the project area, a questionnaire survey and interviews were held, involving 175 women in total, accounting for 58.33% of the sample size.

1. Age

In the sample population, males and females aged 31-59 years account for 66.29% and 64.80% respectively.

Table 8-2 Gender and Age Distribution of the Samples

Age	Females		Males		Total	
	N	Percent (%)	N	Percent (%)	N	Percent (%)
30 years or below	28	16.00	18	14.40	46	15.2
31-59 years	116	66.29	81	64.80	197	65.5
60 years or above	31	17.71	26	20.80	57	19.3

Source: SA survey

2. Educational level

In the sample population, females and males having received junior high school or senior high school/secondary technical school education account for 67.73% and 66.40% respectively, and females and males having received higher education account for 13.71% and 13.60% respectively, showing no significant gender-related difference in educational level.

Table 8-3 Gender and Educational Level Distribution of the Samples

Gender / Educational level	Females		Males	
	N	Percent (%)	N	Percent (%)
Primary school or below	33	18.86	25	20.0
Junior high school	71	40.57	43	34.4
Senior high school/secondary technical school	47	26.86	40	32.0
Junior college	17	9.71	11	8.80
University or above	7	4.00	6	4.80
Total	175	100.00	125	100.00

Source: SA survey

3. Occupations

In the sample population, the proportions of female farmers and migrant workers are lower than those of males, while the proportions of female freelancers and unemployed women are higher than those of males, showing a significant division of labor between the two genders. Most men work outside, while most women do farm work or take care of children at home. Even women working outside work in nearby areas, such as Xining City.

Table 8-4 Gender and Occupation Composition of the Samples

Gender / Occupation	Females		Males	
	N	Percent (%)	N	Percent (%)
Civil servant	8	4.57	2	1.60
Public institution worker	9	5.14	5	4.00
Enterprise employee	25	14.29	13	10.40
Self-employer	22	12.57	18	14.40
Freelancer	11	6.29	5	4.00
Farmer	41	23.43	38	30.40
Migrant worker	45	25.71	36	28.80
Unemployed	6	3.43	2	1.60
Student	3	1.71	1	0.80
Retiree	5	2.86	3	2.40
Other	0	0.00	2	1.60
Total	175	100.00	125	100.00

Source: SA survey

4. Income

In the sample population, those with annual income of 20,001-30,000 yuan account for the highest proportion of 35.67%. Females with annual income of 20,001-30,000 yuan account for 37.14%, and males with annual income of over 30,000 yuan account for 36%, which is much higher than the proportion of females.

Table 8-5 Gender and Annual Income Distribution of the Samples

Annual household income	Females		Males		Total	
	N	Percent (%)	N	Percent (%)	N	Percent (%)
≤5,000 yuan	9	5.14	6	4.80	15	5.00
5,001-10,000 yuan	10	5.71	6	4.80	16	5.33
10,001-20,000 yuan	19	10.86	15	12.00	34	11.33
20,001-30,000 yuan	65	37.14	42	33.60	107	35.67
≥30,000 yuan	52	29.71	45	36.00	97	32.33

Source: SA survey

8.1.3 Women and the Environment

There is a significant division of labor in domestic wastewater and MSW disposal. 87.34% of those pouring domestic wastewater pouring are women (57% elderly and 30.34% young), and 73.34% of those dumping MSW are women (45% elderly and 28.34% young), as shown in Tables 8-6 and 8-7. This shows that women play an important role in domestic wastewater and MSW disposal. Therefore, more attention should be paid to attitudes, needs and suggestions of women, especially elderly women, in project activities.

Table 8-6 Division of Labor by Gender in Domestic Sewage Disposal

Gender	Which member of your family disposes of domestic wastewater most often?				
	Young woman	Young man	Elderly woman	Elderly man	Child
Female	56	6	101	12	0
	32.00	3.43	57.71	6.86	0.00
Male	35	3	70	16	1
	28.00	2.40	56.00	12.8	0.80
Total	91	9	171	28	1
	30.34	3.00	57.00	9.33	0.33

Source: SA survey

Table 8-7 Division of Labor by Gender in MSW Disposal

Gender	Which member of your family disposes of MSW most often?				
	Young woman	Young man	Elderly woman	Elderly man	Child
Female	47	13	77	36	2
	26.86	7.43	44.00	20.57	1.14
Male	38	9	58	19	1
	30.40	7.20	46.40	15.20	0.80
Total	85	22	135	55	3
	28.34	7.33	45.00	18.33	1.00

Source: SA survey

8.1.4 Participation of Women in Resettlement Activities

1. Resettlement impacts

3,421.891 mu of land will be acquired permanently, 333.705 mu of land occupied temporarily, and residential houses totaling 1.1816 million m^2 and non-residential properties totaling 25,900 m^2 demolished for the Project and related projects, affecting 1,473 households with 7,044 persons, including 3,368 women, accounting for 47.81%.

