World Bank-financed Liaoning Safe and Sustainable Urban Water Supply Project

Social Assessment Report

National Research Center for Resettlement, Hohai University

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Abbreviations

FGD	-	Focus Group Discussion
M&E	-	Monitoring and Evaluation
MLS	-	Minimum Living Security
PMO	-	Project Management Office
RAP	-	Resettlement Action Plan
SA	-	Social Assessment
WTP	-	Water Treatment Plant

Units

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

1 Introduction

1.1 Background and Overview of the Project

The urban water supply system is an integral part of the urban infrastructure, and the development level of urban water supply is an important indicator of urban modernization and an important guarantee of sustainable urban development. With the improvement of people's living standard, urban water supply has become an important restraint on economic development and social stability. In order to construct urban water supply infrastructure suited to urban modernization, existing water supply networks must be reconstructed to improve water supply rate, and the building of water supply management information systems strengthened to lay a foundation for urban and economic development. According to the Draft Feasibility Study Report of Shenyang Water Group (September 2016), the Liaoning Urban Water Supply Safety and Sustainable Development Demonstration Project - Anshan Feasibility Report (January 2017), the Liaoning Urban Water Supply Safety and Sustainable Development Demonstration Project - Fushun Feasibility Report (January 2017), the Liaoning Urban Water Supply Safety and Sustainable Development Demonstration Project - Fuxin Feasibility Report (January 2017), and the Liaoning Urban Water Supply Safety and Sustainable Development Demonstration Project - Gaizhou Feasibility Report (January 2017), the Liaoning Safe and Sustainable Urban Water Supply Project (hereinafter, the "Project") consists of the Shenyang Safe Urban Water Supply Subproject, Anshan Urban Water Supply System Improvement Subproject, Fushun Water Supply Reconstruction Subproject, Fuxin Urban Water Supply System Reconstruction Subproject, and Gaizhou Surface Water Diversion Subproject (Phase 1). See Table 1-1.

Table 1-1 Basic Information of the Project

Subproject	Scope of construction	Estimated budget (Million yuan)
Shenyang Subproject	①Construction or reconstruction of water supply pipelines of 114.515km, including reconstruction of DN150-DN1400mm pipelines of 69.705km, and construction of DN300- DN1000mm pipelines of 44.810km, and construction or reconstruction of 107 values ②Construction of GIS platform-based intelligent urban water supply system, including an intelligent water supply (Smart Water) platform, a GIS, a DCS for WTPs/pump stations, remote control of secondary booster pump stations, and hydraulic system analysis	9.62
Anshan Subproject	①Reconstruction of the Tanghe raw water pump station and Wangjiayu WTP; ②Smart Water construction; ③reconstruction of valves and old pipelines; ④reconstruction of secondary water supply pump stations; and ⑤replacement of household connection pipes	4.65
Fushun Subproject	①Distribution network (including emergency repair equipment); ②pump station reconstruction and water quality monitoring; ③"Smart Water" (intelligent water supply platform); ④institutional strengthening and capacity building	6.82
Fuxin Subproject	①Construction of water supply network; ②reconstruction of old water supply facilities (Phase 2); ③purchase of water quality monitoring equipment and construction of Smart Water infrastructure; ④WTP reconstruction	3.00
Gaizhou Subproject	①Construction of DN900 raw water pipelines of 6km; ②construction of a WTP of 50,000 m3/d; ③construction of DN1000 treated water mains of 4km; ④reconstruction of DN100~ DN300mm community distribution pipelines of 49km; ⑤reconstruction of DN20~DN80mm household pipelines of 345km; ⑥reconstruction of 17 secondary pump stations, replacement of 39,570 water meters; ⑦reconstruction of an intelligent water network	2.83

1.2 Objectives of SA

The Project aims to ensure safe and sustainable urban water supply, and support economic and social development, thereby improving overall urban influence, and realizing social, economic and environmental benefits.

This SA aims to learn different stakeholders' expectations and needs, and identify the Project's positive and negative impacts through fieldwork, thereby helping the owner take a series of measures to ensure the extensive and fair participation of stakeholders, and maximize the Project's benefits. Therefore, the main objectives of this SA are:

1) Identifying the Project's primary stakeholders, learning their perceptions of and needs for the Project, and collecting their comments on the Project;

2) Identifying the Project's potential impacts on and risks to stakeholders, especially women, the poor and other vulnerable groups;

3) Strengthening the collection of local knowledge, promoting extensive public participation, especially women, the poor and other vulnerable groups, and proposing an urban water supply management pattern and a public participation strategy suited to local conditions;

4) Learning the current situation of local urban water supply, and its impacts on local residents through field investigation and secondhand data collection; and

5) Developing a social action plan through extensive participation and consultation to improve the project design, avoid risks and realize the project objectives.

1.3 Survey Process

From October 16 to November 1, 2016, the task force with 5 members conducted a 17-day social survey in the project area with the support of the PMOs and agencies concerned, and communicated project changes, and survey findings and suggestions with the feasibility study agency. During the survey, the task force visited the proposed sites, conducted a questionnaire survey, with 600 copies distributed and 590 valid copies recovered, in-depth interviews with 169 men-times and key informant interviews with 78 men-times, and held 20 community/village-level FGDs.

1.4 SA Methods

1) Literature review

The feasibility study reports of the subprojects were read, and social, economic, population and other statistics of the project area, and local policies and regulations collected from the local labor and social security bureaus, civil affairs bureaus, women's federations, development and reform bureaus, PMOs, sub-district offices and community committees.

2) FGD

20 FGDs were held in 20 villages/communities in the project area to learn local residents' needs for the Project, the Project's impacts on them, and their comments and suggestions, with 397 participants in total, including 209 females, accounting for 53%; 217 old people (>60 years), accounting for 55%; and 59 poor residents, accounting for 15%.

3) Key informant interview

Key informant interviews of 78 men-times were conducted with heads of the IAs (water companies), PMOs, women's federations, labor and social security bureaus, development and reform bureaus, statistics bureaus, sub-district offices and community committees to learn the Project's impacts and potential risks, needs and suggestions, public participation, etc.

4) In-depth interview

In-depth interviews were conducted with 169 men-times in 20 villages/communities in the project area, including 101 females, accounting for 60%, in order to learn local residents' attitudes to and needs for the Project, and the Project's potential impacts and risks.

5) Observation

Participatory observation was conducted on local water supply, secondary pump stations, water meter use, existing water pipelines, water supply facilities, etc.

6) Questionnaire survey

20 villages/communities were sampled randomly and purposefully, and 600 copies of the questionnaire distributed, with 590 valid copies recovered, to learn local residents' perceptions of local water quality and pressure, and water supply facilities, and their needs and attitudes.

1.5 Key Concerns of SA

This SA aims to describe the socioeconomic profile of the project area; identify primary stakeholders, and analyze their needs and impacts based on the feasibility study Report and the fieldwork; identify the Project's potential positive and negative impacts, and social risks; analyze local women's development, the Project's impacts on them and their needs for the Project; analyze how to incorporate stakeholders into the Project effectively, and propose a public participation plan; and include social factors that affect the project objectives into the project design, and propose measures to avoid or mitigate negative impacts.

This SA has the following key concerns:

1) Water amount: learning how local residents' water demand is satisfied, and how the Project will satisfy this demand;

2) Water quality: learning local water quality, residents' comments on and needs for water quality, water companies' water quality monitoring measures, etc.;

3) Willingness to pay: learning local residents' willingness to pay potentially higher water charges;

4) Public participation: local residents' participation in the Project, potential issues, mechanism and strategy, especially the participation of old people, women and the poor;

5) Social gender: women's participation in project design, construction and implementation, and measures to give effective play to women in making the Project more sustainable; and

6) Poor population: their participation in the Project, the Project's impacts on them, and how to enable them to benefit from the Project.

2 Socioeconomic Profile of the Project Area

2.1 Natural Conditions and Administrative Division

Liaoning Province is located in the southern part of northeastern China, with a land area of 148,400 km^2, a watershed area of 145,500 km^2 and a river runoff of 12.374 billion m^3, governing 19 counties, 56 districts, 645 towns, 217 Xiangs and 668 sub-districts.

Shenyang City is located in the southern part of northeastern China, with a land area of 12,860 km^2, an urban planning area of 3,471 km^2 and a population density of 568/km^2, governing 9 districts (Heping, Shenhe, Dadong, Huanggu, Tiexi, Yuhong, Hunnan, Sujiatun and Shenbei) and 4 counties (Xinmin, Liaozhong, Faku and Kangping).

Anshan City is located in the central Liaodong Peninsula, with a land area of 9,255.4 km^2, an urban land area of 625.6 km^2, and 8 rivers with a watershed area of over 500 km^2 (the largest river of Liaohe has a watershed area of 858.9 km^2 in Anshan), governing 7 counties/districts (Haicheng, Tai'an, Youyan, Tiedong, Tiexi, Lishan and Qianshan), 52 towns, 3 Xiangs, 61 sub-districts, 831 villages and 329 communities.

Fushun City is located in eastern Liaoning Province, with a land area of 11,272 km^2 and an urban land area of 1,416 km^2. The largest river of Hunhe has a mainstream length of 415 km, a watershed area of 11,481 km^2 and an average low-water season discharge of 8.2 m^3/s. The city governs 4 districts, 3 counties, 3 province-level development zones, 26 towns, 21 Xiangs, 37 sub-districts. 615 villages and 311 communities.

Fuxin City is located in northwestern Liaoning Province, with a land area of 10,355 km^2, an urban planning area of 674.02 km^2 and a built-up area of 53 km^2. The city governs two districts (Fuxin Mongolian Autonomous County and Zhangwu County), 5 districts (Haizhou, Taiping, Xinqiu, Qinghemen and Xihe), 36 towns, 32 Xiangs and 26 sub-districts.

Gaizhou City is located in the northwestern Liaodong Peninsula, the east wing of the Liaohe River Delta, bordered by Youyan and Zhuanghe on the east, Wafangdian City on the south, Dashiqiao and Gaizhou City on the north, and the Liaodong Bay on the west, governing 8 sub-districts, 16 towns and 3 Xiangs.

Table 2-1 Administrative Divisions (2014)

Division	Sub-districts	Townships	Communities	Villages
Liaoning	668	862	/	/
Shenyang	141	73	878	1509
Anshan	61	55	329	831
Fushun	37	47	311	615
Fuxin	26	68	/	/
Gaizhou	8	19	/	/

Source: Statistical Yearbook 2015 of Liaoning Province, Statistical Yearbook 2015 of Shenyang City, Statistical Yearbook 2015 of Fushun City, Statistical Yearbook 2015 of Fuxin City, Statistical Yearbook 2015 of Gaizhou City, Compilation of Key Statistics 2015 of Anshan City

2.2 Population

At the end of 2014, Liaoning had a registered population of 42.442 million, including a female population of 21.12 million, accounting for 49.76%; with a population birth rate of 9.0‰, a population death rate of 7.1‰, and a natural population growth rate of 1.9‰.

At the end of 2014, Shenyang City had a registered population of 7.308 million, including a female population of 3.686 million, accounting for 50.44%; with an urban registered population of 5.284 million, accounting for 72.30%; a population birth rate of 9.84‰, a population death rate of

7.91‰, and a natural population growth rate of 1.93‰.

At the end of 2014, Anshan City had a registered population of 3.46 million, including a female population of 1.718 million, accounting for 49.65%; with an urban registered population of 1.501 million, accounting for 43.38%; a population density of 374/km^2; a population birth rate of 5.77‰, a population death rate of 8.83‰, and a natural population growth rate of -0.92‰.

At the end of 2014, Fushun City had a registered population of 2.1736 million, including a female population of 1.0884 million, accounting for 50.07%; with an urban registered population of 1.415 million, accounting for 65.10%; a population density of 193/km^2; a population birth rate of 7.18‰, a population death rate of 8.05‰, and a natural population growth rate of -0.87‰.

At the end of 2014, Fuxin City had a registered population of 1,910,101, including a female population of 959,279, accounting for 50.22%; with an urban registered population of 857,340, accounting for 44.88%; a population density of 184/km^2; a population birth rate of 7.88‰, a population death rate of 6.56‰, and a natural population growth rate of 1.33‰.

At the end of 2014, Gaizhou City had a registered population of 698,900, including a female population of 339,400, accounting for 48.56%; with an urban registered population of 229,600, accounting for 32.85%; a population birth rate of 9.16‰, a population death rate of 6.56‰, and a natural population growth rate of -0.37‰.

Table 2-2 Population Information (2014)

Division	Population (0,000)	Gender (0,000)		Registered population (0,000)	
		Female	Percent (%)	Urban population	Percent (%)
Liaoning	4244.2	2112.0	49.76	/	/
Shenyang	730.8	368.6	50.44	528.4	72.30
Anshan	346.0	171.8	49.65	150.1	43.38
Fushun	217.36	108.84	50.07	141.5	65.10
Fuxin	191.0	95.9	50.22	85.7	44.88
Gaizhou	69.89	33.94	48.56	22.96	32.85

Source: Statistical Yearbook 2015 of Liaoning Province, Statistical Yearbook 2015 of Shenyang City, Statistical Yearbook 2015 of Fushun City, Statistical Yearbook 2015 of Fuxin City, Statistical Yearbook 2015 of Gaizhou City, Compilation of Key Statistics 2015 of Anshan City

Table 2-3 Population Birth, Death and Natural Growth Rates (2014)

Division	Birth		Death		Natural growth	
	Population (0,000)	‰	Population (0,000)	‰	Population (0,000)	‰
Liaoning	38.20	9.0	30.13	7.1	8.06	1.9
Shenyang	7.19	9.84	5.78	7.91	1.41	1.93
Anshan	2.0	5.77	3.06	8.83	-1.06	-3.06
Fushun	1.56	7.18	1.75	8.05	-0.19	-0.87
Fuxin	1.50	7.88	1.25	6.56	0.25	1.33
Gaizhou	0.6404	9.16	0.486	6.95	-0.0256	-0.37

Source: Statistical Yearbook 2015 of Liaoning Province, Statistical Yearbook 2015 of Shenyang City, Statistical Yearbook 2015 of Fushun City, Statistical Yearbook 2015 of Fuxin City, Statistical Yearbook 2015 of Gaizhou City, Compilation of Key Statistics 2015 of Anshan City

2.3 Economy

In 2015, Liaoning Province's GDP was 2.87434 trillion yuan, up 3.0% year on year, in which the added value of primary industries was 238.4 billion yuan, up 3.8%; that of secondary industries 1.33826 trillion yuan, down 0.2%; and that of tertiary industries 1.29768 trillion yuan, up 7.1%. The ratio of primary, secondary and tertiary industries was adjusted from 8.0:50.2:41.8 in the previous year to 8.3:46.6:45.1. Per capita GDP was 65,521 yuan, up 3.1%.

In 2015, Shenyang City's GDP was 728.05 billion yuan, up 3.5%, in which the added value of

primary industries was 34.14 billion yuan, up 3.5%; that of secondary industries 349.9 billion yuan, up 0.9%; and that of tertiary industries 344.01 billion yuan, up 6.3%. The ratio of primary, secondary and tertiary industries was 4.7:48.1:47.2. Per capita GDP was 87,833 yuan, up 3.2%.

In 2015, Anshan City's GDP was 234.9 billion yuan, up 3.0%, in which the added value of primary industries was 13.65 billion yuan, up 3.5%; that of secondary industries 111.69 billion yuan, up 1.7%; and that of tertiary industries 109.56 billion yuan, up 4.6%. The ratio of primary, secondary and tertiary industries was 5.8:47.5:46.7. Per capita GDP was 67,675 yuan, up 3.5%.

