

Project Administration Manual

Project Number: 46079
January 2014

Guangdong Chaonan Water Resources
Development and Protection Demonstration Project

CURRENCY EQUIVALENTS

(as of 24 January 2014)

Currency Unit - yuan (CNY)

CNY1.00 = \$0.1652

\$1.00 = CNY6.0527

ABBREVIATIONS

ADB	–	Asian Development Bank
CDG	–	Chaonan district government
CEPB	–	Chaonan Environmental Protection Bureau
CFB	–	Chaonan Finance Bureau
CSC	–	construction supervision company
CWSC	–	Chaonan Water Supply Company
DMF	–	design and monitoring framework
EIA	–	environmental impact assessment
EMP	–	environmental management plan
EMS	–	environmental monitoring station
EPB	–	environmental protection bureau
FMA	–	financial management assessment
GAP	–	gender action plan
GRM	–	grievance redress mechanism
ICB	–	international competitive bidding
IEE	–	initial environmental examination
LIBOR	–	London interbank offered rate
LIEC	–	loan implementation environment consultant
m ³	–	cubic meter
mcm	–	million cubic meter
M&E	–	monitoring and evaluation
NCB	–	national competitive bidding
NRW	–	nonrevenue water
PAM	–	project administration manual
PMO	–	project management office
PPMS	–	project performance management system
PPTA	–	project preparatory technical assistance
PRC	–	People's Republic of China
SAP	–	social action plan
SOE	–	statement of expenditure
WSP	–	water supply plant

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Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the borrower, the Government of the People's Republic of China (PRC); and the Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant universal resource locators or directly incorporated in the PAM.

The Chaonan district government (CDG), the project executing agency; and the implementing agencies, including the Chaonan Education Bureau (CEB); the Chaonan Environmental Protection Bureau (CEPB); the Chaonan Forestry Bureau (CFoB); the Chaonan Water Affairs Bureau (CWAB); the Chaonan Water Supply Company (CWSC); and the Chaonan Urban Management Bureau (CUMB), are wholly responsible for the implementation of the ADB-financed project, as agreed jointly between the borrower and ADB; and in accordance with the government's and ADB policies and procedures. The ADB staff is responsible to support the implementation, including compliance by CDG, CEB, CEPB, CFoB, CWAB, CWSC, and CUMB with their obligations and responsibilities for project implementation in accordance with ADB policies and procedures.

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

After ADB Board approval of the project's report and recommendation of the President, changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures, including the project administration instructions; and upon such approval they will be subsequently incorporated in the PAM.

I. PROJECT DESCRIPTION

Borrower	People's Republic of China
Classification	<p>Sector (subsectors): Multisector (water supply and sanitation, water-based natural resources management, and waste management)</p> <p>Themes (subthemes): Social development (human development), economic growth (promote economic efficiency and enabling business environment), environmental sustainability (natural resources conservation), and capacity development (institutional development)</p> <p>Gender mainstreaming: Effective gender mainstreaming</p> <p>Targeting classification: General intervention</p> <p>Location impact: Rural (medium), urban (high)</p>
Risk Categorization	Low risk
Environment Assessment	B
Involuntary Resettlement	B
Indigenous People Assessment	C
Implementation Period	October 2014 to September 2019
Estimated Completion Date	Physical completion: 30 September 2019 Loan closing: 31 March 2020
Executing Agency	Chaonan district government (CDG)
Implementing Agencies	<ol style="list-style-type: none"> 1. Chaonan Water Supply Company (CWSC) 2. Chaonan Water Affairs Bureau (CWAB) 3. Chaonan Forestry Bureau (CFoB) 4. Chaonan Education Bureau (CEB) 5. Chaonan Environmental Protection Bureau (CEPB) 6. Chaonan Urban Management Bureau (CUMB)

A. Rationale

1. Chaonan District is a county-level administrative division of Shantou Municipality in Guangdong Province. About 30 kilometers away from the Shantou City center, Chaonan District has a population of about 1.33 million spreading over about 600 square kilometers, of which 1.13 million or about 85% are rural residents. Chaonan District, which administers 232 villages in 11 towns, is a plain with hills in the northeast and coastlines in the east. Annual rainfall averages about 1,830 millimeters. The total annual water resources of the district are about 580 million cubic meters (mcm), equivalent to only about 450 cubic meters (m³) per capita per year which is internationally considered as absolute water scarcity.¹ There are about 70 small and medium-sized reservoirs in the district with a total storage capacity of about 224 mcm, of which eight reservoirs along the three river systems (Jinxi, Longxi, and Qiufeng) are the district's dominant water sources, contributing about 180 mcm.

2. Guangdong Province has achieved remarkable growth since 1980; and it is now one of the most developed provinces in the People's Republic of China (PRC), accounting for over 11% of the PRC's 2011 gross domestic product. However, Guangdong faces a serious challenge of poverty and rising inequality, representing a microcosm of the PRC. More than 18% of its rural residents lived on below \$2/day in 2007, and two-thirds of those who lived in poverty were found in the eastern and western regions where Chaonan District is.² Due to its large rural population and less-developed industry and services, the district's economy and fiscal revenue fall far behind the developed regions in Guangdong and even below the national average. Its per capita gross domestic product in 2011 was only CNY16,379, which was about 32% of the provincial average of CNY50,807, or about 46% of the national average of CNY35,198. The per capita annual net income of rural households in 2011 was CNY5,076, which was about half the provincial average of CNY9,372, or 72% of the national average of CNY6,977.

3. **Inadequate and unsafe water supply.** Chaonan District faces a great challenge of ensuring water security for its social and economic development due to (i) lack of adequate water treatment and supply facilities, (ii) weak institutional capacity for managing water resources and providing water services, and (iii) water pollution in rivers and other water bodies around the towns and villages in the plain area. Current water supply capacity, including the three major water supply systems of Jinxi, Longxi, and Qiufeng, is about 135,000 m³/day, which is far from meeting both the current and future demand for domestic and industrial uses in the district. Water demand is estimated to reach 288,800 m³/day by 2020 and 331,423 m³/day by 2025. The current water supply systems serve about 70% of the district population, but cannot guarantee 7-day, 24-hour services. The three water supply systems are independent from each other and cannot supplement each other if one system is facing water shortage. Due to low technical standards, aging of the pipes, and lack of maintenance, nonrevenue water (NRW) of the current district supply systems are as high as 50% (40% leakage, 10% nonpayment), resulting in serious water and energy losses, high water tariffs, and limited service coverage.³

4. Moreover, about 429,600 residents (32% of the population) do not have access to tap water. Some residents are still using wells as direct source for cooking and drinking without

¹ Hydrologists typically assess scarcity by looking at the population–water equation. An area is experiencing water stress when annual water availability drops below 1,700 m³/person. When annual water availability drops below 1,000 m³/person, the population faces water scarcity; and below 500 m³ absolute water scarcity.

² World Bank. 2011. *Reducing Inequality for Shared Growth in China: Strategy and Policy Options for Guangdong Province*. Washington DC.

³ Nonrevenue water refers to water that has been produced and is “lost” before it reaches the customer.

appropriate treatment, which has caused serious health problems due to the high fluoride content in the groundwater. Such unreliable and inequitable water supply has affected economic development and people's living standards in Chaonan District.

5. **Water pollution.** The water quality in the reservoirs is generally good (class II)⁴ but soil erosion occurs in some catchment areas and eutrophication⁵ risk is increasing, especially in the Qiufeng reservoir, due to nonpoint source pollution⁶ from agricultural practices in the watershed. Lian River, which originates from Puning Municipality and flows through Chaonan District, is seriously polluted. The water quality of most Lian River sections is below class V, and cannot be used for irrigation or landscaping. In 2011, the total domestic wastewater discharge amounted to 22.6 mcm, and total industrial discharge reached 19.2 mcm, primarily from textile and dyeing factories in the district. Inadequate wastewater treatment capacity and rural sanitation networks are also concerns. Currently, less than 50% of the district's wastewater is treated and only about 20% of rural wastewater is connected to the district's sewerage system.

6. **Weak institutional capacity.** The district lacks adequate institutional capacity and a water supply master plan for integrated water resources management. The Chaonan district government (CDG) established the Chaonan Water Supply Company (CWSC) in 2012 to operate and maintain the district's several independently operated water supply plants (WSPs) and the pipe networks. However, CWSC has limited control over water distribution to and tariffs for end users because ownership of the distribution pipes belongs to individual towns or villages. CWSC supplies water through these towns and/or villages to end users, and charges the towns or villages instead of directly charging the end users. Such an arrangement has resulted in higher overall cost, low efficiency, inadequate maintenance, and unfair and high tariffs. CWSC needs to be entrusted with overall responsibility over the water supply system, and empowered with qualified professionals to provide better services to its clients. There is also a need to strengthen the district's overall water resources management capacity, and to increase public awareness on water resources protection and environmental improvement. This is to ensure the sustainability of water supply and thus the economic development of the district.

7. **Government efforts and opportunities for Asian Development Bank support.** The provincial, municipal, and district governments have been increasing their investments in the district's water resources management, and water supply and wastewater treatment facilities. Conservation zones were established around the district's three major reservoirs to protect water from pollution. The reservoirs were rehabilitated to their designed function and full-storage capacity. The governments are also restoring the severely polluted Lian River. Two wastewater treatment plants, with a total treatment capacity of 60,000 m³/day, have been in operation since December 2010. In 2013, CDG approved its wastewater treatment plan, 2013–2020, which aims to expand the two wastewater treatment plants to their design capacity of 130,000 m³/day and to construct three additional wastewater treatment plants and associated sewerage and sanitation networks by 2020 to cope with increasing wastewater volumes.⁷ To implement and coordinate these activities, the district needs an integrated approach to water resources

⁴ The PRC's national standard defines five water quality classes: class I for headwaters and natural reserves; class II for first-class drinking water sources and habitats of rare species; class III for second-class drinking water sources, aquaculture, and swimming; class IV for water sources for industrial use, and recreational use that does not involve direct human contact with water; and class V for water sources for agricultural use and landscaping.

⁵ Eutrophication refers to excessive richness of nutrients in a lake or other body of water, frequently due to runoff from the land, which causes a dense growth of plant life and death of animal life from lack of oxygen.

⁶ Nonpoint source pollution refers to diffuse pollution caused by sediment, nutrients, organic and toxic substances originating from land-use activities, which are carried to lakes and streams by surface runoff.

⁷ Chaonan District Government. 2013. *Chaonan District Wastewater Treatment Plan, 2013-2020*. Chaonan.

management and construction of water supply infrastructure for both urban and rural residents. It needs external support to help (i) ensure equitable water supply and thus equitable urban and rural development, (ii) improve the district's water resources management and CWSC's performance, and (iii) promote water conservation and step up water security for both urban and rural residents. During project preparation, opportunities for private sector participation in the project were explored but found to be limited due to the fragmented ownership of the current water supply pipe networks in the district.

8. The project is consistent with the Twelfth Five-Year Plan (2011–2015) of the Government of the People's Republic of China (government), which aims to build a harmonious and moderately prosperous society through livelihood improvement, equitable urbanization and coordinated urban–rural development, and balanced regional and environmentally sustainable growth.⁸ The project supports the Water Operational Plan, 2011–2020 of the Asian Development Bank (ADB) for increasing water use efficiency and rural water supply coverage, and promoting integrated water resources management.⁹ The project is in line with ADB's country partnership strategy, 2011–2015 for the PRC which supports the government's goal of building a harmonious society by focusing on three strategic pillars of inclusive growth, environmentally sustainable growth, and regional cooperation and integration.¹⁰ The Twelfth Five-Year Plans for Guangdong Province and Shantou Municipality also focus on building a resource-oriented and environment-friendly society to increase water use efficiency, improve the environment, reduce regional development gaps, and improve people's living environment. The project also conforms to the Guangdong Provincial Water Resources Development and Protection Master Plan which emphasizes that water resources will be developed, used, and managed in a coordinated and sustainable way.¹¹

9. **Lessons.** The project design builds on ADB's experiences and lessons from previous projects and knowledge generated from policy-oriented studies on integrated water resources management, water supply, wastewater treatment, urban and rural development, and flood and wetland management in the PRC and other countries. Major lessons from those earlier projects and incorporated in the current project design are (i) an integrated approach of structural and nonstructural measures to water resources management; (ii) wide community participation and increased public awareness for environmental improvement; (iii) adequate operation and maintenance (O&M) with sustainable financial sources based on a realistic and enforceable tariff structure and reforms; (iv) capacity development of the executing, implementing, and other relevant agencies; (v) effective cross-sector coordination between relevant agencies at various levels; and (vi) establishment of an effective project monitoring and evaluation (M&E) system.

B. Impact and Outcome

10. The impact of the project will be better health and quality of life in Chaonan District. The outcome will be improved and equitable water supply services to urban and rural residents in Chaonan District.

⁸ Government of the People's Republic of China, National People's Congress. 2011. *Outline of the Twelfth Five-Year Plan of the People's Republic of China, 2011–2015*. Beijing.

⁹ ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

¹⁰ ADB. 2012. *Country Partnership Strategy: People's Republic of China, 2011–2015*. Manila.

¹¹ Government of the People's Republic of China, Guangdong Provincial Water Resources Department. 2011. *Guangdong Water Resources Development and Protection Master Plan*. Guangzhou.

C. Outputs

11. The project will have three outputs: (i) improved water resources protection, (ii) improved water supply infrastructure, and (iii) strengthened institutional and staff capacity.

12. **Output 1: Improved water resources protection.** This output comprises (i) public awareness and learning on environment and sanitation; (ii) water conservation reforestation of about 1,682 hectares (ha) in the catchments of Jinxi, Longxi, and Qiufeng reservoirs; (iii) a study on pollution prevention and control measures in the catchments of Jinxi, Longxi, and Qiufeng reservoirs;¹² and (iv) solid waste collection and treatment in Chengpo and Qiufeng villages.

13. **Output 2: Improved water supply infrastructure.** This output comprises (i) expansion of the capacity of the Qiufeng WSP from 70,000 m³/day to 142,000 m³/day; and construction of a sludge treatment facility and water intake facility; (ii) rehabilitation of the Jinxi WSP by constructing a pump station and a sludge treatment facility; (iii) construction of the Longxi WSP with a capacity of 100,000 m³/day, including a sludge treatment facility and a pump station; (iv) installation and upgrade of water delivery and distribution pipelines in the district for a total length of about 1,000 kilometers; (v) establishment of a water quality monitoring center; (vi) installation of about 37,770 household water meters; and (vii) provision of O&M equipment, including leakage detection equipment.

14. **Output 3: Strengthened institutional and staff capacity.** This output comprises (i) provision of consulting services, and training including study tours for project implementation; (ii) support for the establishment of a water supply control center, with a remote monitoring and control system, a data transmission and dispatching center, and communication network; (iii) support for the establishment of a water resources management and three-prevention (flood, drought, and typhoon) management center; (iv) preparation of a water resources protection and development action plan to address issues concerning water safety, water allocation optimization, and water reuse and conservation; and (v) establishment of a project M&E system.

15. Table 1 below summarizes the project outputs.

¹² In the government approved project feasibility study report, this subproject was replaced to the Output 3.

Table 1: Summary of Outputs

Output	Subprojects
1. Improved water resources protection	A1. Public awareness and learning on environment and sanitation A1.1. Training of school teachers and students A1.2. Development of education and training materials A1.3. Establishment of an exhibition hall A1.4. Field trips and social survey A1.5. Propaganda at schools A1.6. Public participation A2. Water conservation reforestation in the catchments of Jinxi, Longxi, and Qiufeng reservoirs A3. Study on pollution prevention and control measures in the catchments of Jinxi, Longxi, and Qiufeng reservoirs ^a A3.1. Pollution source survey and control technology A3.2. Nonpoint source pollution prevention A3.3. Wastewater collection and treatment technology A4. Solid waste collection and treatment in Chengpo and Qiufeng villages
2. Improved water supply infrastructure	B1. Expansion of Qiufeng water supply plant (WSP) by 72,000 cubic meters (m ³) per day B2. Rehabilitation of the Jinxi WSP B3. Construction of the Longxi WSP with capacity of 100,000 m ³ /day B4. Installation of water delivery and distribution pipelines with a total length of about 1,000 kilometers B5. Establishment of a water quality monitoring center B6. Installation of water meters B7. Provision of operation and maintenance equipment
3. Strengthened institutional and staff capacity	C1. Provision of project implementation consulting services, and training, including study tours C2. Support for the establishment of a water supply control center C3. Support for the establishment of a water resources management and three-prevention (flood, drought, and typhoon) management center C4. Development of a water resources protection and development action plan C5. Establishment of a project monitoring and evaluation system

^a In the government approved project feasibility study report, this subproject was replaced to the Output 3.

Source: Asian Development Bank.

D. Special Features and Demonstration

16. The project is expected to demonstrate the following innovations that can be replicated in other regions of Guangdong Province and the PRC: (i) an integrated approach to water resources management, (ii) inclusive water supply services and integration of urban and rural water supply systems, (iii) strengthened operational performance of the water utility, and (iv) institutional and tariff reforms.

17. **Integrated approach to water resources management.** The project will not only support structural measures to build water supply facilities, but also support nonstructural measures to improve watershed management and protect water sources from pollution. The nonstructural measures include reforestation in upstream catchment areas, a pollution prevention study, environmental awareness building and education, solid waste treatment in rural villages, institutional strengthening and capacity development for water resources planning, and support for the establishment of a water quality monitoring center and a three-prevention (flood, drought, and typhoon) management center. The project will also support NRW reduction

from the current 50% to 25% by project completion. In addition, extensive environmental and social due diligence was conducted, including assessment of potential climate change impacts and sensitivity analysis of the water supply facilities, and the assessment of social risks and promotion of community participation.

18. Inclusive water supply services and integration of urban and rural water supply systems. The project will cover the majority of Chaonan District and provide better water supply services to both urban and rural residents in the district by adopting unified service standards and water tariffs. Water demand projections and the design of the water supply system have factored in future urbanization requirements. The project will also improve responses to droughts and the reliability of water supply by integrating the three major supply systems of the district so they can supplement each other when one system encounters problems. Such an inclusive integration is ADB's value addition to inclusive and balanced development, and applies to future urbanization and regional integration of Guangdong Province and other regions in the PRC. This model can be replicated in many similar rural and small-town water supply systems in the PRC to improve services and efficiency.

19. Strengthened operational performance. The project will strengthen CWSC, the major implementing agency and the operator of the water supply system under the project. The project will upgrade the skills of operational staff, improve operational performance and viability, establish water quality monitoring and control centers, and reduce operating losses. The current water supply systems' NRW is particularly high, and an assessment was carried out during project preparation to determine improvement measures. The project incorporates such measures to reduce NRW with an agreed target.

20. Institutional and tariff reforms. The project will support the executing agency's institutional and tariff reforms by (i) streamlining institutional arrangements for water supply services in the district, which means removing involvement of towns and villages to allow CWSC to collect tariffs directly from end users; (ii) making services equitable to all and affordable to the poor according to local conditions; (iii) strengthening tariff-setting mechanisms through public hearings; and (iv) increasing industrial tariffs and improving CWSC's performance to recover costs.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

21. The project readiness activities are as follows:

Indicative Activities	2013			2014									Responsibility
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Advance contracting													CDG and IAs
Retroactive financing													CDG and IAs
Establishing project implementation													CDG and IAs
Finalizing draft resettlement plan and IEE													CDG
Approving FSR													GPG
Loan negotiations													Government, ADB, GPG, and CDG
ADB Board consideration													ADB
Loan signing													Government, ADB, GPG, and CDG
Government legal opinion provided													Government
Government budget inclusion													GPG and CDG
Loan effectiveness													Government, ADB, GPG, and CDG

ADB = Asian Development Bank, CDG = Chaonan district government, FSR = feasibility study report, GPG = Guangdong provincial government, IA = implementing agency, IEE = initial environmental examination.

Source: ADB.

	2014				2015				2016				2017				2018				2019				2020		
Indicative Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
2.4 Rehabilitate and/or construct water delivery and distribution pipelines																											
2.4.1 Design and bidding document																											
2.4.2 Land acquisition and resettlement																											
2.4.3 Bidding and contract award																											
2.4.4 Civil works																											
2.4.5 Equipment																											
2.4.6 Testing and commissioning/completion																											
2.5 Establish the water quality monitoring center																											
2.5.1 Design and bidding document																											
2.5.2 Land acquisition and resettlement																											
2.5.3 Bidding and contract award																											
2.5.4 Civil works																											
2.5.5 Equipment																											
2.5.6 Testing and commissioning/completion																											
2.6 Install household water meters																											
2.7 Procure operation and maintenance equipment																											
3. Strengthened institutional and staff capacity																											
3.1 Recruit consulting services for project implementation																											
3.2 Develop a training plan and conduct training programs																											
3.3 Establish a water supply control center																											
3.4 Establish a water resources management and three-prevention management center																											
3.5 Develop the water resources protection and development action plan																											
3.6 Establish a project monitoring and evaluation system and conduct regular monitoring																											
B MANAGEMENT ACTIVITIES																											
1. Develop contract package and procurement plan																											
2. Consultant selection procedures																											
3. Environmental and social safeguards key activities																											
4. Gender action plan and social action plan key activities																											
5. Annual project review and/or midterm review																											
6. Project completion																											
6.1 Project physical completion																											
6.2 Loan closing																											

The implementation period will be 5 years from October 2014 (assuming loan effectiveness in September 2014) to September 2019; while this implementation plan includes project preparation activities and advance contracting activities before the loan signing.