2. Participation in the socioeconomic survey

The socioeconomic survey involved 120 respondents, including 62 women, accounting for 51.67%. All the female respondents are aware of the Project, where 18.5% are clearly aware and 23.5% are aware. 78.5% of the female respondents support the Project and 12.5% don't care.

3. Participation in resettlement housing construction

A duty of community volunteer service teams is to supervise the construction progress and quality of resettlement housing. Women will participate in supervision as important team members.

4. Right to receive compensation fees

Local women have the same right as men to sign to receive compensation fees for LA

and HD.

8.1.5 Other Ongoing Women's Activities in the Project Area

In the Project, women's development will be promoted by caring about and meeting their needs at all stages, and conducting relevant initiatives, which have been learned by the social consultants through FGDs and interviews.

1. **Small-amount secured loan for women**: In the document issued by the provincial women's federation, the coverage of small-amount secured loans is expanded to rural women engaged in crop cultivation, stockbreeding, handicrafts, processing and services. By the end of March 2012, 1,469 small-amount secured business startup loans totaling 237.66 million yuan had been granted, including 184.81 million yuan for 1,364 women and laid-off workers.
2. **Popular science training and Anti-illiteracy Month**: The municipal women's federation offers training on agricultural skills, mental health, etc. to women. In the popular science training and Anti-illiteracy Month campaigns in 2011, 102 training courses were held throughout the city, involving 14,311 women, over 10,000 science books distributed, and 358 anti-illiteracy training courses held for 3,884 men-times.
3. **Protection of women's rights**: The provincial women's federation improves women's awareness of right protection through publicity and legal consulting.
4. **Special job fair**: In recent years, the provincial women's federation has held 6 special job fairs for women together with the provincial labor and social security department, and provincial federation of trade unions, organizing 500 enterprises to offer over 6,000 jobs for over 15,000 women, in which over 3,000 women have been employed.
5. **Publicity on environmental protection and health**: The provincial women's federation has given publicity on environmental protection and health in cooperation with the environmental protection department by means of brochure distribution, billboard display and on-site consulting.

8.2 Women's Needs and Expectations

1. Attitude to the Project

It is learned from the questionnaire survey and interviews that most women support the Project (see Table 8-8), and think that the Project will improve their living environment and quality of life.

42.86% and 28.00% of the female respondents think the Project is very important and important respectively, and the corresponding proportions of the male respondents are 37.60% and 26.40% (see Table 8-9). It can be seen that women are better aware of the importance of the Project and expect more from the Project than men.

Table 8-8 Attitudes to the Project

Component	Attitude	Female	Male	Total
Construction of wastewater collection systems	Supportive	91.7	89.9	90.7
	Opposed	2.6	1.2	1.9
	Don't care	5.8	8.9	7.4
municipal wastewater reclamation and reuse	Supportive	95.4	90.4	93.3
	Opposed	1.7	3.2	2.3
	Don't care	2.9	6.4	4.4
Beichuan River embankment	Supportive	97.1	93.6	95.7
	Opposed	0.0	0.0	0.0

Component	Attitude	Female	Male	Total
improvement	Don't care	2.9	6.4	4.3
Integrated gully and canal improvement	Supportive	85.2	97.4	90.2
	Opposed	5.6	0	3.3
	Don't care	9.3	2.6	6.5

Source: SA survey

Table 8-9 Awareness of the Importance of the Project

Gender	Very important	Important	Somewhat important	Unimportant	Don't care
Female	42.86%	28.00%	18.57%	2.88%	7.69%
Male	37.60%	26.40%	24.00%	3.20%	8.80%

Source: SA survey

2. Need for wastewater treatment and MSW disposal

According to the questionnaire survey, 72.5% of the female respondents think domestic wastewater causes serious pollution, 52.6% think industrial wastewater causes serious pollution, and 78.3% think nearby MSW and construction waste causes serious pollution; all these proportions are higher than those of men. It is learned that local women do more household at home. 87.34% of the female respondents dispose of domestic wastewater and 73.34% dispose of MSW. Therefore, the Project will be more important for women.