In 2015, Fushun City's GDP was 121.65 billion yuan, up 2.0%, in which the added value of primary industries was 9.8 billion yuan, up 4.4%; that of secondary industries 59.45 billion yuan, down 1.6%; and that of tertiary industries 52.4 billion yuan, up 7.1%. The ratio of primary, secondary and tertiary industries was 8.0:48.9:43.1. Per capita GDP was 58,555 yuan, up 2.4%.

In 2015, Fuxin City's GDP was 54.21 billion yuan, down 4.8%, in which the added value of primary industries was 11.83 billion yuan, down 3.5%; that of secondary industries 21.23 billion yuan, down 9.3%; and that of tertiary industries 21.15 billion yuan, up 0.4%. The ratio of primary, secondary and tertiary industries was adjusted from 19.7:44.7:35.6 in the previous year to 21.8:39.2:39.0. Per capita GDP was 30,420 yuan, down 4.4%.

In 2015, Gaizhou City's GDP was 19.67 billion yuan, up 7%, in which the added value of primary industries was 3.77 billion yuan, up 11.1%; that of secondary industries 7.75 billion yuan, up 2.9%; and that of tertiary industries 8.15 billion yuan, up 10.1%. Per capita GDP was 28,000 yuan, up 8.1%. The ratio of primary, secondary and tertiary industries was 19.2:39.4:41.4.

Table 2-4 GDP and Composition (2015)

Division	GDP (00m yuan)	Primary industries (00m yuan)		Secondary industries (00m yuan)		Tertiary industries (00m yuan)		Ratio (%)
		Output value	%	Output value	%	Output value	%	
Liaoning	28743.4	2384.0	8.3	13382.6	46.6	12976.8	45.1	3.8: -0.2: 7.1
Shenyang	7280.5	341.4	4.7	3499	48.1	3440.1	47.2	3.5: 0.9: 6.3
Anshan	2349.0	136.5	5.8	1116.9	47.5	1095.6	46.7	3.5: 1.7: 0.4
Fushun	1216.5	98.0	8.0	594.5	48.9	524.0	43.1	4.4: -1.6: 7.1
Fuxin	542.1	118.3	21.8	118.3	39.2	211.5	39.0	-3.5: -9.3: 0.4
Gaizhou	196.69	37.68	19.2	77.53	39.4	81.48	41.4	11.1: 2.9: 10.1

Source: statistical bulletins of national economic and social development 2015 (Liaoning, Shenyang, Anshan, Fuxin and Gaizhou)

2.4 Education

At the end of 2015, Liaoning Province's compulsory education retention rate was 97.0%, and senior-high-school gross enrollment rate 99.0%, and had 911,000 kindergarten kids, 325,000 enrolled regular primary school students, 2 million current students and 305,000 graduates; 305,000 enrolled junior high school students, 1.013 million current students and 337,000 graduates; 210,000 enrolled senior high school students, 635,000 current students and 224,000 graduates; and 274,000 enrolled regular university and college students, 1.006 million current students and 258,000 graduates. Postgraduate education institutions had 33,000 enrolled students, 94,000 current students and 30,000 graduates.

At the end of 2015, Shenyang City had 47 regular universities and colleges with 108,200 enrolled students, 404,000 current students and 100,700 graduates; 15,700 enrolled postgraduate students, 43,800 current students and 14,100 enrolled students; 295 regular high schools, with 267,300 enrolled students; 33 regular specialized secondary schools with 57,500 current students; 48 vocational high schools with 19,000 current students; 31 technical schools with 15,000 current students. The enrollment rate of junior high school students was 113.1%, and the enrollment rate of

senior high schools 116.5%. There were 274 primary schools with 365,100 current students. The gross enrollment rate of primary schools was 112.9%, and the enrollment rate of preschool education 96.8%.

At the end of 2015, Anshan City had 3 regular universities and colleges, 23 secondary vocational schools, 36 regular senior high schools, 127 junior high schools, 535 regular primary schools, and 994 kindergartens with 81,312 kids, 26,213 enrolled regular primary school students, 166,346 current students and 27,712 graduates. 27,375 enrolled junior high school students, 87,723 current students and 28,264 graduates. 15,618 enrolled senior high school students, 46,796 current students and 16,469 graduates. Secondary vocational schools had 5,521 enrolled students, 17,110 current students and 5,467 graduates; 8,558 enrolled regular university and college students, 34,113 current students and 10,364 graduates. Postgraduate education institutions had 452 enrolled students, 1,259 current students and 525 graduates. There were 463 current special education students.

At the end of 2014, Fushun City had two regular universities and colleges, with 13,378 enrolled students, 45,017 current students, 13,337 graduates and a teaching staff of 2,936; two adult higher education institutions, with 876 enrolled students, 3,102 current students, 1,428 graduates and a teaching staff of 30; 20 regular senior high schools, with 9,975 enrolled students, 31,629 current students, 11,312 graduates and a teaching staff of 2,817; 34 junior high schools, with 10,665 enrolled students, 32,544 current students, 11,470 graduates and a teaching staff of 3,077; 81 primary schools, with 13,748 enrolled students, 84,698 current students, 15,624 graduates and a teaching staff of 5,990; and 5 special education schools, with 40 enrolled students, 242 current students, 15 graduates and a teaching staff of 37.

At the end of 2015, Fuxin City had 916 enrolled postgraduate students, 2,939 current students and 833 graduates; 13,378 enrolled regular university and college students, 45,017 current students and 13,337 graduates. Secondary vocational schools had 5,070 enrolled students, 16,541 current students and 6,148 graduates; 9,860 enrolled senior high school students, 30,487 current students and 10,983 graduates; 9,234 enrolled junior high school students, 31,421 current students and 10,079 graduates; 13,293 enrolled regular primary school students, 83,093 current students and 13,945 graduates; 37 enrolled special education students and 317 current students; and 35,587 kindergarten kids.

At the end of 2014, Gaizhou City had 22,083 regular high schools, including 10,971 schoolgirls, accounting for 49.68%. 43 primary schools, with 4,492 enrolled students, including 2,074 schoolgirls, accounting for 46.17%; 27,886 current students, including 13,159 schoolgirls, accounting for 47.19%; and 4,815 graduates, including 2,377 schoolgirls, accounting for 49.37%.

2.5 Water Supply

In 2014, Liaoning Province's overall water supply capacity was 13.38 million m^3/day, annual water supply capacity of 2.73 billion tons, including domestic water 1.07 billion tons, per capita domestic water consumption 131.8 liters, water penetration rate 98.7%, and total length of drainpipes 16,783 km.

In 2014, Shenyang City's overall water supply capacity was 2.029 million m^3/day, total length of water supply pipes 3,501 km, water supply capacity 57.169 million m^3, water quantity sold 412.44 million m^3, including 208.23 million m^3 of domestic water, and water-using population 5.166 million.

In 2015, Anshan City's urban water supply capacity was 136 million m^3, daily water supply capacity 374,000 m^3, an urban water-using population 1.58 million, urban water penetration rate 98.7%, urban water quantity sold 94.3 million m^3, and urban water sales revenue 280 million yuan.

Anshan City's urban water supply consists mainly of the municipal water supply system, Ansteel water supply system, and self-water supply systems of industrial and mining enterprises.

In 2014, Fushun City's overall water supply capacity was 1.29 million m^3/day, annual water supply capacity 212.13 million tons, water quantity sold 151.94 million tons, including 24.91 million tons of domestic water, water-using population 1.3099 million, and water penetration rate 98.63%. Urban domestic water in Fushun City is from the Dahuofang Reservoir, where source water is delivered by gravity flow and pressure delivery pipelines to 8 water purification plants along the route.

In 2014, Fuxin City had 7 waterworks, with a total capacity of 350,000 m^3/day, a total length of water supply pipes of 2,012 km, an annual water supply capacity of 75.03 million tons, including 29.95 million tons of domestic water, a water-using population of 773,000, a water penetration rate of 99.8%, and a daily per capita domestic water consumption of 133 liters. The water sources in the urban area mainly include groundwater and surface water sources, where groundwater is mainly from Linghe, Wangfu and Daba, while surface water mainly from the Naodehai, Beipiaobai and Fosi Reservoirs. The maximum water supply capacity of the 6 water sources is 350,000 tons/day.

In 2014, Gaizhou City's total length of water supply pipes was 266.16 km, overall water supply capacity 81,000 m^3/day, annual water supply capacity 11.5075 million m^3, water quantity sold 8.1585 million m^3, including 5.0206 million m^3 of domestic water, water loss 3.274 million m^3, and water-using population 229,600.

3 Stakeholder Analysis

3.1 Projec Area and Beneficiary Population

3.1.1 Shenyang Subproject

It is estimated that this subproject has a beneficiary population of about 460,000, including 220,000 females, accounting for 47.82%; a minority population of 43,000, accounting for 9.35%; and a floating population of 60,000, accounting for 13.04%. Water supply coverage is now 100%, and will be 100% after subproject completion. Water leakage rate is now 21.69%, and will be 19.69% after subproject completion. Water quality conformity rate is now 98.87%, and will be 99.3% after subproject completion.

3.1.2 Anshan Subproject

It is estimated that this subproject has a beneficiary population of about 1.58 million, including 780,000 females, accounting for 49.37%; a minority population of 240,000, accounting for 15.19%. Water supply coverage is now 98%, and will be 99% after subproject completion. Water leakage rate is now 30.9%, and will be 26.9% after subproject completion. Water quality conformity rate is now 99%, and will be 99.5% after subproject completion.

3.1.3 Fushun Subproject

It is estimated that this subproject has a beneficiary population of about 1.267 million, including 620,000 females, accounting for 48.93%; a minority population of 100,000, accounting for 7.89%; and a floating population of 20,000, accounting for 1.58%. Water supply coverage is now 100%, and will be 100% after subproject completion. Water leakage rate is now 25.7%, and will be 16.2% after subproject completion. Water quality conformity rate is now 99.3%, and will be 99.6% after subproject completion.

3.1.4 Fuxin Subproject

It is estimated that this subproject has a beneficiary population of about 850,000, including 390,000 females, accounting for 45.9%. Water supply coverage is now 90%, and will be 92% after subproject completion. Water leakage rate is now 37.8%, and will be 26% after subproject completion. Water quality conformity rate is now 100%, and will be 100% after subproject completion.

3.1.5 Gaizhou Subproject

It is estimated that this subproject has a beneficiary population of about 285,000, including 129,000 females, accounting for 45.33%; a minority population of 2,860, accounting for 1.01%; and a floating population of 1643, accounting for 0.73%. Water supply coverage is now 75%, and will be 98% after subproject completion. Water leakage rate is now 64.9%, and will be 31.7% after subproject completion. Water quality conformity rate is now 100%, and will be 100% after subproject completion.

See Table 3-1.

Table 3-1 Subproject Areas and Estimated Beneficiary Populations

Subproject	Range	Beneficiary population (0,000)	Where: women (0,000)	Where: minority population (0,000)	Where: floating population (0,000)
Shenyang	Main urban area covered by water supply	46	22	4.3	6
Anshan	/	158	78	24	/
Fushun	/	126.7	62	/	/
Fuxin	Mainly for the Fuxin city, Qinghemen District, Fu	85	39	10	2

Subproject	Range	Beneficiary population (0,000)	Where: women (0,000)	Where: minority population (0,000)	Where: floating population (0,000)
	Mengxian				
Gaizhou	/	28.5	10.2	0.2801	0.1643
Total	/	444.2	213.9	19.9255	8.1643

3.2 Stakeholder Identification

Stakeholders refer to individuals or groups that can affect or be affected by the realization of the project objectives. Stakeholders can be divided into primary and secondary stakeholders. The stakeholders of the subprojects have been identified based on the feasibility study Report and the fieldwork. The primary stakeholders of the Project include: local residents/villagers, especially women and the poor, and secondary stakeholders include: 1) PMOs, owners, design agencies, etc.; and 2) government agencies concerned.

See Table 3-2.

Table 3-2 Identification of Stakeholders of the Subprojects

Subproject	Primary stakeholders	Secondary stakeholders	Remarks
Shenyang Subproject	Affected residents and beneficiaries; IA	PMO, owner, design agency, etc., and government agencies concerned	Other stakeholders, mainly including municipal and district governments
Anshan Subproject	Affected residents and beneficiaries; IA	PMO, owner, design agency, etc., and government agencies concerned	Other stakeholders, mainly including municipal and district governments
Fushun Subproject	Affected residents and beneficiaries; IA	PMO, owner, design agency, etc., and government agencies concerned	Other stakeholders, mainly including municipal and district governments
Fuxin Subproject	Affected residents and beneficiaries; IA	PMO, owner, design agency, etc., and government agencies concerned	Other stakeholders, mainly including: 1) municipal and district governments; and 2) township and village administrative and social management organizations
Gaizhou Subproject	Affected residents and beneficiaries; IA	PMO, owner, design agency, etc., and government agencies concerned	Other stakeholders, mainly including: 1) municipal and district governments; and 2) township and village administrative and social management organizations

3.3 Demand Analysis of Primary Stakeholders

3.3.1 Shenyang Subproject

According to the survey, local residents' needs for this subproject include: ①improving water quality; ②improving pipelines and valves to reduce tap water loss rate; ③organizing residents to clean water tanks of secondary pump stations frequently; ④increasing water pressure, especially in the old urban area where pipes have not been improved and there is no secondary pump station; ⑤strengthening management.

🕮 **FGD of Heping New Village**

1. Bad water quality: Drinking water includes both groundwater and surface water, and would be turbid when supplied after an outage; the water storage tank is connected with a septic tank. 2. We are not satisfied with secondary pressurization. 3. Water leakage: There were two points of leakage in the pump station and pipe, but this problem has been solved. 4. Water meter: Water meters have not been replaced for a long time, but are vague now. We don't want new meters because they run too fast. Water readers often have a bad attitude. 5. Management: Water leakage issues are mostly solved by ourselves.

🕮 **FGD of Chuangye Community**

1. Bad water quality: Water quality is not too good, and there is some scale, which remains after one-day sedimentation and re-boiling. 2. Secondary pressurization has health issues, and the pumps are often dirty, but we don't know if they are cleaned or not. 3. Inadequate management: The property management staff once closed the valves of the 4 buildings at a time, but only Building 1 had a problem. 4. Water reading: Meter readers made estimates without reading meters a few years ago. Things are much better now.

3.3.2 Anshan Subproject

According to the survey, local residents' needs for this subproject include: ①improving water quality; ②disclosing water quality monitoring results; ③improving seriously aged pipes and values, which have a high loss rate and are likely to cause secondary water pollution; ④increasing water pressure, especially in the old urban area where pipes have not been improved and there is no secondary pump station; ⑤improving pipes in buildings with serious leakage.

🕮 **FGD of Jiefang Community**

1. Water quality: Water is dirty and contains impurities. Filter screens have been installed for household water pipes and are cleaned every two weeks. 2. Water pipe: The water supply pipe and the drainpipe are put together, so we worry about water contamination. 3. Repair.

3.3.3 Fushun Subproject

According to the survey, local residents' needs for this subproject include: ①improving water quality and reducing tap water sediments; ②disclosing water quality monitoring results, and organizing residents to watch water quality monitoring; ③improving pipes to reduce water loss rate; ④increasing water pressure, especially during construction; ⑤strengthening publicity on water quality and the Project's public benefits; ⑥strengthening management.

🕮 **FGD of Yongning Community**

1. Water quality: Water has a smell of bleaching powder and sediments. Water would turn yellow when supplied after an outage. Water purifiers are available. 2. Water pressure: Water pressure is insufficient during construction. 3. Repair: Damages are repaired ourselves, and those non-repairable are referred to the water company.4. Publicity on the Project's public benefits should be strengthened before construction.

3.3.4 Fuxin Subproject

According to the survey, local residents' needs for this subproject include: ①improving water quality; ②improving the hygiene of secondary pump stations; ③solving the water leakage problem; ④increasing water pressure; ⑤strengthening the management of meter readers and property management staff.

