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Report No: PAD 901

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$ 200 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

ZHEJIANG RURAL WATER SUPPLY AND SANITATION PROJECT

August 25, 2014

Water Global Practice
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 9, 2014)

Currency Unit	=	RMB
RMB 6.1581	=	US$1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BOD	Biological Oxygen Demand
BP	Bank Policy
CFB	County Finance Bureau
CNAO	China National Audit Office
COD	Chemical Oxygen Demand
CPMO	County Project Management Office
CPS	Country Partnership Strategy
CQS	Consultant Qualification Selection
DA	Designated Account
DRC	Development Reform Commission
DSCR	Debt Service Coverage Ratio
EA	Environmental Assessment
ECOPs	Environmental Codes of Practice
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EPD	Environmental Protection Department
FSR	Feasibility Study Report
ESSAF	Environmental and Social Screening and Assessment Framework
FIRR	Financial Internal Rate of Return
FM	Financial Management
FMM	Financial Management Manual
FSR	Feasibility Study Report
FYP	Five Year Plan
GDP	Gross Domestic Product
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
IPF	Investment Project Financing

LIBOR	London Inter-bank offered rate
MES	Monitoring and Evaluation System
MIS	Management Information System
MOF	Ministry of Finance
NCB	National Competitive Bidding
NDRC	National Development and Reform Commission
NPL	Non-performing Loan
NRW	None Revenue Water
OA	Operating Account
O&M	Operation and Maintenance
OPEX	Operating Expenditures
ORAF	Operational Risk Assessment Framework
PAD	Project Appraisal Document
PAP	Project Affected People
PDO	Project Development Objective
PIU	Project Implementation Unit
PLG	Zhejiang Provincial Foreign Fund Utilization Leading Group
PMC	Project Management Consultant
POM	Project Operation Manual
QBS	Quality Based Selection
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SLA	Subsidiary Loan Agreement
TOR	Terms of Reference
WSS	Waters Supply and Sanitation
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
ZAC	Zhejiang Agricultural Committee
ZDRC	Zhejiang Provincial Development Reform Commission
ZPAO	Zhejiang Provincial Audit Office
ZPFB	Zhejiang Provincial Finance Bureau
ZPMO	Zhejiang Provincial Project Management Office

Regional Vice President:	Axel van Trotsenburg
Country Director:	Klaus Rohland
Sector Director:	John A. Roome (through June 30, 2014)
Global Practice Senior Director:	Junaid Ahmad (from July 1, 2014)
Global Practice Director:	Jennifer Sara (from July 1, 2014)
Sector Manager:	Charles M. Feinstein (through June 30,2014)
Practice Manager:	Ousmane Dione (from July 1, 2014)
Task Team Leader:	Gang Qin

CHINA: Zhejiang Rural Water Supply and Sanitation Project

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PAD DATA SHEET

China

Zhejiang Rural Water Supply and Sanitation Project (P133018)

PROJECT APPRAISAL DOCUMENT

EAST ASIA AND PACIFIC

GWADR

Report No.: PAD901

Basic Information			
Project ID P133018	EA Category B - Partial Assessment		Team Leader Gang Qin
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 01-Oct-2014	Project Implementation End Date 31-Dec-2020		
Expected Effectiveness Date 02-Feb-2015	Expected Closing Date 31-Dec-2020		
Joint IFC No			
Practice Manager/Manager Ousmane Dione	Senior Global Practice Director Junaid K. Ahmad	Country Director Klaus Rohland	Regional Vice President Axel van Trotsenburg

Borrower: People's Republic of China			
Responsible Agency: Zhejiang Provincial Economic Information Center			
Contact:	Mr. Cai He	Title:	PMO director
Telephone No.:	86-571-81050281	Email:	ch@zei.gov.cn

Project Financing Data(in USD Million)					
[X] Loan	[ ] IDA Grant	[ ] Guarantee			
[ ] Credit	[ ] Grant	[ ] Other			
Total Project Cost:	400.00		Total Bank Financing:	200.00	
Financing Gap:	0.00				

Financing Source	Amount

Borrower	200.00
International Bank for Reconstruction and Development	200.00
Total	400.00

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021
Annual	4.00	19.00	37.00	40.00	45.00	45.00	10.00
Cumulative	4.00	23.00	60.00	100.00	145.00	190.00	200.00

Proposed Development Objective(s)

The proposed Project Development Objective (PDO) is to improve access to sustainable water supply and sanitation services in selected villages and towns in rural areas of Zhejiang Province.

Components

Component Name	Cost (USD Millions)
Improving Water Supply and Sanitation	355.87
Training and Capacity Building	2.50
Project Management and Supervision	3.50

Institutional Data

Practice Area / Cross Cutting Solution Area

Water

Cross Cutting Areas

[ ] Climate Change

[ ] Fragile, Conflict & Violence

[ ] Gender

[ ] Jobs

[ ] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Water, sanitation and flood protection	Wastewater Collection and Transportation	50		
Water, sanitation and flood protection	Water supply	20		
Water, sanitation and flood protection	Wastewater Treatment and Disposal	30		
Total		100		

☑ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Rural development	Rural services and infrastructure	100
Total		100

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04		**X**
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37	**X**	
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Covenant on SLA in Section I.E.1 of the Schedule to the PA	**X**		

Description of Covenant

The Project Implementing Entity (PIE) shall cause each Project Participant to relend a portion of the proceeds of the Loan to its Respective Project Company for purposes of carrying out said Project Company's Respective Part of the Project, under a Subsidiary Loan Agreement (SLA) to be entered into between the Project Participant and its Respective Project Company.

Name	Recurrent	Due Date	Frequency
Financial and Operational Sustainability, Section IV of the schedule to the PA	X		

Description of Covenant

Except as the Bank shall otherwise agree, the PIE, through the respective Project Participant, shall ensure, and cause the respective Project Companies to ensure that the Subprojects under Part 1 of the Project produce, for each of the Fiscal Years starting 2015, total revenues equivalent to and not less than its total operating expenses, excluding depreciation.

Conditions

Source Of Fund	Name	Type
IBRD	Disbursement conditions in Section IV.B.1 of Schedule 2 to the LA	Disbursement

Description of Condition

No withdrawal shall be made: (b) under each of Categories (1)(a) through (1)(d), and (2), until the Bank shall have notified the Borrower and the PIE of its receipt of a copy of the SLA entered into between the Project Participant concerned and its Respective Project Company, satisfactory to the Bank.

Source Of Fund	Name	Type
IBRD	Disbursement conditions in Section IV.B.1 of Schedule 2 to the LA	Disbursement

Description of Condition

No withdrawal shall be made: (c) under Category (1)(b) until the Bank shall have notified the Borrower and the PIE of its receipt of a copy of the environmental acceptance certification issued by the competent Environment Protection Department, satisfactory to the Bank, regarding the Fuyang wastewater treatment plant (WWTP) phase 3 expansion.

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Alejandro Alcala Gerez	Sr. Counsel	Legal	LEGES
Yi Geng	Sr. Financial Management Specialist	Financial Management	GGODR
Jingrong He	Procurement Specialist	Procurement	GGODR
Zhefu Liu	Sr. Social Development Specialist	Social Development	GURDR
Gang Qin	Water & Sanitation Specialist	Team Lead	GWADR
Sudipto Sarkar	Lead Specialist	Water and Sanitation	GWADR
Chongwu Sun	Sr. Environmental Specialist	Environment	GENDR
Hongwei Zhao	Program Assistant	Program Support	EACCF

Non Bank Staff

Name	Title	City
Vivian Argueta-Bernal	Consultant	Beijing

Hongye Fan	Transport Consultant	Beijing
Chirong Huang	Wastewater Engineer	San Diego
Yan Li	Consultant	Washington DC
Ning Wu	Finance Analyst	Beijing

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
China	Zhejiang Sheng	Zhejiang Sheng	**X**		

I. STRATEGIC CONTEXT

A. Country Context

1. China has made significant progress in increasing water supply and sanitation (WSS) coverage over recent decades, increasing access to improved water supply from 67 to 92 percent and to improved sanitation from 24 to 65 percent between 1990 and 2012. However, these broad WSS coverage statistics mask significant regional and rural-urban disparities, with many rural people still without access to improved WSS services, the most vulnerable groups being women, children and elderly. As of 2012, over 290 million rural people were without improved sanitation and about 100 million were without improved water supply.[1] Lack of WSS infrastructure in rural areas affects people's health, welfare and living conditions, negatively impacts the rural environment, and is a barrier to rural development and prosperity. Improving equitable and sustainable access to safe and improved WSS in rural areas is therefore an important national development objective.

2. The National 11th and 12th Five-Year Plans for Social and Economic Development (FYP, 2006-2010/2011-2015) prioritize the need to narrow the gap in basic public services between urban and rural areas. The plans also promote development of infrastructure to address safety, adequacy, and sustainability aspects of drinking water, waste management services, and environmental pollution reduction in rural areas.

3. As part of the 11th FYP, the government began a program of New Countryside Development (NCD) which has also been extended into the 12th FYP. The NCD program aims to reduce disparities between the countryside and cities by encouraging cities to invest in the development of their surrounding countryside. The program has been designed to take into account regional differences. For less-developed provinces located in the central and western region of China, the NCD program aims to provide or improve basic infrastructure services such as housing, water supply services, sanitary latrines, paving of village lanes etc. For those economically advanced provinces located in the eastern region such as Beijing, Shanghai, Zhejiang and Guangdong, the NCD programs focus is on the provision of community greening, rehabilitation of streams, channels and ponds, as well as provision of safe and reliable rural water supply, wastewater treatment and solid waste management services.

4. Among the advanced provinces, Zhejiang is in a prominent position to pilot approaches for the wider NCD program. The program here has been designed to reflect local socio-economic conditions and to improve the natural beauty of the countryside with the aim of capturing the areas potential for eco-tourism and catalyze rural development. Specifically a Beautiful Countryside Development Action Plan (Action Plan) has been devised to improve infrastructure services, including WSS, to enhance the natural environment and people's living conditions, as well as boost the rural economy. The Action Plan seeks to establish a mechanism for the sustainable operation of rural sanitary facilities. It is expected that, with successful implementation of the Action Plan, Zhejiang's experiences may be scaled up to other parts of China. As such, supporting the Action Plan, through provision of improved WSS services in

[1] WHO/UNICEF. Joint Monitoring Programme for Water Supply and Sanitation. April 2014.

rural areas, is well aligned with national goals and the WBG's twin goals of eliminating extreme poverty and boosting shared prosperity, in a sustainable manner.

B. Sectoral and Institutional Context

5. Zhejiang is located on the east coast of China covering an area of 105,391 km^2 and has a total population of 54.6 million (2012). With a GDP of RMB 3.46 trillion (US$ 562 billion) in 2012, it is the fourth largest provincial economy in China. The per capita GDP in Zhejiang is RMB 63,266 (US$ 10,273). However, economic development is geographically disparate, with the western and southern areas, especially rural areas, lagging behind. Average disposable income in urban areas is RMB 37, 851 (2013), more than double the average net income in rural areas of RMB 16,106.[2]

6. Rural areas in Zhejiang are characterized by small towns that were formed as adjacent villages expanded or merged over time.[3] These small towns offer various services to nearby villages and rural communities. Recently, some small towns have started providing WSS services to surrounding villages by connecting them to their water distribution and sewerage collection systems.