3. Need for job opportunities under the Project

Some unskilled jobs will be created at the construction and operation stages. It is learned that the construction site is close to villages and the working system is relatively flexible, so some local residents expect to get jobs under the Project. 74.29% of the female respondents are willing to get jobs under the Project, higher than that of males (70.03%). Some women are willing to get jobs during construction or at the subsequent operation and maintenance stages, but workplaces should be close to their homes, so that they can take care of the family while working.

4. Need for willingness to pay

57.71% of the female respondents think the prevailing rate of wastewater treatment charges is reasonable and acceptable. Most women expect that the rate should not be increased. Some women are willing to pay more for domestic wastewater collection but not much more.

5. Need for public participation

Among the 216 persons involved in environmental protection and health publicity, women account for 46.76%, higher than that of men (31.94%), as shown in Table 8-10. This shows that more attention should be paid to needs and expectations of women, especially elderly women in environmental protection and health publicity.

According to FGDs, women are generally willing to participate in public activities, such as environmental protection and health publicity, and project training in order to improve the public awareness of environmental protection and health, and build harmonious communities.

Table 8-10 Public Participation of the Samples

Gender	Young woman	Young man	Elderly woman	Elderly man	Depends	Total

N	39	24	62	45	46	216
Percent (%)	18.06	11.11	28.70	20.83	21.30	100

Source: SA survey

8.3 Impacts of the Project on Women

8.3.1 Positive Impacts

1. Reducing diseases related to wastewater and MSW

Women are the main force of housework, and wastewater (87.34%) and MSW (73.34%) disposal is mostly done by women, which means that women are exposed more to wastewater and MSW. The Project will improve the environment and reduce relevant diseases, such as skin and respiratory diseases, thereby improving women's physical and mental health, and reducing household medical expenses.

2. Offering more leisure places, and promoting women's physical and mental health

The Beichuan River embankment improvement will offer more leisure and recreational places to nearby residents. Women think that walking and spending leisure time with the family in a better environment will promote their physical and mental health, and maintain family harmony.

> 🕮 **Interview with resident Ms Zhou (29)**
> We like to walk around after supper at ordinary times. However, the surrounding environment is worsening. MSW and construction waste is littered, the river is full of waste and there is much sludge. The river is smelly in summer with many flies, so that we are unwilling to walk near the river. When the embankment is improved and landscaped, we will walk here often.

3. Generating job opportunities to increase women's income

At the construction and operation stages, some unskilled jobs will be created, such as cleaning and painting, which will be first made available to women, the poor and vulnerable groups. In addition, construction will also generate such jobs as restaurant waiters and cleaners. The Project will improve the natural and cultural environment of Xining City, thereby driving the further development of tourism and related tertiary industries, and bringing more job opportunities to women.

4. Promoting women's long-term development

The environmental protection and health awareness, and overall competencies of local women will be improved, and their long-term development promoted through participation in the Project.

8.3.2 Potential Risks

It is learned from FGDs and personal in-depth interviews that if social gender sensitivity is insufficient in project design, implementation and management, and women's needs for and suggestions on the Project are neglected, the project benefits would be reduced and risks generated for women, including:

1. LA in the Project may affect the living standard of land-expropriated women directly. If these women are not employed or resettled properly, their income and living standard will be reduced.
2. The possible rise of wastewater treatment charges may increase the financial

burden of housewives, especially for MLS households.

3. Women's job opportunities under the Project are affected. In the project area, people (including women themselves) often think that women's family status is low due to traditional culture, economic status and educational level, so that women's needs and suggestions are often disregarded at the design, implementation and subsequent operation stages. During construction, female workers are excluded or their rights not protected.

In addition, jobs at the construction stage are temporarily, and women have to find other jobs after the completion of construction.

8.4 Gender Action Plan

Although the Project will have great benefits, it may pose some potential risks. Therefore, social gender sensitive measures should be taken to strengthen its benefits and minimize its risks. Thereby promoting women's participation and development.

A gender action plan has been developed in consultation with the Xining PMO, IA, women's federation and agencies concerned. See Table 8-11.