In Changyingzi Village, Qingqiu District, local residents' needs for this subproject include: ①improving water quality; ②introducing facilities and equipment; ③improving seriously aged and highly leaking pipes; ④increasing water pressure to avoid pipe bursting.

> 🕮 **FGD of Changyingzi Village, Qingqiu District**
> 1. Bad water quality: The existing community pipe network was built in the 1980s, and has insufficient capacity for a much larger population and a serious pressure problem. 2. Water leakage is serious, but the leaking point can hardly be located, because old pipes are deeply buried. 3. Water quality monitoring facilities are inadequate, and cannot cover all 106 items. The water supply information network should be established. 4. Existing water pipes have insufficient pressure, but cannot be pressurized, because they may burst.

3.3.5 Gaizhou Subproject

According to the survey, local residents' needs for this subproject include: ①improving water quality; ②improving seriously aged and highly leaking pipes in the old urban area; ③realizing automated control; ④increasing water pressure.

> 🕮 **FGD of Xinglong Community**
> Water quality is bad and there is scale, so that thermoses have to be washed often. Water often has a disinfectant smell. An outage lasted from 5 pm to 6 am. Outages occurred in this August, September and October.

> 🕮 **FGD of Baling Village**
> Water quality is fair good and water supply is ample. Domestic water is tap water, and irrigation water is well water. There is publicity on water conservation and pollution prevention in the village. There is no protective measure for well water, which would be assayed 4-5 times per annum. No outage has occurred from October 2013 to date.

In Baling Village, villagers' main need is introducing tap water, where well water is used and is likely to be contaminated by pesticides due to inadequate protection measures. See Table 3-3.

Table 3-3 Summary of Needs of Primary Stakeholders

Subproject	Residents
Shenyang Subproject	①improving water quality; ②improving pipelines and valves to reduce tap water loss rate; ③organizing residents to clean water tanks of secondary pump stations frequently; ④increasing water pressure, especially in the old urban area where pipes have not been improved and there is no secondary pump station; ⑤strengthening management.
Anshan Subproject	①improving water quality; ②disclosing water quality monitoring results; ③improving seriously aged pipes and values, which have a high loss rate and are likely to cause secondary water pollution; ④increasing water pressure, especially in the old urban area where pipes have not been improved and there is no secondary pump station; ⑤improving pipes in buildings with serious leakage.
Fushun Subproject	①improving water quality and reducing tap water sediments; ②disclosing water quality monitoring results, and organizing residents to watch water quality monitoring; ③improving pipes to reduce water loss rate; ④increasing water pressure, especially during construction; ⑤strengthening publicity on water quality and the Project's public benefits; ⑥strengthening management.
Fuxin Subproject	Urban residents: ①improving water quality; ②improving the hygiene of secondary pump stations; ③solving the water leakage problem; ④increasing water pressure; ⑤strengthening the management of meter readers and property management staff.

Subproject	Residents
	Rural residents: ①improving water quality; ②introducing facilities and equipment; ③improving pipes; ④increasing water pressure.
Gaizhou Subproject	Urban residents: ①mproving water quality; ②mproving seriously aged and highly leaking pipes in the old urban area; ③realizing automated control; ④ncreasing water pressure. Rural residents: introducing tap water

4 Poverty Analysis

4.1 Local Poverty

At the end of 2016, China had 8,766,567 urban MLS households and an urban MLS population of 15,281,580, and Liaoning Province had 383,011 urban MLS households and an urban MLS population of 645,132, accounting for 4.37% and 4.22% of those of China respectively.

At the end of 2015, Liaoning Province had a rural five-guarantee support population of 138,578, in which 33,669 people were subject to centralized support and 104,909 to scattered support, accounting for 24.3% and 75.7% respectively.

See Tables 4-1 and Table 4-2.

Table 4-1 Statistics of Local MLS (2016)

Division	Urban MLS households	Urban MLS population	Urban MLS standard (yuan/month per capita)	Rural MLS households	Rural MLS population	Rural MLS standard (yuan/year per capita)
China	8766567	15281580	486.15	26470132	45234428	3611.40
Liaoning Province	383011	645132	516.66	529976	776508	3815.85
Shenyang City	44952	65856	589.23	/	/	/
Anshan City	21182	31089	527.43	/	/	/
Fushun City	46577	81071	508.71	/	/	/
Fuxin City	39131	74407	481.43	36248	48211	2832
Gaizhou City	8020	12946	460.00	33331	44779	3500

Source: Website of the Ministry of Civil Affairs (data of Q3 2016); website of the Liaoning Provincial, Fuxin Municipal and Gaizhou Municipal Civil Affairs Bureaus (data of 2015)

Table 4-2 Local Rural Five-guarantee Support Rates

Division	Population	Centralized support		Scattered support	
		Population	Standard (yuan/year per capita)	Population	Standard (yuan/year per capita)
China	5.167 million	1.623 million	6025.7	3.544 million	4490.1
Liaoning Province	138578	33669	6159	104909	4097
Fuxin City	5721	948	5568	4773	3756
Gaizhou City	4365	983	6360	3382	4340

Source: Website of the Ministry of Civil Affairs (data of Q3 2016); website of the Liaoning Provincial, Fuxin Municipal and Gaizhou Municipal Civil Affairs Bureaus (data of 2015)

4.1.1 Shenyang Subproject

At the end of Q3 2016, Shenyang City had an urban MLS population of 65,856, accounting for 10.21% of Liaoning's urban MLS population. The urban MLS standard was 589.23 yuan/month per capita, higher than the provincial average.

4.1.2 Anshan Subproject

At the end of Q3 2016, Anshan City had an urban MLS population of 31,089, accounting for 4.82% of Liaoning's urban MLS population. The urban MLS standard was 527.43 yuan/month per capita, higher than the provincial average.

4.1.3 Fushun Subproject

At the end of Q3 2016, Fushun City had an urban MLS population of 81,071, accounting for 12.57% of Liaoning's urban MLS population. The urban MLS standard was 508.71 yuan/month per capita, lower than the provincial average.

4.1.4 Fuxin Subproject

At the end of Q3 2016, Fuxin City had an urban MLS population of 74,407 and a rural MLS population of 84,211, accounting for 11.53% and 10.84% of Liaoning's urban and rural MLS populations respectively. The urban and rural MLS standards were 481.43 yuan/month and 144 yuan/year per capita respectively, lower than the provincial averages.

At the end of 2015, Fuxin City had a rural five-guarantee support population of 5,721, accounting for 4.13% of that of Liaoning, in which 948 people were subject to centralized support and 4,773 to scattered support, with standards of 5,568 and 3,756 yuan/year per capita respectively, lower than the provincial averages.

4.1.5 Gaizhou Subproject

At the end of Q3 2016, Gaizhou City had an urban MLS population of 12,946 and a rural MLS population of 44,779, accounting for 2.01% and 5.77% of Liaoning's urban and rural MLS populations respectively. The urban and rural MLS standards were 460.00 yuan/month and 3500 yuan/year per capita respectively, lower than the provincial averages.

At the end of 2015, Gaizhou City had a rural five-guarantee support population of 4,365, accounting for 3.15% of that of Liaoning, in which 983 people were subject to centralized support and 3,382 to scattered support, with standards of 6,360 and 4,340 yuan/year per capita respectively, almost equal to the provincial averages.

4.2 Impacts of the Project on Poverty Reduction

1) Promoting the employment of local residents, especially the poor, to increase income

Temporary or permanent jobs will be generated at the construction and operation stages. 40% of these jobs will be first made available to women, the poor, minority residents and other vulnerable groups through consultation with the IAs and PMOs.

According to the survey, 100% of flexibly employed individuals are very willing to do these jobs to increase income.

2) Promoting the development of secondary and tertiary industries, thereby improving living conditions of local residents especially the poor, and generating employment and business startup opportunities for them

Building materials will be consumed in large quantities at the construction stage. Through consultation with the IAs, these materials will be purchased locally as long as they meet the quality requirements, thereby promoting the development of local building material enterprises, and local infrastructure construction and investment, and increasing local residents' income. In addition, the Project will improve water service level and quality, and expand water supply coverage, thereby improving living conditions of local residents especially the poor greatly.

3) Enacting or improving preferential policies for the poor

According to Document FFGJG [2016] No.52 of the Fushun Municipal Development and Reform Bureau, preferential water rates are applied to urban MLS subjects, such as 1.35 yuan/m^3 for Stage 1 (156 -216 m^3/year per household).

According to Document FJF [2014] No.176 of the Fuxin Municipal Price Bureau, preferential water rates are applied to MLS households, namely 2.06 yuan/m^3 for not more than 5 m^3/month per

household and 2.56 yuan/m^3 for more than 5 m^3/month per household.

Among the 5 project cities, preferential policies for the poor area available in Fushun and Fuxin Cities only. At the operation stage of the Project, preferential policies for urban and rural poor residents should be enacted or improved.

5 Social Gender Analysis

5.1 Local Women's Development

In order to learn local women's development and project participation, FGDs were held and in-depth interviews conducted during the fieldwork. 20 FGDs were held, including 6 women's FGDs, with 397 participants in total, including 209 women; in-depth interviews were conducted with 169 men-times, including 101 men-times of women, accounting for 59.76%. 566 people were involved in the survey in total, including 310 women, accounting for 54.77%.

1) Age structure

The respondents are composed mainly of middle-aged and young people. In the sample population, those aged above 60 years are the most, accounting for 35.9%; and those aged 51-60 years are the least, accounting for 12.4%. Among the female respondents, those aged above 60 years account for 27.5%; followed by those aged 31-40 years, accounting for 33.3%; and those aged 41-50 years, accounting for 19.5%. In general, the male and female respondents are similar in age structure.

Table 5-1 Age Distribution by Gender of the Samples of the Project

Age	Male		Female		Total	
	N	Percent	N	Percent	N	Percent
=<30 years	14	14.1%	61	17.5%	75	12.7%
31-40 years	39	16.2%	82	23.5%	121	20.5%
41-50 years	41	17.0%	68	19.5%	109	18.5%
51-60 years	31	12.9%	42	12.0%	73	12.4%
>60 years	116	48.1%	96	27.5%	212	35.9%
Total	241	100.0%	349	100.0%	590	100.0%

Source: socioeconomic survey (N=590)

2) Educational level

19.8% and 33.6% of the female and male respondents have received junior high school education respectively; 25.2% of the females have received undergraduate or above education, higher than that of the males (7.1%); 14.1% of the males have received primary school education, lower than that of the females (15.2%); 7.1% of the males are illiterate, lower than that of the females (8.0%). It can be seen that there is no significant difference in educational level between men and women.

Table 5-2 Educational Level Distribution by Gender of the Samples of the Project

Educational level	Male		Female		Total	
	N	Percent	N	Percent	N	Percent
Illiterate	17	7.1%	28	8.0%	45	7.6%
Primary school	34	14.1%	53	15.2%	87	14.7%
Junior high school	81	33.6%	69	19.8%	150	25.4%
Senior high school / secondary technical school	67	27.8%	56	16.0%	123	20.8%
Vocational high school / junior college	25	10.4%	55	15.8%	80	13.6%
Undergraduate or above	17	7.1%	88	25.2%	105	17.8%
Total	241	100.0%	349	100.0%	590	100.0%

Source: socioeconomic survey (N=590)

3) Employment

The primary occupations of the female respondents are retiree, migrant worker and state-owned enterprise employee, accounting for 24.9%, 22.6% and 12.9% respectively, while the primary occupations of the males are retiree, migrant worker and farmer, similar to those of the females. In local family division of labor, more women take care of the family and do housework, and even those employed work nearby; while men are responsible more for external affairs and work distantly.

Table 5-3 Occupation Composition by Gender of the Samples of the Project

Occupation	Male		Female		Total	
	N	Percent	N	Percent	N	Percent
Civil servant	6	2.5%	18	5.2%	24	4.1%
State-owned enterprise employee	12	5.0%	45	12.9%	57	9.7%
Private / foreign enterprise employee	14	5.8%	25	7.2%	39	6.6%
Business owner	0	0.0%	0	0.0%	0	0.0%
Professional	4	1.7%	2	0.6%	6	1.0%
Self-employer	11	4.6%	28	8.0%	39	6.6%
Farmer	16	6.6%	16	4.6%	32	5.4%
Migrant worker	55	22.8%	79	22.6%	134	22.7%
Housewife	0	0.0%	0	0.0%	0	0.0%
Unemployed	2	0.3%	14	4.0%	16	2.7%
Retired	109	45.2%	87	24.9%	196	33.2%
Student	0	0.0%	3	0.9%	3	0.5%
Other	12	5.0%	32	9.2%	44	7.5%
Total	241	100.0%	349	100.0%	590	100.0%

Source: socioeconomic survey (N=590)

5.1.1 Shenyang Subproject

To learn local women's development and project participation, 4 FGDs were held, including one women's FGD, with 77 participants in total, including 37 women; 32 in-depth interviews were conducted, including 20 women, accounting for 62.5%. 109 people were involved in the survey in total, including 57 women, accounting for 52.29%.

1) Age structure

Table 5-4 Age Distribution by Gender of the Samples of the Shenyang Subproject

Age	Male	Female	Total
	Percent	Percent	Percent
=<30 years	7.1%	52.4%	33.3%
31-40 years	1.8%	11.1%	6.7%
41-50 years	12.3%	11.1%	11.7%
51-60 years	12.3%	1.6%	6.7%
>60 years	61.4%	33.3%	46.7%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=120)

2) Educational level

Table 5-5 Educational Level Distribution by Gender of the Samples of the Shenyang Subproject

Educational level	Male	Female	Total
	Percent	Percent	Percent
Illiterate	21.1%	25.4%	23.3%

Educational level	Male	Female	Total
	Percent	Percent	Percent
Primary school	8.8%	11.1%	10.0%
Junior high school	52.6%	20.6%	35.8%
Senior high school / secondary technical school	14.0%	7.9%	10.8%
Vocational high school / junior college	0.0%	11.1%	5.8%
Undergraduate or above	3.5%	23.8%	14.2%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=120)

3) Employment

Table 5-6 Occupation Composition by Gender of the Samples of the Shenyang Subproject

Occupation	Male	Female	Total
	Percent	Percent	Percent
Civil servant	3.5%	9.5%	6.7%
State-owned enterprise employee	8.8%	30.2%	20.0%
Private / foreign enterprise employee	0.0%	14.3%	7.5%
Business owner	0.0%	0.0%	0.0%
Professional	0.0%	3.2%	1.7%
Self-employer	0.0%	9.5%	5.0%
Farmer	0.0%	0.0%	0.0%
Migrant worker	14.0%	1.6%	7.5%
Housewife	0.0%	0.0%	0.0%
Unemployed	0.0%	0.0%	0.0%
Retired	73.7%	31.7%	51.7%
Student	0.0%	0.0%	0.0%
Other	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=120)

5.1.2 Anshan Subproject

To learn local women's development and project participation, 4 FGDs were held, including one women's FGD, with 73 participants in total, including 37 women; 29 in-depth interviews were conducted, including 17 women, accounting for 58.6%. 102 people were involved in the survey in total, including 54 women, accounting for 52.29%.

1) Age structure

Table 5-7 Age Distribution by Gender of the Samples of the Anshan Subproject

Age	Male	Female	Total
	Percent	Percent	Percent
=<30 years	1.0%	10.3%	6.8%
31-40 years	32.7%	41.2%	37.6%
41-50 years	18.4%	13.2%	15.4%
51-60 years	10.2%	11.8%	11.1%
>60 years	46.9%	25.0%	34.2%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=117)

2) Educational level

Table 5-8 Educational Level Distribution by Gender of the Samples of the Anshan Subproject

Educational level	Male	Female	Total
	Percent	Percent	Percent
Illiterate	4.1%	0.0%	1.7%
Primary school	20.4%	13.2%	16.2%
Junior high school	36.7%	14.7%	23.9%
Senior high school / secondary technical school	20.4%	26.5%	23.9%
Vocational high school / junior college	10.2%	5.9%	7.7%
Undergraduate or above	53.1%	7.4%	26.5%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=117)

3) Employment

The primary occupations of the female respondents are state-owned enterprise employee, migrant worker and retiree, accounting for 14.7%, 25% and 25% respectively, while the primary occupations of the males are retiree, migrant worker and private enterprise employee, similar to those of the females. In local family division of labor, more women take care of the family and do housework, and even those employed work nearby; while men are responsible more for external affairs and work distantly. A significant feature in Anshan City is that a high percentage of men work at steelworks and earn a lot, but these enterprises were depressed in recent years.