Source: Asian Development Bank.

III. PROJECT MANAGEMENT ARRANGEMENTS

22. CDG will be the executing agency responsible for overall project planning and management. A project leading group has been established, headed by the governor of CDG; and comprising representatives from district bureaus of agriculture, audit, development and reform, education, environmental protection, finance, forestry, health, housing and construction, land and resources management, supervision, urban and rural planning, urban management, and water affairs; and representatives of town governments concerned. The project leading group will provide overall policy guidance, facilitate interagency coordination, and resolve any institutional problems affecting project preparation and implementation.

23. A project management office (PMO) has been established within CDG, headed by the executive deputy governor of CDG, comprising 16 full-time staff from CWSC and district bureaus of development and reform, education, environmental protection, finance, forestry, housing and construction, urban management, and water affairs. The PMO currently has four departments—administration, contract management, finance, and engineering and technology. An environmental and social management unit was established under the engineering and technology department. The PMO will be responsible for overall guidance, supervision, coordination, and management of project preparation and implementation.

24. The PMO's major tasks include (i) directing project preparation and implementation activities; (ii) drawing up the annual work program and budget; (iii) coordinating procurement activities; (iv) coordinating financial management of the implementing agencies, and consolidating project accounts and financial statements; (v) reviewing withdrawal applications prepared by the implementing agencies, and submitting withdrawal applications through the Chaonan District Finance Bureau (CFB) via the Shantou Municipality Finance Bureau to the Guangdong Provincial Finance Department for approval and submission to ADB; (vi) establishing baseline data to monitor project impacts, including regular monitoring of physical and financial progress; (vii) submitting reports to ADB, CDG, and relevant government departments of Guangdong Province and Shantou Municipality; (viii) supervising and reporting safeguards implementation and compliance; and (ix) liaising with ADB and other agencies.

25. The implementing agencies will include (i) CWSC, who will be responsible for the implementation of all activities under improved water supply infrastructure output and activities of the water supply control center under the strengthened institutional and staff capacity output; (ii) the Chaonan Water Affairs Bureau (CWAB, through its water conservancy construction and management center), who will be responsible for the implementation of the water resources management and three-prevention management center, and water resources protection and development action plan under the strengthened institutional and staff capacity output; (iii) the Chaonan Forestry Bureau (CFoB) will be responsible for water conservation reforestation subproject under the improved water resources protection output; (iv) the Chaonan Education Bureau (CEB) will be responsible for public environment and sanitary awareness activities under the improved water resources protection output; (v) the Chaonan Environmental Protection Bureau (CEPB) will be responsible for water resources pollution control and prevention research in the water source protection area under the improved water resources protection output; and (vi) the Chaonan Urban Management Bureau (CUMB) will be responsible for the implementation of solid waste collection and treatment subproject under the improved water resources protection output. Consulting services, training (including study tours), and project M&E under the strengthened institutional and staff capacity output will be implemented by PMO in coordination with relevant bureaus of Chaonan District.

26. At provincial level, the Guangdong Provincial Finance Department, who has implemented several ADB- and World Bank-financed projects, will provide overall guidance, coordination, supervision, and management for the project preparation and management. It will be responsible for establishment, management, monitoring, and reconciliation of the imprest account. The Guangdong Provincial Development and Reform Commission and the Guangdong Provincial Water Resources Department will also provide necessary guidance and support to the project preparation, approval, and management.

27. Within 3 months of the effective date, the Guangdong provincial government (GPG) shall cause CDG to enter into a project implementation agreement with CWSC, in the form and substance acceptable to ADB. The project implementation agreement shall, *inter alia*, include CWSC's obligations set out in the project agreement and the project administration manual (PAM) and shall require CWSC to comply with the gender action plan (GAP); the initial environmental examination (IEE), including the environmental management plan (EMP); the resettlement plan; and the social action plan (SAP) to the extent applicable to CWSC.

A. Project Implementation Organizations—Roles and Responsibilities

Project Stakeholders	Management Roles and Responsibilities
Guangdong Provincial Finance Department	<ul style="list-style-type: none"> ➤ Provide overall guidance, coordination, supervision, and management for the project preparation and implementation; ➤ Establish, manage, and reconcile the imprest account; ➤ Submit loan withdrawal applications to the Asian Development Bank (ADB); and ➤ Manage and supervise loan repayment.
Shantou Municipal Finance Bureau	<ul style="list-style-type: none"> ➤ Provide coordination, supervision, and management for the project preparation and implementation; ➤ Submit loan withdrawal applications to GPPD; and ➤ Manage and supervise loan repayment
Executing Agency Chaonan district government (CDG)	<ul style="list-style-type: none"> ➤ Guide preparation and implementation; ➤ Coordinate project implementation activities among government agencies; and ➤ Ensure counterpart contributions are provided for project implementation on time.
Project leading group (chaired by the governor of CDG)	<ul style="list-style-type: none"> ➤ Provide overall policy guidance; ➤ Facilitate interagency coordination; and ➤ Resolve any institutional problems affecting project preparation and implementation.
Chaonan District Finance Bureau	<ul style="list-style-type: none"> ➤ Establish and manage a bank account to receive ADB loan proceeds; and ➤ Review withdrawal applications prepared by PMO, and submit withdrawal applications to the Guangdong Provincial Finance Department through the Shantou Municipality Finance Bureau.

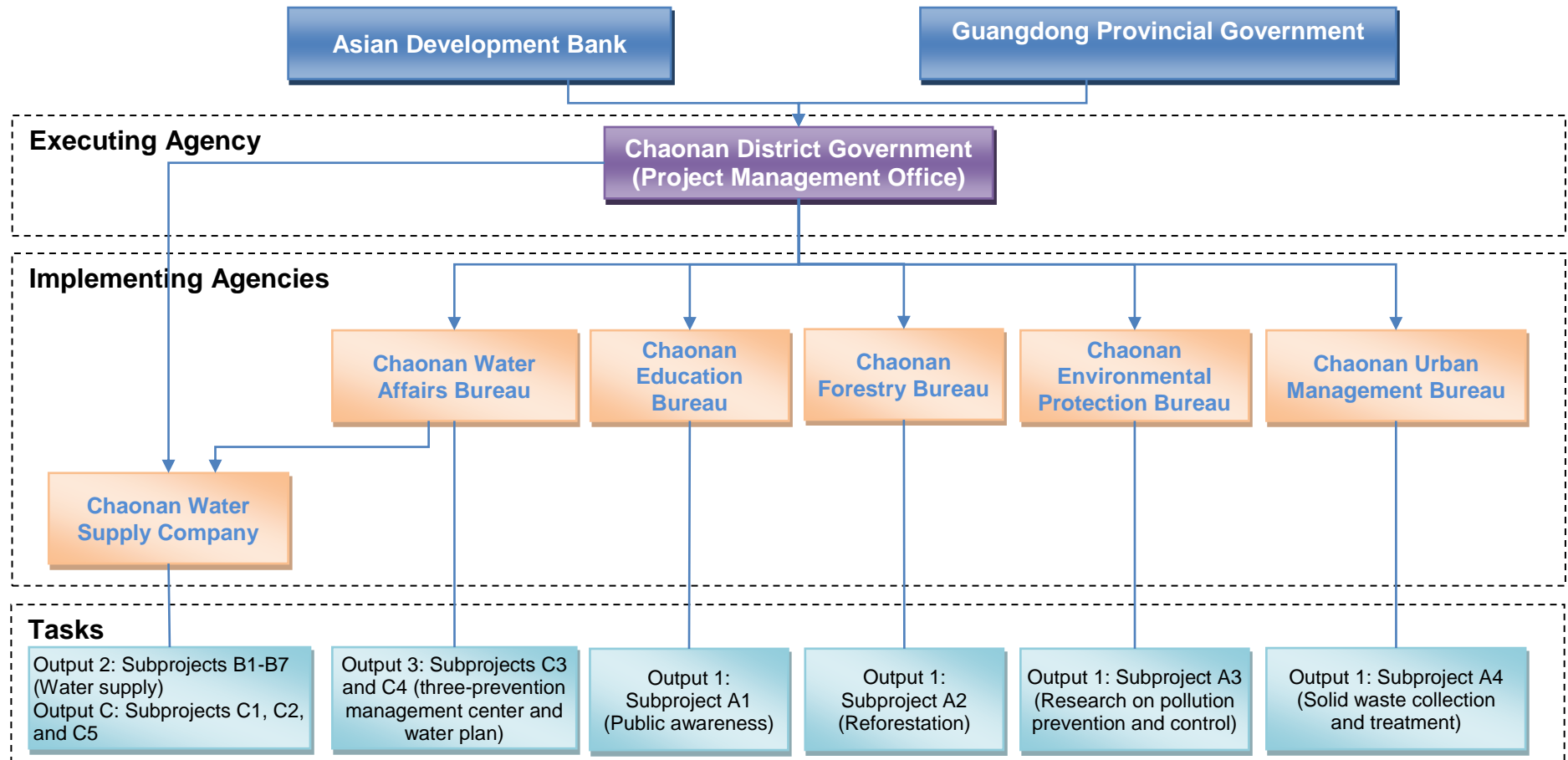
Project Stakeholders	Management Roles and Responsibilities
Project Management Office (PMO) under CDG	<ul style="list-style-type: none"> ➤ Direct project preparation and implementation activities; ➤ Develop the annual work program and budget; ➤ Coordinate procurement activities; ➤ Coordinate financial management of the implementing agencies and consolidating project accounts and financial statements; ➤ Review withdrawal applications prepared by the implementing agencies and prepare and submit withdrawal applications through the Chaonan District Finance Bureau; ➤ Establish baseline data to monitor project impacts, including regular monitoring of physical and financial progress; ➤ Submit reports to ADB, CDG, and relevant government departments; ➤ Supervise and report safeguards implementation and compliance; and ➤ Liaise with ADB and other agencies.
Implementing Agency 1 Chaonan Water Supply Company	<ul style="list-style-type: none"> ➤ Implement all activities under output 2: improved water supply infrastructure; ➤ Carry out bidding, bid evaluation, and signing and administration of contracts; ➤ Implement the consulting services for project implementation, and training including study tours in coordination with relevant bureaus under the guidance of the PMO; ➤ Prepare withdrawal applications; and ➤ Maintain the implementing agency's account and financial records.
Implementing Agency 2 Chaonan Water Affairs Bureau	<ul style="list-style-type: none"> ➤ Implement the subprojects of development of water resources protection and development action plan and three-prevention (flood, drought, and typhoon) management center; ➤ Carry out bidding, bid evaluation, and signing and administration of contracts; ➤ Prepare withdrawal applications; and ➤ Maintain the implementing agency's account and financial records.
Implementing Agency 3 Chaonan Forestry Bureau	<ul style="list-style-type: none"> ➤ Implement the water conservation reforestation subproject; and ➤ Carry out bidding, bid evaluation, and signing and administration of contracts; ➤ Prepare withdrawal applications; and ➤ Maintain the implementing agency's account and financial records.
Implementing Agency 4 Chaonan Education Bureau	<ul style="list-style-type: none"> ➤ Implement the public environment and sanitary awareness subproject; ➤ Carry out bidding, bid evaluation, and signing and administration of contracts; ➤ Prepare withdrawal applications; and ➤ Maintain the implementing agency's account and financial records.

Project Stakeholders	Management Roles and Responsibilities
Implementing Agency 5 Chaonan Environmental Protection Bureau	<ul style="list-style-type: none"> ➤ Implement water resources pollution control and prevention research in the water source protection area; ➤ Carry out bidding, bid evaluation, and signing and administration of contracts.
Implementing Agency 6 Chaonan Urban Management Bureau	<ul style="list-style-type: none"> ➤ Implement the solid waste collection and disposal subproject; ➤ Carry out bidding, bid evaluation, and signing and administration of contracts; ➤ Prepare withdrawal applications; and ➤ Maintain the implementing agency's account and financial records.
Asian Development Bank	<ul style="list-style-type: none"> ➤ Provide guidance to CDG and the implementing agencies to ensure compliance with loan and project covenants; ➤ Conduct regular loan review missions, a midterm review mission, and a project completion review mission; ➤ Review and approve procurement actions; ➤ Process withdrawal applications and release loan funds; ➤ Monitor the project implementation progress; ➤ Review annual audit reports and following up on audit recommendations; ➤ Update regularly the project performance review reports with the assistance of CDG and the implementing agencies; ➤ update regularly the project information documents for public disclosure at the ADB website, including safeguard documents; and ➤ Monitor implementation of ADB's anticorruption policies.

B. Key Persons Involved in Implementation

Executing Agency	
Chaonan District Government	<p>Mr. Yongming Liu Governor Chaonan District Government Telephone no.: +(86)-1380-2331-347 Email address: hhmhdx@126.com Office address: 1 Chaoyang Road, Xiashan Street, Chaonan District, Shantou Municipality, Guangdong Province, People's Republic of China, 515144</p>
Asian Development Bank	
Division Director	<p>Ms. Yue-Lang Feng Director Environment, Natural Resources, and Agriculture Division East Asia Department Asian Development Bank Telephone nos.: +632-6326769/4444 Fax nos.: +632-6362534/2444 Email address: fengyuelang@adb.org Office address: 6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines</p>
Mission Leader	<p>Mr. Yaozhou Zhou Senior Water Resources Specialist Environment, Natural Resources, and Agriculture Division East Asia Department Asian Development Bank Telephone nos.: +632-6326170/5943/4444 Fax nos.: +632-6362534/2444 Email address: yaozhou@adb.org Office address: 6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines</p>

C. Project Organization Structure



- C1. Provision of project implementation consulting services, and training including study tours
- C2. Support for the establishment of a water supply control center
- C3. Support for the establishment of a water resources management and three-prevention (flood, drought and typhoon) management center
- C4. Development of a water resources protection and development action plan
- C5. Establishment of a project monitoring and evaluation system

Source: Asian Development Bank.

IV. COSTS AND FINANCING

A. Investment and Financing Plans

28. The project is estimated to cost \$230.75 million (Table 1). The government has requested a loan of \$100,000,000 from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility,¹³ a commitment charge of 0.15% per year (the interest and commitment charges during implementation to be capitalized in the loan), and such other terms and conditions as set forth in the draft loan and project agreements. The government is the borrower of the loan. The government will relend the loan to GPG, who will in turn onlend it to CDG through the Shantou municipal government. The terms and conditions of the relending and onlending will be the same as those of the ADB loan to the government. CDG will assume the foreign exchange and interest variation risks of the loan.

Table 1: Project Investment Plan (\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Improved water resources protection	8.78
2. Improved water supply infrastructure	177.44
3. Strengthened institutional and staff capacity	9.17
Subtotal (A)	195.39
B. Contingencies^c	29.80
C. Financing Charges During Implementation^d	5.56
Total (A+B+C)	230.75

^a Includes taxes and duties of \$12.73 million to be financed from government resources and the Asian Development Bank (ADB) loan resources.

^b In mid-2013 prices.

^c Physical contingencies computed at 6% for all expenditure categories. Price contingencies computed at 2.2% for 2014, 1.9% for 2015, and 1.8% thereafter on foreign exchange costs; and 3.2% for 2014, 3.5% for 2015, and 3.0% thereafter on local currency costs.

^d Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.4%. Commitment charges for the ADB loan are computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

¹³ The interest rate includes a maturity premium of 0.10%. This is based on the above loan terms and the government's choice of repayment option and dates.

29. The financing plan is in Table 2. The ADB loan will finance 43.34% of the total project costs, including civil works, equipment, materials, consulting services, training, and taxes and duties relating to goods and services.¹⁴ Local governments will provide counterpart funds.¹⁵

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (loan)	100.00	43.34
Local governments		
Guangdong provincial government	21.15	9.17
Shantou municipal government	11.57	5.01
Chaonan district government	98.03	42.48
Total	230.75	100.00

Source: Asian Development Bank estimates.

¹⁴ The amount of taxes and duties to be financed in the project has been determined based on the principles that (i) the amount is within the reasonable threshold identified during the country partnership strategy preparation progress; (ii) the amount does not represent an excessive share of the project; (iii) the taxes and duties apply only with respect to ADB-financed expenditures; and (iv) the financing of taxes and duties is relevant to the success of the project since the percentage of some financed expenditures needs to be 100%.

¹⁵ CDG will assume responsibility for meeting any shortfalls or cost overruns. CDG will also seek financial support from municipal, provincial, and national governments and other sources.

B. Detailed Cost Estimate by Financier (\$ million)

Item	ADB		Local Governments						TOTAL	
	Amount	%	GPG		SMG		CDG		Amount ^a	
			Amount	%	Amount	%	Amount	%		
A. Base Costs^b										
1 Civil Works										
Civil works	57.22	54.0	12.89	12.2	11.57	10.9	24.35	23.0	106.03	
Non-ADB financing civil works	0.00	0.0	8.26	96.3	0.00	0.0	0.32	3.7	8.58	
2 Goods (Equipment and Materials)	33.66	100.0	0.00	0.0	0.00	0.0	0.00	0.0	33.66	
3 Land Acquisition, Compensation, and Resettlement	0.00	0.0	0.00	0.0	0.00	0.0	7.74	100.0	7.74	
4 Environmental Protection	0.00	0.0	0.00	0.0	0.00	0.0	0.96	100.0	0.96	
5 Water and Soil Protection	0.00	0.0	0.00	0.0	0.00	0.0	1.59	100.0	1.59	
6 Project Management	0.00	0.0	0.00	0.0	0.00	0.0	20.43	100.0	20.43	
7 Survey and Design	0.00	0.0	0.00	0.0	0.00	0.0	11.72	100.0	11.72	
8 Consulting Services										
ADB financing consulting services	2.32	100.0	0.00	0.0	0.00	0.0	0.00	0.0	2.32	
Non-ADB financing consulting services	0.00	0.0	0.00	0.0	0.00	0.0	1.12	100.0	1.12	
9 Training (including Study Tours)	1.25	100.0	0.00	0.0	0.00	0.0	0.00	0.0	1.25	
Subtotal—Base Costs (A)	94.44	48.3	21.15	10.8	11.57	5.9	68.23	34.9	195.39	
B. Contingencies^c										
Physical Contingency	0.00	0.0	0.00	0.0	0.00	0.0	11.72	100.0	11.72	
Price Contingency	0.00	0.0	0.00	0.0	0.00	0.0	18.08	100.0	18.08	
Subtotal—Contingencies (B)	0.00	0.0	0.00	0.0	0.00	0.0	29.80	100.0	29.80	
C. Financial Charges During Implementation^d										
Interest During Implementation	5.06	100.0	0.00	0.0	0.00	0.0	0.00	0.0	5.06	
Commitment Charges	0.50	100.0	0.00	0.0	0.00	0.0	0.00	0.0	0.50	
Subtotal—Financial Charges (C)	5.56	100.0	0.00	0.0	0.00	0.0	0.00	0.0	5.56	
TOTAL PROJECT COSTS	100.00	43.3	21.15	9.2	11.57	5.0	98.03	42.5	230.75	
(A+B+C)										

ADB = Asian Development Bank, CDG = Chaonan district government, GPG = Guangdong provincial government, SMG = Shantou municipality government.

Note: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$12.73 million to be financed from government resources and the loan resources.

^b In mid-2013 prices.

^c Physical contingencies computed at 6% for all expenditure categories. Price contingencies computed at 2.2% for 2014, 1.9% for 2015, and 1.8% thereafter on foreign exchange costs; and 3.2% for 2014, 3.5% for 2015, and 3.0% thereafter on local currency costs.

^d Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.4%. Commitment charges for the ADB loan are computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

C. Allocation and Withdrawal of Loan Proceeds

CATEGORY			ADB FINANCING BASIS
No.	Item	Total Amount Allocated (\$)	Percentage and Basis for Withdrawal from the Loan Account*
		Category	
1	Civil Works	57,221,200	54.0% of total expenditure claimed
2	Goods**	33,655,400	100.0% of total expenditure claimed
3	Consulting Services	2,317,300	100.0% of total expenditure claimed
4	Training (including Study Tours)	1,246,000	100.0% of total expenditure claimed
5	Interest and Commitment Charges	5,560,100	100.0% of amounts due
	Total	100,000,000	

* Includes taxes and duties.