7. Water supply in Zhejiang relies heavily on surface water sources. Average annual precipitation is about 1,600mm, but 50 to 60 percent of rainfall occurs during the short rainy season. As a result, many dams have been built to store water for supplying water in the dry season. The quality of raw water is generally in compliance with national standards. However, due to a lack of water treatment and distribution facilities, many people living in rural areas do not have access to safe drinking water. Non-Revenue-Water (NRW) is generally high in rural areas and small towns, jeopardizing the financial sustainability of water companies and efficient use of scarce water resources.

8. Coverage of sanitation services in Zhejiang varies greatly, but generally lags behind water supply services. In the lower plains such as Hangzhou, Ningbo, and Huzhou, 10 to 35 percent of rural domestic sewerage is collected and properly treated. In mountainous areas, this rate drops to 1.7 to 5 percent. Septic tanks are widely used in villages, but inappropriate design and construction coupled with inadequate maintenance has led to soil and water contamination in many communities. Improving sanitation services in rural areas will require upgrading existing septic tanks, connecting septic tanks to sewer networks, constructing wastewater treatment plants (WWTPs) and effective operation and maintenance (O&M).

9. There are some critical challenges to improving rural sanitation in China. First, in many villages the government has invested in end-of-pipe sewerage treatment facilities, but household connection rates are low, especially in the early years of operation. Second, the national effluent discharge standards for domestic wastewater are high and are essentially based on urban wastewater treatment norms. In rural areas, attempts to comply with these standards have proved

[2] Survey Office of the National Bureau of Statistics.

[3] In China, the government has grouped some geographically close or adjacent "natural" villages into an Administrative Village administrated by a Township Government. In an Administrative Village, the villagers of each Natural Village are led by a Villagers' Group and all Villagers' Groups are under the leadership of a Village Committee. In this document, the term "Village" refers to Natural Village, unless otherwise specified.

unsustainable as operating and maintaining such facilities is excessively expensive not to mention unaffordable for rural households. Such sophisticated wastewater treatment facilities are more appropriate for densely populated urban areas.

10. The provision of rural WSS services in Zhejiang needs to be developed within an adequate institutional framework. High NRW levels and low water tariffs have resulted in excessive use of water. Poor operation of wastewater services in rural areas is also directly related to low tariffs, and has led to fluctuations in service quality and compliance with standards. In summary, Zhejiang will need to address a number of issues in its rural WSS services, including: (i) ensuring drinking water quality and safety, (ii) increasing household connection rates, (iii) reducing NRW and other operational inefficiencies, (iv) establishing adequate tariffs and subsidy rates to cover operation and maintenance costs, while servicing an economically diverse group of users, and (v) enhancing O&M systems for WSS networks and treatment facilities.

11. This project will support Zhejiang to address key issues in sustainable WSS service delivery in four counties (or county-level cities): Anji County, Fuyang City, Tiantai County and Longquan City (hereafter "Project Counties"). Table 1 provides population and economic data for Zhejiang and the Project Counties. These counties cover different regions of the Province and their topography, lifestyle, incomes, and local customs in relation to rural WSS vary considerably. These Project Counties have been selected because they are considered representative of the realities in different rural areas in Zhejiang and eastern China. Therefore, by focusing on improving WSS services in these Project Counties, this operation will pilot solutions that could be scaled up and replicated in Zhejiang and other provinces in eastern China.

Table 1. Basic Population and Economic Data of Zhejiang and Project Counties (2012)

	Total Population	Rural Population	GDP (RMB Million)	Income for Urban Population (RMB/person)	Income for Rural Population (RMB/person)
Zhejiang Province	47,813,000	32,794,300	3,460,600	34,550	14,552
Anji County	459,700	353,300	24,523	32,120	16,141
Fuyang City	653,900	510,400	54,180	32,739	17,397
Tiantai County	586,300	476,400	15,020	27,691	11,333
Longquan City	290,100	274,400	8,565	27,930	9,127

Note: The poverty line in China is RMB 2,300 per annum (US$1.05 per day). The poverty line suggested by the World Bank is US$1.25 per day (RMB 2,783 per annum).

12. While widespread extreme poverty is no longer an issue in Zhejiang (see Table 1), the Bank team has paid close attention to low income and vulnerable populations, who mostly reside in rural villages. The cost of household sewer connections in villages, including provision and installation of toilets and wash basins, as well as upgrading of septic tanks, will be fully covered by the project and repaid by the counties. The villagers' ability to afford increased tariffs has been carefully assessed, and counties have been requested to provide subsidies to cover the difference between O&M cost and tariffs collected during operation. A total of 259 villages have been appraised during project preparation, but additional villages might be selected in the future.

13. This project is aligned with the WBG's twin goals of eliminating extreme poverty and boosting shared prosperity, in a sustainable manner. In addition to improving the provision of basic services to rural areas, the project will also have a positive impact on the rural economy by providing the basis for developing eco-tourism and improving conditions for secondary and tertiary industry development which will generate rural employment, increase rural incomes and raise government revenues making further resources available for rural development.

C. Higher Level Objectives to which the Project Contributes

14. The World Bank Group's Country Partnership Strategy (CPS) for the fiscal years (FYs) 2013-2016 (Report No. 67566-CN) was discussed by the Board of Executive Directors on November 6, 2012, and is aligned with the challenges and priorities outlined in China's 12th Five Year Plan. The CPS focuses on three main themes: (i) supporting greener growth, (ii) promoting more inclusive development, and (iii) advancing mutually beneficial relations with the world by supporting China's South-South cooperation and role as a global stakeholder.

15. The proposed project directly supports the first and second theme by reducing pollution, helping to balance development between urban and rural areas, and addressing the needs of vulnerable groups. Under the CPS it is also specifically envisioned that the Bank will contribute to boosting rural incomes by increasing access to basic services thereby addressing obstacles to rural and economic growth and rural income generation. The provision of WSS services under the proposed project will assist rural areas in precisely such a manner, and is clearly aligned with WBG's twin goals of eliminating extreme poverty and boosting shared prosperity.

II. PROJECT DEVELOPMENT OBJECTIVE

A. PDO

16. The Project Development Objective (PDO) is to improve access to sustainable water supply and sanitation services in selected villages and towns in rural areas of Zhejiang Province.

17. This will be accomplished by: (i) improving water supply and water safety in rural areas through construction and/or rehabilitation of raw water mains, water distribution networks and water treatment plants (WTP); (ii) reducing NRW to lessen demand on raw water resources and increase revenues for water companies (as well as other operational efficiency improvements), through rehabilitation of water distribution networks; (iii) increasing the number of sewerage household connections; (iv) providing reliable, easy-to-operate and affordable sanitation and sewerage services to people living in rural areas, through the rehabilitation of septic tanks, construction of sewerage collection networks and end-of-pipe treatment facilities; and (v) establishing management systems that promote the sustainability of the facilities both in terms of technical capacity and O&M. With these targets achieved, the project will be extremely beneficial to both the users and provincial policy makers.

B. Project Beneficiaries

18. The main project beneficiaries are the residents of participating small towns and rural villages that directly and indirectly benefit from access to rehabilitated and newly constructed

WSS services. Other beneficiaries include local governments and water companies providing WSS services in the Project Counties, including: (i) Anji Guoyuan Water Company Limited; (ii) Fuyang Water Affairs Company Limited; (iii) Longquan Water Supply and Drainage Company Limited; (iv) Longquan Rural & Towns Water Supply Station; and (v) Tiantai County Water Supply Company Limited.

C. PDO Level Results Indicators

19. The key results expected from the proposed project will be measured through the following outcome indicators: (a) number of people in rural areas provided with access to improved water sources under the project (disaggregated by total and female population); and (b) people provided with access to improved sanitation facilities (disaggregated by total and female population). Annex 1 includes a more detailed list of indicators.

III. PROJECT DESCRIPTION

A. Project Components

20. The proposed Bank supported project will have three components.

21. **Component 1: Improving Water Supply and Sanitation** (US$ 355.9 million). This component will invest a total of US$ 355.9 million, of which US$ 193.5 million is from the IBRD loan, for the construction and rehabilitation of water supply and wastewater collection and treatment facilities in the Project Counties. A total of 138 administrative villages (259 natural villages) and 9 rural towns have been identified during preparation, but more villages and towns could be added during project implementation. During preparation, the team has appraised US$ 169 million in subprojects or about 47 percent of the total allocation for this component. Each county has already received a nominal allocation from the total amount of the loan, and the remaining 53 percent of investments under this component will be identified and appraised during project implementation, batch by batch, in accordance with the framework approach described in detail in Annex 3. Changes may happen to these allocations depending on the performance of different subprojects and Project Counties during implementation.

22. **Component 2: Training and Capacity Building** (US$ 2.5 million)**.** This component will be fully financed by the IBRD loan. It will provide specific training and assistance to local water companies to improve their technical, financial, and overall managerial performance, including their technical capacity for operation and maintenance of all WSS systems. The identified and agreed areas of technical assistance support include: (a) training for staff of Project Management Offices (PMO), Project Implementing Unit (PIU) and institutions involved in project implementation; (b) training for staff and operators of water companies participating in the Project to enhance their O&M competency; (c) institutional strengthening and capacity building for water companies participating in the Project; and (d) implementation of a program to monitor and evaluate the performance of wastewater treatment stations in the participating villages.

23. **Component 3: Project Management and Supervision** (US$ 3.5 million)**.** This component is closely linked to the infrastructure investment under Component 1 and will be fully

financed by the IBRD loan. It will provide project management assistance to all relevant agencies at both provincial and county level. The identified and agreed areas of technical assistance to be financed by this component include: (a) technical support for the implementation of a framework approach, including reviewing technical reports for subprojects which are eligible for project financing; and (b) support for project management and supervision.

B. Project Financing

Lending Instrument

24. The project will be financed through an IBRD Investment Project Financing (IPF) Loan of US$ 200 million, repayable in 25 years, including a 6 years grace period, annuity repayment at six-month LIBOR-based US dollar plus variable spread, a front-end fee of 25 basis points, and with all conversion options.

Project Cost and Financing

25. The preliminary cost estimates of the project are US$ 400 million (about RMB 2.46 billion). The funding sources for the project include an IBRD loan of US$ 200 million, with the remaining balance mobilized by the Project Counties and the Provincial Government. Table 2 below details the breakdown of costs by components.