Table 5-9 Occupation Composition by Gender of the Samples of the Anshan Subproject

Occupation	Male	Female	Total
	Percent	Percent	Percent
Civil servant	4.1%	4.4%	4.3%
State-owned enterprise employee	4.1%	14.7%	10.3%
Private / foreign enterprise employee	14.3%	10.3%	12.0%
Business owner	0.0%	0.0%	0.0%
Professional	4.1%	0.0%	1.7%
Self-employer	10.2%	11.8%	11.1%
Farmer	0.0%	0.0%	0.0%
Migrant worker	16.3%	25.0%	21.4%
Housewife	0.0%	0.0%	0.0%
Unemployed	0.0%	4.4%	2.6%
Retired	46.9%	25.0%	34.2%
Student	0.0%	0.0%	0.0%
Other	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=117)

5.1.3 Fushun Subproject

To learn local women's development and project participation, 4 FGDs were held, including one women's FGD, with 84 participants in total, including 45 women; 35 in-depth interviews were conducted, including 20 women, accounting for 57.1%. 119 people were involved in the survey in total, including 65 women, accounting for 54.62%.

1) Age structure

Table 5-10 Age Distribution by Gender of the Samples of the Fushun Subproject

Age	Male	Female	Total
	Percent	Percent	Percent
=<30 years	1.0%	8.8%	6.0%
31-40 years	28.6%	30.9%	29.9%
41-50 years	8.2%	25.0%	17.9%

Age	Male	Female	Total
	Percent	Percent	Percent
51-60 years	14.3%	7.4%	10.3%
>60 years	46.9%	27.9%	35.9%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=117)

2) Educational level

Table 5-11 Educational Level Distribution by Gender of the Samples of the Fushun Subproject

Educational level	Male	Female	Total
	Percent	Percent	Percent
Illiterate	4.1%	0.0%	1.7%
Primary school	18.4%	16.2%	17.1%
Junior high school	20.4%	27.9%	24.8%
Senior high school / secondary technical school	36.7%	13.2%	23.1%
Vocational high school / junior college	10.2%	2.9%	6.0%
Undergraduate or above	10.2%	39.7%	27.4%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=117)

3) Employment

Table 5-12 Occupation Composition by Gender of the Samples of the Fushun Subproject

Occupation	Male	Female	Total
	Percent	Percent	Percent
Civil servant	2.0%	2.9%	2.6%
State-owned enterprise employee	4.1%	17.6%	12.0%
Private / foreign enterprise employee	12.2%	8.8%	10.3%
Business owner	0.0%	0.0%	0.0%
Professional	4.1%	0.0%	1.7%
Self-employer	8.2%	13.2%	11.1%
Farmer	0.0%	0.0%	0.0%
Migrant worker	16.3%	22.1%	19.7%
Housewife	0.0%	0.0%	0.0%
Unemployed	0.0%	5.9%	3.4%
Retired	46.9%	26.5%	35.0%
Student	0.0%	0.0%	0.0%
Other	6.1%	2.9%	4.3%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=117)

5.1.4 Fuxin Subproject

To learn local women's development and project participation, 4 FGDs were held, including one women's FGD, with 79 participants in total, including 38 women; 36 in-depth interviews were conducted, including 23 women, accounting for 63.9%. 115 people were involved in the survey in total, including 61 women, accounting for 53.04%.

1) Age structure

Table 5-13 Age Distribution by Gender of the Samples of the Fuxin Subproject

Age	Male	Female	Total
	Percent	Percent	Percent
=<30 years	1.0%	2.6%	2.5%
31-40 years	7.0%	18.2%	14.2%
41-50 years	20.9%	29.9%	26.7%
51-60 years	20.9%	18.2%	19.2%
>60 years	48.8%	31.2%	37.5%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=120)

2) Educational level

Table 5-14 Educational Level Distribution by Gender of the Samples of the Fuxin Subproject

Educational level	Male	Female	Total
	Percent	Percent	Percent
Illiterate	0.0%	7.8%	5.0%
Primary school	7.0%	11.7%	10.0%
Junior high school	10.0%	5.2%	13.3%
Senior high school / secondary technical school	30.2%	24.7%	26.7%
Vocational high school / junior college	23.3%	36.4%	31.7%
Undergraduate or above	11.6%	14.3%	13.3%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=120)

3) Employment

Table 5-15 Occupation Composition by Gender of the Samples of the Fuxin Subproject

Occupation	Male	Female	Total
	Percent	Percent	Percent
Civil servant	1.8%	4.8%	3.3%
State-owned enterprise employee	0.0%	3.2%	1.7%
Private / foreign enterprise employee	1.8%	1.6%	1.7%
Business owner	0.0%	0.0%	0.0%
Professional	0.0%	0.0%	0.0%
Self-employer	0.0%	0.0%	0.0%
Farmer	17.5%	17.5%	17.5%
Migrant worker	19.3%	33.3%	26.7%
Housewife	0.0%	0.0%	0.0%
Unemployed	1.7%	6.3%	5.0%
Retired	21.1%	33.3%	27.5%
Student	0.0%	0.0%	0.0%
Other	10.5%	22.2%	16.7%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=120)

5.1.5 Gaizhou Subproject

To learn local women's development and project participation, 4 FGDs were held, including one women's FGD, with 84 participants in total, including 52 women; 39 in-depth interviews were conducted, including 21 women, accounting for 56.8%. 121 people were involved in the survey in total, including 73 women, accounting for 60.33%.

1) Age structure

Table 5-16 Age Distribution by Gender of the Samples of the Gaizhou Subproject

Age	Male	Female	Total
	Percent	Percent	Percent
=<30 years	2.0%	17.8%	12.9%
31-40 years	11.6%	17.8%	15.5%
41-50 years	39.5%	28.8%	32.8%
51-60 years	11.6%	13.7%	12.9%
>60 years	32.6%	21.9%	25.9%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=116)

2) Educational level

Table 5-17 Educational Level Distribution by Gender of the Samples of the Gaizhou Subproject

Educational level	Male	Female	Total
	Percent	Percent	Percent
Illiterate	2.3%	8.2%	6.0%
Primary school	18.6%	21.9%	20.7%
Junior high school	16.4%	20.5%	29.3%
Senior high school / secondary technical school	23.3%	17.8%	19.8%
Vocational high school / junior college	11.6%	19.2%	16.4%
Undergraduate or above	0.0%	12.3%	7.8%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=116)

3) Employment

Table 5-18 Occupation Composition by Gender of the Samples of the Gaizhou Subproject

Occupation	Male	Female	Total
	Percent	Percent	Percent
Civil servant	0.0%	5.5%	3.4%
State-owned enterprise employee	7.0%	2.7%	4.3%
Private / foreign enterprise employee	0.0%	2.7%	1.7%
Business owner	0.0%	0.0%	0.0%
Professional	0.0%	0.0%	0.0%
Self-employer	4.7%	6.8%	6.0%
Farmer	14.0%	6.8%	9.5%
Migrant worker	46.5%	34.2%	38.8%
Housewife	0.0%	0.0%	0.0%
Unemployed	0.0%	4.1%	2.6%
Retired	20.9%	15.1%	17.2%
Student	0.0%	4.1%	2.6%
Other	7.0%	17.8%	13.8%
Total	100.0%	100.0%	100.0%

Source: socioeconomic survey (N=116)

5.2 Social Gender Impact Analysis

The survey shows that local women will benefit from the Project, but will also undergo negative impacts at the construction, implementation and operation stages. In view of this, women's comments on the Project should be collected, social gender sensitivity maintained, and measures taken to minimize the negative impacts and maximize the benefits.

5.2.1 Positive Impacts

1) Improving domestic water quality

Water quality can be reflected in two aspects: First, with the improvement of water quality after project completion, women will select tap water as domestic drinking water other than bottled mineral water or purified water, and the incidence of waterborne diseases will be lower; second, ample water supply will be available after project completion, so that women will be less affected by low water supply capacity or frequent outages in housework.

2) Generating jobs to increase income

At the construction and operation stages, some unskilled jobs will be generated, which will be first made available to women, the poor and other vulnerable groups. In addition, construction will also promote the development of nearby stores and restaurants, where women can be employed.

> 🕮 **FGD of Changyingzi Village, Fuxin City (female, 29 years)**
> Villagers are very willing to do jobs generated by the Project, because there is much surplus labor in the village.

3) Reducing women's housework load

Since the Project mostly covers urban communities, and tap water is already available in the few villages covered, no woman in the project area carries water manually, and there is no extra burden of domestic water on women. After the intelligent urban water supply system is established, intelligent water charge payment and information transmission will be realized, and pipe leaks will be identified and repair more timely, thereby reducing women's housework load greatly.

5.2.2 Negative Impacts

1) Ignorance of women's needs

Local women's financial contribution to families is generally lower than men. As a result, people (including women themselves) often think that women have limited ability to participate in family affairs. This perception often results in the ignorance of women's needs and suggestions at the project design, implementation and operation stages.

2) Construction impacts

First, some roads would be damaged during water supply network reconstruction, thereby affecting residents' daily traffic, especially old people, women, children and other vulnerable groups. The failure to restore roads timely after construction will pose great safety risks. Second, water outages will occur during construction, affecting women's housework to some extent, such as cooking and clothes washing. Third, overnight construction will produce noise, thereby affecting residents' regular rest and physical health.

> 🕮 **Interview with a resident in Yongning Community, Fushun City (female, 58 years)**
> The water pipe burst last time, and was later repaired by the water company, but the hole on the road has been left unfilled. We later contacted them through the community for filling, and they did that with sand. We think it is unsafe because that part is lower after filling.

> 🕮 **Interview with the secretary of Bajiazi Community, Anshan City (female, 35 years)**
> Any repair work must be restored to the original condition after completion, and any special case should be notified to everyone. Construction should preferably be in the daytime, because overnight construction would affect our rest and be adverse to quality.

5.3 Social Gender Demand Analysis

5.3.1 Shenyang Subproject

1) Learning project information

20% of the female respondents and 70% of the males are aware of this subproject. Moreover, fewer women have a deep understanding of this subproject, and only 8% of the female respondents know more about this subproject. It can be seen that most women aware of this subproject have just heard of it. They hope to learn more about this subproject as it relates closely to them, and expect the competent authority to disclose relevant information in diverse ways, especially outage notices. Women have the need to learn more project information.

> 🕮 **Interview with a resident in Shandongbao Community, Shenhe District, Shenyang (female, 78 years)**
>
> Construction and door-to-door connection should be notified to community residents in advance to avoid conflicts and make preparations.

2) Improving water quality and pressure

It is learned that local women are not quite satisfied with current tap water quality and pressure. Insufficient pressure will make housework difficult, and drinking water safety is essential to physical health. Local women mentioned the need for reducing water impurities frequently in interviews.

3) Strengthening the management of secondary pump stations

Women are sensitive to the environment and have higher environmental requirements. They are particularly concerned about the hygiene of secondary pump stations, and think that such stations must be cleaned and disinfected regularly by specially assigned persons.

> 🕮 **Interview with a resident in Shandongbao Community, Shenhe District, Shenyang (female, 68 years)**
>
> My greatest concern about water is the storage tank of the pump station, which is usually cleaned once a year, two years or three years. I think it should be cleaned semiannually (it takes 1-2 hours only to clean it), because the pump station is too dirty, with many insects and much scale.

5.3.2 Anshan Subproject

1) Improving water quality and pressure

It is learned that local women are not quite satisfied with current tap water quality and pressure. Insufficient pressure will make housework difficult, and drinking water safety is essential to physical health. Local women mentioned the need for reducing water impurities frequently in interviews.

> 🕮 **Interview with a resident in Bajiazi Sub-district, Anshan (female, 33 years)**
>
> I live in a house on Floor 2 without improvement. In every morning, water is very turbid. The household water purifier would be blocked monthly. The pipe has been overhauled. Those living on Floor 7 suffer from insufficient water pressure. My family (3 members) consumes 5-6 tons of water per month.

2) Improving residents' water conservation awareness

Local residents' water conservation awareness is still low, and can rarely be applied to daily life. Many people, especially young people, cannot feel water shortage. Since women are the main force of housework and domestic water consumption, it is very necessary to improve residents' water conservation awareness under women's leadership, involve women in water conservation, and enable them to benefit more from the Project.

3) Getting employed under the Project

Some jobs will be generated at the construction and operation stages. 90% of the female respondents are willing to receive such jobs. Since women mostly have to take care of families and cannot work away from home, they often do temporary or flexible jobs. Some women are willing to receive jobs at both the construction and operation stages, but expect to work close to home, so that they can take care of families while working.

5.3.3 Fushun Subproject

1) Improving water quality and pressure

It is learned that local women are not quite satisfied with current tap water quality and pressure. Insufficient pressure will make housework difficult, and drinking water safety is essential to physical health. Local women mentioned the need for reducing tap water sediments frequently in interviews.

> 🕮 **Interview with a resident in Yongning Community, Fushun (female, 60 years)**
> 1. Water quality: Water has a smell of bleaching powder and sediments. Water would turn yellow when supplied after an outage. Water purifiers are available. 2.Water pressure: Water pressure is insufficient during construction.

2) Learning project information

25% of the female respondents and 55% of the males are aware of this subproject. Moreover, fewer women have a deep understanding of this subproject, and only 6% of the female respondents know more about this subproject. It can be seen that most women aware of this subproject have just heard of it. They hope to learn more about this subproject as it relates closely to them, and expect the competent authority to disclose relevant information in diverse ways, especially outage notices, water quality monitoring results, water quality and quantity knowledge, and project benefits. Women have the need to learn more project information.

> 🕮 **Interview with a resident in Yongning Community, Fushun (female, 58 years)**
> I formerly thought that our houses are old, and improvement should be made after the completion of new houses. However, after explanation by the water company, I think that improvement is still necessary. In addition, I think that publicity on the Project's public benefits should be strengthened before construction.

3) Improving residents' water conservation awareness

Local residents have a strong need for solving the water leakage problem, but mostly for financial reasons. Many people, especially young people, cannot feel water shortage. Since women are the main force of housework and domestic water consumption, it is very necessary to improve residents' water conservation awareness under women's leadership, involve women in water conservation, and enable them to benefit more from the Project.

> 🕮 **Interview with a resident in Yongning Community, Fushun (female, 60 years)**
> Water conservation awareness: I think most nearby residents, especially young people, do not have this awareness, because there is no water shortage here. No one would flush toilet bowls with vegetable rinse water except old people. Children have developed this awareness at kindergartens, but parents would just tell them not to waste water at home.

5.3.4 Fuxin Subproject

1) Getting employed under the Project

Some jobs will be generated at the construction and operation stages. 95% of the female respondents are willing to receive such jobs, because they are willing to do temporary jobs to increase income even if they cannot find permanent jobs when the economy is depressed. The employment willingness of rural women is much higher than that of urban women, because urban women can easily find jobs in secondary and tertiary industries, while rural women mostly have to take care of families and cannot work away from home, they often do temporary or flexible jobs. Some women are willing to receive jobs at both the construction and operation stages, but expect to work close to home, so that they can take care of families while working.