Table 8-11 Gender Action Plan

Suggestion	Actions	Target group	Agencies responsible	Funding source	Stage	Monitoring indicators
1. Provide job opportunities to women	1) Jobs offering food services to the construction site during construction are first made available to local women; 2) Unskilled jobs are first made available to women and other vulnerable groups during construction; 3) Cleaning and maintenance jobs are first made available to local women at the operation stage; 4) Women's pay is not less than the local minimum wage standard.	Local women	PMO, contractor, labor and social security bureau, communities	Budget of the contractor	Construction stage	1) Number and proportion of women offering food services to the construction site; 2) Proportion of women doing unskilled jobs during construction; 3) Number and proportion of women engaged in cleaning and maintenance; 4) Income level
2. Protecting women's rights in respect of resettlement	1) Avoid LA and HD in project design and implementation, consider women's needs and suggestions at the design stage; 2) Women's expectations are respected, and women have the right to receive compensation fees; 3) Women's comments on house allocation and resettlement planning are solicited; 4) Women's comments on the property management of the resettlement community are solicited.	Employed and affected women	Design agency, RAP agency, municipal government, land and resources bureau, women's federation, township governments, village committees, community volunteer service teams	Government fiscal budget	Construction stage	1) Records of women's needs and suggestions, and feedback; 2) Percentage of signing women; 3) Form and number of participants of public participation, and proportion of women; 4) Property management of the resettlement community, and women's needs and suggestions
3. Ensuring that riverside facilities are convenient for women's traffic and leisure	1) Lighting, environmental sanitation and other public facilities are provided along the Beichuan River; 2) Women's comments on quantities and distribution of facilities are solicited; 3) Public facilities are properly maintained at the operation stage.	Local women	Municipal environmental sanitation bureau, PMO	Project budget, government fiscal budget	Construction stage	1) Quantities of public facilities; 2) Records of women's needs and suggestions, and feedback; 3) Operation, damage and maintenance of public facilities
4. Giving publicity to environmental protection and health knowledge	1) 1-2 sessions of publicity and education on environmental protection and health are held in each project village per annum; 2) Publicity and training times are suited to women; training is conducted in a manner that is easily understood and accepted by women; 3) At least 30% of members of community volunteer service teams are women.	Local women	Municipal environmental protection bureau, center for disease prevention and control, women's federation, PMO, township governments, village committees, community volunteer service teams	Environmental protection bureau, center for disease prevention and control, women's federation	Construction and operation stages	1) Frequency of publicity and training, and number and proportion of women involved; 2) Quantity of publicity materials distributed; 3) Number and proportion of women community volunteer service teams
5. Giving employment training to	1) 1-2 sessions of skills training are given in each project village per annum; 2) Women's needs are considered in skills training;	Local women, in which 60% are of labor	Agriculture and stockbreeding bureau, women's federation,	Agriculture and stockbreeding bureau,	Construction and operation	1) Frequency of training; 2) Number of FGDs with women held and suggestions proposed;

Suggestion	Actions	Target group	Agencies responsible	Funding source	Stage	Monitoring indicators
affected women	training is conducted in a manner that is easily understood and accepted by women.	age	township governments, village committees	women's federation	stages	time and location of training, and number and proportion of women involved
6. Offering waste bins and other MSW collection facilities to local women	1) Waste bins and other MSW collection facilities are provided in the project area. 2) Women's comments on quantities and distribution of MSW collection facilities are solicited; 3) 1-2 sessions of publicity and education on MSW collection and disposal are held in each project village per annum.	Local women	Municipal environmental sanitation bureau, township governments, village committees, community volunteer service teams	Environmental sanitation bureau	Construction stage	1) Quantities of waste bins and other MSW collection facilities; 2) Records of women's needs and suggestions, and feedback; 3) Form and frequency of publicity

9. Risks of the Project and Action Plan

The Project will undoubtedly generate great economic and social benefits. However, potential social risks arising from the Project must be addressed in order to avoid negative impacts completely.

9.1 Risks of the Project

9.1.1 Construction of Wastewater Collection Systems

1. Risk of construction: Since wastewater collection systems will be constructed along roads, construction will result in traffic congestion, thereby affecting their production and operating activities temporarily, and also generate sludge, dust and noise, thereby bringing inconvenience and posing health risks to local residents. During construction, such impacts should be minimized to avoid conflicts with enterprises, stores and residents, which may affect construction progress.
2. Risk of the willingness to pay of vulnerable groups: Wastewater treatment charges will be collected to ensure the proper operation of wastewater treatment facilities. The survey shows that local residents' willingness to pay is high, but such charges may be a heavy burden for MLS households.
3. Risk of inability to collect some wastewater treatment charges: According to the project proposal and local customs, it is feasible and reasonable to collect wastewater treatment charges based on actual water consumption. However, during the SA, the SA team found that some local residents use well water, such as in Jiujiawan Village, Ershilipu Town, so that wastewater treatment charges for well water cannot be calculated and collected.
4. Risk of pipeline connection charges: In the construction of wastewater collection systems, residents have to pay branch pipeline construction and installation charges to extend pipelines to their houses. Some residents are unwilling to pay such charges.
5. Risk of project operation and maintenance: After the completion of wastewater collection systems, industrial and domestic wastewater will be discharged to wastewater collection systems other than directly into rivers. If wastewater collection systems are damaged, daily lives and regular operations will be affected. If no emergency repair mechanism is in place, some people will refuse to pay wastewater treatment charges, thereby affecting the normal operation of wastewater treatment facilities.