Table 2. Project Cost and Financing Plan by Component (in US$ million)

	Total Project Cost			Appraised		Unallocated	
By Components	**Total**	**IBRD**	**Local**	**IBRD**	**Local**	**IBRD**	**Local**
Component 1: Improving Water Supply and Sanitation (WSS)							
1.a. Anji County	102.71	53.21	49.50	17.05	14.57	36.16	34.93
1.b. Fuyang City	115.11	58.05	57.06	43.68	39.32	14.37	17.74
1.c. Tiantai County	78.66	43.54	35.12	13.08	9.91	30.46	25.21
1.d. Longquan City	59.39	38.70	20.69	21.34	9.10	17.36	11.59
Sub-Total	**355.87**	**193.5**	**162.37**	**95.15**	**72.90**	**98.35**	**89.47**
Component 2: Training and Capacity Building							
Sub-Total	**2.50**	**2.50**	**0**	**2.50**	**0**	**-**	**-**
Component 3: Project Management and Supervision							
Sub-Total	**3.50**	**3.50**	**0**	**3.50**	**0**	**-**	**-**
Baseline Cost	**361.87**	**199.50**	**162.37**	**101.15**	**72.90**	**98.35**	**89.47**
Physical and Price Contingencies	35.60	0	35.60				
Total Project Costs	**397.47**	**199.50**	**197.97**				
Front end Fee	0.50	0.50	0				
Interest During Construction	2.03	0	2.03				
Total Financing Required	**400.00**	**200.00**	**200.00**				

C. Lessons Learned and Reflected in the Project Design

26. During the preparation of the project several missions and workshops were organized to ensure that good practices and lessons learned from ongoing or completed rural WSS projects in China and other countries were shared with the entities involved in the project and were incorporated into the project design. The team also looked at the implementation of other Bank projects in Zhejiang Province to find ways to strengthen implementation. The following are some of the key lessons learned which are incorporated into the project design.

27. *The importance of using appropriate water and wastewater treatment processes and technology that require low investment, low energy, and are simple and affordable to operate and maintain.* Special attention was given to ensure that the proposed technologies for rural sanitation are reliable, easy-to-operate, and require low capital investment and operational costs so that they are viable in rural areas. As a result, this project is proposing a new effluent discharge limit for rural sanitation facilities that conforms to the reality of rural areas. The proposed discharge limit could potentially be adopted by other rural wastewater facilities in China. This change in technology options used for rural wastewater requires a mind shift by the Design Institutes which entails an ongoing capacity building and technical assistance effort using project resources.

28. *Adequate subsidies for O&M of rural sanitary facilities needs to be ensured up front based on known tariffs and projected O&M costs.* As rural populations have comparably low incomes, it is necessary for government to provide adequate subsidies to support the O&M of rural sanitation facilities. It is therefore also important to select the most appropriate technologies for the specific rural location in order to minimize the need for targeted subsidies. A detailed financial analysis has been conducted on the scale of subsidies, identifying the requisite amounts and these will be further reviewed and monitored during implementation. Correspondingly, the project legal documents will include break even covenants to ensure operators have a firm base for future sustainability.

29. *Operators should be properly identified and assessed during project preparation stage and their technical, financial, and managerial skills strengthened during project implementation.* In-depth assessments have been conducted with regard to future operation of the proposed WSS facilities. Project Counties have submitted practical O&M action plans detailing the organization structure, manpower and other resources available and required for the sustainability of all facilities. Furthermore, the project has factored in support to each O&M action plan through the implementation of Component 1 (physical resources) and Component 2 (technical assistance).

30. *Availability of adequate counterpart funding is important.* Apart from Fuyang City, which has a relatively strong local economy and revenue intake, Project Counties may face difficulties to ensure adequate counterpart funds are available in a timely manner. Given that the proposed project services are in rural areas of Zhejiang, provincial funds which are regularly budgeted for rural development could also be made available. However, attention must be given to those counties which could still face challenges raising the necessary counterpart funds even with provincial assistance. Semi-annual reviews of counterpart financing plans are built into the Project Operational Manual.

31. During implementation of services in the first 259 villages which were appraised during preparation, approximately 53 percent of the overall project investment, additional lessons will be learned and fed back into the design of the remaining investments. This is one of the positive aspects of the framework approach which allows for improvements to be made to future investments which will be appraised during implementation.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

32. **Provincial Level**. The Zhejiang Provincial Foreign Fund Utilization Leading Group (PLG) was established in May 2013 and is chaired by the Provincial Vice-Governor responsible for the Provincial Development and Reform Commission (PDRC) and includes representatives of PDRC, Zhejiang Provincial Finance Bureau (ZPFB), Water Resource Department, Environment Protection Department (EPD), Land Resource Department, and other agencies and relevant institutions. The major responsibilities of the PLG are to provide coordination, policy-level support, guidance on strategic issues and oversee the timely implementation of the project.

33. The Zhejiang Provincial Project Management Office (ZPMO) is housed at the Provincial Economic Information Center, an institution affiliated to the PDRC. The ZPMO is responsible for the financial management (FM) of the project under the support and guidance of the ZPFB. ZPFB is responsible for managing the project's Designated Account (DA). Together with PDRC, ZPFB will provide support and advice to ZPMO and project counties on financial matters. ZPMO, with support from consultants, will be responsible for overall supervision of the project, focusing on technical and project management aspects, advisory services to the Project Counties and PIUs, quality assurance and control, and consolidation of monitoring, reporting and due diligence requirements. ZPMO will also manage the project and be responsible for immediately flagging any issues which may affect the timely implementation on the project according to the policies and procedures agreed. Furthermore, ZPMO has selected a procurement agent to assist with the preparation of bidding documents and managing the overall bidding process. ZPMO will prepare semi-annual progress reports and coordinate the monitoring and evaluation of the project. A project management and supervision team of consultants will support ZPMO in carrying out these functions and provide advice to the cities and local PIUs on contract and safeguard supervision.

34. **Local Level.** The project will be implemented by the participating water companies in each of the Project Counties which will be serving as the PIUs. These PIUs are financially and legally autonomous and will be responsible for overall construction management and O&M of the investments, supported by experienced design institutes, tendering companies, and a construction supervision company per county.

35. Also at the local level, a county project management office (CPMO) has been established in each of the Project Counties, chaired by the officials of each county Development and Reform Commission or Agricultural Committee. CPMOs will report directly to ZPMO and will be responsible for supervising the project, focusing on technical and project management aspects, assisting PIUs in complying with the Bank's safeguards policies, and providing general advisory services to the County and the corresponding PIU.

36. Village Committees, under the support and supervision of the relevant CPMO, will act as PIUs responsible for assisting village sewer network construction and implementing household connections to the sewer networks. For details refer to Annex 3 of the PAD.

37. **Project Operation Manual (POM).** To facilitate and assist the identification of additional subprojects, a comprehensive POM was prepared during project preparation. The POM details the policies and procedures that need to be followed for the identification, appraisal and implementation of subprojects in accordance to the framework approach described in detail in Annex 3. The eligibility criterion for subprojects is discussed in the POM as detailed in Attachment 1 to Annex 3. The consultant hired for project management and supervision will be responsible for providing technical assistance to the PIUs and ZPMO for the appraisal of subsequent subprojects.

B. Results Monitoring and Evaluation

38. A result-based monitoring and evaluation system (MES) has been established under the project. ZPMO, CPMOs and PIUs will implement and maintain the system and, monitor, evaluate and analyze results towards achieving the project development objective. The MES will record project outputs and allow the responsible entities to evaluate outcomes. The system includes a database of overall project outcome indicators which will be used to measure achievement of project objectives and changes in performance. Intermediate outcome indicators for each subcomponent, with baseline values and target values, will be reported to allow monitoring of progress towards the expected project outcomes. The status of indicators will be presented in semi-annual progress reports. These reports will be kept up-to-date and provided as needed for project supervision by the Bank (see Annex 1 for details of the key indicators).

39. PIU and CPMO staff will be directly responsible for inputting project data at the county level, which will be consolidated by ZPMO at the Provincial level and reflected in the semi-annual progress report and other reports required during the project implementation. ZPMO has agreed to consider establishing a website under which the four counties can measure their progress and compare it to other participating counties. The aim is to foster a spirit of competition to excel in implementation while also assisting the Province in allocating the balance of funding under the framework approach to the best performers.

C. Sustainability

40. To ensure the long term sustainability of the project, thorough technical and economic analysis was conducted to ensure the necessary resources and capacities will be available to build, maintain, and operate project investments. Detailed assessments were made of the current and future demand for services to properly optimize the WSS facilities. Appropriate technologies were also identified to make sure the facilities will be reliable, easy-to-operate, and affordable for users as well as to local government who will be subsidizing capital and O&M costs.

41. The project will help the WSS operators to strengthen their management, financial, and technical capacities for operating and maintaining the facilities supported by the project. In addition, the project will also help to develop comprehensive capital investment and asset

management plans for the operators to ensure sustainability. During project preparation, tariff structures for the provision of WSS services were carefully analyzed to ensure that local governments are able to provide adequate subsidies to cover the operational cost of the facilities. Detailed information is provided in Annex 2 of the PAD.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	Rating
Stakeholder Risk	Moderate
Implementing Agency Risk	
- Capacity	Substantial
Project Risk	
- Design	Moderate
- Social and Environmental	Moderate
- Delivery Monitoring and Sustainability	Substantial
Overall Implementation Risk	Substantial

B. Overall Risk Rating Explanation

42. The overall project risk is considered to be substantial. Specifically, a number of risks were identified during project preparation that might hamper project implementation.

43. **Project management capacity.** ZPMO and the CPMOs are inexperienced with regard to managing Bank projects. Their staffing, project management capacity and technical expertise to supervise the operation are limited. The PIUs also have limited capacity to manage the project. As a result the Procurement and Financial Management risks are rated substantial. To minimize these risks, an experienced consultant team—with project management and contract supervision experience—will be hired by ZPMO to provide advisory services to the PIUs and CPMOs and support them in building their capacity. Frequent supervision by the Bank team will also be fielded to help address issues that the ZPMO and CPMOs might face.

44. **Large number of scattered sub-projects over a wide geographical area.** The large number of subprojects, especially village subprojects, has made project preparation and appraisal complex. To solve this challenge, the proposed framework approach described in detail in Annex 3 will be utilized. This approach will have the added benefit of enabling lessons learned from the implementation of previously appraised and implemented subprojects into subsequent phases of subproject design and implementation. Regardless, the effective execution of such large numbers of subprojects in four counties is still expected to be challenging and needs constant monitoring and adjustments where needed.

45. **Financial sustainability and local subsidies.** Close attention has been given to the financial sustainability of the proposed facilities. Full assessments were made of the operating

expenditures (OPEX) and capital investment in facilities to determine the tariff contribution and government subsidies necessary for sustainable operation. It is well understood from previous rural WSS projects that it is unrealistic to increase tariff levels to cover the full cost of facilities and services, thus arrangements are made so government can provide adequate subsidies to balance costs versus revenues of the facilities developed under the project. As such, the project's legal documents include break-even covenants.

46. **Local Counterpart Funding.** A review of the finances for each of the Project Counties—including revenue sources, expenditure allocations, debt structure, and land value—shows that they have different levels of financial capacity. While some Project Counties have demonstrated strong capacity to provide counterpart funding from their physical revenue alone, others are in a more challenging situation, relying on different and more uncertain sources of finance such as land sale revenues or funds transferred from the provincial level. Therefore a potential risk for the project is that some Project Counties will experience difficulties in providing counterpart funds in a timely manner during project implementation.

47. The following measures have been taken to reduce the risk of delays in the provision of counterpart funds. First, the subprojects proposed for financing under the project, especially in villages, must already be in the investment priority list of the Project County; therefore provision of counterpart funding is more likely. Second, close monitoring of counterpart funds allocation and frequent talks with high rank of government officials will be conducted to secure the timely and sufficient counterpart funds allocation during project implementation stage.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

Economic Analysis

48. The water supply subprojects involve a range of investments in rural areas such as construction and rehabilitation of raw water mains, distribution pipelines, household connections, small-scale water treatment plants (WTPs). The overall benefits of the subprojects are therefore difficult to quantify or properly align. Instead a cost effectiveness analysis was undertaken for the water supply investments already appraised and to be implemented during the first three years. For each water supply subcomponent the cost of various alternatives was assessed. Final selection was made on a least-cost basis.