** Includes insurances and transportation.

D. Detailed Cost Estimates by Expenditure Category

Item	(CNY million)			(\$ million)			
	Foreign Exchange	Local Currency	Total Cost ^a	Foreign Exchange	Local Currency	Total Cost ^a	% of Total Base Cost
A. Base Costs^b							
1 Civil Works	69.35	624.19	693.55	11.46	103.14	114.60	58.66
2 Goods (Equipment and Materials)	203.67	0.00	203.67	33.66	0.00	33.66	17.23
3 Land Acquisition, Compensation and Resettlement ^c	0.00	46.87	46.87	0.00	7.74	7.74	3.96
4 Environmental Protection	0.00	5.82	5.82	0.00	0.96	0.96	0.49
5 Water and Soil Protection	0.00	9.62	9.62	0.00	1.59	1.59	0.81
6 Project Management	0.00	123.62	123.62	0.00	20.43	20.43	10.46
7 Survey and Design	0.00	70.91	70.91	0.00	11.72	11.72	6.00
8 Consulting Services	20.80	0.00	20.80	3.44	0.00	3.44	1.76
9 Training (including Study Tours)	7.55	0.00	7.55	1.25	0.00	1.25	0.64
Subtotal—Base Costs (A)	301.38	881.04	1,182.41	49.80	145.59	195.39	100.00
B. Contingencies^d							
1 Physical Contingency	0.00	70.94	70.94	0.00	11.72	11.72	6.00
2 Price Contingency	0.00	123.88	123.88	0.00	18.08	18.08	9.25
Subtotal—Contingencies (B)	0.00	180.34	180.34	0.00	29.80	29.80	15.25
C. Financial Charges During Implementation^e							
1 Interest During Implementation	30.63	0.00	30.63	5.06	0.00	5.06	2.59
2 Commitment Charges	3.02	0.00	3.02	0.50	0.00	0.50	0.26
Subtotal—Financial Charges (C)	33.65	0.00	33.65	5.56	0.00	5.56	2.85
Total Project Cost (A+B+C)	335.03	1,061.41	1,396.40	55.36	175.39	230.75	118.10

ADB = Asian Development Bank.

Note: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$12.73 million to be financed from government resources and the loan resources.^b In mid-2013 prices.^c Tax and fees, and survey and administration cost were included under project management.^d Physical contingencies computed at 6% for all expenditure categories. Price contingencies computed at 2.2% for 2014, 1.9% for 2015, and 1.8% thereafter on foreign exchange costs; and 3.2% for 2014, 3.5% for 2015, and 3.0% thereafter on local currency costs.^e Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.4%. Commitment charges for the ADB loan are computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

E. Detailed Cost Estimates by Outputs/Components

		\$ million						
		Improved Water Resources Protection		Improved Water Supply Infrastructure		Strengthened Institutional and Staff Capacity		Total Cost ^a
No.	Item	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	
A.	Base Costs ^b							
1	Civil Works	6.55	5.7	108.05	94.3	0.00	0.0	114.60
2	Goods (Equipment and Materials)	0.10	0.3	28.82	85.6	4.74	14.1	33.66
3	Land Acquisition, Compensation, and Resettlement	0.00	0.0	7.74	100.0	0.00	0.0	7.74
4	Environmental Protection	0.00	0.0	0.96	100.0	0.00	0.0	0.96
5	Water and Soil Protection	0.00	0.0	1.59	100.0	0.00	0.0	1.59
6	Project Management	0.39	1.9	19.36	94.8	0.67	3.3	20.43
7	Survey and Design	0.26	2.2	10.91	93.1	0.55	4.7	11.72
8	Consulting Services	1.48	43.0	0.00	0.0	1.96	57.0	3.44
9	Training (including Study Tours)	0.00	0.0	0.00	0.0	1.25	100.0	1.25
	Subtotal—Base Costs (A)	8.78	4.5	177.44	90.8	9.17	4.7	195.39
B.	Contingencies ^c							
1	Physical Contingency	0.53	4.5	10.65	90.8	0.55	4.7	11.72
2	Price Contingency	0.66	3.7	16.73	92.5	0.69	3.8	18.08
	Subtotal—Contingencies (B)	1.19	4.0	27.38	91.9	1.24	4.1	29.80
C.	Financial Charges During Implementation ^d							
1	Interest During Implementation	0.30	5.9	4.28	84.6	0.48	9.4	5.06
2	Commitment Charges	0.02	3.4	0.45	89.3	0.04	7.3	0.50
	Subtotal—Financial Charges (C)	0.32	5.7	4.73	85.0	0.51	9.3	5.56
	TOTAL PROJECT COSTS (A+B+C)	10.29	4.5	209.55	90.8	10.92	4.7	230.75

ADB = Asian Development Bank.

Note: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$12.73 million to be financed from government resources and the loan resources.^b In mid-2013 prices.^c Physical contingencies computed at 6% for all expenditure categories. Price contingencies computed at 2.2% for 2014, 1.9% for 2015, and 1.8% thereafter on foreign exchange costs; and 3.2% for 2014, 3.5% for 2015, and 3.0% thereafter on local currency costs.^d Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.4%. Commitment charges for the ADB loan are computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

F. Detailed Cost Estimates by Year (\$ million)

	2014	2015	2016	2017	2018	2019	Total ^a
A. Base Costs^b							
1 Civil Works	2.25	21.00	21.72	21.79	19.75	28.09	114.60
2 Goods (Equipment and Materials)	0.81	6.16	6.17	6.17	6.61	7.73	33.66
3 Land Acquisition, Compensation, and Resettlement	0.15	1.39	1.39	1.39	1.39	2.01	7.74
4 Environmental Protection	0.02	0.17	0.17	0.17	0.17	0.25	0.96
5 Water and Soil Protection	0.03	0.29	0.29	0.29	0.29	0.41	1.59
6 Project Management	0.43	3.71	3.76	3.76	3.71	5.07	20.43
7 Survey and Design	0.25	2.14	2.16	2.17	2.14	2.86	11.72
8 Consulting Services	0.12	0.74	0.90	0.92	0.66	0.10	3.44
9 Training (including Study Tours)	0.06	0.25	0.25	0.25	0.37	0.06	1.25
Subtotal—Base Costs (A)	4.13	35.86	36.81	36.91	35.09	46.59	195.39
B. Contingencies^c							
1 Physical Contingency	0.25	2.15	2.21	2.21	2.11	2.80	11.72
2 Price Contingency	0.09	1.74	2.84	3.43	3.56	6.43	18.08
Subtotal—Contingencies (B)	0.34	3.89	5.05	5.64	5.67	9.22	29.80
C. Financial Charges During Implementation^d	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 Interest During Implementation	0.02	0.23	0.61	1.00	1.38	1.81	5.06
2 Commitment Charges	0.14	0.13	0.10	0.07	0.05	0.02	0.50
Subtotal—Financial Charges (C)	0.16	0.36	0.71	1.07	1.43	1.82	5.56
TOTAL PROJECT COSTS (A+B+C)	4.63	40.10	42.57	43.62	42.19	57.64	230.75
% of Total Project Cost	2.0	17.4	18.4	18.9	18.3	25.0	100.0

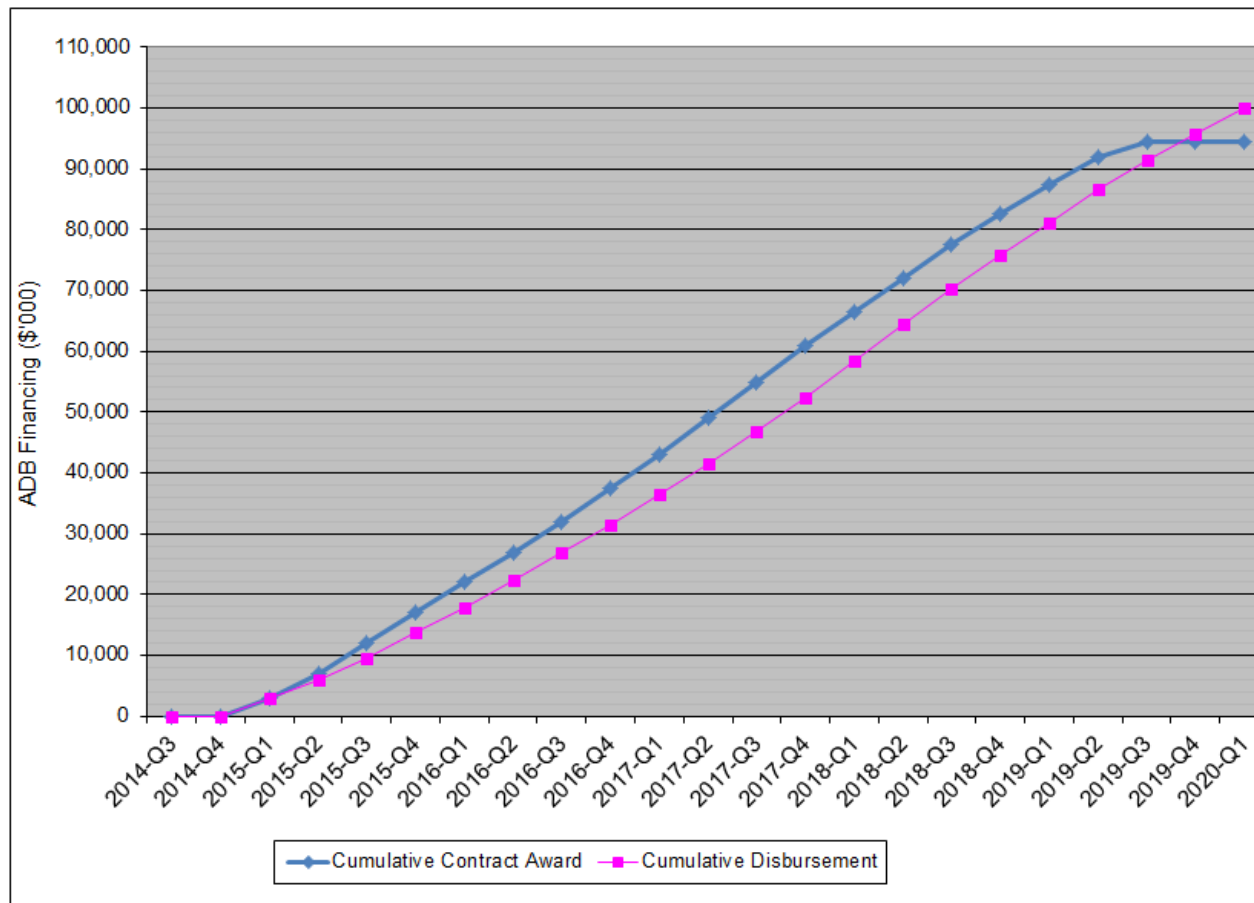
ADB = Asian Development Bank.

Note: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$12.73 million to be financed from government resources and the loan resources.^b In mid-2013 prices.^c Physical contingencies computed at 6% for all expenditure categories. Price contingencies computed at 2.2% for 2014, 1.9% for 2015, and 1.8% thereafter on foreign exchange costs; and 3.2% for 2014, 3.5% for 2015, and 3.0% thereafter on local currency costs.^d Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.4%. Commitment charges for the ADB loan are computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

G. Contract and Disbursement S-curve



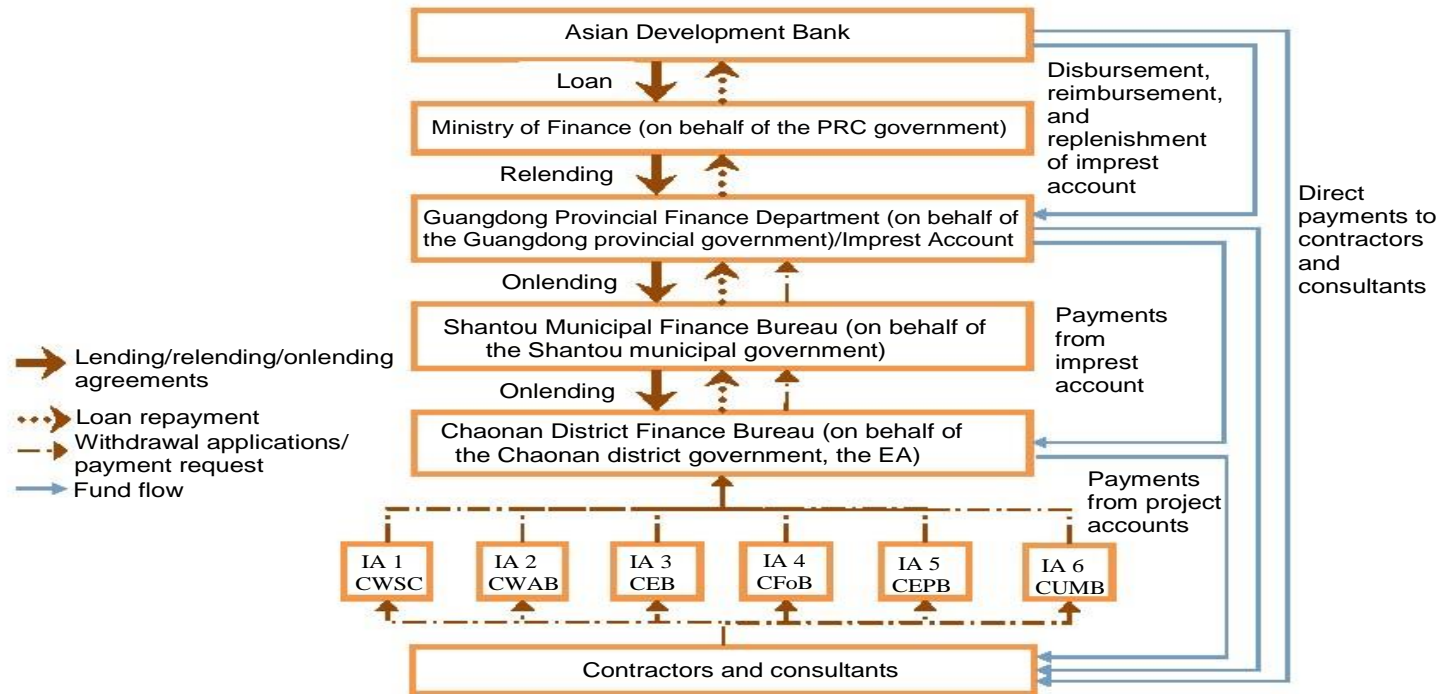
	2014-Q3	2014-Q4	2015-Q1	2015-Q2	2015-Q3	2015-Q4	2016-Q1	2016-Q2	2016-Q3	2016-Q4	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018-Q1	2018-Q2	2018-Q3	2018-Q4	2019-Q1	2019-Q2	2019-Q3	2019-Q4	2020-Q1
Cumulative Contract Award	0	0	3,000	7,000	12,000	17,000	22,000	27,000	32,000	37,500	43,000	49,000	55,000	61,000	66,500	72,000	77,500	82,500	87,500	92,000	94,440	94,440	94,440
Cumulative Disbursement	0	0	3,000	6,000	9,500	13,700	17,900	22,400	26,900	31,400	36,400	41,400	46,900	52,400	58,400	64,400	70,200	75,700	81,200	86,700	91,500	95,800	100,000

ADB = Asian Development Bank.

Note: Cumulative contract award does not include \$5.56 million financial charges.

Source: ADB estimates.

H. Funds Flow Diagram



CEB = Chaonan Education Bureau, CEPB = Chaonan Environmental Protection Bureau, CFoB = Chaonan Forestry Bureau, CUMB = Chaonan Urban Management Bureau, CWAB = Chaonan Water Affairs Bureau, CWSC = Chaonan Water Supply Company, EA = executing agency, IA = implementing agency.
Source: Asian Development Bank.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

30. Financial management assessment (FMA) of the executing and implementing agencies has been conducted for the project in accordance with ADB's *Financial Management and Analysis of Projects*¹⁶ and the publication, *Financial Due Diligence—A Methodology Note*.¹⁷ The FMA includes review of executing and implementing agencies, funds flow arrangement, the staff of finance, accounting policies and procedures (segregation of duties, budgeting system, payments, policies and procedures, cash and banking, safeguarding assets, other offices and implementing agencies), internal and external auditing, reporting and monitoring, and information systems. The instrument used for the assessment was ADB's FMA questionnaire.

31. The Guangdong Provincial Finance Department, the project imprest account holder, has experience in donor-funded projects, including the Guangdong Energy Efficiency and Environment Improvement Investment Program, Tranches 1 to 3.¹⁸ CFB, on behalf of CDG, has overall responsibility for financial management for the project under the guidance of the Guangdong Provincial Finance Department, and will supervise the PMO's financial management activities as specified in the Section III of the PAM. The assessment confirmed that CFB financial staff has adequate academic qualification and professional experience as financial specialists or accountants. The assessment shows that the accounting practice of CFB is in accordance with the national accounting standard that is harmonized with the international accounting standard. Nonetheless, neither CDG nor CFB has experience with foreign-funded projects. Special attention shall be directed to the reporting system, cost control and audit process, loan proceeds disbursement and loan repayment, fund monitoring and management, and contract implementation. The overall financial management risk rating of the project at appraisal was hence *medium*.

32. It is important for the CFB and PMO staff to gain understanding on ADB policies and procedures, particularly disbursement, as its staff has no experience with ADB projects. The implementing agencies, CWSC, and five district-level bureaus will cooperate with CFB and PMO on financial management for respective subcomponents. The role of the implementing agencies is more on technical aspect, rather than financial aspect, of subcomponent implementation. The project preparatory technical assistance (PPTA) already provided CFB, PMO, and the implementing agencies with training on disbursement, and the project will also continue to do so to further strengthen their financial management capacity for the project. Besides, it was agreed that the PMO would (i) develop financial management manual to guide staff activities and ensure staff accountability, (ii) provide regular training on ADB's financial management and disbursement, and (iii) purchase financial software for computerized accounting and regularly back up the accounting data. The implementation arrangements are considered adequate for financial management of the project.

¹⁶ ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

¹⁷ ADB. 2009. *Financial Due Diligence A Methodology Note*. Manila.

¹⁸ ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranche Financing Facility and Administration of Grant to the People's Republic of China for the Guangdong Energy Efficiency and Environment Improvement Investment Program*. Manila.

B. Disbursement

33. The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2012, as amended from time to time),¹⁹ and detailed arrangements agreed upon between the government and ADB.

34. Direct payment, reimbursement, commitment, and imprest fund procedures may be used to withdraw funds from the loan account. To expedite the flow of funds and simplify document processing, the statement of expenditures (SOE) procedure may be used to reimburse, replenish, and liquidate eligible expenditures for any individual payment not exceeding \$200,000 equivalent. Payments exceeding this ceiling will be reimbursed, replenished, and liquidated based on the full documentation process. SOE records should be maintained and made readily available for review by ADB's disbursement and review mission, or upon ADB's request for submission of supporting documents on a sampling basis and for independent audit.

35. The minimum value per withdrawal application is US\$100,000 equivalent, under reimbursement and imprest fund procedures, unless otherwise approved by ADB. Individual payments below this amount should generally be paid from the imprest account, or by the executing agency (or the implementing agency) and subsequently claimed to ADB through reimbursement. ADB reserves the right not to accept withdrawal applications below the minimum amount. Withdrawal applications and supporting documents will demonstrate, among other things that the goods and/or services were produced in or from ADB members; and are eligible for ADB financing.

36. An imprest account will be set up for the project by the Guangdong Provincial Finance Department in a commercial bank acceptable to ADB.²⁰ The maximum amount deposited into the imprest account will not exceed 10% of the total loan amount. The currency of the imprest account will be US dollar. The imprest account is to be used exclusively for ADB's share of eligible expenditures. The Guangdong Provincial Finance Department will be responsible for management, monitoring, and reconciliation of the imprest account. The request for initial advance to the imprest account should be accompanied by an estimate of expenditure sheet setting out the estimated expenditures for the forthcoming 6 months of project implementation. The imprest account will be established, managed, and liquidated in accordance with ADB's *Loan Disbursement Handbook* and detailed arrangements agreed by the government and ADB. Supporting documents should be submitted to ADB or retained by the executing or implementing agency, as appropriate, in accordance with ADB's *Loan Disbursement Handbook* when liquidating or replenishing the imprest account.

37. Pursuant to ADB's Safeguard Policy Statement (2009),²¹ ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement. All financial institutions will ensure that their investments are in compliance with applicable national laws and regulations and will apply the prohibited investment activities list (Appendix 5) to subprojects financed by ADB.

¹⁹ Available at: [http://www.adb.org/Documents/Handbooks/Loan Disbursement/loan-disbursement-final.pdf](http://www.adb.org/Documents/Handbooks/Loan%20Disbursement/loan-disbursement-final.pdf)

²⁰ The bank charges in the operation of the imprest account may be financed from the loan proceeds.

²¹ Available at: <http://www.adb.org/Documents/Policies/Safeguards/Safeguard-Policy-Statement-June2009.pdf>

C. Accounting

38. PMO, on behalf of CDG, will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project. PMO will prepare consolidated project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing

39. CDG will cause the detailed consolidated project financial statements to be audited in accordance with the International Standards on Auditing and with the government's audit regulations, by an independent auditor acceptable to ADB. The audited project financial statements will be submitted in the English language to ADB within 6 months of the end of the fiscal year by the PMO.

40. The annual audit report for the project accounts will include an audit management letter and audit opinions which cover (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether loan and grant proceeds were used only for the purposes of the project or not; (iii) the level of compliance for each financial covenant contained in the legal agreements for the project; (iv) use of the imprest fund procedure; and (v) the use of the SOE procedure certifying to the eligibility of those expenditures claimed under SOE procedures, and proper use of the SOE and imprest procedures in accordance with ADB's *Loan Disbursement Handbook* and the project documents.

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

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

43. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Public Communications Policy (2011).²² After review, ADB will disclose the project financial statements for the project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on the ADB website. The audit management letter will not be disclosed.