9.1.2 Municipal Wastewater Reclamation and Reuse

1. Risk of reclaimed water quality and quantity at the operation stage: Municipal wastewater reclamation and reuse needs guaranteed water supply. If water supply is not guaranteed due to pipeline damage, etc., road landscaping and urban water use will be affected, thereby preventing the environmental sanitation department from conducting routine work. On the other hand, landscaping water must meet a certain quality standard, otherwise it may affect the regular growth of plants.
2. Risk of construction: Reclaimed water pipelines will be laid along roads mainly and involve the construction of bridges, so urban road traffic, and the operation of enterprises and stores on both sides will be affected adversely during construction. During construction, such impacts should be minimized to avoid conflicts with enterprises, stores and residents, which may affect construction progress. In addition, dust and noise arising from construction will make residents' traffic inconvenient, and affect their health and safety to some extent.

9.1.3 Beichuan River Embankment Improvement

1. Risk of shortage of public environmental awareness: Due to weak environmental awareness, nearby enterprises and residents still discharge wastewater and MSW into the Beichuan River, thereby weakening the function of this component.
2. Risk of project maintenance: This component will promote local economic development, and attract more enterprises and stores. However, such new enterprises and stores, and tourists may bring additional pollution to the Beichuan River.
3. Risk of living habits: The improved Beichuan River will provide good leisure

places to local residents. It can also be predicted that some residents would swim in the clean river and may drown.

9.1.4 Integrated Gully and Canal Improvement

1. Risk of shortage of public environmental awareness: The survey shows that 70% of the respondents have never participated in environmental protection and health publicity, mainly because they don't known how to participate (40.8%). Due to weak environmental publicity, local residents' environmental awareness is generally weak, and some nearby residents may still discharge wastewater and MSW into gullies and canals, thereby possibly weakening the functioning of this component.
2. Risk of project maintenance: It is found that a main reason why residents dump MSW into gullies and canals is the shortage or absence of environmental sanitation facilities. If environmental sanitation facilities are not sufficient after the completion of this component, its function will be weakened greatly.
3. Risk of construction: There are residents and stores beside Liujia Gully, Shengou Gully and Chaoyangdian Canal, and the construction of this component will inevitably affect residents' daily lives and stores' operations. In integrated gully and canal improvement, much MSW, construction waste and sludge will drop out during transport and emit odor, posing a risk of secondary pollution.

9.2 Policy Suggestions and Action Plan

Project risks may be evaded in two ways – optimizing the project design without increasing the amount of work, and consulting with stakeholders before, during and after construction to learn their needs and expectations. The SA team has proposed the following pertinent suggestions:

9.2.1 Construction of wastewater collection systems

1. The project owner has promised to give proper publicity before construction, conduct construction in stages to minimize impacts on operating activities of enterprises and stores on both sides, and take noise and dust reducing, and staggered construction measures to minimize impacts on residents' daily lives.
2. Needs and expectations of affected vulnerable groups have been learned through consultation. The government should take measures to reduce or exempt their wastewater treatment charges, and develop a detailed and operable program to address the low ability to pay wastewater treatment charges of MLS population.
3. The owner should learn the willingness and ability to pay of the APs, and develop a branch pipeline construction and installation rate accepted by them through adequate consultation. It is also feasible to set aside certain funds from government finance for reduction or exemption. In addition, with the progress of new countryside building, connection to the wastewater collection systems can be integrated into new countryside building.
4. The owner should establish an emergency repair mechanism, disclose the repair hotline, handle emergencies timely, minimize user losses, and ensure the regular operation of wastewater collection systems.
5. The owner should establish an emergency repair mechanism and disclose the repair hotline, dealing with the emergency and minimizing the loss of the users to ensure the normal operation of wastewater collection systems.

9.2.2 Municipal Wastewater Reclamation and Reuse

1. The owner should strengthen its own management, and inspect the outgoing water quality of the reclamation plant regularly and irregularly, so that reclaimed water meets a certain standard.
2. The project owner has promised to give proper publicity before construction, conduct construction in stages to minimize impacts on operating activities of enterprises and stores on both sides, and take noise and dust reducing, and staggered construction measures to minimize impacts on residents' daily lives.