49. A cost effectiveness analysis was also conducted for the sanitation subprojects as some project benefits relating to environment and public health improvements could not be quantified. The choice of priority interventions for the project was guided by the cost effectiveness analysis, including options for village sanitation, as well as selection of sewer systems and wastewater treatment processes for towns.

50. As mentioned, this project will be implemented through a framework approach. The WSS subprojects that might be eligible for financing in future will also be assessed using cost-effectiveness analysis, and recommends made on a least-cost basis. This and other subproject eligibility criteria are detailed in Attachment 1 to Annex 3 of the PAD.

Financial Analysis

51. Financial analysis was carried out to assess the financial sustainability of the project. It analyzed the financial situation of each PIU and the impact of the project on local government finances.

52. There are currently five PIUs responsible for the O&M of WSS services in the four project counties. The financial performance of each PIU over the last four years was analyzed. In general the PIUs have good financial standing but there is still scope for them to improve their financial performance. Financial projections for each PIU have been prepared based on the planned WSS services and information on past. The projections include revenues from water and wastewater services, operating costs for water supply and wastewater treatment, investments in water and wastewater and financing plans.

53. The impact of the project on the local governments' fiscal ability was also analyzed. Local governments' contribution to the project mainly comes from fiscal revenues including tax revenue, non-tax revenue, and transfer payments from central and provincial governments. The comparison of contribution to fiscal revenues shows that the contribution to the project is less than 3 percent of fiscal revenues. Therefore, there is no significant fiscal impact on the participating local governments.

B. Technical

54. During project preparation, the Bank task team conducted in-depth reviews of the feasibility and design of each facility and investment. Designs have been improved to take into account global experience and best practices in providing sustainable WSS services in rural areas, while also taking into account the socio-economic realities of the Project Counties. Specific attention was given to determine typical influent wastewater quality, establish appropriate domestic wastewater discharge limits for rural areas, and effectively manage sewerage household connections. In particular, the task team ensured the most reliable, and low-cost option was selected in each case, both in terms of capital investment requirements and O&M costs.

55. In addition, a range of technologies and service levels were evaluated to ensure sustainable delivery based on local socio-economic and infrastructure levels. O&M costs were reviewed and measures introduced to improve the quality and efficiency of services, including: management information systems, assets management strategies, and on-the-job training for operators. Detailed information is included in Annex 2 of the PAD.

C. Financial Management

56. The overall Financial Management (FM) risk is assessed as Substantial. FM capacity assessment identified the following principal risks: (a) the designated project FM staff lack knowledge and experience in managing Bank financed projects which may cause inappropriate or inefficient use of project funds; and (b) multi-layer arrangements may affect disbursement efficiency. Mitigation measures to address these risks will be as follows: (a) preparation and

distribution of a FM Manual (FMM) as part of the POM, so that project FM procedures for coordination and reporting are standardized; (b) training workshops and peer learning from other experienced projects to be arranged by ZPFB and ZPMO; (c) hiring of experienced consultants to help the project enhance its FM work; and (d) further advance of Bank loan proceeds to be maintained by CFBs to improve disbursement efficiency.

57. ZPFB will be responsible for managing the Bank loan proceeds, including overseeing the DA. ZPMO and the CPMOs will be responsible for overall coordination and project management. Respective District/County PIUs will conduct project financial management and disbursement work for WSS components (except household sewerage connections). CPMOs will conduct financial management and disbursement work for household sewerage connections. A financial management capacity assessment conducted by the Bank and actions to strengthen the financial management capacity are agreed with the relevant implementing units. The FM assessment concluded that with the implementation of the proposed actions, financial management arrangements will satisfy the Bank's requirements under OP/BP 10.00. Annex 3 of the PAD provides additional information on financial management.

D. Procurement

58. **ZPMO, CPMO and PIUs Procurement Assessment.** As this project will be the first Bank financed project to be managed and implemented by the ZPMO, CPMO and the four PIUs, the key procurement risks identified are (i) possible noncompliance due to the unfamiliarity with the Bank's procurement policy and procedures, (ii) low contract management capacity to ensure smooth contracts implementation; and (iii) project supervision and coordination risk due to large number of small value contracts scattered in four counties. The overall procurement risk is assessed as substantial.

59. In order to mitigate these risks the following actions have been discussed and agreed with the ZPMO, CPMO and PIUs: (i) hiring, by the ZPMO, of a procurement agent with requisite qualifications and experience and under a set of TOR acceptable to the Bank to assist all implementing agencies with procurement management; (ii) preparation, by the ZPMO with the participation of the PIUs, of a Procurement Manual as part of the POM acceptable to the Bank to guide procurement management; (iii) appointment by the ZPMO of qualified procurement staff at provincial and county levels; and, (iv) periodic training for the ZPMO, CPMO and PIU staff on procurement and contract management in Bank-financed projects.

60. ZPMO will be responsible for (i) overall procurement management including annually updating the procurement plan (with CPMO and PIU collaboration); (ii) managing the procurement cycle for contracts to be implemented by ZPMO; (iii) providing guidance to CPMOs and PIUs on procurement and contract management; (iv) regularly supervising and monitoring procurement activities carried out by PIUs; (v) liaising with the Bank on procurement matters and reporting on overall procurement progress; (vi) raising to the Bank any issues which may affect timely project implementation; (vii) carrying out procurement of some TA contracts; and (viii) procuring and implementing capacity building activities.

61. CPMOs will be responsible for (i) updating the procurement plan for contracts under their jurisdiction; (ii) managing the procurement cycle for contracts under their jurisdiction; (iii)

providing guidance to PIUs on procurement and contract management; (iv) supervising and monitoring procurement activities carried out by PIUs; (v) liaising with ZPMO on procurement matters and reporting procurement progress for activities carried out under their jurisdiction; (vi) bringing up to ZPMO attention any issues which may affect timely project implementation.

62. PIUs will be responsible for (i) implementing procurement processes and managing contracts under their respective jurisdiction; and (ii) liaising with the relevant CPMO on procurement and contract management issues.

63. **Procurement Plan**. A Procurement Plan for all contracts for which procurement action is to take place during the first 18 months of project implementation has been prepared by ZPMO with guidance from the Bank and will be made available on the Bank's external website. The Procurement Plan will be updated annually or as required to reflect implementation needs and improvements in institutional capacity. Further details concerning procurement are found in Annex 3.

E. Social (including Safeguards)

64. The project has significant social benefits. It supports basic service improvements in villages and small towns of selected counties in Zhejiang Province by strengthening infrastructure and providing water and sanitation utilities for current and growing rural migrant population and managing environmental pollution. At this stage, the project includes 259 village communities in the four cities or counties.

65. **RAP and RPF**. Four resettlement action plans (RAP) are prepared to address land acquisition and resettlement in the four cities/counties and a consolidated RAP is prepared to summarize the main contents of these four RAPs. A resettlement policy framework (RPF) is prepared to guide resettlement activities in the second stage of the project where further village communities will be selected to participate in the project. The RAPs provide details of the resettlement policy procedures and requirements that will be followed during project implementation, including compensation rates, mitigation measures to restore livelihoods, and institutional and monitoring arrangements. The four RAPs and consolidated RAP were disclosed through Bank's InfoShop on June 18, 2014. A RPF has been prepared to address any changes in project components and any linked projects that might lead to involuntary resettlement in the cities prior to project close.

66. **Public Participation.** Public consultations and participatory processes during project preparation have enabled the project to incorporate key stakeholders' concerns and demands, refine the project design, and reduce the number of people affected by land acquisition and resettlement.

67. **Land Acquisition and Resettlement.** The subprojects appraised during preparation, covering 53 percent of the total investment, will require the permanent acquisition of 6.1 hectares of land, including 3.3 hectares of cultivated land and 2.8 hectares of State owned land. The dominant current land use is rice growing. 75.1 hectares of land will be used temporarily during pipeline installations. The project will require 24,418 square meters of structures, including 6,976 square meters of rural structures and 17,442 square meters of enterprise structures. As a

result, these subprojects will impact 518 people by permanent land acquisition and resettlement, and 1,094 people by temporary land use. No tombs were affected.

68. During the project preparation process and stages of project design, public consultations were conducted. These consultations will be continued by the resettlement offices in the engaged cities/counties and also the independent resettlement monitoring agency. Project information was disseminated to potentially displaced families to refine the project design, select project components and location of subprojects.

69. **Gender Analysis and Development.** A disaggregated gender analysis in the affected villages/communities was completed. Gender disaggregated information was collected and used in the RAP to ensure that women's interests could be safeguarded during resettlement implementation. The project is consistent with the Bank's approach to promote inclusion as a tool to help increase productivity and reduce disparities. The project will also explore the possibility of providing training for women so that they can assist with the basic maintenance of assets created under the project which could also provide an additional source of income for women.

70. **Participation Strategy.** Focused group discussions and key informant interviews were used to consult with potentially affected persons, beneficiary groups in villages and obtain views and preferences regarding resettlement impacts and mitigation measures, including land compensation and the resettlement budget. These views and preferences were taken into account in the RAP. The affected villages will play a key role in determining and implementing their livelihood restoration programs.

71. **Institutional Arrangements**. Resettlement offices at county level will be established to implement resettlement programs and ZPMO will supervise resettlement implementation. Project county land and resources bureaus will be responsible for land acquisition approval. An experienced national consulting team will be contracted to serve as the independent resettlement monitoring agency. The project will be closely monitored and the living standards of project-affected people (PAP) will be evaluated over the course of project implementation. The monitoring results will be reported twice a year and, if needed, remedial actions will be devised.

72. **Linked Projects.** The task team conducted due diligence reviews and concluded that no local funded linkage projects within two years prior to the project identification were identified.

F. Environment (including Safeguards)

73. Based on environmental screening, the Bank policy OP 4.01 Environmental Assessment is triggered. The project is Category B as per the Bank's OP 4.01 Environmental Assessment, as the major impacts are site-specific and few would be irreversible. An Environmental Impact Assessment (EIA) was carried out for the proposed project components, as well as preparation of a freestanding environmental management plan (EMP) to determine the mitigation measures, environmental monitoring program and necessary institutional arrangements as well as necessary capacity building. The documents were prepared in compliance with the Chinese legal and policy framework, and applicable Bank safeguard policies.

74. **Environmental Benefit.** The project will have significant benefits in terms of providing improved water and wastewater infrastructure and services in the project areas, which are rural) and remote mountainous areas in four counties of Zhejiang Province. The initial phase includes 259 villages and up to around 500 villages may eventually be covered by the entire project. The project supported WSS services will benefit about 1.5 million people. Water supply capacity will increase by 24.7 million m^3 per year and wastewater treatment capacity will increase to 53.1 million m^3 per year. Furthermore, almost 13 thousand tons of chemical oxygen demand (COD) and 6 thousand tons of biochemical (BOD), will be collected and treated thus reducing water pollution.