2) Safe and stable water supply

Water supply network improvement and equipment introduction in Fuxin City will ensure water supply, improve water quality and reduce the incidence of women's diseases, especially in rural areas and outskirts, where pipes are seriously damaged, leading to frequent water outages. Currently, water is turbid and highly alkaline, and women would suffer from such diseases as hepatitis, liver cancer and gallstone after prolonged drinking. Many families would drink bottled water or use a water purifier. According to interviews, women expect the Project to protect their health and safety, and poor women expect water rates not to rise dramatically.

> 🕮 **Interview with a resident in Xiyi Community, Fuxin (female, 31 years)**
>
> Water quality is bad, often containing yellow and white impurities, and particles. Water supply capacity and pressure are usually okay, but water pressure was very low in the past 3 months, making it difficult to wash vegetables. A couple has suffered from kidney stones due to bad water quality. Many families are buying mineral water for drinking. "Wangfu" mineral water drunk by my family costs 4.76 yuan/kg, tastes good, and has no scale. It has been drunk for 13-14 years. We are unwilling to drink tap water due to its taste.

3) Improving residents' water conservation awareness

Local residents have a strong need for solving the water leakage problem, but mostly for financial reasons. Many people, especially young people, cannot feel water shortage. Since women are the main force of housework and domestic water consumption, it is very necessary to improve residents' water conservation awareness under women's leadership, involve women in water conservation, and enable them to benefit more from the Project.

4) Diversified payment channels of water charges

In Fuxin City, water charges can paid at collection stations or service offices only. Female interviewees, especially young ones, think that this traditional payment mode adds to their housework burden, and expect more diversified payment channels, especially online payment.

> 🕮 **Interview with a resident in Chuangye Community, Fuxin (female, 36 years)**
>
> Meter readers made estimates without reading meters a few years ago. Things are much better now. Water meters are outdoor, and water charges would be paid at the collection station. I know that online payment is possible in Shenyang by means of WeChat, Alipay, etc. on the phone. I also expect to have these convenient payment modes.

5.3.5 Gaizhou Subproject

1) Improving water quality and pressure

It is learned that local women are not quite satisfied with current tap water quality and pressure. Insufficient pressure will make housework difficult, and drinking water safety is essential to physical health. Local women mentioned the need for reducing water impurities frequently in interviews. Currently, well water is still used in rural areas in Gaizhou City, but is much more expensive than tap

water. 100% of the female respondents expect the Project to be implemented as soon as possible so that they can have access to tap water.

> 🕮 **Interview with a resident in Baling Village, Gaizhou (female, 49 years)**
>
> Water quality is fair good and water supply is ample. Domestic water is tap water, and irrigation water is well water. There is publicity on water conservation and pollution prevention in the village. There is no protective measure for well water, which would be assayed 4-5 times per annum. I expect to use safer and cheaper tap water derived from surface water through this project.

> 🕮 **Interview with a resident in Xinglong Community, Gaizhou (female, 35 years)**
>
> Water quality is bad and there is scale, so that thermoses have to be washed often. Water often has a disinfectant smell. An outage lasted from 5 pm to 6 am. Outages occurred in this August, September and October.

2) Getting employed under the Project

Some jobs will be generated at the construction and operation stages. 93% of the female respondents are willing to receive such jobs, because they are willing to do temporary jobs to increase income even if they cannot find permanent jobs when the economy is depressed. The employment willingness of rural women is much higher than that of urban women, because urban women can easily find jobs in secondary and tertiary industries, while rural women mostly have to take care of families and cannot work away from home, they often do temporary or flexible jobs. Some women are willing to receive jobs at both the construction and operation stages, but expect to work close to home, so that they can take care of families while working.

> 🕮 **Interview with a resident in Shengli Community, Gaizhou (female, 52 years)**
>
> Housing conditions in the old urban area are poor. Retirees are poorly paid (less than 2,000 yuan per month), and many young people are laid-off or do odd jobs. The labor and social security bureau offers free training to laid-off workers. Everyone would highly welcome job opportunities generated by the Project.

3) Diversified payment channels of water charges

In Gaizhou City, water charges can paid at collection stations or service offices only. Female interviewees, especially young ones, think that this traditional payment mode adds to their housework burden, and expect more diversified payment channels, especially online payment.

6 Minority Analysis

6.1 Local Minority Profile

6.1.1 Minority Composition in Beneficiary Population

Among the subproject areas, the proportion of minority population in the Fuxin subproject area (11.76%, mostly Mongolians) is higher than those of the other 4 subproject areas (9.35%, 3.38% and 1.01% in the Shenyang, Anshan and Gaizhou subproject areas respectively).

According to the feasibility study and the survey, the Fuxin subproject area includes two villages in Fuxin Mongolian Autonomous County (Tugulu and Dongguan). At the end of 2015, Fuxin Mongolian Autonomous County had a population of 730,687, in which minority population accounts for 22%, mostly in such townships as Fosi, Daban, Wangfu, Shala, Daba, Hadahushao and Hongmaozi, and is scattered in the county town and other townships: 1) The urban area of Fuxin Mongolian Autonomous County has a population of 73,000, including a Mongolian population of 9,030, accounting for 12.4%; and a Korean population of 970, accounting for 1.32%; 2) Dongguan Village has a population of 4,000, in which Mongolian population accounts for 25%; 3) Tugulu Village has a population of 2,200, in which minority population accounts for 50%.

According to the feasibility study and the survey, the Gaizhou Subproject has a beneficiary population of 285,000, including a minority population of 2,860, accounting for 1.01%.

Table 6-1 Summary of Minority Population in the Subproject Areas

Ethnic composition	Shenyang Subproject	Anshan Subproject	Fushun Subproject	Fuxin Subproject		Gaizhou Subproject
				Total	Fuxin Mongolian Autonomous County	
Beneficiary population (0,000)	46	158	126.7	85	7.3	28.5
Minority population (0,000)	4.3	5.3395	/	10	0.903	0.286
Where: Mongolians (0,000)	3.87	3.2139	/	5.5	0.806	0.2377
Koreans (0,000)	0.0130	0.5756	/	3.1	0.097	0.0103
Other (0,000)	0.417	1.55	/	1.4	/	0.3269
Minority community or not	No	No	No	No	No	No

6.1.2 Minority Profile in the Affected Population of Fuxin Mongolian Autonomous County

Impacts of collective land acquisition: According to the RAP and the feasibility study report, the Fuxin Subproject involves the permanent occupation of 6.048 mu of land, including 3.024 mu of gratuitously allocated state-owned land and 3.024 mu of acquired collective construction land in Xinqiu District, affecting no one. According to the feasibility study report of the linked project (LXB Water Supply Supporting Facility Construction Project), the linked project involves the permanent acquisition of 226.62 mu of collective land, affecting 44 households with 141 persons in Ajindai Village, Changyingzi Town, Xinqiu District and Houyao Village, Hexi Town, Qinghemen District, including 14 minority residents. For temporary land use, the linked project acquire 2563.24 mu of land. The total affected people in the linked project will be 1820 people from 521HHs affected.

Impacts of temporary land occupation: According to the RAP and the feasibility study report, the Fuxin Subproject involves the temporary occupation of 244.202 mu of collective land, of which state-owned land free of charge 141.293 mu, temporary occupation of collective land 102.909 mu (101.661 mu of non-irrigated land and 1.248 mu of construction land), affecting 65 households with 223 persons in 6 villages in 6 townships/sub-districts. In Fuxin Mongolian Autonomous County, 54.861 mu of land will be occupied temporarily, affecting 31 households with 105 persons in Tugulu

and Dongguan Villages. In Tugulu Village, 1.44 mu of land will be occupied temporarily, affecting 3 households with 10 persons; in Dongguan Village, 53.421 mu of land will be occupied temporarily, affecting 28 households with 95 persons. Tugulu and Dongguan Villages are also beneficiary villages.

The Gaizhou Subproject involves the temporary occupation of 231 mu of land, all being collective land, including 73.99 mu of non-irrigated land, 123.395 mu of garden land and 33.615 mu of construction land, affecting 210 households with 679 persons in Baling Village, Dongcheng Sub-district and Jiatun Village, Tuandian Town, including 21 minority residents, including 7 Mongolians, 9 Manchu people and 5 Koreans. Baling and Jiatun Villages are also beneficiary villages.

Table 6-2 Summary of LA Impacts and Affected Population

	Subproject	District/ sub-district	Town	Village	Collective land (mu)	AHs	APs	Minority population	Minority community or not
The Project	Fuxin	Xinqiu District	Changyingzi	Ajindai	3.024	0	0	0	/
Linked project	Fuxin	Xinqiu District	Changyingzi	Ajindai	116.24	23	73	13	No
		Qinghemen District	Hexi	Houyao	110.38	21	68	15	No
		Subtotal	/	/	226.62	44	141	28	/

A linked project is identified in in LXB Water Supply Supporting Project in Fuxin City. This project is going to construct 2 water purification plants with the scale of 10^4t/d for each, and 45km of water distribution pipe networks. The land acquisition of the project will affect Fumeng County, Xinqiu County, Xihe District, Qinghemen District, Science & Technology Park of Fumeng County and High Tech Park in Fuxin City, the total land occupation area is 2789.86mu, of which, there are 226.62mu of permanent land acquisition and 2563.24 mu of temporary land occupation; there will be 1820 people from 521 households affected.

6.1.3 Key Minority Features

1) Mongolian

①Customs: The Mongolians are hospitable and sincere. Offering khatas is a traditional Mongolian courtesy to show respect for the old and guests. Local Mongolians celebrate the same festivals as Han people, such as the Spring Festival and the Lantern Festival.

②Diet: The Mongolians have the tradition of toasting at banquets and ceremonies.

③Clothing: The traditional Mongolian clothing, also known as the Mongolian gown, mainly consists of a gown, a waistband, boots and jewelry. Local Mongolians are rarely dressed in the Mongolian gown.

④Marriage: Local Mongolians intermarry extensively with Han people, and speak the northeastern China dialect.

2) Korean

①Customs: The Koreans advocate the traditional virtues of respecting the old and loving the young. Juniors must respect seniors in language and behavior. On one's 60^{th} birthday, its children would hold a banquet. Local Koreans celebrate the same festivals as Han people, such as the Spring Festival and the Lantern Festival.

②Diet: There are a wide variety of traditional Korean foods, including glutinous rice cakes, cold

noodles, pickles, sauce soup, etc. The Koreans like to eat dog meat, except on weddings, funerals and festivals.

③Clothing: The Koreans like to be dressed in white to indicate cleanliness, simplicity and decency.

④Marriage: Local Koreans intermarry extensively with Han people and other ethnic groups.

6.2 Minority Participation and Needs in the Project

The task force conducted free, prior and informed consultation among the affected minority population using the following methods:

1) Literature review: Local minority information was collected, such as local minority population and distribution, diet, economic and social development, etc.

2) Key informant interview: Key informant interviews of 78 men-times were conducted with heads of the IAs (water companies), PMOs, ethnic and religious affairs bureaus, women's federations, statistics bureaus, sub-district offices and community committees to learn the Project's impacts and potential risks, needs and suggestions, public participation, and local minority residents' living conditions.

3) In-depth interview: In-depth interviews were conducted with local residents of different income levels, gender and ethnic groups to learn local residents' attitudes to and needs for the Project, willingness to pay water charges, the Project's potential impacts and risks, their comments and suggestions, etc.

4) FGD: 20 FGDs were held in 20 villages/communities in the project area to learn local residents' needs for the Project, the Project's impacts on them, and their comments and suggestions, including women, the old, the poor, minority residents, etc.

5) Questionnaire survey: 600 copies of the questionnaire were distributed, with 590 valid copies recovered, to learn local residents' perceptions of local water quality and pressure, and water supply facilities, and their needs and attitudes, including women, the old, the poor, minority residents, etc.

Table 6-3 Summary of Minority Participation Activities

Subproject	Participants	Activities	Objectives
Shenyang Subproject	Local residents (including the poor, minority residents, women and old people), local government officials, owner, task force	4 FGDs 32 in-depth interviews 13 key informant interviews 120 valid copies of the questionnaire Literature review	①Sharing project information ②Analyzing project needs ③Evaluating project design and practice ④Analyzing project impacts ⑤Learning local residents' willingness to pay ⑥Analyzing existing issues ⑦Proposing expectations and suggestions
Anshan Subproject	Local residents (including the poor, minority residents, women and old people), local government officials, owner, task force	4 FGDs 29 in-depth interviews 16 key informant interviews 117 valid copies of the questionnaire Literature review	①Sharing project information ②Analyzing project needs ③Evaluating project design and practice ④Analyzing project impacts ⑤Learning local residents' willingness to pay ⑥Analyzing existing issues ⑦Proposing expectations and suggestions
Fushun Subproject	Local residents (including the poor, minority residents, women and old people), local government officials, owner, task force	4 FGDs 35 in-depth interviews 15 key informant interviews 117 valid copies of the questionnaire Literature review	①Sharing project information ②Analyzing project needs ③Evaluating project design and practice ④Analyzing project impacts ⑤Learning local residents' willingness to pay ⑥Analyzing existing issues ⑦Proposing expectations and suggestions

Subproject	Participants	Activities	Objectives
Fuxin Subproject	Local residents (including the poor, minority residents, women and old people), local government officials, owner, task force	4 FGDs 36 in-depth interviews 16 key informant interviews 120 valid copies of the questionnaire Literature review	①Sharing project information ②Analyzing project needs ③Evaluating project design and practice ④Analyzing project impacts ⑤Learning local residents' willingness to pay ⑥Analyzing existing issues ⑦Proposing expectations and suggestions
Gaizhou Subproject	Local residents (including the poor, minority residents, women and old people), local government officials, owner, task force	4 FGDs 37 in-depth interviews 18 key informant interviews 116 valid copies of the questionnaire Literature review	①Sharing project information ②Analyzing project needs ③Evaluating project design and practice ④Analyzing project impacts ⑤Learning local residents' willingness to pay ⑥Analyzing existing issues ⑦Proposing expectations and suggestions

It is learned that minority residents think the Project can improve tap water quality and pressure, and reduce water leakage rate, so they 100% support the Project.

6.3 Analysis of Project Impacts on Minority Residents

Positive impacts: 1) improving the layout of the water supply network to ensure domestic water supply; 2) improving the urban secondary water supply system to avoid secondary pollution during supply; 3) reducing network leakage rate and conserving water resources; 4) improving pipes and valves to improve water quality; and 5) generating nonagricultural jobs for minority residents at the construction and operation stages to increase their income.

Negative impacts: 1) Permanent and temporary land occupation will cause inconvenience to local minority residents, for which the owner should compensate according to local regulations; 2) After project completion, the water supply network and associated equipment will be maintained, which is likely to cause disputes if not coordinated well; 3) Construction may lead to noise, safety and other issues, thereby affecting the traffic and agricultural production of some minority residents.

In general, the Project's positive impacts on minority residents are much more than negative impacts, and such negative impacts can be evaded through alternatives. Based on free, prior and informed consultation, most minority residents think that the Project can meet their water demand and is positive in general.

6.4 Conclusion

If any ethnic minority exists in or collectively attached to the project area, the need for an ethnic minority development plan will be determined through SA and consultation. Such plan should be flexible and practical so that: a) the affected minority residents receive social and economic benefits suited to their cultural customs; and b) the Project's negative impacts on the minority residents are avoided or minimized through appropriate measures, or compensated for.

The task force identified the local ethnic minorities and the Project's impacts on them. The key points are as follows:

1) Free, prior and informed consultation shows that 100% of minority residents support the Project;

2) The proportions of minority population in the Shenyang, Anshan, Fuxin and Gaizhou subproject areas are 9.35%, 3.38%, 11.76% and 1.01% respectively, so minority residents are a direct beneficiary group of the Project;

3) In the project area, minority residents live together and get along with Han people, and the local ethnic minorities are not unique and vulnerable social and cultural groups;

4) The local ethnic minorities are not attached collectively to living areas or ancestral territories with unique geographic characteristics in the project area, or to natural resources in such residential areas;

5) Their traditional cultural, economic, social or political institutions are largely consistent with those of the majority people- Han, and they speak mandarin -Putonghua.