9.2.3 Beichuan River Embankment Improvement

1. Strengthen publicity on environmental protection knowledge to improve public environmental awareness, and prevent wastewater from being discharged into rivers actively, so that the river environment is truly improved. Strengthen supervision over

wastewater discharge by nearby enterprises and residents after project completion, and ensure river water quality through administrative power.

2. After project completion, define the duties of the environmental protection, urban administration, water resources, and municipal construction bureaus, conduct scientific management, and strengthen the participation of and supervision by all citizens.

3. Safety signs such as “no swimming” should be set up at visible positions to prevent drowning, and give full play to the positive impacts of this component.

9.2.4 Integrated Gully and Canal Improvement

1. Strengthen environmental publicity and improve environmental awareness by means of publicity material, broadcast, blackboard, knowledge contest, on-site supervision, announcement and expert workshop, and establish villager supervisory teams.

2. The urban administration department should establish a sound environmental sanitation system, and provide environmental sanitation facilities in communities to collect and transfer MSW timely. In addition, the schedule of MSW collection should be adjusted to residents’ habits, such as in the evening.

3. The project owner has promised to give proper publicity before construction, conduct construction in stages to minimize impacts on operating activities of enterprises and stores on both sides, and take noise and dust reducing, and staggered construction measures to minimize impacts on residents’ daily lives.

The SA team has developed a feasible social action plan in consultation with the PMO, owner, IA and design agency. See Table 9-1.

Table 9-1 Summary of Project Risks and Actions

Component	Negative risks	Actions	Stage
Construction of wastewater collection systems	①Risk of construction; ②Risk of the willingness to pay of vulnerable groups; ③Risk of inability to collect some wastewater treatment charges; ④Risk of pipeline connection charges; ⑤Risk of project operation and maintenance	①The project owner has promised to give proper publicity before construction, conduct construction in stages to minimize impacts on operating activities of enterprises and stores on both sides, and take noise and dust reducing, and staggered construction measures to minimize impacts on residents' daily lives; ②The project owner and government agencies concerned have promised to develop a water charge exemption policy or grant subsidies before the Project is put into operation; ③Collect wastewater treatment charges from residents who have not used tap water as the domestic water source; ④Fix affordable branch pipeline construction and installation charges in consultation with residents and based on their income; ⑤Establish an emergency repair mechanism and disclose the repair hotline.	①Before and during construction ②Construction ③Construction and operation ④Construction and operation ⑤Construction
municipal wastewater reclamation and reuse	①Risk of water quality and amount; ②Risk of construction;	①Establish a standard conformity inspection institution to check the outgoing water quality of the reclamation plant regularly and irregularly; ②The project owner has promised to give proper publicity before construction, conduct construction in stages to minimize impacts on operating activities of enterprises and stores on both sides, and take noise and dust reducing, and staggered construction measures to minimize impacts on residents' daily lives.	①Operation ②Before and during construction ③Before and during construction
Beichuan River embankment improvement	①Risk of shortage of public environmental awareness; ②Risk of project maintenance; ③Risk of living habits;	①Strengthen publicity on environmental protection knowledge to improve public environmental awareness, and strengthen supervision over wastewater discharge by nearby enterprises and residents, and ensure river water quality through administrative power; ②Define the duties of the environmental protection, urban administration, water resources, and municipal construction bureaus, conduct scientific management, and strengthen the participation of and supervision by all citizens; ③Set up signs at dangerous positions.	①Construction and operation ②Operation ③Operation
Integrated gully and canal improvement	①Risk of shortage of public environmental awareness; ②Risk of project maintenance; ③Risk of construction;	①Improve environmental awareness by various means of publicity; ②Establish a sound environmental sanitation system; ③The project owner has promised to give proper publicity before construction, conduct construction in stages to minimize impacts on operating activities of enterprises and stores on both sides, and take noise and dust reducing, and staggered construction measures to minimize impacts on residents' daily lives.	①Operation ②Construction and operation ③Before and during construction

9.3 Feedback on the Social Action Plan

Both the PMO and project owner think that the Social Action Plan is consistent with the actual needs of local residents for the Project, and plays an active role in mitigating negative impacts and magnifying project outputs. At the construction and operation stages, the agencies concerned will take measures to carry through the specific actions under the Social Action Plan, ensure the successful operation of the Project, and protect the rights and interests of the APs.

All agencies concerned of Xining City support the development and implementation of the Social Action Plan, and think that the Social Action Plan will mitigate the negative impacts of the Project and enhance its social benefits effectively, thereby extending the project outputs to the project area. During the implementation of the Social Action Plan, local residents will participate in the Project more deeply and actively, and their awareness and capacity of public participation will be enhanced.