75. Potential environmental and social impacts include: (i) construction impacts related to disturbance to rivers and streams, short-term water quality degradation, soil erosion, noise, dust, and shipping and disposal of construction waste; and (ii) operational impacts related to wastewater treatment capacity with increased wastewater collection, and management capacity at township and village level.

76. **Public Consultations and Information Disclosure.** Two rounds of public consultations were carried out during the EA process. The techniques used for public consultation included surveys using public opinion questionnaires, focused group discussions, public meetings with key stakeholders and interviews with a number of project affected persons. The issues raised during consultations have been incorporated in the EIA and EMP and project design. Furthermore, feedback to the concerns and issues raised by the public has been documented in the EA. The environmental safeguards documents and other project related documents were disclosed locally through websites and newspapers on March 7, 2014, as required by national and Bank's policies. The environmental safeguards documents were disclosed through the Bank's InfoShop on June 18, 2014.

G. Other Safeguards Policies Triggered

77. **Physical Cultural Resources (OP/BP 4.11).** Although there were no physical cultural relics found through screening and site survey during project preparation, this policy is triggered in case of chance finding of cultural relics during project implementation. In the EMP, mitigation measures in line with Bank policy and the national regulatory and legal framework concerning cultural heritage have been included, and chance find procedures will be included in all construction contracts.

78. **Safety of Dams (OP4.37).** The project triggers the Safeguards Policy on Safety of Dams (OP4.37) since the project financed water supply facilities will draw water from existing dams. An independent dam safety expert was hired by ZPMO to inspect and evaluate the past performance and current safety status of the dams and evaluate the O&M procedures. A number of measures were identified to upgrade the existing dams to an acceptable safety standard, of which the best international practices were considered and incorporated. They have been reviewed by the Bank and are now being implemented. During implementation, ZPMO will prepare Annual Dam Safety Action Plans and provide relevant dam safety information to the dam safety expert and the Bank and arrange field trips when necessary to review the safety status of relevant dams and take remedial action if necessary.

Annex 1: Results Framework and Monitoring

China: ZHEJIANG RURAL WATER SUPPLY AND SANIATION PROJECT

PDO Level Results Indicators	Core	Unit of Measure	Base line	Cumulative Target Values[4]						Frequency	Data Source/ Methodology	Responsibility for Data Collection
				2015	2016	2017	2018	2019	2020			
Project Development Objective Indicators												
PO-1 Number of people in rural areas provided with access to improved water sources under the project[5]										Once a year	Actual data collection and monitored	PMOs and PIUs
- Total population	X	Persons	0	5,000	30,000	220,000	-	-	-			
- Female population	X	Persons	0	2,500	15,000	110,000	-	-	-			
PO-2 People provided with access to improved sanitation facilities under the project[6]										Once a year	Actual data collection and monitored	PMOs and PIUs
- Total population	X	Persons	0	7,000	25,000	290,000	-	-	-			
- Female population	X	Persons	0	3,000	12,000	145,000	-	-	-			
Intermediate Results Indicators												
IO-1.1 Piped household water connections that are benefiting from rehabilitation works undertaken by the project	X	Number	0	800	5,000	55,000	-	-	-	Once a year	Actual data collection and monitored	PMOs and PIUs
IO-1.2 New household sewer connections constructed under the project	X	Number	0	2,000	15,000	31,000	-	-	-	Once a year	Actual data collection and monitored	PMOs and PIUs

[4] The target values at project appraisal are for calendar year 2015-2017 only as the subprojects will be appraised batch by batch according to the framework approach. The values for 2018 and beyond will be determined during project mid-term review.

[5] "Improved water sources" include piped household connections (house or yard connections) from water treatment facilities. The raw water quality is improved by the project.

[6] "Improved sanitation facilities" refers to construction and/or rehabilitation of sewer household connections (septic tanks inclusive), sewerage collection networks and end-of-pipe treatment plants for the people living in rural areas.

PDO Level Results Indicators	Core	Unit of Measure	Base line	Cumulative Target Values[4]						Frequency	Data Source/ Methodology	Responsibility for Data Collection
				2015	2016	2017	2018	2019	2020			
IO-1.3 Volume (mass) of BOD pollution loads removed by the treatment plants under the project										Once a year	Actual data collection and monitored	PMOs and PIUs
- Fuyang WWTP (Phase 4)	X	Ton/Yr	0	0	0	0	-	-	-			
- Anren WWTP	X	Ton/Yr	0	0	0	16	-	-	-			
- Badu WWTP	X	Ton/Yr	0	0	0	5	-	-	-			
- Xiaomei WWTP	X	Ton/Yr	0	0	0	5	-	-	-			
IO-1.4 Ratio of production cost of water supply per cubic meter over the tariff charge per cubic meter										Once a year	Actual data collection and monitored	PMOs and PIUs
- Anji Guoyuan Water Company		Number	<1	<1	<1	<1	-	-	-			
- Fuyang Water Company		Number	<1	<1	<1	<1	-	-	-			
- Tiantai Water Company		Number	<1	<1	<1	<1	-	-	-			
- Longquan Water Company		Number	<1	<1	<1	<1	-	-	-			
- Longquan Rural Water Supply Station		Number	<1	<1	<1	<1	-	-	-			
IO-2.1. Number of staff training days in project financed training and TA activities[7]		Person-day	0	210	390	570	-	-	-	Once a year	Actual data collection and monitored	PMOs and PIUs
IO-2.2. Number of O&M management plans prepared and implemented		Number	0	0	5	5	-	-	-	Once a year	Actual data collection and monitored	PMOs and PIUs
IO-3.1 Development and implementation of a simplified management information system in the ZPMO for daily project management		Description	None	Completed	Completed	Completed	-	-	-	Once a year	Actual data collection and monitored	ZPMO

[7] It includes staff of ZPMO, CPMOs, PIUs and villagers who will assist PIU on the daily operation of wastewater treatment station in the village.

Annex 2: Detailed Project Description

CHINA: Zhejiang Rural Water Supply and Sanitation Project

1. The Project Development Objective (PDO) is to improve access to sustainable water supply and sanitation services in selected villages and towns in rural areas of Zhejiang Province.

2. To achieve this objective, the project is divided into 3 different components: (i) improving water supply and sanitation, (ii) training and capacity building, (iii) project management and supervision. A more detailed description of each project component and subprojects under each component is provided below.

Component 1: Improving Water Supply and Sanitation (Total: US$ 355.9 million, of which IBRD loan is US$193.5 million).

3. This component will improve drinking water services through investment in the rehabilitation and construction of water mains, distribution networks, pumping stations and water treatment plants (WTP); as well as improvement of sanitary services, through the rehabilitation and construction of wastewater and storm water collection networks, pumping stations, river channels and ponds, septic tanks, toilets, and end-of-pipe small-scale domestic wastewater treatment facilities in villages and municipal wastewater treatment plants (WWTP) in towns and cities. In particular, household connections will be emphasized to ensure that the domestic wastewater is collected and treatment facilities are properly loaded (in terms of quality and quantity) and functioning in a manner that guarantees long-term sustainability. This component is further split administratively and geographically into four subcomponents, as follows:

4. **Component 1(a): Improving Water Supply and Sanitation in Anji County** (US$ 102.7 million, of which IBRD loan is US$ 53.2 million. US$ 31.6 million has been appraised, of which US$ 9.2 million is for water supply and US$ 22.5 million is for sanitation; the remaining US$ 71.1 million will be appraised during project implementation). Anji County is part of Huzhou City, located in northwestern Zhejiang and with about 450,000 registered citizens in 2011 (exclusive of migrant population). The socio-economic activities of the County are concentrated in three main areas: central, northern and southern mountain areas. This subcomponent aims to improved WSS services in these areas for both registered citizens and migrant populations, as detailed in Table A2.1.

Table A2.1 Summary of Project Activities for Anji County

Category	Area	Functions
Water Supply	Meixi Town	Construction of water distribution pipelines benefiting 7 natural villages
Sanitation	Meixi Town	Construction of sewerage system in 7 villages
Water Supply	Tianhuangping Town	Construction of water supply and pumping station Construction of distribution networks for 2 natural villages
Sanitation	Tianhuangping Town	Construction pumping station and sewage system in 47 villages
Sanitation	Anji County	Construction of sewerage collection and treatment facilities in 50 villages

5. **Component 1(b): Improving Water Supply and Sanitation in Fuyang City** (US$ 115.1 million, of which IBRD loan is US$ 58.1 million. US$ 83 million has been appraised, of which 6 million is for water supply, US$ 77 million is for sanitation; the remaining US$32.1 million will be appraised during project implementation)**.** Fuyang City is located to the southwest of Hangzhou City, the provincial, and has approximately 653,800 registered citizens in 2011 (exclusive of migrant population). The northern and eastern parts of the city neighbor Hangzhou Municipality, and are the most developed areas of the city. The western part of the city is an ecological conservation area, representing the ecological buffer zone of the city. This subcomponent aims at improving sanitation services in the city suburban areas, villages and towns, and water supply services in city suburban areas for both registered citizens and migrant populations, as detailed in Table A2.2.

Table A2.2 Summary of Project Activities for Fuyang City

Category	Area	Functions
Sanitation	Fuyang City	Upgrading and expansion of Fuyang WWTP. Treated effluent will comply with Class 1A discharge standard after completion
Water Supply	Xindeng Town	Rehabilitation of water distribution pipelines in 12 villages
Sanitation	Xindeng Town	Rehabilitation and expansion of sewers and storm pipelines in 12 villages
Water Supply	Dayuan Town	Rehabilitation of water distribution pipelines in 9 villages
Sanitation	Dayuan Town	Rehabilitation and expansion of sewers in 9 villages
Sanitation	Fuyang City	Construction of sewerage collection facilities for 18 villages
Sanitation	Fuyang City	Construction of sewerage collection and treatment facilities for 6 villages

6. **Component 1(c): Improving Water Supply and Sanitation in Tiantai County** (US$ 78.7 million, of which IBRD loan is US$ 43.5 million. US$ 23 million has been appraised, fully for sanitation; the remaining US$ 55.7 million will be appraised during project implementation)**.** Tiantai County is part of Taizhou City, located in eastern Zhejiang and had an approximate population of 582,800 registered citizens in 2010 (exclusive of migrant population). The socio-economic activities of the county are concentrated in a narrow basin, Tiantai Basin. This subcomponent aims to improve water supply and sanitation services in the county, mostly for registered citizens and migrant populations of the villages and towns in the Tiantai Basin, as detailed in Table A2.3.

Table A2.3 Summary of Project Activities for Tiantai County

Category	Area	Functions
Sanitation	Tiantai Basin	Collection of sewerage from 61 villages in the region
Sanitation	Tiantai County	Sanitation improvement for 27 villages

7. **Component 1(d): Improving Water Supply and Sanitation in Longquan City** (US$ 59.4 million, of which IBRD loan is US$ 38.7 million. US$ 30.4 million has been appraised, of which US$ 14 million is for water supply and US$ 16.4 million is for sanitation; the remaining US$ 29 million will be appraised during project implementation). Longquan City is located in southeastern Zhejiang, part of Lishui City and had about 288,490 registered citizens in 2010

(exclusive of migrant population). Longquan is a hilly city where 90 percent of land is mountainous. Up to 40 percent of the Longquan population resides in the county seat with others living in hilly towns and villages. Manufacturing is less developed and the local economy is based on ecological-related sectors. This subcomponent aims to improve WSS services in old city areas and villages and towns that urgently require such services, as detailed in Table A2.4.