In addition, the Project will ensure that the local ethnic minorities benefit equally, and will not affect their languages and religions. The minority population has no special need. For the Project's negative impacts on the minority population, restoration programs suited to the minority characteristics have been proposed in the RAP and the Environmental Management Plan. See Table 6-4.

In conclusion, the subprojects don't trigger the Bank OP4.10 ethnic minority

Table 6-4 Identification of Minority Features by Subproject

Subproject	Percent of minority beneficiary population (%)	Ethnic minorities	Cultural feature	Mode of inhabitation	Poor village involved or not	Language	Minority community involved or not
Sheyang Subproject	Shenyang City: 9.35%	Mongolian	Almost the same with the dominant majority people- Han	Scattered in the urban area	No	Putonghua	No
Anshan Subproject	Anshan City: 3.38%	Mongolian, Korean		Scattered in the urban area	No	Putonghua	No
Fushun Subproject	Fushun City: /	Hui, Mongolian		Scattered in the urban area	No	Putonghua	No
Fuxin Subproject	Fuxin City: 11.76%	Mongolian, Korean		Urban area, county town and two nearby villages of Fuxin Mongolian Autonomous County; scattered	No	Putonghua	No
Gaizhou Subproject	Gaizhou City: 1.01%	Mongolian		Scattered in the urban area and some nearby Han villages	No	Putonghua	No

7 Social Benefits and Risks of the Project

7.1 Social Benefits

7.1.1 Shenyang Subproject

1) Improving the layout of the urban water supply network to meet domestic water demand

Since the urban area of Shenyang City is expanding rapidly, and some formerly marginal waterworks have been included, the water supply network has become irrational, and domestic water demand cannot be well met in some areas. The network should be rationalized.

2) Improving supplied water quality and ensuring water hygiene

In the questionnaire survey, only 9.2% of the respondents are satisfied with current water supply, and 100% think it necessary to improve supplied water quality. This subproject will improve the water supply network to improve water quality significantly, and also improve secondary pump stations to ensure water hygiene.

> 🕮 **Interview with a resident in Shandongbao Community, Shenhe District, Shenyang (male, 62 years)**
>
> The water group does well in repairing water leaks, but the water tank in the community is fed by a secondary pump station, and all of us expect primary water supply. The water tank is always dirty and rarely cleaned.

3) Improving the water supply network to ensure ample water supply

The water supply network in the old urban area is seriously aged and has a high leakage rate, very likely to cause production and living inconveniences to local residents due to extensive outages. This subproject will reduce the leakage rate of the water supply network, expand water supply, and ensure timely and ample water supply.

7.1.2 Anshan Subproject

1) Improving the urban water supply network to ensure water supply

In Anshan City, surface water was not supplied as domestic water in place of groundwater until 2013, so that existing pipes are seriously corroded, resulting in a serious loss of water resources. This subproject will improve old valves and pipes, and reduce leakage rate greatly to ensure ample water supply.

> 🕮 **Interview with a resident in Jiefang Community, Anshan (male, 45 years)**
>
> There are leaks in water pipes in the community, and those living on the roof floor can wash clothes after 10:00 pm. When water is unavailable, residents can only carry water downstairs.

2) Improving supplied water quality and ensuring water hygiene

The Tanghe River water source supplies 350,000 tons of raw water to the city daily, but there is no measure to deal with alga and other emergency organic pollution; the Wangjiayu Purification Plant does not meet the new national standard, indicating that domestic water quality should be improved urgently. In this subproject, a water intake pump station will be built at the Tanghe River water source to cope with emergency pollution events, and improve the Wangjiayu Purification Plant to improve overall supplied water quality.

3) Improving the layout of the urban water supply network to meet domestic water demand

There are 406 residential secondary pump stations in Anshan City, in which 73 are substandard and aged, and should be improved.

7.1.3 Fushun Subproject

1) Improving secondary pump stations to ensure supplied water quality

There are 242 secondary pump stations in Fushun city, 90% of which are characterized by extended service, high energy consumption, frequent failure and technical backwardness, very likely to cause “secondary pollution”. In this subproject, 70 secondary pump stations will be improved to ensure safe water supply.

> 🕮 **Interview with a resident in Yongning Community, Fushun (female, 53 years)**
>
> Water quality in the community is not too good, and there is some scale, which remains after one-day sedimentation and re-boiling. Water has a high impurity level, and the water purifier would be blocked and water would turn yellow over time. Water must have been contaminated by the metallic water tank or valve.

2) Reducing leakage losses to meet water demand

Serious pipe leakage is likely to cause secondary pollution, frequent pipe bursting and even extensive outages. In this subproject, old pipes will be improved extensively to reduce overall leakage rate from 37.8% to 25.2%.

3) Improving water monitoring capacity to ensure safe water use

Currently, the water quality monitoring center of Fushun Water Company can monitor 76 items only, and its capacity needs to be improved urgently to cover all 106 items in the Sanitary Standard for Drinking Water for more assured water use.

7.1.4 Fuxin Subproject

1) Improving the existing waterworks to ensure supplied water quality

Most equipment of the Naodehai Purification Plant is seriously aged and has a high failure rate, affecting its normal operation. In this subproject, this plant will be improved in all aspects to improve its purification capacity and supplied water quality.

> 🕮 **Interview with a resident in Xiyi Community, Fuxin (female, 42 years)**
>
> Water quality is bad, often containing yellow and white impurities, and particles, and leaving thick scale on kettles. Many families drink mineral water, and are unwilling to drink tap water due to its taste. Some richer families use water purifiers.

2) Improving the water supply network to ensure ample water supply

Some water supply pipes in Fuxin City are seriously aged, especially in old communities, leading to a high leakage rate, reduced water supply and frequent outages. In this subproject, water supply facilities in old communities will be improved thoroughly to meet domestic water demand.

> 🕮 **Interview with a villager in Changyingzi Village, Fuxin (male, 48 years)**
>
> There are usually two outages per week, and water supply is intermittent every day. We are used to this. Water quality is bad, and water leakage is serious. Normal water supply cannot be ensured if time-segmented water supply is impossible.

3) Improving the urban water supply network to ensure water supply pressure

Due to frequent water leakages and pipe bursts in the old urban area, reduced-amount and lower-pressure supply is inevitable, so that the water demand of residents on higher floors cannot be met. In this subproject, the urban water supply network will be improved, and two booster pump stations built to ensure water supply and pressure.

🕮 **Interview with a villager in Baling Village, Gaizhou (male, 53 years)**
Water leakage is serious, but the leaking point can hardly be located, because old pipes are deeply buried. Tap water is very likely to be polluted by well water or other pollutants, especially on rainy days. We strongly expect to use safe and clean tap water.

🕮 **Interview with a resident in Chuangye Community, Fuxin (female, 42 years)**
There are many points of secondary pressurization, because the water source is too distant. For residential buildings, tap water is pressurized every 6 floors to ensure water supply. Water output is very small during peak hours, but we have to wait.

7.1.5 Gaizhou Subproject

1) Improving the layout of the urban water supply network to meet domestic water demand

The Yushidong surface water source has insufficient capacity, but planned East New District and Beihai New District need much water supply. In this subproject, a surface water purification plant and some distribution pipelines will be built to meet domestic and industrial water demand.

2) Improving the water supply network to ensure ample water supply

The water supply network in the old urban area is outdated, resulting in low supply pressure and serious leakage. In this subproject, community distribution and household pipes will be improved to reduce leakage rate, ensure water supply and pressure, and meet domestic water demand.

3) Improving supplied water quality and ensuring water hygiene

Water supply systems in some communities are poorly managed, so that secondary pump stations are corroded and tank water quality is bad. In this subproject, 8 secondary pump stations will be improved to improve supplied water quality and ensure water hygiene.

4) Improving water metering

In some communities, water meters are inaccurate or difficult to read, and residents have strong complaints about this. In this subproject, 31,606 intelligent water meters will be installed to realize intelligent remote control, and more precise and convenient reading.

🕮 **Interview with a resident in Shengli Community, Gaizhou (male, 62 years)**
Old meters are installed indoors and have to be read indoors. New meters are installed outdoors, but would be blocked by impurities during outages. Door-to-door meter reading is very inconvenient, and would disturb daily lives. If a family is absent, the reading would be estimated from the water consumption of the past 3 months.

7.2 Social Risks

The Project will undoubtedly generate great social and economic benefits, but may also pose potential risks. During the fieldwork, the task force discussed this with different stakeholders.

7.2.1 Traffic Impacts of Construction

Some roads will be damaged during construction, thereby affecting residents' daily traffic, especially old people, children and other vulnerable groups. Failure of filling after construction will pose great safety risks.

🕮 **Interview with a resident in Yongning Community, Fushun (female, 58 years)**
The water pipe burst last time, and was later repaired by the water company, but the hole on the road has been left unfilled. We later contacted them through the community for filling, and they did that with sand. We think it is unsafe because that part is lower after filling.

7.2.2 Collection of Rural Water Charges

It is learned that each rural family has a well, and uses well water at ordinary times. After project completion, water charges will be collected from rural residents, who may refuse to pay water charges and even prevent meter readers from entering their houses.

7.2.3 Water Supply Management and Maintenance

After project completion, the new waterworks will be managed by water companies, including facility installation and maintenance, water charge collection and meter reading, which requires coordination between village committees and water companies. Inadequate coordination will have adverse impacts on urban and rural water supply. In addition, rural residents usually irrigate crops with well water, but during droughts, they may damage water meters or pipes for extensive irrigation, thereby resulting in a waste of water resources and damages to water supply equipment.

7.2.4 Residents' Water Conservation Awareness

After project completion, high-quality tap water will be available. Most rural residents do not have the habit of saving water and have not received education on water conservation by means of brochure or training, making it difficult to change their water using habit in the short term.

> 🕮 **Interview with a resident in Baling Village, Gaizhou (female, 31 years)**
> Villagers use well water as domestic and irrigation water, but have no water conservation awareness. Publicity on water conservation is conducted once or twice a year, and has limited coverage and effectiveness.

7.2.5 Environmental Impacts of Construction

During construction, much flying dust will be produced due to the prolonged exposure of excavated earth, affecting the city appearance and the surrounding living environment greatly. On rainy days, the construction site will become very muddy and difficult to pass through.

Much spoil will be produced during construction, and may affect the environment and local traffic during transport and disposal. In addition, unregulated spoil dumping will affect land use and river running, and damage the natural environment and the city appearance.

7.2.6 Land Occupation

The Fuxin and Gaizhou Subprojects involve land acquisition and house demolition, and potentially compensation.

The Fuxin Subproject involves the permanent occupation of 6.048 mu of land, including 3.024 mu of gratuitously allocated state-owned land and 3.024 mu of acquired collective construction land in Xinqiu District, affecting no one; and the temporary occupation of 244.202 mu of land, including 141,293 mu of gratuitously allocated state-owned land and 102.909 mu of collective land (101.661 mu of non-irrigated land and 1.248 mu of construction land), affecting 65 households with 223 persons in 6 villages in 6 townships/sub-districts. The Gaizhou Subproject involves the permanent occupation of 48.75 mu of land, all being collective land, of which 26.87 acres of land owned by the village collective ,affecting 18 households with 66 persons in Baling Village, Dongcheng Sub-district; and the temporary occupation of 231 mu, all being collective land, including 73.99 mu of non-irrigated land, 123.395 mu of garden land and 33.615 mu of construction land, affecting 194 households with 650 persons in two villages in two townships/sub-districts.

The compensation rates for land acquisition should be fixed and disclosed as soon as possible, because they are a great public concern.

8 Willingness to Pay Analysis

Expenses arising from the Project are additional water charges for improved water supply services. The data for the analysis of the willingness to pay model here is from the socioeconomic survey questionnaire. In this survey, 590 valid copies were recovered, including 120 from Shenyang, 117 from Anshan, 117 from Fushun, 120 from Fuxin and 116 from Gaizhou.

8.1 Shenyang Subproject

1) 120 valid copies were recovered. According to the survey, 22.5% of the respondents do not accept a higher water rate for improved water supply services, and 77.5% do. The willingness of the female respondents is higher than that of the males by 24 percentage points.

> 🕮 **Interview with a resident in Shandongbao Community, Shenhe District, Shenyang (male, 65 years)**
>
> Each family has a water meter, which is read door-to-door per month, and water charges are paid at the service office of the water company. My family's monthly water charges are about RMB50, and delayed payment would lead to a penalty. The water rate is already high, and a higher rate is unacceptable.

2) According to the survey, willingness to pay drops as the amount of payment rises. Among those willing to pay extra water charges, 97% are willing to pay a water rate of 4 yuan/ton, 5.4% willing to pay 6 yuan/ton, and only 1.1% willing to pay 8 yuan/ton, 10 yuan/ton, 20 yuan/ton or 50+ yuan/ton.

> 🕮 **Interview with a resident in Shendian Community, Heping District, Shenyang (female, 42 years)**
>
> The water rate was raised this October 1 to 3.3 yuan including wastewater treatment charges. The meter is usually read once every 3 months. There are several service offices, and water charges can also be paid at banks. Per capita water consumption is 3 tons per month. We can only accept a certain increase of the water rate if water quality and supply is improved after project completion.

3) Among the reasons for being willing to pay 4 (6/8/10/20/50/) yuan/ton, the first one is "this rate is almost negligible", as chosen by 98.9%, followed by "this rate is reasonable" and "better service quality is needed", as chosen by 5.4% and 2.3% respectively.

> 🕮 **Interview with a resident in Heping New Village, Heping District, Shenyang (female, 57 years)**
>
> I attended the water rate hearing, and everyone thinks that a multi-stage water rate system is rational. We can accept a higher water rate because we won't spend on this too much per month, but the key is water quality.

4) Among the reasons for being unwilling to pay 4 (6/8/10/20/50/) yuan/ton, the first one is "this is the government's responsibility", as chosen by 100%, followed by "I don't need this service", "the current rate is already very high" and "the government does not use funds properly", as chosen by 11.1% each.

8.2 Anshan Subproject

1) 117 valid copies were recovered. According to the survey, 42.7% of the respondents do not accept a higher water rate for improved water supply services, and 57.3% do. The willingness of the

female respondents is higher than that of the males by 7 percentage points.

> 🕮 **Interview with a resident in Shihe Community, Tiedong District, Anshan (female, 46 years)**
> Water meters are read and water charges paid every two months. Old people would pay at service offices or banks, but young people would pay by WeChat. The current water rate is reasonable.

2) According to the survey, willingness to pay drops as the amount of payment rises. Among those willing to pay extra water charges, 100% are willing to pay a water rate of 4 yuan/ton, 25.4% willing to pay 6 yuan/ton, and none willing to pay 8 yuan/ton, 10 yuan/ton, 20 yuan/ton or 50+ yuan/ton.

> 🕮 **Interview with a resident in Dongminsheng Community, Tiexi District, Anshan (male, 62 years)**
> Old people can hardly accept a higher water rate, but water has to be used. The water company has also conducted a sampling survey on this, and thinks that residents can accept a higher rate after communication and explanation. A higher water rate will also facilitate water conservation.

3) Among the reasons for being willing to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “this rate is reasonable”, as chosen by 97%, followed by “this rate is almost negligible” and “better service quality is needed”, as chosen by 68.7% and 29.9% respectively.

4) Among the reasons for being unwilling to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “this is the government’s responsibility”, as chosen by 65.7%, followed by “the government does not use funds properly” and “the current rate is already very high”, as chosen by 20.9% and 25.4% respectively.

8.3 Fushun Subproject

1) 117 valid copies were recovered. According to the survey, 41.1% of the respondents do not accept a higher water rate for improved water supply services, and 58.9% do. The willingness of the female respondents is higher than that of the males by 10 percentage points.