VI. PROCUREMENT

44. A procurement capacity assessment was conducted to assess the capacity of the executing and implementing agencies to procure goods, works, and consulting services under the project. The assessment found that the executing agency has established procurement

²² Available from <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>

procedures and staffing, and have certain domestic procurement experience; but do not have foreign-funded project experience, especially for ADB-financed projects. During project preparation, the PPTA provided on-the-job training on procurement and project management. During implementation, the project will provide consulting services and training to the executing and implementing agencies on ADB's procurement policies and procedures. The executing agency is in the process of recruiting a procurement agent to help them handle procurement-related matters.

A. Advance Contracting and Retroactive Financing

45. CDG has requested advance contracting and retroactive financing to enable early commencement of procurement of civil works, goods, consulting services, and training. The details of activities to be financed and their justifications will be set out in a written request to ADB. The government and CDG have been advised that retroactive financing may only apply to up to 20% of the amount of the ADB loan in respect for expenditures incurred before loan effectiveness, but not earlier than 12 months before the date of the loan and project agreements. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Guidelines (2013, as amended from time to time)²³ and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).²⁴ The issuance of invitations to bid, advertisement, bidding documents and bid evaluation, and recommendation of contract award under advance contracting and retroactive financing will be subject to ADB approval; and advance contracting should follow ADB's review and approval procedures shown in above paragraphs relating to procurement and consulting services. The government and CDG have been advised that approval of advance contracting and retroactive financing does not commit ADB to financing the project.

B. Procurement of Goods, Works, and Consulting Services

46. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines (footnote 16). Contracts for goods estimated to cost \$1.0 million and above and contracts for works estimated to cost \$10.0 million and above shall be procured using international competitive bidding (ICB) procedures. Contracts for works and goods estimated to cost less than the above ICB value but equal to \$100,000 and above will be procured through national competitive bidding (NCB) procedures. NCB will be conducted in accordance with the PRC Tendering and Bidding Law (1999), subject to modifications agreed with ADB.²⁵ Contracts for goods and works estimated to cost less than the above NCB values will be procured using shopping procedures. The relevant sections of ADB's Anticorruption Policy (1998, as amended from time to time)²⁶ will be included in all procurement documents and contracts.

47. For ICB, all invitations for bids, bidding documents, bid evaluation reports, and draft negotiated contracts need ADB's prior review and approval. For NCB, invitations for bids, bidding documents, bid evaluation reports, and draft negotiated contracts for the first NCB for civil works and the first NCB for goods need ADB's prior review and approval. For the other packages for NCB, as long as the invitations for bids and bidding documents approved by ADB

²³ Available at: <http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf>

²⁴ Available at: <http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf>

²⁵ For NCB for works and goods, Chinese Model Bidding Documents: Procurement of Civil Works/Goods under National Competitive Bidding (NCB) issued by the Ministry of Finance in January 2012 and enforced on 1 June 2012 will be used as model NCB documents.

²⁶ Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/default.asp>

are used as models without substantial modification, ADB's prior approvals are not necessary; and ADB will review and approve the signed contracts together with the bid evaluation reports on post-facto basis.

48. All consultants will be recruited according to ADB's Guidelines on the Use of Consultants (footnote 17). There are four consulting services packages, including (i) water resources protection research, (ii) water resources management action plan, (iii) project implementation, and (iv) project M&E. The first three packages will be financed by ADB and last package will be wholly financed by CDG. The project will require a total of about 37 person-months international consultants and about 195 person-months of national consultants. The implementing agencies will be responsible for the selection and supervision of the consultants. Consulting firms will be applied by (i) inviting simplified technical proposals, and (ii) using the quality- and cost-based selection method, with a quality-cost weighting ratio of 80:20. Individual selection will be used to recruited specific short-term consulting assignments. The terms of reference for these three consulting services packages are detailed in Annexes 1–3.

49. A procurement plan (including 18 months), indicating contract value, procurement method, threshold and review procedures, goods, works, and consulting services contract packages, and national competitive bidding guidelines, is in subsection C.

C. Procurement Plan

Basic Data

Project Name: Guangdong Chaonan Water Resources Development and Protection Demonstration Project	
Project Number: 46079-002	Approval Number: xxxx
Country: People's Republic of China	Executing Agency: Chaonan District Government
Project Financing Amount: \$230,750,000	Implementing Agencies: Chaonan Water Supply Company, Chaonan Water Affairs Bureau, Chaonan Forestry Bureau, Chaonan Education Bureau, Chaonan Environmental Protection Bureau, and Chaonan Urban Management Bureau
ADB Financing: \$100,000,000	
Cofinancing (ADB Administered):	
Non-ADB Financing: \$130,750,000	
Date of First Procurement Plan: 17 September 2013	Date of this Procurement Plan: 18 December 2013

Methods, Thresholds, and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

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

Procurement of Goods and Works

Method	Threshold	Comments
ICB for Works	\$10,000,000 and above	Invitation for bids, bidding documents, and bid evaluation and recommendation for contract awards will be subject to ADB's prior review.

Procurement of Goods and Works

Method	Threshold	Comments
ICB for Goods	\$1,000,000 and above	Invitation for bids, bidding documents, and bid evaluation and recommendation for contract awards will be subject to ADB's prior review.
Government Procedure for Works	No threshold (allowed for any amount)	
NCB for Works	Between \$100,000 and \$9,999,999	The first NCB procurement documents for works should be submitted for prior ADB review and approval. Subsequent NCB procurement documents will be subject to post review.
NCB for Goods	Between \$100,000 and \$999,999	The first NCB procurement documents for goods should be submitted for prior ADB review and approval. Subsequent NCB procurement documents will be subject to post review.
Shopping for Works	Up to \$99,999	
Shopping for Goods	Up to \$99,999	

ICB = international competitive bidding, NCB = national competitive bidding.

Consulting Services	
Method	Comments
Others for Consulting Firm	
Quality- and Cost-Based Selection for Consulting Firm	
Individual Consultants Selection for Individual Consultant	

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

51. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months:

Package Number	General Description	Estimated Value	Procurement Method	Bidding Procedure	Review (Prior/Post)	Advertisement Date (quarter/year)	Comments
C11	Distribution pipelines in Lugang township	6,995,370.00	NCB	1S1E	Post	Q4/2015	Prequalification of Bidders: N Bidding Document: Works
C12	Distribution pipelines in Xiashan	5,346,320.00	NCB	1S1E	Post	Q2/2015	Prequalification of Bidders: N Bidding Document: Works
C2	Water conservation reforestation around the	5,552,750.00	NCB	1S1E	Post	Q4/2014	Prequalification of Bidders: N

Package Number	General Description	Estimated Value	Procurement Method	Bidding Procedure	Review (Prior/Post)	Advertisement Date (quarter/year)	Comments
	three major reservoir areas						Bidding Document: Works
C3	Civil works, installation, and commissioning of water transmission pipelines for Shikeng to Yangfencheng	8,824,710.00	NCB	1S1E	Prior	Q4/2014	Prequalification of Bidders: N Bidding Document: Works
C4	Civil works, installation, and commissioning of the Longxi water supply plant	10,553,960.00	ICB	1S1E	Prior	Q4/2014	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Large Works
C5	Civil works, installation, and commissioning of water transmission pipelines for Wugou reservoir to the Longxi water supply plant and for Shi-Jing section	3,784,470.00	NCB	1S1E	Post	Q2/2015	Prequalification of Bidders: N Bidding Document: Works
C6	Water distribution pipelines in Longtian township	9,141,370.00	NCB	1S1E	Post	Q2/2015	Prequalification of Bidders: N Bidding Document: Works
C9	Distribution pipelines in townships of Chengtian and Jingdu	8,317,720.00	NCB	1S1E	Post	Q3/2015	Prequalification of Bidders: N Bidding Document: Works
G2	Water transmission pipelines for Shikeng to Yangfencheng,	14,036,270.00	ICB	1S1E	Prior	Q4/2014	Prequalification of Bidders: N Domestic Preference

Package Number	General Description	Estimated Value	Procurement Method	Bidding Procedure	Review (Prior/Post)	Advertise-ment Date (quarter/year)	Comments
	Wugou reservoir to the Longxi water supply plant and Shi-Jing section, and water meters used for households						Applicable: Y Bidding Document: Goods Comments: Loan Agreement Schedule 4
G3	Supply, installation, and commissioning of equipment of the Longxi water supply plant and water plant maintenance equipment and pipeline leak-detecting equipment	2,940,330.00	ICB	1S1E	Prior	Q4/2014	Prequalifi-cation of Bidders: N Domestic Preference Applicable: Y Bidding Document: Goods Comments: Loan Agreement Schedule 4

ICB = international competitive bidding, NCB = national competitive bidding.

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

52. The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months:

Package Number	General Description	Estimated Value	Recruit-ment Method	Type of Proposal	Review (Prior/Post)	Advertise-ment Date (quarter/year)	Comments
T1	Project implementation consulting services	830,000.00	QCBS	STP	Prior	Q2/2014	Assignment: International Quality–Cost Ratio: 80:20 Comments: Both international and national consultants
T2	Individual consultants	140,000.00	ICS		Prior	Q2/2014	Assignment: International Expertise: Various expertise Comments: Tbd. The individual consultants will be recruited for short-term assignments.

Package Number	General Description	Estimated Value	Recruitment Method	Type of Proposal	Review (Prior/Post)	Advertisement Date (quarter/year)	Comments
T3	Study on water resources protection and control measures around the reservoir areas	590,000.00	QCBS	STP	Prior	Q3/2014	Assignment: International Quality–Cost Ratio: 80:20 Comments: Both international and national consultants
T4	Development of water source protection and development action plan	800,000.00	QCBS	STP	Prior	Q2/2015	Assignment: International Quality–Cost Ratio: 80:20 Comments: Both international and national consultants

ICS = individual consultant selection, QCBS = quality- and cost-based selection, STP = simplified technical proposal.

4. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)

53. The following table groups smaller-value goods, works, and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months:

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Bidding Procedure	Review (Prior/Post)	Advertisement Date (quarter/year)	Comments
C1	Exhibition hall for water resource protection and bulletin boards	998,070.00	1	NCB	1S1E	Post	Q4/2014	Prequalification of Bidders: N Bidding Document: Works
G1	Solid waste collection and transfer trucks and equipment in Chengpo and Qiufeng villages	98,150.00	1	Shopping		Post	Q1/2015	Prequalification of Bidders: N
G7	Equipment of water quality test center	318,350.00	1	NCB	1S1E	Post	Q2/2015	Prequalification of Bidders: N Bidding Document: Goods

NCB = national competitive bidding.

Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Type of Proposal	Review (Prior/ Post)	Advertisement Date (quarter/ year)	Comments
None								

Indicative List of Packages Required Under the Project

54. The following table provides an indicative list of goods, works, and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period):

Goods and Works							
Package Number	General Description	Estimated Value (Cumulative)	Estimated Number of Contracts	Procurement Method	Bidding Procedure	Review (Prior/Post)	Comments
C13	Distribution pipelines in townships of Chendian and Simapu	9,809,370.00	1	NCB	1S1E	Post	Prequalification of Bidders: N Bidding Document: Works
C14	Civil works, installation, and commissioning of water transmission pipelines for He-Yang, Si-gao, and Xia-Xin sections	6,755,120.00	1	NCB	1S1E	Post	Prequalification of Bidders: N Bidding Document: Works
C15	Civil works, installation, and commissioning of water transmission pipelines for Donglan and Shan-He sections	2,535,270.00	1	NCB	1S1E	Post	Prequalification of Bidders: N Bidding Document: Works
C7	Water distribution pipelines in townships of Liangying and Xiancheng	9,476,820.00	1	NCB	1S1E	Post	Prequalification of Bidders: N Bidding Document: Works
C8	Civil works, installation, and commissioning of the Jinxi and Qiufeng water supply plants	17,934,650.00	1	ICB	1S1E	Prior	Prequalification of Bidders: N Domestic Preference Applicable: N

Goods and Works							
Package Number	General Description	Estimated Value (Cumulative)	Estimated Number of Contracts	Procurement Method	Bidding Procedure	Review (Prior/ Post)	Comments
							Bidding Document: Large Works
G4	Supply, installation, and commissioning of equipment of the Jinxi and Qiufeng water supply plants	4,316,390.00	1	ICB	1S1E	Prior	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Goods Comments: Loan Agreement Schedule 4
G5	Water transmission pipelines for He-Yang, Si-Gao, and Xia-Xin sections	5,600,130.00	1	ICB	1S1E	Prior	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Goods Comments: Loan Agreement Schedule 4
G6	Water transmission pipelines for Dong-Lan and Shan-He sections	1,607,090.00	1	ICB	1S1E	Prior	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Goods Comments: Loan Agreement Schedule 4
G8	Supply and installation of equipment of water supply dispatching and control center	1,468,710.00	1	ICB	1S1E	Prior	Prequalification of Bidders: N Domestic Preference Applicable: Y

Goods and Works							
Package Number	General Description	Estimated Value (Cumulative)	Estimated Number of Contracts	Procurement Method	Bidding Procedure	Review (Prior/Post)	Comments
							Bidding Document: Goods Comments: Loan Agreement Schedule 4
G9	Supply and installation of equipment of three-prevention (flood, drought, and typhoon) management center	3,269,970.00	1	ICB	1S1E	Prior	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Goods Comments: Loan Agreement Schedule 4

ICB = international competitive bidding, NCB = national competitive bidding.

Consulting Services						
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Type of Proposal	Comments
None						

National Competitive Bidding

55. The borrower's Law of Tendering and Bidding of the People's Republic of China, promulgated by Order No. 21 of the President of the People's Republic of China on 30 August 1999, are subject to the following clarifications required for compliance with the guidelines:

- (i) All invitations to prequalify or to bid shall be advertised in the national press, official gazette, or a free and open access website in the borrower's country. Such advertisement shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents, and prepare and submit their responses. In any event, a minimum preparation period of thirty (30) days shall be given. The preparation period shall count (a) from the date of advertisement; or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.
- (ii) Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents; and in the prequalification documents, if the bidding is preceded by a prequalification process.

- (iii) If bidding is preceded by a prequalification process, all bidders that meet the qualification criteria set out in the prequalification document shall be allowed to bid; and there shall be no limit on the number of pre-qualified bidders.
- (iv) All bidders shall be required to provide a performance security in an amount sufficient to protect the borrower and/or project executing agency in case of breach of contract by the contractor, and the bidding documents shall specify the required form and amount of such performance security.
- (v) Bidders shall be allowed to submit bids by mail or by hand.
- (vi) All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.
- (vii) All bid evaluation criteria shall be disclosed in the bidding documents and quantified in monetary terms or expressed in the form of pass or fail requirements.
- (viii) No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the borrower and/or project executing agency.
- (ix) Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources; and whose bid has been determined (a) to be substantially responsive to the bidding documents, and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.
- (x) Each contract financed with the proceeds of the loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.
- (xi) Government-owned enterprises in the borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law, and (c) are not a dependent agency of the borrower and/or project executing agency.
- (xii) Re-bidding shall not be allowed solely because the number of bids is less than three (3).

VII. SAFEGUARDS

A. Environment

56. The project is classified as category B for environment. An initial environmental examination (IEE) and an environmental management plan (EMP) were prepared, and are consistent with the requirements set out in ADB's Safeguard Policy Statement (2009). The IEE

incorporates the results of the domestic environmental impact assessment (EIA) report approved by the Shantou Municipality Environmental Protection Bureau on 30 September 2013. Consultations to raise public awareness of the project and receive stakeholder's inputs to project design were conducted with communities and local government agencies. The conclusions and recommendations of the environmental assessments and consultations were integrated in the project design.

57. The IEE, not the domestic EIA, forms the basis of the official loan agreement between ADB and CDG. Environmental safeguard management for the project will be implemented on the basis of the EMP in the IEE. It includes impact mitigation measures, an environmental monitoring program, grievance redress mechanism (GRM), and public consultation plan. It is the principal document to be used by the government and contractors to avoid, mitigate, monitor, and report the environmental impacts of project construction and operation. CDG, through the PMO, will be responsible for EMP implementation and compliance, including inspection, monitoring, reporting, and initiating corrective actions or measures. The PMO will have final responsibility for implementation of the GRM for handling any disputes. The institutional capacity of the implementing agencies to implement the EMP and ensure compliance with ADB's Safeguard Policy Statement (2009) is weak, and the project will include a capacity development program.

58. Project benefits and potential impacts were identified during preparation of the domestic EIA and IEE. The project is expected to achieve environmental benefits, including improved water resources protection, water quality, and water supply services to the majority of residents in Chaonan District, climate change adaptation and mitigation, reduced water and energy losses, and health improvement by alleviating drinking water endemics. Potential construction impacts include localized and short-term air and water pollution, noise and vibration, fugitive dust, soil erosion, solid waste disposal, interference with traffic and municipal facilities, limited land acquisition, and occupational and community health and safety. Potential operational impacts are noise and energy use of the WSP pumps, maintaining national standards for water treatment and quality at the WSPs, occupational health and safety during WSP operation, and the need to maintain protection efforts at the three reservoirs to minimize nonpoint source pollution from agriculture and rubbish dumping from local communities. A water balance assessment was conducted and potential environment-related livelihood impacts were assessed. No irrigated land will be reduced, and water allocated for environment will remain the same as the current level. No environment-related livelihood impacts are anticipated. Overall, no major adverse impacts were identified. The IEE concludes that full and effective implementation of the EMP, together with the prescribed capacity training, will result in minor residual impacts which are within the limits of the PRC standards defined in the EMP. Mitigation measures are detailed in the project EMP.

59. **Public consultation and grievance redress mechanism.** Information disclosure and two rounds of public consultations with the key stakeholders, including the representatives of the affected persons, local village committees, and urban residential communities were conducted during the IEE in accordance with the PRC's Guideline on Public Consultation in EIA (2006) and ADB's Safeguard Policy Statement (2009). In total, around 230 people were consulted. The results revealed that consulted people support the project components. In compliance with the Safeguard Policy Statement (2009), a GRM has been established in Chaonan District to prevent and resolve any community concerns and to assist the project in maximizing environmental and social benefits.

60. **Environmental management plan.** The EMP was developed together with the IEE and defines impacts and mitigation measures for the phases of detailed design, construction, and operation, as well as a monitoring program, reporting, institutional responsibilities, training plan, and budget. The EMP will be implemented by the PMO and implementing agencies until project completion, except for the monitoring of potential operational-phase impacts, which will start upon the physical completion of each project component and be implemented for 12 months after the date of physical completion of the overall project. CDG is responsible for the implementation and compliance with the EMP to be posted in the ADB website. If necessary, CDG and ADB, through mutual agreement, will update the EMP based on the detailed final project designs. During the final design stage, the PMO will provide the EMP to the design institutes to incorporate the mitigation measures into the detailed designs. Particular attention will be given to (i) protection of reservoir water quality; and (ii) environmental monitoring, as described in the EMP. Project implementation environment specialist will assist the PMO and implementing agencies in monitoring EMP implementation. The final updated EMP, following detailed technical design, will be reposted on the ADB website. A full-time environmental officer has been assigned in the PMO to coordinate the implementation of the EMP. The effectiveness of mitigation measures will be evaluated through environmental inspections and monitoring. The construction contractors and supervision companies will incorporate the EMP mitigation measures into their construction plans and will be responsible for internal environmental monitoring during construction. To ensure that contractors comply with the EMP, the PMO will prepare and provide the following for incorporation into the bidding procedures: (i) a list of environmental management requirements to be budgeted by bidders in their proposals, (ii) environmental clauses for contractual terms and conditions, and (iii) full domestic EIAs for compliance.

B. Land Acquisition and Resettlement

61. The project is classified as category B in terms of involuntary resettlement. The project will require permanent land acquisition of 79.33 *mu* (5.3 ha) of village collective land for the construction of the three WSPs, including farmland, orchard land, construction land, wasteland, and water pond. A total of 15 persons from two households renting 44.33 *mu* (3.0 ha) of collective land are affected directly by the permanent land acquisition. The remaining 35.00 *mu* (2.3 ha) of affected collective village land will have only indirect impacts. In addition, total temporary land occupation for laying the pipelines, access road, storing construction materials etc., will be about 2,271.16 *mu* (154.1 ha), including 802.83 *mu* (53.5 ha) of state-owned land; and 1,468.33 *mu* (97.9 ha) of collective land. The project will not trigger any house or building demolition. Additional 725.1 *mu* (48.3 ha) will be used for spoil disposal—storage of excavated earth not used for filling of pipeline trenches or other uses. The spoil disposal site is part of land earmarked for industrial park development, but currently not under use. The land is leased under a negotiated agreement between the industrial park company and CWSC. Due diligence on this arrangement is part of the resettlement plan. The industrial park will use the spoil deposited to level the land after the project finishes disposal. A resettlement plan was prepared which is consistent with the ADB's Safeguard Policy Statement (2009) requirements. The budget for land acquisition is included in the project. When final design becomes available, the resettlement plan will be updated and submitted to ADB for approval. No land acquisition will be undertaken prior to the approval of the final resettlement plan by ADB.

62. **Resettlement implementation arrangements.** CWSC will assume the overall responsibility of planning, implementation, financing, and reporting on land acquisition and resettlement activities. A draft resettlement plan and a due diligence report have been prepared for the project, and have been endorsed by the executing and implementing agency, and were

disclosed to affected people in local languages. The draft resettlement plan has been uploaded in the ADB website. During project implementation, the resettlement plan will be finalized based on the final design and detailed measurement survey, disclosed to affected persons in local language and submitted to ADB for review and approval before awarding civil works contracts. Bidding documents for civil works should include provisions for temporary land occupation in accordance with the resettlement plan.