Table A2.4 Summary of Project Activities for Longquan City

Category	Area	Descriptions
Water Supply	Longquan City	Rehabilitation and expansion of Nandayang WTP and construction of water distribution pipelines
Sanitation	Longquan City	Construction of sewers and storm pipelines
Water Supply	Xiaomei Town	Construction of Xiaomei WTP, raw water pipelines and water distribution pipelines
Sanitation	Xiaomei Town	Construction of Xiaomei WWTP and sewers
Water Supply	Anren Town	Construction of Anren WTP and water distribution pipelines
Sanitation	Anren Town	Construction of Anren WWTP and sewers
Water Supply	Badu Town	Construction of WTP and water distribution pipelines
Sanitation	Badu Town	Construction of WWTP and sewers
Water Supply and Sanitation	Longquan City	Construction and improvement of water supply and sanitation facilities
Water Supply and Sanitation	Longquan City	Construction and improvement of water supply and sanitation facilities

8. Under this component, the total investment amounts US$355.87 with an IBRD loan financing of US$193.5 million. US$95.15 million of investments were appraised during preparation with the remaining US$ 98.35 million to be identified and appraised during project implementation in accordance with a framework approach which will be described in detail later in this section.

Component 2: Training and Capacity Building. (Total: US$ 2.5 million fully funded by IBRD Loan)

9. This component will help ensure there is adequate capacity, including technical capacity, to operate and maintain WSS investments in a sustainable manner. As many institutions are involved in the project, some being recently established water and sanitation companies, it is essential to provide a comprehensive training program and initiate a capacity building process. Specific attention will be paid to improve the performance of the water and sanitation companies to ensure sustainable service provision and to enhance the capacity of PMOs and PIUs involved in project implementation. The identified and agreed areas of technical assistance support to be financed by the component include:

(a) training for staff of PMOs, PIUs and institutions involved in project implementation in the areas of technical, procurement, financial management and safeguards, etc. It is expected that at least 12 training workshops will be held during project implementation;

(b) training for staff and operators of water companies participating in the project to enhance their O&M competency. It is expected that 30 on-the-job training sessions will be provided by experienced trainers, 20 training study tours within China, and 2 overseas study tours will be made during project implementation;

(c) institutional strengthening and capacity building for participating water companies. The consultant hired by ZPMO will work out tailored business plans and institutional strengthening strategies for water companies to achieve sustainable operation. Preliminary asset management plans, septic tanks management plans, basic geographical information systems (GIS) and management information systems (MIS) will also be developed;

(d) implementation of a program to monitor and evaluate the performance of wastewater treatment stations in the participating villages. As the discharge limit for the project is approved by Zhejiang Environment Protection Department on an exceptional case, this program will conduct a post-evaluation to assess the rationality of the discharge limit and look for opportunities to further optimize the selection of treatment technologies during project implementation. The outcomes of this program and lessons learned will be very useful to other rural sanitation projects in Zhejiang and China as a whole, and provide evidence-based results which may be used in future for establishing of nation-wide or region-wide rural wastewater discharge code.

Component 3: Project Management and Supervision (Total: US$ 3.5 million fully funded by IBRD Loan)**.**

10. This component is closely linked to the infrastructure investment under Component 1. It will provide project management assistance to the PMOs, PIUs at both province and county level. The identified and agreed areas of technical assistance to be financed by the project include:

(a) technical support for the implementation of a framework approach, including reviewing technical reports for subprojects which are eligible for project financing; and

(b) support for project management and supervision. Five key staff from the consultancy firm, including one resident engineer and four deputy resident engineers, will be deployed to ZPMO and four project counties, working closely with the clients to assist contract management, site supervision, procurement and safeguards, etc.

Attachment 1 to Annex 2

Summary of Technical Analysis

1. **Framework Approach.** Approximately 53 percent of subproject investments were appraised during project preparation. The remaining 47 percent will be selected, designed and appraised during implementation. The following is the criteria for selecting, designing and appraising future subprojects.

2. **Problems to be Addressed and Determination of Alternatives.** Inadequate wastewater collection and treatment is one of the major issues to be addressed by the Project. Household septic tanks have been extensively built in rural Zhejiang but their construction and maintenance is not properly regulated. For example, many are constructed without bottom lining resulting in waste directly seeping into the ground and causing groundwater contamination. However, other wastewater such as kitchen and laundry waste are also discharged in an unregulated manner and this problem is not solved by the construction of septic tanks alone as these wastes are often directly poured into small streams or ponds or shallow uncovered ditches alongside village lanes, causing not only environmental pollution but also environmental health problems and nuisances such as flies and bad odors.

3. As such, apart from upgrading septic tanks to prevent groundwater contamination, building sewer networks to collect household wastewater is essential to fully address environment problems caused by unregulated wastewater discharge. In addition, as indicated in Table A2.6, A2.7 and A2.8, treating wastewater by septic tank only will not meet the rural domestic wastewater discharge limits proposed by local environment authorities; therefore it will not be considered as an alternative on its own unless justified by the remoteness of an individual household.

4. In this project, taking into account village topography, population density and distance to the towns where a WWTP has been built, to be built or to be expended, three alternatives are identified and will be implemented based on the cost-effectiveness analysis for the improvement of rural sanitation, being:

- **Option 1:** collect wastewater in villages and transfer to a WWTP located in nearby town for treatment;
- **Option 2:** collect wastewater in a village and treat locally in a small-scale treatment station normally built on the edge of the village; and
- **Option 3:** collect wastewater in villages and transfer to a small-medium scale WWTP located in the region for treatment.

5. During project implementation, household connection rates in each village will reach a minimum of 70 percent; and will be gradually increased. Therefore, for a few households located either remotely or far away from dense settlements, the upgrading of septic tanks might be considered as an interim approach for improved rural sanitation under the project. These households will be connected to the sewer network in the future with housing development in the village.

6. **Analysis of Typical Village Categorization and per Capita Investment.** A detailed analysis of the completed feasibility study reports (FSRs) was conducted to determine the per capita investment for village sanitation improvement. It is recognized that the cost of sewer network construction varies largely in terms of topography and population, but makes up the largest part of total costs (about 80 percent of the capital investment required). The cost of household connection and construction of small scale treatment stations are however are somewhat "standardized". The categorization of villages and associated per capita cost of sewer network construction are shown in Table A2.5.

Table A2.5 Categorizations of Typical Village and Per Capita Cost of Sewer Network

Categories	Population Density (Persons per hectare)	Pipeline length (meter per capita)	Per Capita Cost (RMB)	Percentage %
Stripe		8.5 ～ 14.4	1934 ～ 3110	9
Low density	< 50	6.5 ～ 9.4	1632 ～ 2036	19
Average	50 ~ 70	4.3 ～ 6.5	1228 ～ 1561	19
High density	70 ~ 90	3.7 ～ 5.3	1129 ～ 1351	24
Very high density	> 90	3.0 ～ 3.9	885 ～ 1155	29

Notes: Data above represents current sample villages, showing a range for each category. This will be further fine-tuned to provide a more comprehensive analysis once more villages provide their FSRs or designs.

7. According to the analysis, the ceiling for per capita investment in sewer network construction is established in the Project Operation Manual (POM) to determine the eligibility of subprojects for project financing in accordance with the framework approach. Being a learning-by-doing approach, these ceilings may be revised during project implementation.

8. **Influent Wastewater Quality Measurement and Determination.** Sampling of domestic wastewater quality in villages has been conducted and analyzed. The results are shown in the Table A2.6.

Table A2.6. Measured Influent Wastewater Concentrations in the Villages

Percentile	COD (mg/L)	BOD (mg/L)	SS (mg/L)	NH4-N (mg/L)
25%	99	40	18	13
50%	159	60	42	25
75%	240	100	87	46

9. Septic tanks have a big impact on the quality of wastewater collected in the village. Analyses were conducted to justify the contribution of septic tanks to reducing pollution load. Table A2.7 presents the typical influent wastewater concentrations to treatment stations, owing to different percentages of septic tanks connected to the sewer system.

Table A2.7 Typical Influent Wastewater Concentrations to the Treatment Stations

Scenarios	COD (mg/L)	BOD (mg/L)	SS (mg/L)	NH4-N (mg/L)
All Households Without Septic Tanks	250	100	100	35
Some with Septic Tanks*	180	70	80	25
All Households With Septic Tanks	150	50	50	20

Note: Assuming 70 percent with septic tanks and remaining discharged to sewer networks directly.

10. The proposed discharge limits for rural sanitation requested by Zhejiang Provincial Environment Department is shown in the Table A2.8.

Table A2.8. Discharge Limits for Domestic Wastewater Treatment in Villages

No	Description	Unit	Discharge Limit
1	Chemical Oxygen Demand (COD)	mg/l	100
2	Biological Oxygen Demand	mg/l	30
3	Ammonia Nitrogen (NH4-N)	mg/l	25
4	Suspend Solids (SS)	mg/l	30

Note: Further land treatment for the treated effluent is required if the village is located in a water supply resource protection zone.

11. **Selection of Rural Wastewater Treatment Technologies.** A comprehensive treatment alternative analysis was conducted to provide guidelines for the selection of technologies for wastewater treatment stations for all rural sanitation subprojects. Based on the recommended effluent limits for rural sanitation subprojects, and also referring to the experiences of recently completed rural sanitation projects in China, two treatment processes are recommended. These are the trickling filter (primary choice) and wetland technology (alternative). These technologies are advantageous as they are relatively simple, require low capital investment and O&M costs, and are easy-to-operate. The POM provides detailed guidelines for the design of these systems.

12. **O&M of Rural Sanitation Subprojects.** Many rural sanitation investments in China do not function as intended, mainly because of poor or inadequate O&M. For this project, the O&M costs have been carefully detailed and sources of financing identified. Table A2.9 details the O&M costs, exclusive and inclusive of depreciation of assets, as well as their sources of financing.

13. Apart from financing, guideline for the O&M of rural sanitation subprojects is developed and included in the POM. The following key issues are highlighted here:

- *Household Connections.* Each subproject should have a well-organized and planned community awareness program with educational information for all households to help in protecting and maintaining household facilities, i.e. laterals, clean-ups and septic tanks.

- *Sewer Networks.* Each relevant subproject should have a well-planned and routine inspection program of sewer networks to prevent system malfunctioning and also protect the investment requiring little effort and associated costs. A basic inspection program to check for silt/sediment accumulated in sewers, leaks or sewer blockages, manhole cover maintenance and structure stability, and limit inflow and infiltration effects will contribute to sustainable system operation.

- *Wastewater Treatment Stations.* Regular site visits to the station is compulsory with routine influent and effluent monitoring to ensure the station is functioning as designed. Preventative maintenance is required for any treatment station to ensure all equipment is functioning and there are no blockages in the sewer networks.