> 🕮 **Interview with a resident in Yongning Community, Xinfu District, Fushun (female, 42 years)**
> Water has a disinfectant smell in the morning. We can accept a certain increase of the water rate as long as the Project can improve water quality.

2) According to the survey, willingness to pay drops as the amount of payment rises. Among those willing to pay extra water charges, 100% are willing to pay a water rate of 4 yuan/ton, 28.9% willing to pay 6 yuan/ton, and only 2.9% willing to pay 8 yuan/ton, 10 yuan/ton, 20 yuan/ton or 50+ yuan/ton.

3) Among the reasons for being willing to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “this rate is reasonable”, as chosen by 97.1%, followed by “this rate is almost negligible”, “better service quality is needed”, as chosen by 71% and 31.9% respectively.

4) Among the reasons for being unwilling to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “this is the government’s responsibility”, as chosen by 89.6%, followed by “the current rate is already very high”, “the government does not use funds properly” and “the project is useless”, as chosen by 31.3%, 27.1% and 18.8% respectively.

8.4 Fuxin Subproject

1) 120 valid copies were recovered. According to the survey, 35% of the respondents do not accept a higher water rate for improved water supply services, and 65% do. The willingness of the female respondents is higher than that of the males by 31 percentage points.

> 🕮 **Interview with a villager in Changyingzi Village, Xinqiu District, Fuxin (male, 66 years)**
> The water rate is 4 yuan/ton, which is not high, but would be deemed high if outages occur often. There is only one master meter in the village, and each family is willing to install a separate one.

2) According to the survey, willingness to pay drops as the amount of payment rises. Among those willing to pay extra water charges, 67% are willing to pay a water rate of 4 yuan/ton, 33.3% willing to pay 6 yuan/ton, 10% willing to pay 8 yuan/ton, and 5%, 3.3% and 1.7% willing to pay 10 yuan/ton, 20 yuan/ton and 50+ yuan/ton respectively.

3) Among the reasons for being willing to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “this rate is reasonable”, as chosen by 58.3%, followed by “this rate is almost negligible” and “better service quality is needed”, as chosen by 48.3% and 36.7% respectively.

> 🕮 **Interview with a resident in Kaiyuan Community, Haizhou District, Fuxin (female, 57 years)**
> Many families are buying mineral water for drinking. “Wangfu” mineral water drunk by my family costs 4.76 yuan/kg, tastes good, and has no scale. It has been drunk for 13-14 years. We are unwilling to drink tap water due to its taste. The water rate may be increased appropriately if there are 104 water quality monitoring items after project completion.

4) Among the reasons for being unwilling to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “the current rate is already very high”, as chosen by 91.7%, followed by “this is the government’s responsibility”, “the government does not use funds properly” and “I don’t need this service”, as chosen by 73.3%, 10% and 8.3% respectively.

8.5 Gaizhou Subproject

1) 116 valid copies were recovered. According to the survey, 25% of the respondents do not accept a higher water rate for improved water supply services, and 75% do. The willingness of the female respondents is higher than that of the males by 29 percentage points.

> 🕮 **Interview with a villager in Baling Village, Dongcheng Sub-district, Gaizhou (male, 54 years)**
> Each family in the village has a water meter, which is read by the head of the women’s federation semiannually, and water charges are also paid semiannually. The water rate is 4 yuan/ton, which is barely acceptable. A family spends less than 20 yuan on water per month on average.

2) According to the survey, willingness to pay drops as the amount of payment rises. Among those willing to pay extra water charges, 80% are willing to pay a water rate of 4 yuan/ton, 33.9% willing to pay 6 yuan/ton, 11.9% willing to pay 8 yuan/ton, 9.2% willing to pay 10 yuan/ton, and none willing to pay 20 yuan/ton or 50+ yuan/ton.

3) Among the reasons for being willing to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “this rate is reasonable”, as chosen by 71.3%, followed by “this rate is almost negligible” and “better service quality is needed”, as chosen by 61.4% and 28.7% respectively.

4) Among the reasons for being unwilling to pay 4 (6/8/10/20/50/) yuan/ton, the first one is “the current rate is already very high”, as chosen by 66.4%, followed by “this is the government’s

responsibility", "I cannot afford it" and "I don't need this service", as chosen by 51.7%, 31% and 25.9% respectively.

9 Public Participation and Consultation

9.1 Public Participation and Consultation at the Preparation Stage

Since April 2016, the Liaoning PMO has organized a series of public participation and consultation activities. At the preparation stage, the Bank mission, feasibility study agency, Environmental Management Plan preparation agency and the RAP preparation agency conducted a social survey in the project area to collect needs and suggestions, and improve the project design.

This report has been prepared based on FGDs, in-depth interviews, stakeholder discussions, key informant interviews, and other public participation activities. In order to fully involve all stakeholders, the task force conducted participatory activities and extensive communications with the APs.

20 FGDs were held in 20 villages/communities in the project area to learn local residents' needs for the Project, the Project's impacts on them, and their comments and suggestions, with 397 participants in total, including 209 females, accounting for 53%; 217 old people (>60 years), accounting for 55%; and 59 poor residents, accounting for 15%. Key informant interviews of 78 men-times were conducted with heads of the IAs (water companies), PMOs, women's federations, labor and social security bureaus, development and reform bureaus, statistics bureaus, sub-district offices and community committees. In-depth interviews were conducted with 169 men-times in 20 villages/communities in the project area, including 101 females, accounting for 60%. 20 villages/communities were sampled randomly and purposefully, and 600 copies of the questionnaire distributed, with 590 valid copies recovered.

9.1.1 Shenyang Subproject

1) Information disclosure

During October 17-19, 2016, the task force disclosed basic project information to local residents, learned their production and living conditions, comments and suggestions on this subproject by means of questionnaire survey, FGD and interview in 4 affected communities.

2) Questionnaire survey

During October 17-19, 2016, the task force conducted a door-to-door socioeconomic questionnaire survey in 4 affected communities to learn local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collect comments and suggestions on this subproject, with 120 copies of the questionnaire distributed.

3) FGD

During October 17-19, 2016, the task force held FGDs in 4 affected communities, involving 77 residents in total, including 37 women and 42 old people, to learn basic information, and local residents' attitudes to, needs for and comments on the Project.

4) In-depth interview

During October 17-19, 2016, the task force conducted in-depth interviews with 32 residents in 4 affected communities, including 20 women, accounting for 62.5%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject.

5) Key informant interview

During October 17-19, 2016, the task force conducted key informant interviews with 13 heads of Shenyang Water Group, the women's federation, civil affairs bureau, labor and social security bureau, statistics bureau, development and reform bureau, and community committees to learn their comments and suggestions, with focus on how to optimize the Project through the Social

Action Plan.

See Table 9-1.

Table 9-1 Summary of Preparation-stage Public Participation Activities of the Shenyang Subproject

No.	Type	Time	Venue	Participants	Remarks
1	Project information disclosure	Oct. 17-19, 2016	Affected communities	Task force, PMO, APs	Collecting general information and comments, and discussing restoration programs by means of interview and consultation meeting
2	Questionnaire survey	Oct. 17-19, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collecting comments and suggestions on this subproject, with 120 copies of the questionnaire distributed
3	FGD	Oct. 17-19, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning basic information, and local residents' attitudes to, needs for and comments on the Project, involving 77 residents, including 37 women and 42 old people
4	In-depth interview	Oct. 17-19, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Conducting in-depth interviews with 32 residents in 4 affected communities, including 20 women, accounting for 62.5%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject
5	Key informant interview	Oct. 17-19, 2016	4 affected communities, agencies concerned	Heads of water company, agencies concerned and communities	Learning their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan

9.1.2 Anshan Subproject

1) Information disclosure

During October 20-22, 2016, the task force disclosed basic project information to local residents, learned their production and living conditions, comments and suggestions on this subproject by means of questionnaire survey, FGD and interview in 4 affected communities.

2) Questionnaire survey

During October 20-22, 2016, the task force conducted a door-to-door socioeconomic questionnaire survey in 4 affected communities to learn local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collect comments and suggestions on this subproject, with 117 copies of the questionnaire distributed.

3) FGD

During October 20-22, 2016, the task force held FGDs in 4 affected communities, involving 73 residents in total, including 37 women and 40 old people, to learn basic information, and local residents' attitudes to, needs for and comments on the Project.

4) In-depth interview

During October 20-22, 2016, the task force conducted in-depth interviews with 29 residents in 4 affected communities, including 17 women, accounting for 58.6%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject.

5) Key informant interview

During October 20-22, 2016, the task force conducted key informant interviews with 16 heads of Anshan Water Company, the women's federation, civil affairs bureau, labor and social security bureau, statistics bureau, development and reform bureau, and community committees to learn their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan.

See Table 9-2.

Table 9-2 Summary of Preparation-stage Public Participation Activities of the Anshan Subproject

No.	Type	Time	Venue	Participants	Remarks
1	Project information disclosure	Oct. 20-22, 2016	Affected communities	Task force, PMO, APs	Collecting general information and comments, and discussing restoration programs by means of interview and consultation meeting
2	Questionnaire survey	Oct. 20-22, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collecting comments and suggestions on this subproject, with 117 copies of the questionnaire distributed
3	FGD	Oct. 20-22, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning basic information, and local residents' attitudes to, needs for and comments on the Project, involving 73 residents, including 37 women and 40 old people
4	In-depth interview	Oct. 20-22, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Conducting in-depth interviews with 29 residents in 4 affected communities, including 17 women, accounting for 58.6%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject
5	Key informant interview	Oct. 20-22, 2016	4 affected communities, agencies concerned	Heads of water company, agencies concerned and communities	Learning their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan

9.1.3 Fushun Subproject

1) Information disclosure

During October 23-25, 2016, the task force disclosed basic project information to local residents, learned their production and living conditions, comments and suggestions on this subproject by means of questionnaire survey, FGD and interview in 4 affected communities.

2) Questionnaire survey

During October 23-25, 2016, the task force conducted a door-to-door socioeconomic questionnaire survey in 4 affected communities to learn local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collect comments and suggestions on this subproject, with 117 copies of the questionnaire distributed.

3) FGD

During October 23-25, 2016, the task force held FGDs in 4 affected communities, involving 84 residents in total, including 45 women and 50 old people, to learn basic information, and local

residents' attitudes to, needs for and comments on the Project.

4) In-depth interview

During October 23-25, 2016, the task force conducted in-depth interviews with 35 residents in 4 affected communities, including 20 women, accounting for 57.1%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject.

5) Key informant interview

During October 23-25, 2016, the task force conducted key informant interviews with 15 heads of Fushun Water Company, the women's federation, civil affairs bureau, labor and social security bureau, statistics bureau, development and reform bureau, and community committees to learn their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan.

See Table 9-3.

Table 9-3 Summary of Preparation-stage Public Participation Activities of the Fushun Subproject

No.	Type	Time	Venue	Participants	Remarks
1	Project information disclosure	Oct. 23-25, 2016	Affected communities	Task force, PMO, APs	Collecting general information and comments, and discussing restoration programs by means of interview and consultation meeting
2	Questionnaire survey	Oct. 23-25, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collecting comments and suggestions on this subproject, with 117 copies of the questionnaire distributed
3	FGD	Oct. 23-25, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning basic information, and local residents' attitudes to, needs for and comments on the Project, involving 84 residents, including 45 women and 50 old people
4	In-depth interview	Oct. 23-25, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Conducting in-depth interviews with 35 residents in 4 affected communities, including 20 women, accounting for 57.1%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject
5	Key informant interview	Oct. 23-25, 2016	4 affected communities, agencies concerned	Heads of water company, agencies concerned and communities	Learning their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan

9.1.4 Fuxin Subproject

1) Information disclosure

During October 26-28, 2016, the task force disclosed basic project information to local residents, learned their production and living conditions, comments and suggestions on this subproject by means of questionnaire survey, FGD and interview in 4 affected communities.

2) Questionnaire survey

During October 26-28, 2016, the task force conducted a door-to-door socioeconomic questionnaire survey in 4 affected communities to learn local water supply conditions, and local

residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collect comments and suggestions on this subproject, with 120 copies of the questionnaire distributed.

3) FGD

During October 26-28, 2016, the task force held FGDs in 4 affected communities, involving 79 residents in total, including 38 women and 43 old people, to learn basic information, and local residents' attitudes to, needs for and comments on the Project.

4) In-depth interview

During October 26-28, 2016, the task force conducted in-depth interviews with 36 residents in 4 affected communities, including 23 women, accounting for 63.9%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject.

5) Key informant interview

During October 26-28, 2016, the task force conducted key informant interviews with 16 heads of Fuxin Water Company, the women's federation, civil affairs bureau, labor and social security bureau, statistics bureau, development and reform bureau, and community committees to learn their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan.

See Table 9-4.

Table 9-4 Summary of Preparation-stage Public Participation Activities of the Fuxin Subproject

No.	Type	Time	Venue	Participants	Remarks
1	Project information disclosure	Oct. 26-28, 2016	Affected communities and villages	Task force, PMO, APs	Collecting general information and comments, and discussing restoration programs by means of interview and consultation meeting
2	Questionnaire survey	Oct. 26-28, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collecting comments and suggestions on this subproject, with 120 copies of the questionnaire distributed
3	FGD	Oct. 26-28, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning basic information, and local residents' attitudes to, needs for and comments on the Project, involving 79 residents, including 38 women and 43 old people
4	In-depth interview	Oct. 26-28, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Conducting in-depth interviews with 36 residents in 4 affected communities, including 23 women, accounting for 63.9%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject
5	Key informant interview	Oct. 26-28, 2016	4 affected communities, agencies concerned	Heads of water company, agencies concerned and communities	Learning their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan

9.1.5 Gaizhou Subproject

1) Information disclosure

During October 29-31, 2016, the task force disclosed basic project information to local residents, learned their production and living conditions, comments and suggestions on this subproject by means of questionnaire survey, FGD and interview in 4 affected communities/villages.

2) Questionnaire survey

During October 29-31, 2016, the task force conducted a door-to-door socioeconomic questionnaire survey in 4 affected communities to learn local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collect comments and suggestions on this subproject, with 116 copies of the questionnaire distributed.

3) FGD

During October 29-31, 2016, the task force held FGDs in 4 affected communities, involving 84 residents in total, including 52 women and 42 old people, to learn basic information, and local residents' attitudes to, needs for and comments on the Project.

4) In-depth interview

During October 29-31, 2016, the task force conducted in-depth interviews with 37 residents in 4 affected communities, including 21 women, accounting for 56.8%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject.

5) Key informant interview

During October 29-31, 2016, the task force conducted key informant interviews with 18 heads of Gaizhou Water Company, the women's federation, civil affairs bureau, labor and social security bureau, statistics bureau, development and reform bureau, and community committees to learn their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan.

See Table 9-5.

Table 9-5 Summary of Preparation-stage Public Participation Activities of the Gaizhou Subproject

No.	Type	Time	Venue	Participants	Remarks
1	Project information disclosure	Oct. 29-31, 2016	Affected communities	Task force, PMO, APs	Collecting general information and comments, and discussing restoration programs by means of interview and consultation meeting
2	Questionnaire survey	Oct. 29-31, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning local water supply conditions, and local residents' attitudes to and comments on water charge payment, water supply network improvement, etc., and collecting comments and suggestions on this subproject, with 116 copies of the questionnaire distributed
3	FGD	Oct. 29-31, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Learning basic information, and local residents' attitudes to, needs for and comments on the Project, involving 84 residents, including 52 women and 42 old people
4	In-depth interview	Oct. 29-31, 2016	4 affected communities	Task force, PMO, residents in the 4 communities	Conducting in-depth interviews with 37 residents in 4 affected communities, including 21 women, accounting for 56.8%, to learn their production and living conditions, this subproject's positive and negative impacts on them, and their comments and suggestions on this subproject
5	Key informant interview	Oct. 29-31, 2016	4 affected communities, agencies	Heads of water company,	Learning their comments and suggestions, with focus on how to optimize the Project through the Social Action Plan

No.	Type	Time	Venue	Participants	Remarks
			concerned	agencies concerned and communities	

Through the above public participation process, the task force learned local residents' perceptions of water supply issues, and their needs and attitudes. Local residents' comments and suggestions on the Project mainly include: ①organizing residents to visit secondary pump stations and the cleanup process; ②disclosing water quality monitoring results, and organizing residents to watch water quality monitoring and water purification processes; ③strengthening publicity for residents on water quality and supply knowledge, and the public benefits of the Project; ④strengthening the management of meter readers; ⑤improving water supply facilities to ensure supplied water quality and meet domestic water demand; ⑥implementing preferential water rates for the poor; and ⑦fixing and disclosing the compensation rates for land acquisition as soon as possible.