63. **Resettlement implementation schedules.** The implementation, supervision, monitoring, and reporting milestones for the resettlement plan are shown in the table on the following page.

Implementation and Supervision Milestones

No.	Tasks	Target	Responsible Agency	Status and Deadline
1	Preparation of Land Acquisition and Resettlement Plan			
1.1	Draft resettlement plan (RP)		Chaonan Water Supply Company (CWSC) and project preparatory technical assistance (PPTA) consultants	By the end of July 2013
1.2	Information disclosure	3 villages, 2 households (HHs)	CWSC	Done in 2011 and 2012
1.3	Disclosure of draft RP	3 villages, 2 HHs	CWSC	October 2013
1.4	Approval of land acquisition and RP		Chaonan district government	October 2013
1.5	Asian Development Bank's (ADB) approval and posting on ADB website		ADB	October 2013
1.6	Disclosure of final RP	3 villages, 2 HHs	CWSC	Within 1 week after ADB's approval
2	Implementation			
2.1	Signing agreements		CWSC, Chaonan district government, 3 villages	Within 1 month after ADB's approval
2.2	Disbursement of compensation fund, payment of endowment insurance fee and land type change fee	3 villages	CWSC, Chaonan District Finance Bureau	Before the land transfer (endowment insurance fee and land type change fee already paid)
2.3	Land transfer		3 villages, Chaonan District Land Resources Bureau, and executing agency	Within 2 weeks after paying compensation to affected villages
2.4	Formal land use certificate issued to CWSC		Chaonan District Land Resources Bureau	2014
3	Monitoring and Reporting			
3.1	Internal monitoring and report	Quarterly	CWSC	First report due one month after land transfer
3.2	External monitoring and report	Semiannually	External monitor	First report due three months after land transfer

64. **Grievance redress mechanism.** A common GRM for all safeguard-related grievances is established for the project. The PMO Environment and Social Officers will be responsible for implementation of the GRM. These staff will instruct the contractors and construction supervision companies (CSCs) on how to proceed with any public concerns received. Any disagreement related to temporary and permanent land acquisition and compensation will be first reported directly to the PMO for solutions, and then settled according to the following procedures if no satisfactory agreements can be reached:

- (i) **Step 1.** If any affected person is aggrieved by any aspect of the land acquisition, he/she can state his/her grievance and appeal to the village committee in oral or in written form. If an oral appeal is made, the village committee will record it on paper and process it. Village committee will make a decision on or resolve it in 2 weeks.
- (ii) **Step 2.** If the aggrieved affected person is not satisfied with the decision of the village committee, the aggrieved affected can state the grievance and appeal to the township government in oral or in written form. The township government will make a decision on or resolve it in 2 weeks.
- (iii) **Step 3.** If the aggrieved affected person is not satisfied with the decision of the township, he/she can appeal to CDG after receiving the decision; the district government will reach a decision in 2 weeks.

65. At any point the affected person is dissatisfied with the grievance process, he/she may appeal to the civil division of a people's court according to the civil court procedure.

66. All agencies will accept grievances and appeals from the affected persons for free, and costs so reasonably incurred will be disbursed from the contingencies. During the whole construction period of the project, these appeal procedures shall remain effective to ensure that the affected persons can use them to address relevant issues. The above grievance redress system will be communicated to the affected persons at a meeting or through the resettlement information booklet, so that the affected persons know their right of appeal. In addition, the appeal process will be published to affected population on mass media.

67. The affected persons may also express grievance to the external monitoring agency, who would then report it to the PMO. Alternatively, the affected persons may submit a complaint to the ADB's project team to try to resolve the problem. If good faith efforts are still unsuccessful, and if there are grievances that stemmed from a violation of ADB's safeguard policy, the affected persons may appeal directly to ADB in accordance with ADB's Accountability Mechanism (2012).²⁷

C. Indigenous Peoples

68. The project is classified as category C in terms of indigenous peoples. The assessment conducted during the PPTA found that more than 99% of residents in the project area are Han nationality, and no ethnic minority people live centrally, and characteristic culture or economic patterns owned especially by ethnic minority people. There will be no adverse impact on ethnic minority communities.

²⁷ http://adb.org/Documents/Policies/ADB_Accountability_Mechanism/ADB_accountability_mechanism.pdf

69. CDG shall ensure that the project does not have any indigenous people impact, within the meaning of the ADB's Safeguard Policy Statement (2009). In the event that the project does have any such impact, CWSC and the PMO shall take all steps required to ensure that the project complies with the borrower's applicable laws and regulations and with the Safeguard Policy Statement (2009).

VIII. GENDER AND SOCIAL DIMENSIONS

70. A social, poverty, and gender analysis was undertaken in accordance with ADB's policies on *Gender and Development in ADB Operations* (Operations Manual Section C2) and *Incorporation of Social Dimensions into ADB Operations* (Operations Manual Section C3). The analysis collected information to assist in the design of the project by identifying the poor, examining causes of poverty, and recommending poverty reduction measures within the project scope.

A. Social and Poverty Benefits

71. By 2011, rural residents in Chaonan District accounted for 85% of total population. The rural poverty incidence of the district was about 6.7%.²⁸ It is found that the mean rural net income per capita of the lowest income portion (20%) in the sampled households is CNY1,541 annually, 33% lower than the national poverty line (CNY2,300 per capita annually). The rural net income per capita of Chaonan District was CNY5,076 annually, which is 54.2% of the average of Guangdong Province, and 72.0% of that of the PRC. Deficiency of natural resources and shortage of water resources have affected severely local social and economic development. Lack of labor, poor health status, and low education level are the main causes of rural household poverty.

72. A poverty and social assessment that included a household survey, community, and focus group discussions, and key informant interviews, was conducted during project preparation. The project will (i) improve water resources protection, which will benefit directly about 4,000 people in villages surrounding the water resource reservoir; (ii) construct inclusive urban and rural water supply system, including three water supply plants and related pipeline network, which will benefit directly 1.23 million people in the plain area of Chaonan District; and (iii) promote public awareness on environmental protection and sanitation management for sustainable improvement of water environment, which will benefit directly for health of 1.33 million inhabitants of Chaonan District. About 76,500 poor and 0.669 million females in Chaonan District will benefit directly from the project. The project is expected to create about 655 full-time employment opportunities during implementation. Employment targets for vulnerable groups and women are included in the design and monitoring framework (DMF), GAP, SAP, and loan assurances. Water quality improvements through provision of water source environmental protection and municipal water service system will enhance public health and safety. A GAP and SAP have been prepared and will be implemented by the PMO and implementing agencies during project construction.

B. Social Action Plan

73. This SAP was prepared jointly by the PMO and the participating local governments, with the assistance of the PPTA social experts. The purpose of this SAP is to ensure that important social and poverty issues are addressed during project implementation and its implementation is

²⁸ Chaonan Poverty Alleviation Office.

to enhance project benefits and mitigate any likely negative impacts. The SAP emphasizes social inclusion and equitable access to project benefits.

74. The SAP has focused on issues related to directly affected people, vulnerable people, gender, and local social and small business development. Measures to address these issues have been formulated based on the poverty and social assessment report and adopted based on further stakeholder consultation. The main actions can be grouped into three types: (i) project benefits and enhancement measures within the direct control of the implementing agencies; (ii) mitigation measures to address social risks caused by the project, being the responsibility of the PMO and the implementing agencies; and (iii) complementary enhancement measures that can be taken by local governments to increase the mutual benefits derived from the project construction or operations. The table below provides details of the SAP, including the proposed actions, target groups, implementing agencies, timing, funding source, and monitoring indicators.

75. **Poverty reduction.** The PMO and the participating local governments have agreed to take the following actions to enhance project benefits for the poor: (i) coordinating with contractors and local affected villages to hire the poor for the project construction and operation, with a target 15% of newly created positions during construction; (ii) supporting local governments in technical training programs or providing training for new workers before taking positions; and (iii) supporting local governments in promoting non-farm employment opportunities. In addition, household connection to the water supply system will be provided under the project.

76. **Implementation arrangements.** The SAP will be implemented by the PMO and the implementing agencies in coordination with local government agencies, as indicated in the table on the next page. The PMO will be responsible for overseeing the SAP and implementing those actions within their direct control, as well as supervision of related activities that involve the construction contractors. For actions outside the direct mandates of the PMO, the assigned staff will be responsible to liaise with the relevant district government agencies under the coordination of the leaders of the PMO; this will ensure appropriate measures are taken in a timely and satisfactory manner. The PMO will also be responsible for monitoring and reporting progress, issues, and results to the executing agency. A national social and gender development consultant will be engaged to assist with monitoring and reporting. The PMO will annually provide SAP monitoring reports for review and follow-up during loan supervision missions. If necessary, ADB and the executing agency may agree to revise the SAP to improve the effectiveness of the proposed measures.

77. **Funding source.** The funding sources for the SAP implementation will come from the project and from local government sources as shown in the following table.

SOCIAL ACTION PLAN

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs and Source	Monitoring Indicators
A. ENHANCEMENT MEASURES (Responsibility of Implementing and Operating Agencies)					
1. Employment Priority to Local People During Project Implementation <ul style="list-style-type: none"> • Priority to local labor, women and poor labors • Use of local construction materials, e.g., rock, gravel, clay, cement • Preferential local labors to be hired by and local qualified materials to be used by contractors are required in bidding documents • Training all workers on labor law, safety, sanitation, skills to be provided by contractors 	655 full-time positions during project construction <ul style="list-style-type: none"> ➢ 65% local labor in civil work ➢ 30% women for labor in landscaping and civil work ➢ 15% poor for unskilled labor in landscaping and civil work ➢ 100% workers get training 	PMO, IAs, PIUs, CB, contractors, local township governments, CAB	2014–2019	Estimated total CNY17.1 million is included in project civil works cost and paid by contractors	<ul style="list-style-type: none"> • No. of local people employed (disaggregated by sex, skilled and/or unskilled, and poverty status) • Wages (disaggregated by sex) paid to local people • Value of construction materials supplied locally • Training of local workers (disaggregated by sex)
2. Employment Priority to Local People During Project Operation <ul style="list-style-type: none"> • Priority to local labor in (i) conservation forest and solid waste management, and water supply plant operation and maintenance; (ii) operation of exhibition building; and (iii) environmental protection awareness • Training all workers on labor law, safety, sanitation, and skills to be provided by the PIUs • About 44 workers, who will be laid off due to closure of the three water treatment plants—Chengtian, Jindu, and Tianxin, will be absorbed into the workforce necessary for operating the project facilities. 	269 full-time positions during project operation <ul style="list-style-type: none"> ➢ 30% women for labor in (i) ➢ 50% women for labor in (ii) ➢ 60% women for labor in (iii) ➢ 15% poor for labor in (i) ➢ 100% workers get training 	PMO, IAs, PIUs, local township governments, labor bureau, and CAB	2015–2019 and onwards	Estimated CNY0.565 million annually is included in project operation cost and paid by the PIUs	<ul style="list-style-type: none"> • No. of local people employed (disaggregated by sex, skilled and/or unskilled, and poverty status) • Wages (disaggregated by sex) paid to local people • Training of local workers (disaggregated by sex) • Number of retrenched workforce re-employed
	44 workers from the three water treatment plants	CDG and CWSC	2020		

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs and Source	Monitoring Indicators
B. MITIGATION MEASURES (Responsibility of the PMO and PIUs)					
3. Protect Local Communities from Construction Disturbances and Ensure Safe Construction Practices <ul style="list-style-type: none"> Prohibit nighttime construction and adhere to proposed noise standards Reconstruct public facility systems such as road, poles and transformers recovery due to pipe installation Construction safety enhancement, including temporary road traffic (e.g., safe road conditions and proper warning sign) 	<ul style="list-style-type: none"> 100% residents and students around project sites know the construction 	PIUs, contractors, and local governments	2014–2019	Included in project cost (refer to EMP)	<ul style="list-style-type: none"> No. and resolution of complaints (disaggregated by sex) Number of public facilities (% recovery) Accidents on roads laying pipes Accidents on project site
4. Control and Prevention of HIV/AIDS/STI <ul style="list-style-type: none"> Clauses to prevent STD/AIDS will be included into bidding documents Local CDPC provides training to worksite health promoters Health promoters provide training to all workers and managers and subcontractors HIV/AIDS and STI counseling program and voluntary testing by health agencies for workers Provide manuals, posters, and drawings 	<ul style="list-style-type: none"> 100% project construction workers 100% service providers 100% communities in the project area 	PIUs, contractors, local CDPCs, and local governments	2014–2019	Awareness training costs for workers are included in contract costs Local CDPCs costs included in local health bureau budget	<ul style="list-style-type: none"> No. of manuals, posters, and drawing distributed No. of training sessions and trainees (disaggregated by sex) No. of tests and HIV/AIDS/STI cases (disaggregated by sex)
C. ENHANCEMENT MEASURES (Responsibility of Participating Local Governments)					
5. Strength Public Environmental Protection Awareness and Education <ul style="list-style-type: none"> Public environmental protection workshop in schools (lecture or picture exhibition, etc.) Public sanitation management education in residential communities of DPA (poster, picture exhibition, etc.) Establish a solid waste management system managed by communities in Chengpo and Quifeng 	232 primary and 63 middle schools (2012), and 900,000 residents in direct project areas <ul style="list-style-type: none"> 100% primary and middle schools in DPA 50% female participants 70% local residents 	Local EB, EPB, CB, HB, PIUs, and local town governments	2015–2019	Local government budget	<ul style="list-style-type: none"> No. of schools No. of participants (disaggregated by sex)

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs and Source	Monitoring Indicators
6. Government Subsidies for Water and Solid Waste Tariff <ul style="list-style-type: none"> Provide subsidy for solid waste tariff for poor and low-income households in Chengpo and Qiufeng villages Provide household connection to the water supply system for poor and low-income households in the plain area with high fluorosis 	<ul style="list-style-type: none"> 100% poor and low income households in Chengpo and Qiufeng 95% poor and low-income households in DPA 	Local government, EA	2018 onwards	Local government budget	<ul style="list-style-type: none"> No. of total households in villages, No. of households with subsidies, average subsidies per household No. of total poor and low income households in the plain area connected to the district's water supply system
7. Public Health Awareness <ul style="list-style-type: none"> Public endemic fluorosis prevention workshop in schools (lecture or picture exhibition, etc.) Safe drinking water education in residential communities of DPA (poster, picture exhibition, etc.) Community meeting on content of the exhibition and comments on the exhibition, and any suggestions from community 	232 primary and 63 middle schools (2012), and 900,000 residents in direct project areas <ul style="list-style-type: none"> 100% primary and middle schools in DPA 70% local residents 50% female participants 	Local EB, EPB, HB, PIUs, and local town governments	2015–2018	Local government budget	<ul style="list-style-type: none"> No. of schools No. of participants (disaggregated by sex) No. of meeting No. of comments and suggestions (disaggregated by sex)
8. Leadership Development <ul style="list-style-type: none"> Workshops on social inclusion and equitable access to the new economy (particularly for the poor and farmer transitions) Workshops on urban expansion and employment (local poor and rural labor opportunity) Case studies on social impacts of water supply project 	Local government officials and representatives of communities <ul style="list-style-type: none"> 30% female participants At least one workshop per year 	PMO, PIUs, and local governments	2015–2017	Budgets included in capacity development	<ul style="list-style-type: none"> No. of workshops No. of participants No. of female decision makers
9. Public Hearings for Water Tariff <ul style="list-style-type: none"> Public hearings for water tariff 	Representatives of residents in project areas <ul style="list-style-type: none"> 30% of female representatives 15% of poor and low-income representatives 	PIUs, local FB, PB, water supply and wastewater treatment plants, and communities	2015 onwards	No budget need	<ul style="list-style-type: none"> No. of participants (disaggregated by sex)

Proposed Actions	Target Group(s)	Agencies Involved	Timing	Funding Needs and Source	Monitoring Indicators
10. Participation and Consultation <ul style="list-style-type: none"> Research on water source conservation Construction plan to be prepared by contractors and included mitigation measures for residents daily activities Public awareness plan for sanitation and environment protection and health improvement Water service quality evaluation 	Representatives of residents and schools in project areas <ul style="list-style-type: none"> ➢ 30% of female representatives 	PIUs, WAB, EB, contractors, water supply plants, and communities	2014 onwards	No budget need	<ul style="list-style-type: none"> No. of actions No. of participants (disaggregated by sex)
11. Reduction of Fluorosis <ul style="list-style-type: none"> Dental fluorosis survey in selected three villages, baseline in 2016 or one year before the operation of water supply plants, and impact in 2024 or the eighth year after operation of water supply plants 	Two villagers in the affected area <ul style="list-style-type: none"> ➢ 100% primary students with 8–12 years old 	PIU, HB, EB	2016, 2024	CNY30,000 of project survey budget	<ul style="list-style-type: none"> No. of total primary students (disaggregated by sex and age) No. of primary students with dental fluorosis (disaggregated by sex and age)
12. Promote Non-farming Employment and Improve Livelihood <ul style="list-style-type: none"> Promote information and training on non-farming jobs for local jobs and migrant jobs Provide education to migrant laborers on labor law, contract, and right issues 	Labor residents in DPA <ul style="list-style-type: none"> ➢ 40% of female participants ➢ 15% of poor participants 	CEWLG, PIUs, local labor bureau, CAB, and PADO	2015–2018	Local government training budget	<ul style="list-style-type: none"> No. of jobs created No. of new migrant laborers (disaggregated by sex) No. of employers involved No. of migrant laborers trained (disaggregated by sex)

CAB = Civil Affairs Bureau, CB = Construction Bureau, CDPC = centers for disease prevention and control, CEWLG = Chaonan employment work leading group, DPA = direct project area, EA = executing agency, EB = Education Bureau, EMP = environmental management plan, EPB = Environmental Protection Bureau, FB = Finance Bureau, HB = Health Bureau, IA = implementing agency, PADO = Poverty Alleviation and Development Office, PB = Price Bureau, PIU = project implementing unit, PMO = project management office, STI = sexually transmitted infection, WAB = Water Affairs Bureau.

Source: Asian Development Bank.

C. Gender

78. The proposed water source conservation and new water supply system will bring both women and men with safe drinking water and improved water supply services. Extensive consultation and gender analysis was conducted during the poverty and social assessment survey and qualitative discussions. The assessment indicated that women strongly support the project and anticipate benefits such as improved water safety, living conditions, new employment opportunities, awareness on environmental protection and sanitation management, and reduced time burdens and incidence of preventable illness. The current incidence of HIV/AIDS associated urbanization is low and will be further reduced by ever-intensifying government interventions.

79. The project will implement a GAP that will facilitate employment opportunities and livelihood improvement for women through training, and mitigate possible negative impacts of the project on women due to land acquisition, and environmental impacts. Women take more household duties and engage more agriculture production because men take more non-farm work. Therefore, women concern water shortage and water service quality more than men. Women are facing more difficulties finding jobs in terms of physical fitness and other gender differences. Skill training specially designed for women is necessary to improve their employment opportunities. The PMO and implementing agencies shall collaborate with local women's federation and community/village committees in providing more employment opportunities to women in the project areas during the project implementation. The GAP will enhance women's active and equitable participation in the project. Furthermore, gender-specific measures are included in the SAP.

80. **Gender plan actions.** The gender action plan stresses inclusion through

- (i) **Public consultation.** Public consultations on affordability, tariffs, water resource environment improvements, water safety and health, water supply services, sanitation management, and environmental protection awareness will require participation by women. Outreach will be conducted through community meetings, dissemination of materials such as posters and radio spots, and coordination with organizations such as the All China Women's Federation, which will ensure their involvement. The social and gender development expert, the PMO, and the implementing agency of each project component will conduct outreach activities with contractors, local township governments, and the Labor Bureau to ensure that women are aware of employment opportunities and the contractors strive to reach the targets. Results will be regularly reported via the project performance monitoring system. Public consultation has a target of 30% women participants;
- (ii) **Employment enhancement.** Employment enhancement measures will include consultation and participation of women during project design and implementation, preferential employment of women as unskilled laborers during and after project implementation, and the formal employment of female staff in conservation forest and solid waste management and for operation and maintenance of water supply services, etc. The employment plan includes a target of 30% for women during project implementation and operation; and

- (iii) **Capacity building.** Measures will include leadership development, training, meetings, consultations, case studies, and workshops on topics such as decision-making, urban expansion, inclusive social transition, water safety and health, project management and implementation to enhance public awareness, and institutional capability. The training plan for capacity development has a target of 30% for women's participation.

81. **Budget and implementation arrangements.** The GAP will be implemented under the guidance of a social and gender development expert who will be a member of the consultant team during project implementation. The action plan will not require a separate budget and will be funded by the project budget. The GAP will be implemented over the five-year life of the project. The PMO, with support from the social and gender development expert, will be responsible for coordinating and monitoring implementation of the plan and will assign responsible staff.