Table A2.9. Operation & Maintenance Cost and Financing Plan with and Without Asset Depreciation Costs (RMB million/year)

Investment	O&M Cost		Planned Source of Financing					
			Tariff Collected from Villagers		Revenues from Water Tariffs		Government Subsidy	
Including Asset Depreciation Costs	No	Yes	No	Yes	No	Yes	No	Yes
Improving WSS in Anji County								
- Village with own treatment facility	0.40	5.33	0.40	0.40			n/a	4.93
- Rural Towns [1]	33.88	64.53			41.22	48.75	n/a	15.96
Improving WSS in Fuyang City								
- Village with own treatment facility	0.31	5.80	0.31	0.31			n/a	5.49
- Rural Towns [1]	159.87	229.06			146.20	200.93	13.95	29.90
Improving WSS in Tiantai County								
- Village with own treatment facility	0.74	6.67	0.74	0.74			n/a	5.93
- Rural Towns [1]	39.55	69.11			60.52	54.59	n/a	18.74
Improving WSS in Longquan City								
- Village with own treatment facility	0.63	9.73	0.63	0.63			n/a	9.10
- Rural Towns [1]	5.20	11.88			3.74	9.73	1.54	3.34
- Longquan Town	21.39	32.82			23.00	31.60	n/a	1.57
Total (appraised)	**261.98**	**434.95**	**2.09**	**2.09**	**274.68**	**345.61**	**15.50**	**94.96**

Note: [1] including villages where WSS services are from rural towns through pipeline connection.

Annex 3: Implementation Arrangements

CHINA: Zhejiang Rural Water Supply and Sanitation Project

Project Institutional and Implementation Arrangements

1. **Provincial Level.** Zhejiang Provincial Foreign Fund Utilization Leading Group (PLG) was established in May 2013 and chaired by the Provincial Vice-Governor responsible for the Provincial Development and Reform Commission (ZDRC). The PLG includes representatives from ZDRC, Zhejiang Provincial Finance Bureau (ZPFB), Water Resource Department, Environment Protection Department (EPD), Land Resource Department, and other agencies and relevant institutions. The major responsibilities of the PLG are to provide coordination, policy-level support, guidance on strategic issues and oversee the timely implementation of all projects with financing from outside of China, including this project.

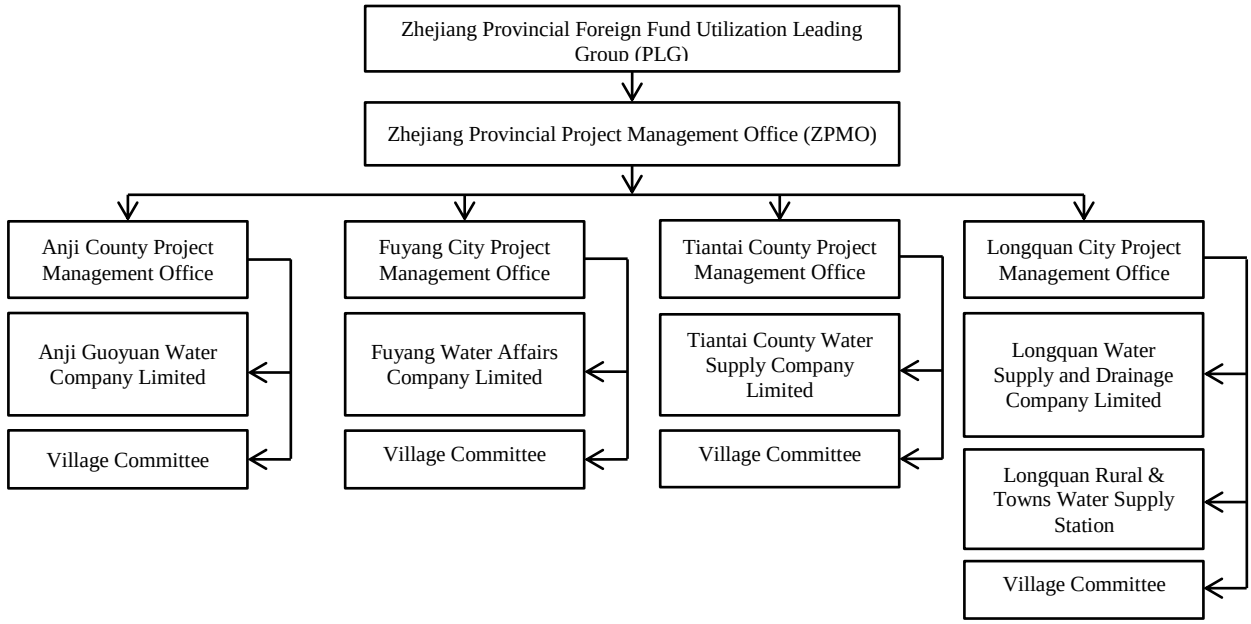
2. Zhejiang Provincial Project Management Office (ZPMO) is housed at the Provincial Economic Information Center, an institution affiliated to ZDRC. The ZPMO will be responsible for the financial management (FM) of the project under the support and guidance of ZPFB. ZPFB is responsible for managing the project's Designated Account (DA). Together with the ZDRC, the ZPFB will provide support and advice to the ZPMO and Project Counties on financial matters. ZPMO, with support from consultants, will also be responsible for overall supervision of the project, focusing on technical and project management aspects, advisory services to the Project Counties and Project Implementing Units (PIUs), quality assurance and control, and consolidation of monitoring and reporting, and due diligence and governance requirements.

3. ZPMO will also be responsible for the overall management of the project and for immediately flagging any issues hampering timely implementation according to the policies and procedures agreed for this project. Furthermore, for procurement, ZPMO has selected an agent to assist with the preparation of bidding documents and the managing of the overall bidding process. ZPMO will prepare semi-annual progress reports and coordinate the monitoring and evaluation of the project. A project management and supervision team of consultants will support ZPMO in carrying out these functions and provide advice to the Project Counties and county-based PIUs regarding contracts and safeguards oversight and supervision.

4. **Local Level.** The project will be implemented by the participating water companies in each of the Project Counties which will be serving as Project Implementation Units (PIUs). These PIUs are financially and legally autonomous and will be responsible for overall construction management and O&M of the investments, supported by experienced design institutes, tendering companies, and a construction supervision company per county.

5. Also at the local level, a county project management office (CPMO) has been established in each of the Project Counties, chaired by the officials of each county's DRC or Agricultural Committee. CPMOs will be responsible for the supervision of the project, focusing on technical and project management aspects, assisting PIUs in the areas of compliance with safeguards policy, and providing general advisory services to the County and the corresponding PIU, reporting directly to ZPMO.

6. The sewer network household connections in the villages will be implemented by the Village Committees, which will be acting as PIUs and be responsible for managing the sewer network construction under the support and supervision of the corresponding CPMO.



7. **Construction Supervision.** The technical supervision of the subprojects and contracts will be done by the PIUs with support from local engineers and safeguards specialists. The PIUs will monitor contract implementation progress according to agreed milestones, evaluate subproject impacts, and prepare monitoring reports. The ZPMO will hire a consultancy firm to support the team in the different project management and supervision tasks. Local supervision will be assisted by local consultants who will perform periodic on-site supervision and provide construction supervision reports and payment certification, reporting to the PIUs.

8. **Framework Approach.** As the proposed project involves a large number of villages (259 villages at appraisal while more will be appraised and implemented in the future) and rural towns, and consequently a large number of subprojects, a framework approach has been adopted to streamline the project preparation and implementation and get some results early on in the project cycle which can inform future investments. This approach will also have the added benefit of reducing implementation risks associated with a project of such large scope. Under the framework approach, only subprojects corresponding to 53 percent of the investment and associated IBRD loan were identified and appraised during the preparation and appraisal stages, while subprojects corresponding to the remaining amount of the investment and IBRD loan will be screened and appraised during project implementation, in accordance with the Project Operation Manual specified in the section below. The initial implementation of subprojects in the 259 villages will provide lessons which will benefit the design and implementation of the remaining investments and help refine the technical designs, community partnerships, and operations and maintenance systems. The framework approach is detailed in Attachment 1 to Annex 3 of the PAD.

9. **Local Level.** At the local level, a county project management office (CPMO) has been established in each of the Project Counties, chaired by the officials of PDRC or ZAC. The implementation arrangement at the local level is shown in Table A3.1.

Table A3.1 Implementation Arrangements at Local Level

County/City	Villages (Household Connections)	Villages (Collection Network and Treatment Station)	Rural Towns	County Towns
Entities Responsible for Investment				
Anji County	Anji County Government	Anji Guoyuan Water Company Limited		
Fuyang City	Fuyang City Government	Fuyang Water Affairs Company Limited		
Tiantai County	Tiantai County Government	Tiantai County Water Supply Company Limited		
Longquan City	Longquan City Government	Longquan Rural & Towns Water Supply Station		Longquan Water Supply and Drainage Company Limited
Entities Responsible for Implementation				
Anji County	Local Village Committees	Anji Guoyuan Water Company Limited		
Fuyang City	Local Village Committees	Fuyang Water Affairs Company Limited		
Tiantai County	Local Village Committees	Tiantai County Water Supply Company Limited		
Longquan City	Local Village Committees	Longquan Rural & Towns Water Supply Station		Longquan Water Supply and Drainage Company Limited
Entities Responsible for O&M				
Anji County	Anji Guoyuan Water Company Limited, with assistance of village committees			
Fuyang City	Fuyang Water Affairs Company Limited, with assistance of village committees			
Tiantai County	Tiantai County Water Supply Company Limited, with assistance of village committees			
Longquan City	Longquan Rural & Towns Water Supply Station, with assistance of village committees			Longquan Water Supply and Drainage Company Limited

10. **The Role of the Village Committee on Household Sewer Connections.** Experience throughout China has shown that the construction of WWTPs is often the simplest aspect of the capital investment, while ensuring sufficient coverage of household sewer connections i.e. no less than 70 percent of household connecting to the sewer network, is the most difficult yet essential to the success of the project.

11. Detailed analysis shows that, for sanitary improvement in a village, the cost of laying household connections makes up only a small percentage of the capital investment (15-20 percent). The contractor is very likely to bid a low price for household connections and drop this part during construction if all works, the treatment plant, networks and household connections,

are included in one contract. Therefore it is recommended that the household sewer connection be implemented separately.

12. Local water companies are the PIUs of the project, but their businesses are historically centered in towns and are not yet providing sanitary services in villages. The incentive for water companies to implemented sewer household connection appears low, and has to substantially rely on the coordination of the village committee. Having considered issues around incentives, ownership and efficiency, it is agreed that calling upon the village committee to implement this part of investment would be the best solution. Due to administrative constraints, the household sewer connection has to be "one administrative village, one contract". This is in contrast to the construction of sewer networks and treatment stations in different natural villages which could be grouped into one contract. Therefore large numbers of contracts for household connections is inevitable.

13. Supervision of the Village Committee will be undertaken by the CPMO and County Finance Bureau (CFB), with support of the local water company. Payments to contractors will be made directly by the CFBs based on the recommendation of the Village Committee.