9.2 Public Participation Strategy

9.2.1 Improving Public Participation Level

In order to implement the Project successfully, and avoid or minimize potential negative impacts, a sound public participation mechanism will be established across all stages.

1) At the preparation stage, the PMOs and the IAs should introduce project information to local residents, and collect their comments and suggestions.

2) Unskilled jobs generated at the implementation stage will be first made available to women and the poor. Construction noise pollution should be minimized; the construction staff should respect local customs; the PMOs and other agencies should have female management members; information should be disclosed timely; construction safety training and other publicity activities should be suited to women and other vulnerable groups to benefit more people.

3) At the operation stage, project information and resettlement policies should be disclosed by various means to protect the right to know of the public. On the other hand, smooth appeal channels should be established, including face-to-face communication, hotline and Web.

See Table 9-6.

Table 9-6 Summary of Public Participation Activities at the Different Stages of the Project

Stage	Activity	Description	Methods	Participants	Agencies responsible
Preparation	Project optimization	1) Introducing project information; 2) Collecting local residents' comments and suggestions on the Project, such as water supply network maintenance and construction safety; 3) Feeding back comments and issues to PMOs and other agencies concerned	Questionnaire survey; FGD, in-depth interview	Local residents, PMOs, agencies concerned,	PMOs, feasibility study agency, IAs, agencies concerned

Stage	Activity	Description	Methods	Participants	Agencies responsible
Implementation	Participation in project construction	1) Coordinating relations among all stakeholders; 2) Establishing criteria for worker selection, including women and the poor; 3) Holding a water price hearing; 4) Supervising compensation payment; 5) Giving publicity on water conservation; 6) Participating in project construction	Collection of comments through community committees	Those involved in project construction, including women and the poor, price bureaus, APs, PMOs, IAs	PMOs, price bureaus, IAs, agencies concerned
Operation	M&E and grievance redress	1) Establishing a participatory M&E mechanism, including internal and external monitoring; 2) Establishing an effective grievance redress mechanism	Interview, FGD, questionnaire survey; PMO appeal hotline, mayor hotline; websites of municipal governments; websites of water companies	Agencies concerned Village committees PMOs	PMOs, IAs, agencies concerned

9.2.2 Strengthening Water Conservation Publicity and Education at Communities and Schools

1. Community level

1) Existing community autonomy experience

- Shandongbao Community, Shenyang: An autonomous management committee has been established, with 12 members, with 4-5 female members, mostly retirees. The committee usually meets monthly, and forwards issues reported by residents to competent authorities.
- Baling Village, Gaizhou: A supervision team would be established during construction, usually with 3-5 members, elected by villagers through voting, responsible for supervision, accounting and construction. They are not paid, and their work must be disclosed.

2) Guiding autonomous organizations to focus on water conservation

In order to maintain the hygiene of secondary pump stations, and improve residents' water conservation awareness, relevant publicity and education activities may be strengthened through existing autonomous community organizations. Institutions of such organizations should be improved, and unified planning made to ensure that communities are fully involved in and benefit from the Project.

i) Scope of work

The duties of autonomous community organizations are as follows:

a. Assisting PMOs in disclosing project information and publicity, and giving relevant feedback, possibly by means of brochure, poster, slogan, broadcast, TV, website and meeting.

b. Organizing, summing up and improving publicity and education activities on water conservation, in which at least 30% of participants should be women, and accepting inquiries on domestic water from residents;

c. Assisting residents in getting employed under the Project, making jobs first available to women, the poor and other vulnerable groups, and assisting in solving labor disputes between residents and the employer; and

d. Giving suggestions on local water conservation behavior and related activities

ii) Work plan

The participation plan for autonomous community organizations in project design, project management, and M&E has been developed through consultation. See Table 9-7.

Table 9-7 Whole-process Participation Plan of Residents' Autonomous Organizations

Stage	Type	Activity	Mode	Remarks
Design	Project optimization	1. Introducing project information; 2. Distributing brochures; 3. Collecting local residents' comments and suggestions	Posting information; Residents' congress Door-to-door interview	PMOs
		Feeding back comments and issues to PMOs and other agencies concerned	FGD; report or summary	
Implementation	Project construction and operation	1. Establishing special contacts with water companies on domestic water issues; 2. Attending water conservation training, and encouraging women's participation	FGD; video; written material	PMOs
	Publicity and training on water conservation	1. Giving publicity on water conservation; 2. Assisting residents in getting employed under the Project, making jobs first available to women, the poor and other vulnerable groups; 3. Organizing publicity and education activities on water conservation, in which at least 30% of participants should be women; 4. Organizing school-based water conservation training and publicity	Inviting technicians from water companies to give lectures and answer questions; Poster, slogan, broadcast, TV, website	PMOs, women's federations, education bureaus
Monitoring and feedback	Participatory M&E	Supervising project implementation, and incorporating comments into external M&E	Interview, FGD, questionnaire survey	PMO, IAs, external M&E agency
	Grievance redress	Establishing a grievance redress mechanism	Hotline	PMO, IAs

2. School level

Give full play to the demonstrative and guiding role of education, and build water conservation awareness among students in conjunction with existing local educational practices, so that students further improve their morality and civility levels. Extend such activities to families and society so that students, teachers and parents are educated together to create a harmonious situation.

Under the leadership of local education bureaus, urban and rural schools should organize the following activities: a) organizing students and parents to distribute brochures at communities at weekends or in spare time; b) disseminating knowledge on water resource conservation by means of campus broadcast, blackboard, bulletin board, etc.; and c) organizing paper calls and speech contests on water conservation to find solutions to practical issues and set examples.

10 Action Plans

In order to ensure the successful implementation of the Social Action Plan and the Gender Action Plan, an integrated project performance management framework has been established through consultation with the agencies concerned.

During project implementation, the PMOs will assign persons specially or appoint the consulting agency to collect baseline and progress data at necessary times, draft annual reports, analyze and compile report data through the project management information system, and submit such data to the Bank through quarterly progress reports.

The Social Development Action Plan of the Project has been developed in consultation with the Liaoning and local PMOs, IAs, and agencies concerned. See Table 10-1.

Table 10-1 Social Development Action Plan of the Project

Action	Monitoring indicator	Agency concerned	Time	Budget
1. Improving residents' water conservation awareness				
● Giving publicity on water conservation awareness at communities and schools ● Holding water rate hearings ● Granting water charge subsidies to MLS population	● Frequency and types of training (by gender) ● Collecting comments and suggestions from 50% of women and 30% of MLS residents during public participation ● Number of hearing participants, and percentages of women (not less than 50%) and the poor (not less than 40%) ● Number and percentage of residents receiving water charge subsidies (by gender)	Agencies responsible: PMOs Assisting agencies: civil affairs bureau, women's federation, price bureaus	2016-2020	Project construction budget
2. Project management				
● Assigning persons to be responsible specifically for the implementation of Social Development Action Plan; ● Training the staff of the PMOs and the IAs to ensure effective implementation	● Workforce of PMOs and IAs responsible for the implementation of Social Development Action Plan ● 100% of staff of PMOs and IAs responsible for social development trained (at least 30% of trainees being women)	Agencies responsible: PMOs	2016-2020	Capacity building budget

Appendix 1Minutes of FGDs

FGD in Heping New Village, Shenyang

Date of interview: October 17, 2016
Venue: Heping New Village Committee
Interviewees: 6 residents (including 3 females)

Details:

I. Water supply issues

1. Bad water quality: Drinking water includes both groundwater and surface water, and would be turbid when supplied after an outage; the water storage tank is connected with a septic tank.
2. We are not satisfied with secondary pressurization.
3. Water leakage: There were two points of leakage in the pump station and pipe, but this problem has been solved.
4. Water meter: Water meters have not been replaced for a long time, but are vague now. We don't want new meters because they run too fast. Water readers often have a bad attitude.
5. Management: Water leakage issues are mostly solved by ourselves.

II. Water charges

The water rate was raised this October 1 to 3.3 yuan including wastewater treatment charges. The meter is usually read once every 3 months. There are several service offices, and water charges can also be paid at banks. Per capita water consumption is 3 tons per month. We can only accept a certain increase of the water rate if water quality and supply is improved after project completion.

III. Water conservation awareness

There is often publicity on water conservation, and water charges are based on each family's consumption.

IV. Feedback channel

1. Water supply issues are reported to meter readers.
2. Calls to the hotline are warmly received but there is no follow-up.
3. Reporting to the community committee

V. Construction impacts

1. Inconvenient traffic, when sidewalks are occupied
2. Causing water outages
3. No unified planning

VI. Suggestions

1. Construction quality should be improved.
2. Construction should be planned as a whole.

FGD in Shanzuizi Community, Anshan

Date of interview: October 20, 2016
Venue: Shanzuizi Community Committee
Interviewees: 14 residents (including 9 females)

Community overview:
This is an old community, where water pipes and meters have been replaced not long ago.

I. Water supply issues

1. Water quality: Water was of bad quality and often turbid in the past, but there is no problem after water pipe replacement.
2. Meter reading: If a family is absent, the reading would be estimated from past water consumption records. If the estimate is less than the actual consumption, the family has to pay a penalty of several yuan. Residents won't argue with the water company for such penalty.
Door-to-door meter reading has no impact on daily life. The water, power and gas meters are read by the same person, who is polite and familiar.
3. Water leakage: We would fix water leaks in houses ourselves, and find the water company for main pipe leaks. Water leaks rarely occur.

II. Water charges

Water charges can be paid anywhere, usually online, by the 5th of each month.
Some interviewees don't remember water consumption data clearly. For example, a family (3 members) uses 5-6 tons of water per month, and another family (3 members) spends over 20 yuan on water per month.

III. Water conservation awareness

We have water conservation awareness without training, because we have to pay more for a higher water consumption.

IV. Feedback channel

We would repair damages ourselves, such as taps, and resort to the property management company for things that cannot be repaired ourselves, because we have to pay for it.

V. Construction

Daytime construction is expected.

FGD in Yongning Community, Fushun

Date of interview: October 21, 2016
Venue: Yongning Community Committee
Interviewees: 18 residents (including 14 females)

Details:

I. Water supply issues

1. Water quality: Water has a smell of bleaching powder and sediments. Water would turn yellow when supplied after an outage.
2. Water pressure: Water pressure is insufficient during construction.
3. Repair: Damages are repaired ourselves, and those non-repairable are referred to the water company.

II. Water charges

We know little about the water rate, and usually pay 200-300 yuan at a time by WeChat, which is very convenient.

III. Water conservation awareness

I think most nearby residents, especially young people, do not have this awareness, because there is no water shortage here. No one would flush toilet bowls with vegetable rinse water except old people. Children have developed this awareness at kindergartens, but parents would just tell them not to waste water at home.

IV. Feedback channel

Damages are repaired ourselves, and those non-repairable are referred to the water company.

V. Construction

We understand construction impacts, because it is for improving our living quality.
However, safe equipment and reliable raw materials should be used, and regulation strengthened during construction.

FGD in Changyingzi Village, Fuxin

Date of interview: October 25, 2016
Venue: Changyingzi Village Committee
Interviewees: 8 residents (including 4 females)

Community overview:
All residents moved here during urban reconstruction in 2002.

1. Bad water quality
The existing community pipe network was built in the 1980s, and has insufficient capacity for a much larger population and a serious pressure problem. About 1/3 of villagers are often unable to drink water, and well water is polluted by industrial wastewater, etc.

2. Serious water leakage
Water leakage is serious, but the leaking point can hardly be located, because old pipes are deeply buried. Tap water is very likely to be polluted by well water or other pollutants, especially on rainy days. Water leaks include exposed and concealed ones, where exposed leaks can be easily located and fixed, while concealed leaks can hardly be located. Water leaks found by villagers are usually reported to village officials and then to the water company.

3. Insufficient equipment and facilities
Water quality monitoring facilities cannot cover all 106 items. The water supply information network should be established.

4. Insufficient water pressure
Existing water pipes have insufficient pressure, but cannot be pressurized, because they may burst. New water pipes differ from old ones in size, and can hardly be repaired.

5. Pipes
Pipes were bonded with glue and are still okay, but glue fails.

6. Other
There is a pump station in the village. Villagers do not have much income and have not been insured.

Villagers' requirements: introducing equipment, and improving the pipe network, including indoor pipes

FGD in Baling Village, Gaizhou

Date of interview: October 27, 2016
Venue: Baling Village Committee
Interviewees: 18 residents (including 3 females)

Details:

1. Community background

The community has 610 households with over 2,300 persons, 30% of which are 60 years or above. All villagers have recovered new-type rural cooperative medical insurance, and pay 150 yuan per annum. 300-400 villagers work outside, dealing with construction, catering, services, clothing, etc. No employment skill training has been offered. Few villagers grow food crops, and most villagers grow grape and apple. Cultivation training is offered annually. There are over 100 villager representatives, and usually 60-70 would attend village meetings, including over 10 women.

2. Water rates

Each family in the village has a water meter, which is read by the head of the women's federation semiannually, and water charges are also paid semiannually. The water rate is 4 yuan/ton, which is barely acceptable. A family spends less than 20 yuan on water per month on average. There is no preferential for MLS households, and the two five-guarantee households are exempted from water charges.

3. Water quality and pressure

Water quality is fair good and water supply is ample. Domestic water is tap water, and irrigation water is well water. There is publicity on water conservation and pollution prevention in the village. There is no protective measure for well water, which would be assayed 4-5 times per annum. No outage has occurred from October 2013 to date.

4. Construction

Farmland should not be occupied during construction.
No toilet bowl is used.
Temporary land occupation is acceptable because there is compensation.
Construction impacts are temporary and acceptable. We support the Project strongly.
There was formerly a supervision team, usually with 3-5 members, elected by villagers through voting, responsible for supervision, accounting and construction. They are not paid, and their work must be disclosed.
Construction meetings would be notified in advance.
All villagers are willing to deal with construction.

Appendix 2 Fieldwork Photos

FGD in Shandongbao Community, Shenyang

FGD in Shendian Community, Shenyang

FGD in Heping New Village, Shenyang

A water charge collection station in Shenyang

Interview at Anshan Water Company

FGD in Bajiazi Community, Anshan

FGD in Shanzuizi Community, Anshan

FGD in Dongminsheng Community, Anshan

A water charge collection station in Fushun

Interview at the dispatching center of Fushun Water Company

FGD in Sishui Community, Fushun

FGD in Yongning Community, Fushun

Interview at the test center of Fuxin Water Company

FGD in Chuangye Community, Fuxin

A secondary pump station in Fuxin

FGD in Kaiyuan Community, Fuxin

Interview with the secretary of Xiyi Community, Fuxin

FGD in Changyingzi Village, Fuxin

FGD in Baling Village, Gaizhou

Interview at Gaizhou Water Company

FGD in Chuangye Community, Gaizhou

Interview in Xinglong Community, Gaizhou

FGD in Shengli Community, Gaizhou

Interview at the Gaizhou Municipal Labor and Social Security Bureau