GENDER ACTION PLAN

Project Output	Tasks	Indicators	Beneficiaries	Responsibility	Funds
Outcome: Improved and equitable water supply services to urban and rural residents in Chaonan District	Workload on women will be reduced as result of improved and equitable water supply, in particular to rural residents	About 4,000 women will be released from fetching water during dry season	Rural households currently relying on carried water for water supply	PIUs	
Output 1: Improved Water Resources Protection					
Output: Research on water resource protection Solid waste disposal within Qiufeng reservoir area Reforestation within reservoir areas Public awareness on environment and sanitation Textbook, permanent bulletin boards, and "A Letter to Parents" on environmental protection and sanitation management Training teachers, community education promotion of environmental protection and sanitation management	Ensure women's participation during consultations with the general public during decision-making processes and in any local decision-making bodies and structures, such as on fertilizer and pesticide control, on solid waste management, and on preparation and implementation of planting conservation forest, etc.	At least 30% of participants are women Record of women's views and actions taken	0.64 million female residents in Chaonan 1,000 female residents in Qiufeng 2,000 female residents in reservoir areas	PMO, PIUs, ACWF, CCs, contractors, and LB (reporting indicators will be reflected in the project performance management system and submitted to ADB annually)	Included in project budgets
	Promote the creation of job opportunities for women during and after project implementation, providing appropriate training, and ensuring equal pay for equal work; and hiring local women as much as possible are required in bidding documents	Any agencies related to employment will have female staff. Target at least 30% jobs for women, of which 50% managerial or skilled positions	Total positions created: 169 full-time positions during project construction, and 23 positions in project operation		Included in contract budgets and operation budgets
	Ensure women participate during consultations with the general public in decision-making processes and in any local decision-making bodies and structures, such as on design and preparation of textbook, bulletin boards, letter to parents, training materials, and community education on environmental protection and sanitation management	Activities have at least 40% women participants	0.61 million female residents in plain areas	PMO, EB, EPB, and HB (reporting indicators will be reflected in the project performance report system and submitted to ADB annually)	Included in project budget

Project Output	Tasks	Indicators	Beneficiaries	Responsibility	Funds
	Ensure women's participation in all activities related to public awareness on environmental protection and sanitation management	Activities have at least 50% women participants			Included in project budget
Output 2: Improved Water Supply Infrastructure					
Output: Expansion of Qiufeng WSP Reconstruction of Jinxi WSP Construction of Longxi WSP Installation of water pipelines	Ensure women participate during consultations with the general public during public hearings, in decision-making processes, and in any local decision-making bodies and structures, such as on design of WSP and water services, pipe installation, construction schedule preparation, etc.	At least 30% of participants are women	0.61 million female residents in plain areas	PMO, PIUs, CCs, ACWF, FB, PB, water supply and wastewater treatment companies, contractors, HB, TPB and LB (reporting indicators will be reflected in the project performance report system and submitted to ADB annually)	Included in project budgets
	Ensure women's participation in public hearing processes for water and wastewater tariff	At least 30% women representatives	0.61 million female residents in plain areas		No budget needed
	Promote the creation of job opportunities for women during and after project implementation, provide appropriate training, and ensure equal pay for equal work; and hiring local women as much as possible are required in bidding documents	Target at least 30% of the job positions for women, of which 50% managerial or skilled positions At least 40% of participants in training are women	Total positions created: 486 positions in project construction, and 246 positions in project operation		Included in contract budgets and operation budgets
	Ensure that women participate in seminars, workshops, and meetings conducted to discuss water supply services design and implementation, water safety and health, and traffic adjustment safety during construction. Ensure female participation in briefings on information and training on non-farming jobs for local jobs and migrant jobs, and education to migrant laborers on labor law, contract, and right issues.	At least 40% of participants in workshops are female residents	Representatives of communities		No budget needed

Project Output	Tasks	Indicators	Beneficiaries	Responsibility	Funds
Output 3: Strengthened Institutional and Staff Capacity					
	Ensure that women participate in leadership development and training to strengthen their capability in managing inclusive urban and rural water supply services, environmental protection and sanitation, employment, and public participation	At least 40% of participants are female	50 female staff in relevant agencies	PMO, PIUs, and local governments (CPMO shall submit annual monitoring reports to ADB)	Included in project budget
	Require that the EA and PIUs have special staff to work on implementation of the GAP. The staff will be trained on safeguard and gender impacts by consultants.	At least one staff assigned to manage GAP work in the EA and PMO, and each PIU			
	Conduct training on capacity building in gender awareness for the EA	Number of trainings and topics covered			

ACWF = All China Women's Federation, ADB = Asian Development Bank, CB = Construction Bureau, CC = community committee, EA = executing agency, EB = Education Bureau, EPB = Environmental Protection Bureau, FB = Finance Bureau, GAP = gender action plan, HB = Health Bureau, LB = Labor Bureau, PB = Price Bureau, PIU = project implementing unit, PMO = project management office, TPB = Traffic Police Brigade, WSP = water supply plant.

Source: ADB estimates.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Better health and quality of life in Chaonan District	By 2025 (baseline year 2011): Per capita annual disposable income of urban households increased from CNY20,761 to CNY58,393 Per capita annual net income of rural residents increased from CNY5,739 to CNY10,822 Fluorosis morbidity rate reduced by 30% (2009 baseline: 11.1%)	Provincial and local statistical reports periodically published by the governments of Guangdong Province and Shantou Municipality Water resources bulletin by Shantou and Chaonan water affairs bureaus Sample surveys	Assumptions The government's development plan to balance urban–rural development remains a priority. Improved sanitation–household connections to the wastewater treatment system Risk Water demand due to economic and population growth exceeds available resources.
Outcome Improved and equitable water supply services to urban and rural residents in Chaonan District	By 2020 (baseline year 2012): A total of 233,550 households directly benefited from new and/or reliable water supply, including 83,250 households (12,490 urban, 70,760 rural) newly connected to piped water supply and 150,300 households (22,540 urban and 127,760 rural) with more reliable water supply services Water service coverage for urban–rural residents increased from 70% to 95% Nonrevenue water reduced from 50% to 25% Satisfaction with the water supply services increased from 50% to 80% About 4,000 women will be released from fetching water during dry season	Reports by the governments of Chaonan District and Shantou Municipality Records of the water supply company Sample social surveys Project completion report	Assumption Water security remains the local government's first agenda. Risks Measures for demand management to conserve water are insufficient. Extreme droughts in all the three water source rivers and reservoirs could result in reduced water availability for 24-hour water supply, particularly for rural residents
Outputs 1. Improved water resources protection	By 2020 (baseline year 2012): Water quality standard in the district water source reservoirs maintained at class II About 1,682 ha of land reforested in the catchment areas of Jinxi, Longxi, and Qiufeng reservoirs About 600 households' solid waste in Chengpo and Qiufeng villages collected and treated	Government's water quality monitoring reports Regular project progress reports by the executing and implementing agencies Site inspection and monitoring reports	Assumption A well-defined reforestation plan is prepared and implemented. Risks The public fails to change its behavior toward environmental protection. The Chaonan district government fails to construct wastewater treatment plants to keep pace with the

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	<p>Average of 30% of female employment of 169 full-time positions during project construction</p> <p>An exhibition hall on water and environmental awareness built and opened to the public</p> <p>At least 40% of people visiting the exhibition hall on water and environmental awareness are women</p>	<p>ADB and government review missions</p> <p>Construction supervision reports</p> <p>Project completion report</p> <p>Sex-disaggregated data from visitor's logbook</p>	<p>increased volume of waste water.</p>
2. Improved water supply infrastructure	<p>Qiufeng WSP expanded from 70,000 m³/day to 142,000 m³/day</p> <p>Jinxi WSP rehabilitated with a newly built pumping station and sludge treatment facility</p> <p>Longxi WSP newly built with a capacity of 100,000 m³/day</p> <p>About 1,000 km of water supply pipelines installed and/or upgraded</p> <p>About 37,770 new meters installed in those households without meters</p> <p>A water quality monitoring center operated</p> <p>About 655 job positions will be created during project implementation, of which 30% for women</p>	<p>Regular project progress reports by the executing and implementing agencies</p> <p>Site inspection and monitoring reports</p> <p>ADB and government review missions</p> <p>Construction supervision reports</p> <p>Project completion report</p>	<p>Risks</p> <p>Water supply institutional reform and water tariff reform will not be implemented as planned.</p> <p>Infrastructure assets are poorly operated and maintained due to lack of capacity and/or budget.</p>
3. Strengthened institutional and staff capacity	<p>A water supply control center established and water quality regularly monitored</p> <p>A three-prevention (flood, drought, and typhoon) management center established and operated</p> <p>A water resources protection and development action plan developed</p> <p>A project monitoring and evaluation system established and project progress quarterly reported</p> <p>A 5-year training plan for project implementation and operation enhanced and implemented</p> <p>About 100 project staff trained, of which 40% are women; and the district government officials independently perform project implementation, water</p>	<p>Regular progress reports by the executing and implementing agencies</p> <p>ADB and government review missions</p> <p>Capacity development and training summaries and reports by the project management office</p> <p>Project completion report</p>	<p>Assumptions</p> <p>The project management office and implementing agencies are adequately staffed and well trained.</p> <p>Trained project implementation and operation staff will stay with the project during project implementation and operation.</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	resource planning, and water supply services to acceptable quality standards		
Activities with Milestones		Inputs	
1. Improved water resources protection 1.1 Plant the conservation forest of 1,682 ha from 2014 to 2019 1.2 Implement solid waste collection and disposal from 2015 to 2018 1.3 Conduct research program on water resources protection and pollution control measures in the reservoir areas from 2015 to 2019 1.4 Conduct public awareness campaigns from 2015 to 2019 1.5 Build and open an environmental public education exhibition hall by the end of 2015		Loan ADB: \$100.00 million Civil works: 57.22 Equipment and materials: 33.65 Consulting services: 2.32 Training: 1.25 Financial charges: 5.56 Local Governments: \$130.75 million Civil works: 57.39 Land acquisition: 7.74 Environmental protection: 2.55 Project management: 20.43 Survey and design: 11.72 Consulting services: 1.12 Contingencies: 29.80	
2. Improved water supply infrastructure 2.1 Expand the capacity of the Qiufeng WSP from 2014 to 2018 2.2 Upgrade the Jinxi WSP from 2014 to 2019 2.3 Construct the Longxi WSP from 2014 to 2018 2.4 Rehabilitate and/or construct water delivery and distribution pipelines from 2014 to 2019 2.5 Establish the water quality monitoring center by June 2018 2.6 Install water meters in the households from 2017 to 2019 2.7 Procure operation and maintenance equipment by end 2017			
3. Strengthened institutional and staff capacity 3.1 Recruit consulting services for project implementation by June 2015 3.2 Develop a training plan and conduct training programs from 2014 to 2019 3.3 Establish a water supply control center by June 2019 3.4 Establish a water resources management and three-prevention management center by June 2019 3.5 Develop the water resources protection and development action plan by end of 2018 3.6 Establish a project monitoring and evaluation system and conduct regular monitoring from 2014 to 2019 3.7 Implement the gender action plan and the social action plan from 2014 to 2019 3.8 Implement the initial environmental examination, the environmental management plan, and the resettlement plan from 2014 to 2019			

ADB = Asian Development Bank, CNY = yuan, ha = hectare, km = kilometer, m³ = cubic meter, WSP = water supply plant.

Source: Asian Development Bank estimates.

B. Monitoring

1. Project performance monitoring

82. **Project performance monitoring.** To monitor the progress of the project in achieving the planned outcome and outputs, the PMO will establish and maintain a project performance management system (PPMS), which will be designed to permit adequate flexibility to adopt remedial action regarding project design, schedules, activities, and development impacts. The PPMS will adopt the following agreed indicators: (i) project physical and financial progress, (ii)

results of capacity development program, (iii) water conservation and environment improvement, (iv) households with improved or newly provided water supply services, (v) poverty and rural income, (vi) implementation of environment safeguards, (vii) social development safeguards and action plans (resettlement, gender and other social dimensions), and compliance with loan covenants (policy, financial, economic, sector, and others).

83. Disaggregated baseline data for output and outcome indicators gathered during project processing will be updated and reported quarterly through the CDG quarterly progress reports and after each ADB review mission. These quarterly progress reports will provide information necessary to update ADB's project performance reporting system.²⁹ At the start of project implementation, the PMO and the implementing agencies, with the project implementation consultant's assistance, will develop integrated PPMS procedures to generate data systematically on the inputs and outputs of the components, as well as the indicators to be used to measure the project's impact and outcome taking into account the components' scope. The PMO will be responsible for monitoring and reporting on project performance. The basis for performance monitoring will be the DMF, which identifies performance targets for the impact, outcomes, and outputs of the project. By collecting data from the sources identified in the DMF, the PMO will be able to report on an annual basis the performance of the project. Specific reporting requirements will be set out in the agreement between ADB and the government. The PMO will collect the data, calculate the indicators, analyze the results, and prepare a brief report describing the extent to which the project is generating the intended outputs and outcomes, as well as the overall impact on Chaonan District. The relevance and practicability of data collection for indicators was confirmed with the PMO and the implementing agencies. Meanwhile, the agreed socioeconomic, environmental, and health indicators to be used will be further enhanced to measure project impacts. The PMO and the implementing agencies agreed and confirmed that they will (i) refine and integrate the PPMS framework at the start of project implementation; (ii) confirm that targets are achievable; (iii) develop recording, monitoring, and reporting arrangements; and (iv) establish systems and procedures no later than 6 months after project inception.

84. **Compliance monitoring.** During project implementation, ADB and the PMO will closely monitor the compliance of all the covenants under the project and will take necessary remedy actions for any noncompliance. The compliance status will be reported in the quarterly progress report by the PMO and will be reviewed during project review missions. Compliance monitoring will also be undertaken by (i) the PMO environmental officer, supported by the PMO and CEPB to ensure overall compliance of all relevant agencies with the EMP, and (ii) the PMO social officer, to ensure overall compliance with the relevant social, gender, and resettlement plans. Semiannual environmental monitoring reports will be prepared by the PMO environmental officer and after review by the implementing agencies, municipal and district environmental protection bureaus (EPBs), and the PMO, will then be submitted by the PMO to ADB. Additional environmental monitoring is described below.

85. **Environment monitoring.** The project will undertake two types of environmental monitoring: internal and external. Internal monitoring will comprise monitoring and inspection by the PMO, the Jinxi and Qiufeng WSPs, contractors, and construction supervision companies (CSCs). The PMO environment officer, supported by the loan implementation environment consultant (LIEC), will be responsible for internal inspection and overall compliance with the EMP throughout the project until project completion. The PMO environment officer, the LIEC,

²⁹ ADB's project performance reporting system is available at:
<http://www.adb.org/Documents/Slideshows/PPMS/default.asp?p=evaltool>

and CEPB will advise and supervise the contractors, the CSCs, and implementing agencies to ensure that the environmental mitigation measures defined in the EMP are properly implemented. Each contractor and CSC will recruit at least one environmental staff for its internal environmental inspection and supervision during construction to ensure that the construction activities comply with the EMP mitigation measures. At the start of the project implementation, detailed internal environmental monitoring plans will be prepared by the CSCs, based on the project EMP, and reviewed and approved by the LIEC and the PMO. External monitoring will comprise monitoring by (i) the Chaonan environmental monitoring station (EMS), and (ii) the LIEC. The EMS will be responsible for the environmental monitoring program (air, noise, soil, and water monitoring; described in Table A.5 of the EMP). Semiannual monitoring reports will be prepared by the EMS and then submitted to the implementing agencies, municipal and district EPBs, and the PMO for review. The LIEC will be responsible for verifying the EMP implementation and environmental monitoring information prepared by the PMO and implementing agencies. In verifying, the LIEC may conduct their own investigation by visiting the project sites, taking samples and/or conducting site inspections. The LIEC will discuss the verification results with the PMO and the implementing agencies, suggest corrective actions, and reflect findings in their EMP implementation and environmental monitoring verification reports.

86. The results of environmental inspection and monitoring will be used to assess (i) the extent and severity of actual environmental impacts against predicted impacts; (ii) the effectiveness of the EMP mitigation measures; (iii) compliance with environmental standards and regulations; (iv) trends in impacts; (v) overall effectiveness of EMP implementation; and (vi) the need for additional mitigation measures and corrective actions, if noncompliance is observed.

87. **Resettlement monitoring.** CWSC and the PMO will submit an internal monitoring report semiannually to ADB on the progress of resettlement implementation. CWSC and the PMO will also employ an external monitoring institute or firm that will submit semiannual monitoring reports to ADB during resettlement implementation, and annually for 2 years after resettlement completion. The PMO will recruit an independent external monitoring agency for the resettlement monitoring with the budget for consulting services for the project.

88. **Social action plan monitoring.** Comprehensive monitoring will be conducted during project construction to ensure that the project fulfills its aims and objectives. The PMO will be responsible for the monitoring and evaluation, and for reporting to ADB once each year during project implementation.

89. **Gender action plan monitoring.** This will be incorporated into the overall monitoring and evaluation plan for the project. The implementing agencies will be responsible for establishing and coordinating monitoring and evaluation. ADB staff with expertise in gender issues will participate in the midterm review. The social and gender development expert will work with the PMO and implementing agency staff to create a detailed implementation and monitoring plan for each of the tasks outlined, help to complete the first gender plan implementation report, and review the second report prepared by the implementing agencies. The firm or institute engaged as the independent external resettlement and social monitor will review and provide guidance on the implementation reports.

C. Evaluation

90. In addition to regular monitoring, project performance will be reviewed at least once a year jointly by ADB, the government, and the Guangdong Provincial Finance Department. The review will assess implementation performance and achievement of project outcomes and outputs, assess financial progress, identify issues and constraints affecting implementation, and work out a time-bound action plan for their resolution. ADB, the government, and the Guangdong Provincial Finance Department will undertake a midterm review to assess implementation status and take appropriate measures—including modification of scope and implementation arrangements, and reallocation of loan proceeds, as appropriate—to achieve the project impact and outcome. Feedback from the PPMS activities will be analyzed. Within 3 months of physical completion of the project, the PMO will submit a project completion report to ADB. During the midterm review, a procurement review for effective implementation shall also be conducted to identify risks in procurement and measures for improved procurement performance.

D. Reporting

91. The PMO will provide ADB with (i) quarterly project progress reports in a format consistent with ADB's project performance reporting system; (ii) semiannual environmental monitoring report; (iii) semiannual resettlement monitoring report; (iv) audited accounts within 6 months of the end of each fiscal year; and (v) a project completion report within 3 months of physical completion of the project. The PMO will also forward external resettlement M&E reports to ADB. The PMO will report to ADB the implementation progress of the GAP and SAP through quarterly project progress reports. To ensure projects continue to be both viable and sustainable, project accounts and the executing agency audited financial statements, together with the associated auditor's report, should be adequately reviewed.

92. The following table summarizes the reporting requirements.

Report	Due Time	Reference
Project Performance Monitoring System <ul style="list-style-type: none"> ➤ Develop comprehensive PPMS procedures ➤ Reporting of baseline and progress data including environmental management plan 	No later than 6 months after loan effectiveness Quarterly	Project Agreement, Schedule
Quarterly Project Progress Reports	Quarterly, within 1 month after the end of each quarter	Project Agreement, Schedule
Audited Financial Statements	Not later than 6 months after the closure of fiscal year	Project Agreement, Schedule
Land Acquisition and Resettlement: <ul style="list-style-type: none"> ➤ Internal monitoring reports to ADB ➤ External Monitoring Report to PMO, CDG, and ADB ➤ Resettlement Completion Report to ADB 	Semiannually Semiannually during implementation and annual evaluation for 2 years Within 3 months after completion of land acquisition and resettlement	Project Agreement, Schedule

Report	Due Time	Reference
GAP and SAP: ➤ Reporting on GAP implementation ➤ Reporting on SAP implementation	Annually (also updates on SAP and GAP indicators in project progress reports)	Project Agreement, Schedule
Environmental Report ➤ Internal and external environmental monitoring reports to ADB ➤ Environmental acceptance monitoring report	Semiannually Within 3 months after project completion	Project Agreement, Schedule
Project Completion Report	Not later than 3 months after the physical completion of the project	Project Agreement, Schedule

ADB = Asian Development Bank, CDG = Chaonan district government, EMP = environmental management plan, GAP = gender action plan, IA = implementing agency, PMO = project management office, SAP = social action plan,

E. Stakeholder Communication Strategy

93. Project information will be communicated through public consultation, information disclosure mechanism in ADB's and government's website, meetings, interviews, focus group discussions, and community consultation meetings, in accordance with ADB's requirements of information disclosure policy. Extensive consultation will take place on aspects of infrastructure design and design of nonstructural measures such as awareness raising campaigns, with institutional stakeholders, beneficiaries, and affected persons. In the consultative meetings, participants—including male, female, and poor and vulnerable residents, and other significant stakeholders—will be consulted about concerns or complaints raising mechanisms, information needs, and further consultation expectations.