9.4 Conclusion

The Project will improve the natural and living environment of the project area, promote community development, and improve urbanization level and community management level. The social benefits of the Project are comprehensive and sustainable.

During project implementation, the associated social risks should not be neglected. If such project activities as wastewater/reclaimed water network connection, and construction are not conducted properly, negative impacts are likely to arise and the project benefits are likely to be weakened, thereby affecting the fulfillment of the project objectives. In view of this, the agencies concerned of Xining City should take measures actively to mitigate negative risks, enhance project benefits and promote sustainable project implementation based on a comprehensive consideration.

10. SA Findings and Feedback

10.1 Key SA Findings and Suggestions

On the basis of the systematic field survey, the SA team has analyzed the social risks and benefits of the Project adequately, and the SA findings, and proposed suggestions to enhance positive impacts and mitigate negative impacts on the basis of extensive public participation to promote sustainable project implementation.

Table 10-1 SA Findings and Suggestions

No.	SA findings	Suggestions
1	Operations of nearby enterprises and stores, and daily lives and safety of nearby residents may be affected during construction.	1) Give proper publicity before construction, conduct construction in stages to minimize impacts on operating activities of enterprises and stores on both sides, and take noise and dust reducing, and staggered construction measures to minimize impacts on residents' daily lives; 2) Notify project and construction safety information to local residents in a quick and effective manner;' 3) Set up guidance and safety signs on the construction site; 4) Include construction safety management in construction contract management, and strengthen safety publicity for the construction staff.
2	Maintenance should be strengthened after the completion of the Project.	1) Define the duties of the environmental protection, urban administration, water resources, and municipal construction bureaus, conduct scientific management, and strengthen the participation of and supervision by all citizens; 2) Establish an emergency repair mechanism and disclose the repair hotline; 3) strengthen supervision over wastewater discharge by nearby enterprises and residents; 4) Establish a sound environmental sanitation system.
3	Weak public environmental awareness	1) Improve environmental awareness by various means of publicity; 2) Conduct publicity in the time and mode accepted by local residents.
4	Weak public awareness and ability of participation	1) Ensure information disclosure and disclose the appeal channels; 2) Establish community volunteer service teams; 3) Make unskilled jobs in the Project first available to local women, the poor and other vulnerable groups.
5	Participation in resettlement	1) Solicit the APs' comments on the layout and site of the resettlement housing; 2) Involve the APs in the supervision over the construction quality of resettlement housing; 3) Solicit the APs' comments on housing allocation.
6	New community management	1) Prepare a property management handbook; 2) Solicit the APs' comments on property management and charges.
7	Sustainable project implementation	A certain number of interfaces are served in wastewater collection systems and reclaimed water network to meet future demand.

10.2 Feedback from Agencies Concerned

Both the PMO and feasibility study agency think that the SA findings reflect the potential issues of project construction and implementation objectively and fairly, and are addressed pertinently, which will help mitigate potential issues and negative impacts actively. The PMO and feasibility study agency suggest that all agencies concerned should take measures to address potential issues, minimize negative impacts and maximize project benefits actively in project construction, implementation and operation.

Appendixes

Appendix 1: Minutes of FGDs

FGD of Shuangsubao Village

Date: March 28, 2013
Venue: Shuangsubao Village Committee
Participants: 9 villagers of Shuangsubao Village, SA team
Key points:

I. Reasons for littering MSW

1. There are no MSW collection facilities such as waste bins in the village. There is a dedicated place in the village for dumping construction waste (free), but it is a bit distant.
2. There was once a waste collection vehicle in the village, which called everyone to dump MSW onto it, but it was slow and ineffective. There is no waste collection vehicle now.
3. MSW is not managed.
4. There are many migrant workers (from Hunan and Sichuan) in the village. Their environmental awareness is poor, and do not have such basic living facilities as waste bins and toilets.

II. Hazards of MSW/wastewater

1. Villagers and livestock mostly drink tap water, and no waterborne disease has occurred to date. However, groundwater quality has been affected.
2. Wastewater affects village appearance.
3. Crops irrigated with wastewater grow badly or die.
4. The odor is unpleasant and there are many flies in summer.
5. More MSW and construction waste can block the river and affect irrigation.

III. Suggestions

1. A waste bin should be set up in each of the 4 groups, and a MSW disposal plant and a MSW transfer station built.
2. The road should be improved, because it is uneven and dusty.
3. Training should be strengthened to improve awareness (village and school).
4. Supervision should be strengthened.