94. **Environment.** Extensive consultation was carried out with affected people and other concerned stakeholders during project preparation. Direct public participation was conducted as an ongoing element in the development of the suboutputs. These activities were carried out by the implementing agencies in their preparation of the feasibility study reports and EIAs and by the PPTA consultants following PRC National Environmental Impact Assessments Technical Guidelines and ADB's Safeguard Policy Statement (2009). Future consultation will include involvement of affected people in monitoring impacts and mitigation measures during the construction and operation stages; evaluating environmental and economic benefits and social impacts; and interviewing the public after the project is completed. During construction, the affected people will be consulted through formal questionnaire surveys and informal interviews by the on-site environmental engineers of the construction contractors, construction supervision companies, and voluntary monitors of the local residents living in the project areas, especially those around the construction sites. A project public complaints unit will be established in the PMO to coordinate the project GRM. The Shantou EPB maintains hotlines for environmental complaints, which will also be made available for continued public complaints after project completion.

95. **Resettlement.** All affected villages and the directly affected households will be involved throughout the project cycle, starting from planning, implementation, and M&E. Through meetings, interviews, socioeconomic surveys, focus group discussions, public consultation workshops, and community consultation meetings, local representatives have participated in the planning, and concerns have been integrated into the resettlement plan. Before implementation, the PMO and implementing agencies will further discuss and consult with the affected persons'

representatives on potential impacts and the detailed compensation plan to ensure interests are protected and to provide employment opportunities for the affected persons' livelihoods as a result of project implementation. The PMO and implementing agencies will disclose the final resettlement plan in relevant governmental offices and to affected people in local language. The draft resettlement plan has been posted on the ADB website and disclosed to the affected households. The respective implementing agency will establish project resettlement units for supervision of implementation, particularly of the temporary land acquisition, continued public consultation, monitoring of progress, and response to grievances. The grievance redress procedures have been established and explanations have been included in the resettlement plan. The resettlement plans also contain a public consultation schedule and detailed description of the progress.

96. Consultations with communities have taken place at different points in the preparation of the GAP and SAP within the components, and have been designed not only to inform people about the component or specific activities related to its preparation and implementation, but also to enable people in the community to ask questions, make suggestions, state preferences, and express concerns. Further consultation will be conducted during GAP and SAP implementation. Special attention will be paid to the participation of women and any other vulnerable groups, such as the poor.

Stakeholder Group	Stakeholder Role	Means of Communication	Communication Process	Remarks
Guangdong provincial government (Guangdong Provincial Finance Department)	Overall guidance, coordination, supervision, and management for the project preparation and implementation including finance	Direct exchange with other government agency stakeholders (EA, IAs, PMOs)		Overall responsible for project implementation and repayment
Shantou municipal government (Shantou Municipal Finance Bureau)	Overall coordination, supervision, and management for the project preparation and implementation including finance	Direct exchange with other government agency stakeholders (EA, IAs, PMOs)		
ADB	Monitoring of project progress, guidance, review, approval of specific project implementation steps	Web disclosure of project-related documents	Disclosure of project documents (report and recommendations of the President, project AM, resettlement plan, environmental impact assessment, social and environmental monitoring plans, etc.)	Disclosure of each document type following specific schedule as laid out in ADB's Public Communication Policy (2011)
Executing agency (Chaonan district government, CDG)	Guidance and coordination of the project	Communication with provincial government and implementing agencies	Coordinate project implementation among government agencies	

Stakeholder Group	Stakeholder Role	Means of Communication	Communication Process	Remarks
Project Management Office (PMO, under CDG)	Management agency for the project	Project coordination, monitoring, grievance redress mechanism and information disclosure	<p>PMO coordinates with IAs, particularly regarding collection of reporting, monitoring, etc.</p> <p>PMO coordinates with nongovernment stakeholders.</p> <p>Women, the poor, and other vulnerable groups, households affected by land acquisition and house demolition, and other directly affected groups are consulted as laid out in RP, SAP, and GAP.</p> <p>PMO will communicate with EA and ADB, particularly to prepare and channel reports to ADB and to other relevant government stakeholders.</p> <p>PMO will engage external monitoring agency for safeguard implementation as required, supervise conduct and regular submission of external and internal safeguard monitoring to ADB, and disclose reports to affected people.</p> <p>PMO will set up an appeal hotline, disclose it widely to people in the project area, and establish a Project Grievance Redress Office headed by a specially assigned person. Number of calls and/or appeals and resolution reported to ADB.</p> <p>PMO organizes and conducts capacity building and training of the project implementation and management staff for IAs</p>	

Stakeholder Group	Stakeholder Role	Means of Communication	Communication Process	Remarks
Implementing agencies	Direct implementation of subprojects and activities under outputs	Information disclosure, public consultation with affected people and beneficiaries	Conduct monitoring and evaluation during project construction and project operation and management, and submission of reports to the PMO Conduct public consultations as required, particularly for RP, GAP, EMP, and SAP implementation. Set up and manage of grievance redress mechanism with suppliers, contractors, and appeals hotline. Number of calls and/or appeals and resolution reported to the PMO.	IAs are the Chaonan Water Supply Company; and the Chaonan District bureaus for education, environmental protection, forestry, water affairs, , and urban management
Civil society	Schools are participating in the implementation of the public awareness activities	Participation in design and implementation of public awareness and sanitation subproject	The public awareness and sanitation subproject will be implemented through the education bureau and concretely through participation of schools, including parents and staff.	Funded through the project (output A1)
Affected households and villages	Oversight of implementation of land acquisition, temporary and permanent	Public meetings, focus group discussions, surveys	Affected households and villages have been participating in the design of the resettlement plan, including the provisions for temporary resettlement. They will continue to participate in a consultation process ongoing until and beyond the finalization of land acquisition.	Funded through the project and/or land acquisition (budget in resettlement plan)

ADB = Asian Development Bank, EA = executing agency, EMP = environmental management plan, GAP = gender action plan, IA = implementing agency, PMO = project management office, RP = resettlement plan, SAP = social action plan

Source: Asian Development Bank estimates.

X. ANTICORRUPTION POLICY

97. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.³⁰ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.³¹

98. To support these efforts, relevant provisions are included in the loan and project agreements, and the bidding documents for the project. The project design and implementation arrangements provide for mitigating corruption risks. Risks associated with project management will be mitigated by (i) training of the executing and implementing agencies' staff in the procurement of civil works, goods, and services under the project; and (ii) periodic inspection of contractors' activities related to fund withdrawals and settlements by the executing agency's staff.

XI. ACCOUNTABILITY MECHANISM

99. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.³²

XII. RECORD OF PAM CHANGES

100. The PAM is a living document subject to change after ADB Board approval of the project's RRP. It is concise yet informative, providing checklists of all activities related to project implementation along with the necessary procedures for the PMOs to effectively implement and monitor the project.

Date	Project Administration Manual Changes
September 2013	Discussed during loan fact-finding mission.
December 2013	Discussed and agreed during loan negotiations.

³⁰ Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

³¹ ADB's Integrity Office web site is available at: <http://www.adb.org/integrity/unit.asp>

³² For further information see: <http://www.adb.org/Accountability-Mechanism/default.asp>.

ANNEX 1: OUTLINE TERMS OF REFERENCE FOR PROJECT IMPLEMENTATION CONSULTING SERVICES

A. Introduction

1. The project will provide consulting services to the executing and implementing agencies to ensure the smooth and successful project implementation.

B. Scope of Work

2. The consulting services will be focused on the following: (i) design review and procurement; (ii) construction supervision and contract management; (iii) financial management and loan disbursement; (iv) operation and maintenance (O&M); (v) water supply institutional and tariff reform; (vi) environmental and social safeguards; (vi) gender action plan (GAP) and social action plan (SAP) implementation; and (vii) project performance management system (PPMS).

C. Implementation Arrangements

3. The consulting services for project implementation support will be carried out by a team of consultants through a firm. A total of 13 person-months of international and 80 person-months of national consulting services will be required. The consulting services will be financed by the Asian Development Bank (ADB) and the consultants will be recruited by the project management office (PMO) according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consulting firm will be selected by (i) inviting simplified technical proposals; and (ii) using the quality- and cost-based selection method, with a quality–cost weighting ratio of 80:20.

International Consultants	Person-month	National Consultants	Person-month
Team Leader/Project Management Specialist	6	Deputy Team Leader/Water Supply Specialist	24
Financial Management Specialist	3	Procurement and Contract Specialist	12
Social and Gender Development Specialist	2	Civil Works Specialist	8
Environmental Specialist	2	Electrical and Mechanical Specialist	5
		Automatic Control Specialist	2
		Nonrevenue Water Specialist	2
		Financial Management and Tariff Reform Specialist	10
		Social and Gender Development Specialist	4
		Resettlement Specialist	4
		Environmental Specialist	4
		Water Resources Specialist	3
		Solid Waste Management Specialist	2
Total	13	Total	80

D. Reporting Requirements

4. The consultant team will produce (i) an inception report within 4 weeks of the start of the consulting services, (ii) an annual report by the end of each year during 2015–2019, (iii) draft final report by the end of 2019, and (iii) a final report at the conclusion of the consulting services. The inception, annual, and draft final reports will be subject to tripartite reviews by ADB, the PMO, and the consultants. All reports are to be written in English and translated into Chinese. One soft and five scanned copies of each report are to be submitted to ADB (English version only) and the PMO (both Chinese and English versions).

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

E. Detailed Scope of Services

1. International Consultant

6. For each of the international consultant positions, (i) possession of a related degree, qualification, and/or memberships of related academic societies; and/or past participation in related training courses; (ii) experience in similar positions for projects or technical assistance (TA) projects; and (iii) experience in projects in the People's Republic of China (PRC) will be highly evaluated.

a. Team Leader and Project Management Specialist (6 person-months)

7. The specialist, together with the national project management specialist and deputy team leader, will (i) coordinate all project management support activities as team leader; (ii) finalize the approach for project management support; (iii) prepare the inception, annual, draft final, and final reports; (iv) assist the PMO and implementing agencies in preparing, implementing, monitoring, and evaluating the overall project and subprojects; (v) assist the PMO in preparing quarterly project progress reports in a format accepted to ADB; (vi) monitor the PMO's procurement activities under the project, and assist the PMO in preparing, updating, and implementing the procurement plan; (vii) assess the need for capacity development of the staff of the PMO and implementing agency; and plan, design, organize, and implement seminars, workshops, training, and/or study tours for project management, financial management, disbursement arrangements, implementation, monitoring, and evaluation of resettlement, gender development, and environmental management, and project monitoring and evaluation; (viii) assist the PMO in preparing a project completion report; (ix) monitor compliance with the loan covenants, assess key implementation issues, and provide recommendations for improvement; and (x) conduct any other necessary work for smooth and appropriate implementation of the project.

b. Financial Management Specialist (3 person-months)

8. The specialist will (i) provide advice in developing and implementing effective financial management system, including timely provision of accurate financial information; (ii) assist in developing financial management and loan disbursement procedures; (iii) review financial risks to reasonably reduce construction and operational costs; (iv) assist the PMO and implementing agencies in preparing withdrawal applications and improving efficiency by streamlining the preparation of withdrawal applications; (v) help in reviewing financial risks to reasonably reduce construction and operational costs; and (v) provide assistance and guidance to the Chaonan

Water Supply Company (CWSC) in institutional and tariff reform to achieve its targeted direct billing arrangements.

c. Social and Gender Development Specialist (2 person-months)

9. The specialist will (i) lead the national social and gender development specialist; (ii) assist in implementing, monitoring, and reporting the gender action plan and social action plan; (iii) provide advice on establishing and implementing adequate monitoring and grievance redress mechanism; (iv) provide relevant training to the executing and implementing agencies; (v) assist the PMO to formulate detailed implementation plan(s); (vi) assist with implementing the consultation and participation plan; and (vii) undertake any other necessary work assigned by the team leader.

d. Environmental Specialist (2 person-months)

10. The specialist will (i) assist the PMO and implementing agencies in constructing, operating, maintaining, and monitoring the project facilities in strict conformity with all applicable laws and regulations and the environmental mitigation and monitoring measures detailed in the initial environmental examination (IEE) and environmental management plan (EMP) for the project; (ii) assist the PMO in preparing and submitting to ADB semiannual environmental monitoring reports in a format acceptable to ADB during construction and implementation of the project; (iii) monitor compliance with the IEE and EMP and assist in conducting follow-up actions to address the key issues identified; and (iv) undertake any other necessary work assigned by the team leader.

2. National Consultants

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

a. Water Supply Specialist and Deputy Team Leader (24 person-months)

12. The specialist, together with the international project management specialist and team leader, will (i) assist team leader in coordinating all project management support activities as team leader; (ii) assist in preparing the inception, annual, draft final, and final reports; (iii) assist the PMO and implementing agencies in preparing, implementing, monitoring, and evaluating the overall project and subprojects; (iv) assist the PMO in preparing quarterly project progress reports in a format accepted to ADB; (v) monitor the PMO's procurement activities under the project, and assist the PMO in preparing, updating, and implementing the procurement plan; (vi) assess the need for capacity development of the staff of the PMO and implementing agency; and plan, design, organize, and implement seminars, workshops, training, and/or study tours; (vii) assist the PMO in preparing a project completion report; (viii) monitor compliance with the loan covenants, assess key implementation issues, and provide recommendations for improvement; (ix) review technical design and identify areas from improvements; and (x) conduct any other necessary work for smooth and appropriate implementation of the project.

b. Procurement and Contract Specialist (12 person-months)

13. The specialist will (i) assist in reviewing key technical parameters and detailed engineering drawings as well as any other necessary documents completed by the local IDs to ensure strict compliance with the international practices and ADB guidelines; (ii) help address

issues associated with bill of quantities (BOQs) prepared by local design institutes, which often lack detailed cost items and require development of new rates and additional works during construction; (iii) review both English and Chinese bidding documents, including all technical specifications, BOQs, schedule of requirements and other related documents developed by local design institutes to ensure all bidding documents are prepared in compliance with the ADB requirements; and (iv) assist the PMO and implementing agencies (IAs) in establishing bid evaluation procedure, pre-bid conference, clarification during bidding, bid opening and bid evaluation in strict compliance with the ADB and national requirements; (v) help develop construction supervision and management system, contract management procedures, quality assurance and quality control (QA/QC) system and guidance manuals on construction and contract management to meet various requirements on quality, cost and progress; (vi) advice in issuing work commencement and/or suspension orders.

c. Civil Works Specialist (8 person-months)

14. The specialist will (i) identify potential problems and changes to designs to accommodate alternative and possibly more cost effective methods of construction, areas where alternative design standards may be adopted, areas where the use of alternative construction materials may be appropriate, changes to the design to facilitate future O&M of the works, changes that will improve safety or environmental aspects, during construction, maintenance and operation; (ii) review key technical parameters and detailed engineering drawings as well as any other necessary documents completed by the design institutes to ensure strict compliance with the international practices and ADB guidelines; (iii) help address issues associated with bill of quantities (BOQs) prepared by local design institutes, which often lack detailed cost items and require development of new rates and additional works during construction; (iv) assist in accepting and/or rejecting works, verifying work quantities and values; issuing variation orders, payment certificates, work extension certificates, and taking-over certificates; and (v) undertake other activities as requested by the team leader.

d. Electrical and Mechanical Specialist (5 person-months)

15. The specialist will (i) identify potential problems and changes to designs to accommodate alternative and possibly more cost effective methods relating to electric aspects of facilities' changes to the design to facilitate future O&M of equipment, changes that will improve safety or environmental aspects, during construction, maintenance and operation; (ii) review key technical parameters and detailed engineering drawings as well as any other necessary documents completed by the design institutes to ensure strict compliance with the international practices and ADB guidelines; (iii) assist in the preparation of bidding documents relating to electric and mechanical equipment; (iv) assist in accepting test of the equipment; and (v) undertake other activities as requested by the team leader

e. Automatic Control Specialist (2 person-months)

16. The specialist will (i) identify potential problems and changes to designs to accommodate alternative and possibly more cost effective methods relating to automatic control of the facilities under the project, changes to the design to facilitate future O&M, changes that will improve safety or environmental aspects, during construction, maintenance and operation; (ii) review key technical parameters and detailed engineering drawings as well as any other necessary documents completed by the design institutes to ensure strict compliance with the international practices and ADB guidelines; (iii) help in preparation of bidding documents relating to automatic control equipment and system integration; (iv) assist in accepting and integrating tests; and (v) undertake other activities as requested by the team leader.

f. Nonrevenue Water Specialist (2 person-months)

17. The specialist will (i) collect and review the information on water supply plants in Chaonan District of Shantou Municipality of Guangdong Province, registered water consumer's usage records, water meters, water pipes, water pressure and operation mechanism and water tariff collection; (ii) assist in reviewing technical design of the water supply plants and pipeline networks; (iii) assist in developing and managing non-revenue water reduction measures with a focus on institutional strengthening and capacity development; (iv) monitor the implementation of non-revenue water reduction measures and the results; (v) identify areas for improving non-revenue management and water utility performance; and (vi) undertake other activities as requested by the team leader.

g. Financial Management and Tariff Reform Specialist (10 person-months)

18. The specialist will (i) review background documents, including the financial analysis of the project undertaken during project preparation; (ii) advice in developing and implementing effective financial management system, including timely provision of accurate financial information; (iii) help strengthen the PMO and IAs' financial management capacity to satisfy the ADB requirements, in areas of development of financial reports; loan disbursement procedures; tariff mechanism reform; full market-oriented operation, in order to ensure financial viability of the IAs and strengthened and streamlined loan repayment capacity of the Chaonan district government (CDG); (iv) assist in developing financial management and loan disbursement procedures; (v) help develop financial plans and control risks related to exchange rate change and other factors; (vi) assist in developing and review financial reports for auditing and making reasonable adjustment of interest option for the loan contract to save repayment costs; (vii) assist in guiding CWSC in O&M to ensure that the project assets are efficiently and effectively managed, including three water supply plants and about 1,000 kilometers (km) of pipelines; (viii) review urban and rural water supply system operation and management of the Chaonan district, and other places in Shantou Municipality and Guangdong Province, and nation-wide; (ix) provide assistance and guidance to CWSC in institutional and tariff reform to achieve its targeted direct billing arrangements; and (x) undertake any other necessary work assigned by the team leader.

h. Social and Gender Development Specialist (4 person-months)

19. The specialist will (i) assist the PMO and implementing agencies in implementing the GAP and SAP, and the consultation and participation (C&P) plan prepared during project preparation; (ii) monitor compliance with the GAP and SAP and assist in conducting follow-up actions to address the key issues; (iii) provide the PMO with support for the preparation of social dimensions of quarterly progress reports and a project completion report; (iv) assist in reporting relevant social and gender indicators in the design and monitoring framework (DMF) and PPMS; and (iv) undertake any other necessary work assigned by the team leader.

i. Resettlement Specialist (4 person-months)

20. The specialist will (i) assist the PMO, implementing agencies, and design institutes in updating the resettlement plan approved by ADB, in ADB formats, based on the detailed designs, disclosing it to the affected persons prior to ADB's approval, and obtaining ADB's approval of it; (ii) assist the PMO and implementing agencies in implementing land acquisition and resettlement in accordance with the resettlement plan, (iii) assist the PMO and implementing agencies in supervising contractors to ensure compliance with requirements of the resettlement plan, applicable laws and regulations, and ADB's Safeguard Policy Statement (2009); (iv) assist the PMO and implementing agencies in supervising the processes of

resettlement by collecting and updating basic data, and closely coordinating between the PMO, implementing agencies, and an external resettlement monitor; (v) review external monitoring and evaluation (M&E) reports prepared by the external resettlement monitor and ADB's comments on the reports, monitor compliance with the resettlement plan, assess the degree of impacts and key implementation issues, explain key issues to the PMO and implementing agencies, and assist them in conducting follow-up actions to address the key issues; (vi) assist the PMO to monitor compliance with the resettlement plan, assess key implementation issues, formulate remedial measures, and assist them in conducting follow-up actions; and (vii) undertake any other necessary work assigned by the team leader.

j. Environmental Specialist (4 person-months)

21. The specialist, together with the international environment specialist, will (i) assist the PMO and implementing agencies in constructing, operating, maintaining, and monitoring the project facilities in strict conformity with all applicable laws and regulations and the environmental mitigation and monitoring measures detailed in the IEE and EMP for the project; (ii) assist the PMO in preparing and submitting to ADB semiannual environmental monitoring reports in a format acceptable to ADB during construction and implementation of the project; (iii) assist in monitoring compliance with the IEE and EMP and assist in conducting follow-up actions to address the key issues identified; (iv) provide necessary training to PMO and implementing agencies on environmental management; and (iv) undertake any other necessary work assigned by the team leader.

k. Water Resources Specialist (3 person-months)

22. The specialist will (i) review the project documents and understand the measures designed for water resources protection and conservation under the project, and identifying any measures to improve the design; (ii) assist in monitoring the current water use and water demand; (iii) review current water management practices and recommend measures for improving water resources management; (iv) review current water resources pollution status and propose recommendations for reducing water pollution; (v) assist in monitoring relevant performance targets relating to water quality, and capacity development in the project design and monitoring framework; and (vi) undertake any other necessary work assigned by the team leader.

l. Solid Waste Management Specialist (2 person-months)

23. The specialist will (i) review the relevant government policies and current and planned projects regarding to solid waste treatment in the Chaonan District; (ii) assist in carrying out pilot programs in Chengpo and Qiufeng villages and monitoring the implementation; (iii) review the measures of solid waste management in the Chaonan District, and make recommendations for improving solid waste management; (iv) assist in design public awareness and training programs under the project; and (v) undertake any other necessary work assigned by the team leader.

ANNEX 2: OUTLINE TERMS OF REFERENCE FOR RESEARCH ON POLLUTION PREVENTION AND CONTROL MEASURES

A. Introduction

1. The project will provide consulting services to the executing and implementing agencies to carry out a research on pollution prevention and control measures in Jinxi, Longxi, and Qiufeng reservoirs, which are the main water sources in Chaonan District. In recent years, with the fast development of economy, problems caused by the improvement of living standards and human activities are more and more severe in the aspect of natural environment destruction, sewage and garbage disordered piling up, and the potential threaten on water quality, which is the most sensitive factor affecting drinking water safety for urban and rural residents. The research aims at prospective and application research to find the solution to the wastewater collection, treatment and water pollution control of scattered and small-scale villages in the range of water source protection zones with high load fluctuation (in both water quality and quantity), with the focus on integrated water pollution control at both the regional and watershed level, so as to protect the ecological environment and human health.

B. Scope of Work

2. There are three main tasks proposed under the research: (i) survey of current conditions on water source protection within the reservoir areas; (ii) field survey on water pollution sources; (iii) evaluation on research achievement and best alternative recommendations.

3. **Task 1: Survey of current conditions on water source protection within reservoir areas.** The specific tasks are to understand the development status in the PRC and abroad on water source protection within reservoir areas; study advanced wastewater treatment technology and research method applied in water pollution control, and successful practices, focusing on non-point and point pollution sources control; and make comparative analysis with the engineering investigation results in similar domestic areas.

4. **Task 2: Field survey on water pollution sources.** The specific tasks are to organize a professional environment monitoring team in the research area to analyze samplings of water and soil; to undertake analytical research on various categories of possible pollution sources; identify type, quantity and distribution of the pollution sources; determine level of pollution; and understand characteristics of wastewater and impacts on follow-up treatment actions; and transport of pollution sources. Through collecting the regional water quality monitoring data of the reservoir in recent years and its relevant evaluation results, a pollution source information database and environmental statistics platform will be established and the key pollution source files be improved, to provide the basis for the plan of social and economic development and environmental protection policy.

5. **Tasks 3: Evaluation and analysis on alternatives.** A comprehensive analysis on the water quality will be undertaken to determine the key to pollutants, and a suitable, practical treatment method to the sewage and solid waste in scattered villages around the reservoirs for the collection, control and treatment of various pollutants.

C. Implementation Arrangements

6. The consulting services for project implementation support will be carried out by a team of consultants through a firm. A total of 8 person-months of international and 33 person-months of national consulting services will be required. The consulting services will be financed by ADB and the consultants will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consulting firm will be selected by (i) inviting simplified technical proposals; and (ii) using the quality- and cost-based selection method, with a quality–cost weighting ratio of 80:20.

International Consultants	Person-month	National Consultants	Person-month
Water Pollution Control and Management Specialist	3	Water Resource Protection and Management Specialist/ Team Leader	12
Chemical Analysis Specialist	2	Water Pollution Evaluation and Point Source Control Specialist	5
Sewage Treatment and Water Reuse Specialist	3	Water Pollution Evaluation and Control of Nonpoint Source Pollution Management Specialist	4
		Chemical Analysis Specialist	6
		Sewage Treatment And Water Reuse Specialist	6
Total	8	Total	33

D. Reporting Requirements

7. The consultant team will produce (i) an inception report within 4 weeks of the start of the consulting services, (ii) an annual report by the end of each year during 2015–2019, (iii) draft final report by the end of 2019, and (iii) a final report at the conclusion of the consulting services. The inception, annual, and draft final reports will be subject to tripartite reviews by ADB, the PMO, and the consultants. All reports are to be written in English and translated into Chinese. One soft and five scanned copies of each report are to be submitted to ADB (English version only) and the PMO (both Chinese and English versions).

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

E. Detailed Scope of Services

1. International Consultant

9. For each of the international consultant positions, (i) possession of a related degree, qualification, and/or memberships of related academic societies; and/or past participation in related training courses; (ii) experience in similar positions for projects or technical assistance (TA) projects; and (iii) experience in projects in the PRC will be highly evaluated.

a. Water Pollution Control and Management Specialist (3 person-months)

10. The specialists will have a postgraduate degree in the water pollution control and management, preferably experienced in water quality monitoring and evaluation for water pollution control and optimal control plan. The specialist will have ADB and other international project experience. The specialist will (i) assess the current pollution status in Chaonan District; (ii) review lessons learned for pollution control in areas in the PRC and world-wide and assess their applicability in Chaonan District; (iii) identify key issues and constraints, and propose measures to solve the issues and constraints; (iv) assist in establishing water quality monitoring and evaluation mechanism for Chaonan District; and (v) undertake other activities as requested by the team leader.

b. Chemical Analysis Specialist (2 person-months)

11. The specialists will have a master degree in chemical analysis especially on water quality monitoring, and evaluation, and drinking water safety. The specialist will (i) guide the domestic chemical analysis specialist to take water sampling, to test water quality by collected water sampling, to evaluate main characteristics of surface water pollution, and to analyze the risk of water pollution sources; (ii) provide recommendations for water quality improvement; (iii) assist in establishing water quality monitoring and evaluation mechanism for Chaonan District; and (iv) undertake other activities as requested by the team leader.

c. Sewage Treatment and Water Reuse Specialist (3 person-months)

12. The specialist will have rich research experience in the field of treated wastewater reuse, water pollution control, water environment research and application especially on wastewater treatment and treated water reuse. The specialist will (i) guide the domestic specialist to analyze characteristics of sewage and the treated water quality by the water sampling; (ii) provide recommendations on possible ways to reuse treated water; (iii) introduce international experience relating to wastewater treatment and water reuse; and (iv) undertake other activities as requested by the team leader.

2. National Consultant

a. Water Resource Protection and Management Specialist/Team Leader (12 person-months)

13. The specialist should have experience in preparing water pollution control, and water resources management, water environment M&E, water protection plan projects in the PRC, including team's leadership experience; and the specialist should be familiar with ADB's project processing requirements. As the team leader, the specialist will be responsible for managing the consultant team and developing the research by the formulated technical route and the research scheme. The specialist will (i) assess the current water pollution status in Chaonan District; (ii) review the government policies and ongoing programs or projects on water resources protection and management in Guangdong and Chaonan District; (iii) document lessons learned from other similar areas in the PRC relating to water resources protection and management; (iv) provide recommendation for improving water resources protection and management in Chaonan District; and (v) assist in establishing water quality monitoring mechanism in Chaonan District.

b. Water Pollution Evaluation and Point Source Control Specialist (5 person-months)

14. The Specialist should have experience in the source of water pollution and control of point source evaluation field. The specialist will (i) carry out survey on data and distribution of point source pollution situation in the Chaonan District; (ii) analyze pollutant statistics and monitoring results; (ii) review government policies and programs and projects on water pollution control; (iv) provide recommendation on improving water pollution control measures; and (v) undertake other activities as requested by the team leader.

c. Water Pollution Evaluation and Control of Nonpoint Source Pollution Management Specialist (4 person-months)

15. The specialist will have experience in nonpoint source evaluation and control and familiar with the pollution source of nonpoint source evaluation methods and control measures. The specialist will (i) undertake the investigation, estimation and evaluation of nonpoint source pollution sources; (ii) review government policies and ongoing programs on nonpoint source pollution; (iii) document lessons on nonpoint source management from similar places in the PRC; (iv) put forward control measures to the areas or rivers with different types of nonpoint source pollution; and (v) undertake other activities as requested by the team leader.

d. Chemical Analysis Specialist (6 person-months)

16. The specialist will have experience in water quality survey and analysis. The specialist will (i) undertake the task, water pollutants chemical analysis in water quality; (ii) carry out field survey in point source and non-points source, water quality test and analysis to collected water sampling and treated water sampling; (iii) provide recommendations for water quality improvement; (iii) assist in establishing water quality monitoring and evaluation mechanism for Chaonan District; and (iv) undertake other activities as requested by the team leader.

e. Sewage Treatment and Water Reuse Specialist (6 person-months)

17. The specialist will have research experience in the field of treated wastewater reuse, water pollution control, water environment research and application especially on wastewater treatment and treated water reuse. The specialist will (i) analyze characteristics of sewage and the treated water quality by the water samplings; (ii) assess current sewage treatment operations in the Chaonan District and also planned water treatment facilities; (iii) document lessons learned on water reuse programs in the PRC; (iv) provide recommendations on possible ways to reuse treated water and measures for improving wastewater treatment performance; (v) undertake other activities as requested by the team leader.

ANNEX 3: OUTLINE TERMS OF REFERENCE FOR DEVELOPMENT OF WATER RESOURCES PROTECTION AND DEVELOPMENT ACTION PLAN

A. Introduction

1. The project will provide consulting services to the executing and implementing agencies to improve water resources management by developing a water resources protection and development action plan.

B. Scope of Work

2. There will be six tasks for action plan development, including: (i) current status survey; (ii) water resources optimal allocation plan; (iii) water resources protection plan; (iv) sewage treatment and reuse plan; (v) water safety plan; and (vi) monitoring and evaluation plan.

C. Implementation Arrangements

3. The consulting services for project implementation support will be carried out by a team of consultants through a firm. A total of 12 person-months of international and 50 person-months of national consulting services will be required. The consulting services will be financed by ADB and the consultants will be recruited by the PMO according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consulting firm will be selected by (i) inviting simplified technical proposals; and (ii) using the quality- and cost-based selection method, with a quality–cost weighting ratio of 80:20.

International Specialists	Person-Month	National Specialists	Person-Month
Water Resource Management and Water Environment Specialist	4	Water Resource Planning Specialist/ Team Leader	12
Water Supply and Drainage Specialist	4	Hydrology Specialist	7
Sewage Treatment and Water Reuse Specialist	4	Water Supply and Drainage Specialist	6
		Wastewater Treatment and Reuse Specialist	6
		Industrial and Domestic Water-Saving Conservation Technology Specialist	6
		Agricultural Water-Saving Irrigation Specialist	4
		Water Policy Specialist	3
		Information System Specialist on Water Management	3
		Water Safety Specialist	3
Total	12	Total	50

D. Reporting Requirements

4. The consultant team will produce (i) an inception report within 4 weeks of the start of the consulting services, (ii) an annual report by the end of each year during 2015–2019, (iii) draft final report by the end of 2019, and (iii) a final report at the conclusion of the consulting services. The inception, annual, and draft final reports will be subject to tripartite reviews by ADB, the PMO, and the consultants. All reports are to be written in English and translated into Chinese. One soft and five scanned copies of each report are to be submitted to ADB (English version only) and the PMO (both Chinese and English versions).

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

E. Detailed Scope of Services

1. Current Status Survey

6. To find out the present situation of water resources in quantity, quality, and distribution in Chaonan District, including

- (i) **To analyze the present situation of water resources.** To make estimation and evaluation on the local surface water resource quantity, on the available quantity of transition water resources and groundwater resources, on the total available water quantity of regional and watershed water resources, on the water resource distribution characteristics and the temporal and spatial evolution trend, and on the quality of rivers, reservoirs and groundwater by zones; to analyze the reasons for the change of water resources and the major effect; to predicate the trend of water resources, water quality and available water resource quantity in future; and to evaluate comprehensively and accurately the condition of water resources and its characteristics.
- (ii) **To evaluate the current situation of development and utilization of water resources.** According to the changes in water resource conditions in Chaonan District, comprehensive and systematic investigation is to be undertaken to assess the situation of water resources development and utilization, the situation of water consumption in sectors, the situation of water supply by types of water engineering, and the current degree of water resource development and utilization.

2. Water Resources Optimal Allocation Plan

7. The plan is to analyze and forecast the rational allocation of water resources in the future in Chaonan District, including:

- (i) **Economic and social indicators and water resources demand forecast.** According to the economic and social development strategy, policy of industrial development and distribution, and adjustment scheme of economic structure in Chaonan District, a city water resources development and utilization plan is to be developed as a guide to rationally forecast the indicator goals for national

economic and social development in the Twelfth Five-Year Plan (FYP). Based on comprehensive analysis of water consumption and potential water saving, to forecast the water demand in life, production and ecological environment to adapt to the economic and social development.

- (ii) **Reasonable allocation of water resources.** According to the economic and social development and the ecological environment improvement to water resources and the actual conditions, the index system of water resources allocation is to be established after analyzing its supply and demand, in order to raise the reasonable allocation between watersheds and regions.

3. Water Resources Conservation and Protection Plan

8. According to the present status of water quality in Chaonan District, the implementation scheme of water resources protection compatible with the economic and social development is to be raised with the measures for rational allocation of water resources, to coordinate with the ecological construction and environmental protection.

- (i) To put forward water-saving action plan targets, and to work out water-saving measures in various aspects of industry, agriculture, and daily life, water saving targets at the current water consumption status of Chaonan District, and the rational allocation of water resources action plan in according to the analysis of potential industry water.
- (ii) To put forward the protection measures of reservoir drinking water source, water quality safety, and a plan of sewage treatment plant construction, for the possible ways of sewage treatment reuse and the expected reuse level of sewage resource,
- (iii) To initially propose the feasible sewage treatment process, incentive policy for the sewage treatment and reuse, the scheme and the implementation timetable.

4. Sewage Treatment and Reuse Plan

9. According to the development status and sewage treatment situation in the district, in order to protect the ecological environment, the goals are put forward for sewage reuse planning, the sewage treatment process, and potential ways of wastewater reuse in order to relieve the shortage of water resources,, which is a significant benefit to economy, society, ecology and environment.

5. Water Safety Plan

10. To identify sources of water security risks in the water supply system in Chaonan District; to identify potential hazards of water security in system determination; to determine the explicit control measures on the existing risks; to identify the uncontrolled residual risks; and to put forward the improvement measures through the establishment of water quality and safety improvement index to achieve water security management.

6. Monitor and Evaluation Plan

11. To develop the qualitative and quantitative assessment methods, index, deviation analysis and formulate correcting measures in stages for each proposed sub-plan of the Action Plan. To put forward the definition of management scope, unified management of water resources is tried to be explored and reformed, for establishing an effective water resources development and utilization, protection coordination mechanism and system.

12. For each proposed action plan and stage target, the qualitative and quantitative assessment methods, stage target of control and evaluation index, the deviation analysis and rectification measures, and stages of assessment will be implemented. It is required that the assessment index data should be easy, simple, and typical. The results of the examination will be reported to the government.

F. Tasks by Consultants

1. International Consultant

13. For each of the international consultant positions, (i) possession of a related degree, qualification, and/or memberships of related academic societies; and/or past participation in related training courses; (ii) experience in similar positions for projects or technical assistance (TA) projects; and (iii) experience in projects in the People's Republic of China will be highly evaluated.

a. Water Resource Management and Water Environment Specialist (4 person-months)

14. The specialists will have rich experience in the water planning and water environment protection with the participation of ADB and other international projects. The specialist will (i) review the status of water resources protection and development; (ii) assess the water supply availability and demands of the district; (iii) document lessons learned in other countries and assess their applicability in Chaonan District; (iv) recommend measures for improving water resources protection and conservation in Chaonan District; and (v) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water reuse and conservation plan.

b. Water Supply and Drainage Specialist (4 person-months)

15. The specialists will have rich experience in the water supply and drainage in rural and urban areas with the participation of ADB and other international projects. The specialist will (i) review the status of water supply and drainage in Chaonan District; (ii) assess the water supply availability and demands of the district and water supply company's performance; (iii) document lessons learned in other countries and assess their applicability in Chaonan District; (iv) recommend measures for improving water supply performance in Chaonan District; and (v) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water conservation plan.

c. Sewage Treatment and Water Reuse Specialist (4 person-months)

16. The specialist will have rich research experience in the field of wastewater treatment process, treated waste water reuse research and application. The specialist will (i) guide the domestic specialist to analyze characteristics of sewage and the treated water quality by the water sampling; (ii) provide recommendations on possible ways to reuse treated water; (iii) introduce international experience relating to waste water treatment and water reuse; and (iv) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water reuse and conservation plan.

2. National Consultants

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

a. Water Resource Planning Specialist/Team Leader (12 person-months)

18. The specialist will have the professional doctor degree or above in the field of water resources planning, hydrological analysis and computation, engineering design and management, and water resources management engineering and economic planning. The specialist will have participated in the World Bank and ADB in utilization of foreign capital project with team leader experience preferred. The specialist will be preferred to having similar scale projects experience in the same field preferably with Guangdong water resources planning. The specialist will (i) review government policies on water resources protection and development and water resources master plans of the Shantou Municipality and Guangdong Province; (ii) review economic and social development plans and its current status on water resources protection and development; (iii) assess water supply and demands of the Chaonan District; (iv) document lessons learned on water resource protection and conservation from PRC and world-wide and assess their applicability in Chaonan District; (v) provide recommendations for improved water resources protection and management in the district; (vi) develop a water resource protection and development action plan for Chaonan District, including water safety plan, water allocation optimization, water reuse and conservation plan; and (vii) organize team members to work and be responsible for overall delivery of outputs.

b. Hydrology Specialist (7 person-months)

19. The specialist will have experience in the field of hydrological analysis and calculation, water resources analysis, water resources planning and other aspects of the similar fields. (i) review hydraulic information of the catchments in Chaonan district and available water resources for the district; (ii) assisted in assessing water supply and demands of the Chaonan District; (iii) provide recommendations for improved water resources protection and management in the district; (vi) assist in developing a water resource protection and development action plan for Chaonan District, including water safety plan, water allocation optimization, water reuse and conservation plan; and (vii) undertake other activities as requested by the team leader.

c. Water Supply and Drainage Specialist (6 person-months)

20. The specialist will have experience in the field of experience in water supply and drainage, water supply and drainage design, and the layout of sewage treatment and sewage process. The specialist will have the technical experience, preferably in similar size of projects in the same field. The specialist will develop the sewage treatment reuse plan. The specialist will (i) review the status of water supply and drainage in Chaonan District; (ii) assess the water supply availability and demands of the district and water supply company's performance; (iii) document lessons learned in other countries and assess their applicability in Chaonan District; (iv) recommend measures for improving water supply performance in Chaonan District; (v) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water conservation plan; (vi) undertake other activities as requested by the team leader.

d. Wastewater Treatment and Reuse Specialist (6 person-months)

21. The specialist will have experience in the field of wastewater treatment process, treated wastewater reuse. The specialist will (i) analyze characteristics of sewage and the treated water quality by the water sampling; (ii) provide recommendations on possible ways to reuse treated water; (iii) introduce international experience relating to wastewater treatment and water reuse; (iv) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water reuse and conservation plan; and (v)) undertake other activities as requested by the team leader.

e. Industrial and Domestic Water-Saving Conservation Technology Specialist (6 person-months)

22. The specialist will have 10 years' experience in technology and measures for industrial and domestic water saving and other aspects of this field. The specialist will be familiar with the domestic existing domestic industrial water saving measures. The specialist will (i) review the current industrial and domestic water use status and use efficiency; (ii) identify issues and constraints, and areas which water use efficiency can be improved; (iii) provide recommendations on ways to increase water use efficiency; (iv) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water reuse and conservation plan; and (v)) undertake other activities as requested by the team leader.

f. Agricultural Water-Saving Irrigation Specialist (4 person-months)

23. The specialist will have at least 10 years' experience in agricultural planting structure adjustment, irrigation and water-saving measures. The specialist will be familiar with the existing domestic agricultural water-saving measures. The specialist will (i) review the current agricultural water use status and use efficiency; (ii) identify issues and constraints, and areas which water use efficiency can be improved; (iii) provide recommendations on ways to increase water use efficiency; (iv) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water reuse and conservation plan; and (v)) undertake other activities as requested by the team leader.

g. Water Policy Specialist (3 person-months)

24. The specialist will have experience in water saving policy studies for industry, agriculture, domestic water saving measures. The specialist will be familiar with the existing domestic water-saving policies. The specialist will (i) review the current water conservation policies in Guangdong Province and Chaonan District; (ii) identify issues and constraints, and provide recommendations on areas for policy reform; (iii) assist in developing water resources protection and development action plan for the district including water safety plan, water allocation optimization, and water reuse and conservation plan; and (iv) undertake other activities as requested by the team leader.

h. Information System Specialist on Water Management (3 person-months)

25. The specialist will have 5 years' experience in the field of water supply and wastewater network design, GIS skill, the definition of system objectives, data bank establishment and maintenance, system analysis and function designing, the design of spatial database, data processing and map input vector, and modular system's design, integration and debugging. The specialist will (i) review current water resources management system of the Chaonan District, including water supply, wastewater treatment, and flood and drought management; (ii) assess the effectiveness of the current information system in the district; (iii) document lessons learned from other places in the PRC; (iv) provide applicable suggestions for improving the information management; (v) undertake other activities as requested by the team leader.

i. Water Safety Specialist (3 person-months)

26. The specialist will have 7 years' experience in water quality and water safety management. The specialist will (i) review the water quality in the reservoirs and in the water supply systems of Chaonan District; (ii) identify sources of water safety risks in the water supply system in Chaonan District, and identify potential hazards of water security in system determination; (iii) recommend improvement measures through the establishment of water quality and safety improvement index to achieve water security management; (iv) develop water safety plan for the district; and (vi) undertake other activities as requested by the team leader.