IV. Other

1. Local women working outside deal with painting, plastering and cleaning mainly.
2. The water quality is seriously affected by the emission of waste water which comes from some chemical plants nearby,such as Guangming Chemical Plant、Liming Chemical Plant、Qinghai Aluminium Cooperation.
3. Wastewater discharge by nearby chemical plants affects water quality.
4. Public participation: Sunshine Hotline and Mayor's Hotline
5. Tap pipes cannot be pressurized.

FGD with an enterprise

Date: April 1, 2013

Venue: Meeting room of the Huangshui Administrative Committee

Participants: Mr. Qi, Head of the Huaneng Thermal Power, Director Han of the South and North Mountain Landscaping Headquarters, SA team

Key points:

I. Basic information

1. Huaneng Thermal Power: This plant is located in Baozi Village, Xibao Town, Huangzhong County, and is expected to break ground in October 2013 and be put into operation at the end of 2015. This plant has a gross investment of 3.98 billion yuan, and will supply heat to some areas of Xining City.

2. South and North Mountain Landscaping Headquarters: The total landscaping area of the South and North Mountains is about 300,000 mu. The Xining South and North Mountain Landscaping Headquarters is affiliated to Qinghai Provincial Forestry Department, and is led by the governor of Qinghai Province, mayor of Xining City and Director-general of the Qinghai Provincial Forestry Department, responsible for the implementation of landscaping, infrastructure construction and maintenance.

II. Water use

1. The daily water consumption of Huaneng is 15,000 tons. All its reclaimed water is used for cooling and boiling. The quality requirement for cooling water is low, but that for boiler water is high.

The supply of reclaimed water must be stable, otherwise the equipment will be damaged.

Huaneng expects the reclaimed water network be constructed under the Project, but may also construct the network itself. In the latter case, it expects a preferential water rate.

2. Director Han of the South and North Mountain Landscaping Headquarters is concerned about the quality of reclaimed water for forest irrigation, because heavy metals in reclaimed water exceed the standard, and may affect forest growth and lead to great losses. In addition, if reclaimed water were used for irrigation, a new pipeline must be laid so that reclaimed water and natural water is used for irrigation separately.

III. Suggestions

Reclaimed water may be used for irrigation, but its quality and supply must be guaranteed. The reclaimed water network will be preferably constructed under the Project and designed rationally to minimize damages to forests.

Appendix 2: Minutes of Interviews

Interview with villagers of Jiujiawan Village

Venue: Jiujiawan Village Committee
Date: March 29, 2013
Interviewee: Ms Qi
Key points:
Ms Qi, female, 65, primary school education, housewife, no income
1. Serious MSW pollution: There are no MSW collection facilities such as waste bins, nor there are waste collection vehicles. Villagers have to dump MSW besides roads and Shengou Gully.
2. Domestic wastewater: There is no sewer, so that wastewater is poured out of doors. Some households have dug ditches themselves for direct discharge to Shengou Gully without treatment.
3. Attitude to the Project: They support the Project and expect it to be constructed as soon as possible.
4. Suggestions: Waste bins and other environmental sanitation facilities should be provided, the government should assign vehicles to collect MSW, the MSW collection and transfer system improved, and publicity and training on environmental protection strengthened to improve public environmental awareness.

Interview with villagers of Ershilipu New Village

Venue: Ershilipu New Village
Date: March 28, 2013
Interviewee: Mr. Ma
Key points:
Mr. Ma, male, 60, Han, primary school education, running a store, monthly income >2,000 yuan
1. Domestic water: There is a pipeline in the village, which was laid 3 years ago and has not been put into use. All domestic water is from wells. Groundwater is not seriously polluted.
Domestic wastewater: My family has a sewer that leads directly to Liujia Gully without wastewater treatment. I usually pour wastewater, because my wife is ill on bed.
2. MSW disposal: The brigade has hired a waste collection vehicle and would transfer MSW once a week from fixed waste dumps in the village. However, the vehicle comes once a week only and the interval is too long. Some families have too much MSW and cannot wait so long, so they have to dump it directly into Liujia Gully. Moreover, many families are building houses, and produce too much construction waste, which has blocked the roads, so that some residents don't want to go too far and have to litter MSW about.
3. industrial wastewater: The nearby ecological park discharges much wastewater.

Appendix 3: Fieldwork Photos

Wastewater discharge in a canal

Construction waste and MSW piling

Field investigation in the reclamation plant

Interview with residents of Chaoyang Community

Resettlement and SA training of the PMO

Interview with villagers of Shuangsubao Village

Interview with villagers of Jiujiawan Village

Interview with the South and North Mountain Landscaping Headquarters

 FGD with villagers of Ershilipu Village	 Interview with the Xining Municipal Poverty Reduction Office