Financial Management, Disbursements and Procurement

Financial Management

14. The overall Financial Management (FM) risk is assessed as Substantial. FM capacity assessment identified the following principal risks: (a) the designated project FM staff lack knowledge and experience in managing Bank financed projects which may cause inappropriate or inefficient use of project funds; and (b) multi-layer arrangements may affect disbursement efficiency. Mitigation measures to address these risks will be as follows: (a) preparation and distribution of a FM Manual (FMM) as part of the POM, so that project FM procedures for coordination and reporting are standardized; (b) training workshops and peer learning from other experienced projects to be arranged by ZPFB and ZPMO; (c) hiring of experienced consultants to help the project enhance its FM work; and (d) further advance of Bank loan proceeds to be maintained by CFBs to improve disbursement efficiency.

15. Funding sources for the project include the Bank loan and counterpart funds. The World Bank loan agreement will be signed between the World Bank and the Ministry of Finance (MOF), and a subsidiary loan agreement will be entered into by MOF and Zhejiang Provincial Government. ZPFB, representing the Provincial Government, will further on-lend the World Bank loan to the government of each project city or county (Anji County, Fuyang City, Longquan City and Tiantai County) which will be the final debtors for the household sewerage connection component, and the remaining loan will be further on-lent to respective PIUs.

16. **Audit Arrangements.** Zhejiang Provincial Audit Office (ZPAO) has been identified as the auditor for the project. The annual audit report will be issued by ZPAO. The annual audit report on the project financial statements will be due to the Bank within 6 months after the end of each calendar year. According to the agreement reached with MOF and China National Audit Office (CNAO), the audit report and audited financial statements will be publicly available in the

official websites of both the World Bank and project auditor (either CNAO or the provincial auditor). The consolidated project financial statements should be prepared by the Zhejiang PMO by June 30 of each calendar year.

17. **Budgeting.** Project counterpart funds will be comprised of provincial subsidies, government fiscal revenue and other fiscal funds mobilized. Each CFB will be responsible for the financing plan and making funds available to the project based on actual construction progress. Budget variance analysis will be conducted regularly thus enabling timely corrective actions.

18. **Funds Flow**. The designated account of the Bank loan will be opened and managed by ZPFB. Then further advance from the DA will be made into the OA established at commercial banks acceptable to the Bank and managed by CFBs. Each OA will be maintained in USD with a pre-defined ceiling of USD 4 million. Disbursement will be made to PIUs or contractors based on PIU funding requests (also referred to as withdrawal applications) submitted through CPMO and ZPMO. The funds requests will be supported by contractor and supplier invoices and other necessary documents. The usage of further advances will be reported to ZPFB and the outstanding advances in the OAs will be reconciled with the DA on quarterly basis. Any excessive further advances in OAs, which cannot be fully used by the end of the project, must be returned to the DA.

19. ZPFB will be directly responsible for the management, maintenance and reconciliation of the DA activities of the project. Each CFB will be directly responsible for the management, maintenance and reconciliation of the OA activities of the project. Supporting documents required for Bank disbursements will be prepared and submitted by CPMO to ZPFB through ZPMO and CFB for final verification before sending to the Bank for further disbursement processing. The proposed flow of funds and funding requests are as follows:

(1) The DA at ZPFB will submit the withdrawal applications to require the advance or report uses of previous advances to the Bank. The Bank will deposit the fund into the DA based on the requirement in withdrawal applications.

(2) The further advance will be made from DA to OAs based on projected construction progress and funding needs within the ceiling documented in the Disbursement Letter issued by the Bank. To report the usage of further advances to an OA, the CFB should provide (i) supporting documents of paid expenditures, (ii) bank statement and, (iii) bank reconciliation in the format agreed with the Bank to ZPFB on quarterly basis.

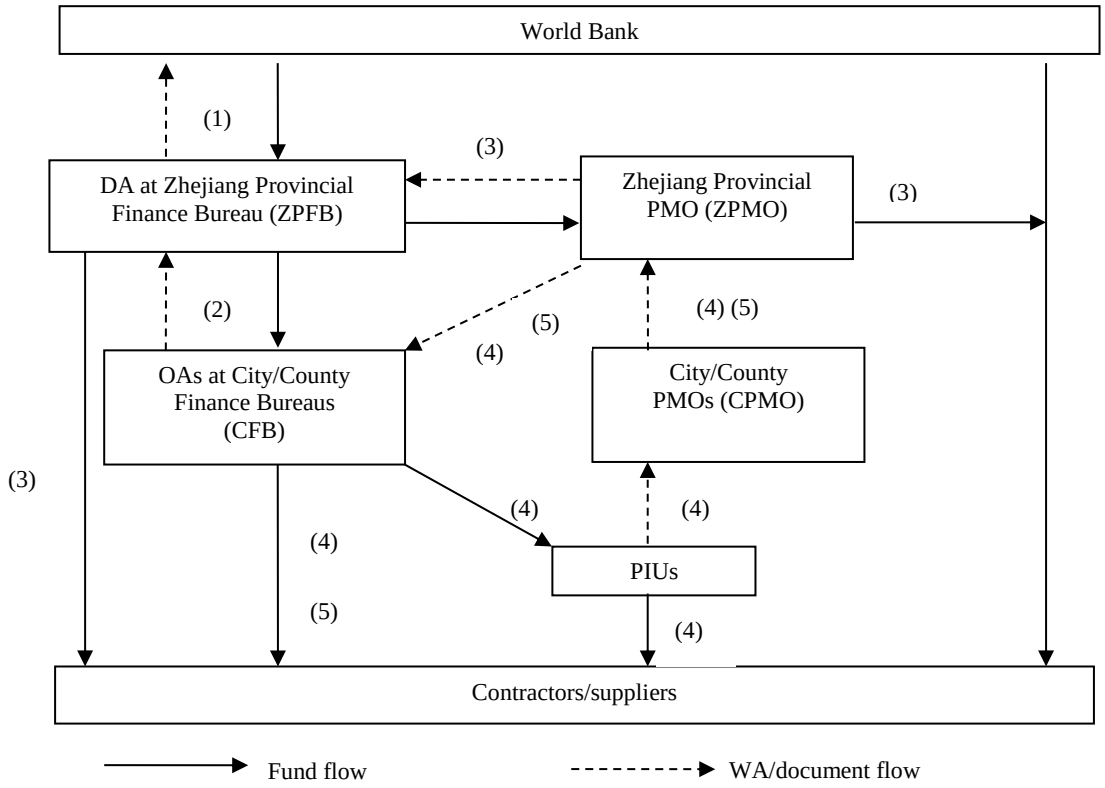
(3) For expenditure at provincial level, it will go through the general provincial internal approval procedures within ZPMO and ZPFB and then be paid to contractors or suppliers by ZPFB directly or through ZPMO.

(4) For expenditure incurred by PIUs for major expenditures for water supply and sanitation components except household sewage connections, it will go through the general internal approval procedures through CPMO and ZPMO, and then be paid to contractors or suppliers by CFB directly or through PIUs (Accounting Assignment Center of Longquan

Finance Bureau will manage project funds and financial management work on behalf of the PIU).

(5) For expenditures incurred for household sewage connection components, it will go through pre-agreed internal approval procedures through village committees, CPMOs and ZPMO, and then be paid to contractors or suppliers by the CFB directly.

Figure A3.1. Fund Flow Arrangement



20. **Accounting and Financial Reporting.** The administration, accounting and reporting of the project will be set up in accordance with Circular #13: "Accounting Regulations for World Bank-financed Projects" issued in January 2000 by MOF.

21. All PIUs, CPMOs and ZPMO will manage, monitor and maintain project accounting records for project activities for which they are responsible. All PIUs will use their current accounting systems which are all commonly used computerized accounting software approved by MOF, to set up individual account profiles for project activities implemented. All CPMOs will use Excel worksheet or manual books to set up project accounts for household sewerage connection components. By incorporating PIUs' financial statements, CPMOs will work with related CFBs to prepare project financial statements of each City/Country and then submit to ZPMO, who will work with the ZPFB to prepare the consolidated project financial statements in Excel. The unaudited semi-annual project financial statements will be prepared and furnished to the Bank by ZPMO as part of the Progress Report no later than 60 days following each semester (the due dates will be August 31 and February 28). Project supervision and the year-end audit

will verify the reliability of financial reports, paying particular attention to reports prepared in Excel or manually.

22. **Internal Controls.** The related accounting policy, procedures and regulations were issued by MOF and the FMM will align the FM and disbursement requirements among various implementing agencies.

Disbursements

23. Four disbursement methods are available for the project: (i) advance, (ii) reimbursement, (iii) direct payment and, (iv) special commitment. Supporting documents required for Bank disbursement under different disbursement methods are documented in the Disbursement Letter issued by the Bank. The Bank loan would disburse against eligible expenditures (taxes inclusive) as in the table A3.3.

24. Retroactive financing will be available for this Project in the amount of US$ 20.0 million for payments made under the Project prior to the date of the Loan Agreement but on or after May 15, 2014, for Eligible Expenditures.

Table A3.3 Categories of Eligible Expenditures for Disbursement

Category	IBRD Loan	
	Allocated Amount (expressed in US Dollar)	**Percentage of Expenditures to be financed (inclusive of taxes)**
(1) Works under Component 1 of the Project		
(a) Anji County	53,210,000	
(b) Fuyang City	35,670,000	85%
(c) Tiantai County	43,540,000	
(d) Longquan City	38,700,000	
(2) Goods for the Fuyang WWTP Subproject - Phase 4	22,380,000	100%
(3) Goods, consultants' services and training	6,000,000	100%
(4) Front-end Fee	500,000	100%
Total Amount	**200,000,000**	

Procurement

25. **Capacity Assessment.** The procurement capacity assessment identified lack of experience by the procurement staff in ZPMO, CPMOs and PIUs with World Bank-financed projects as the principal risk which could lead to possible noncompliance and limited contract management capacity. The agreed mitigation measures to deal with these risks include: (i) hiring, by the ZPMO, a procurement agent with requisite qualifications and experience and under TOR acceptable to the Bank to assist all CPMOs and PIUs with procurement management; (ii) preparation, by the ZPMO with the participation of the CPMOs and PIUs, of a Procurement Manual acceptable to the Bank to guide procurement management; (iii) appointment by the

ZPMO of qualified procurement staff at province and county level; and (iv) periodic training for the ZPMO, CPMOs and PIU staff on procurement and contract management in Bank-financed projects. The overall procurement risk is substantial.

26. **Applicable Guidelines.** Procurement will be carried out in accordance with the "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011; and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011; and the provisions stipulated in the Loan Agreement. National Competitive Bidding (NCB) shall be carried out in accordance with the Law on Tendering and Bidding of the People's Republic of China promulgated by Order of the President of the People's Republic of China on August 30, 1999 subject to the modifications stipulated in the Legal Agreement in order to ensure consistency with Bank Procurement Guidelines.

27. **Procurement of Works.** Works procured under this project will include: construction and rehabilitation of water supply and wastewater collection and treatment facilities. Procurement will be conducted using the Bank's Standard Bidding Documents for all International Competitive Bidding (ICB) and National Model Bidding Documents agreed with or satisfactory to the Bank for all NCB.

28. **Procurement of Goods and Non-consulting Services.** No goods procurement is included in the current procurement plan; however, goods may be required during project implementation. Procurement will be done using the Bank's Standard Bidding Documents for all ICB and National Model Bidding Documents agreed with or satisfactory to the Bank for all NCB.

29. **Selection of Consultants.** Consulting services will include hiring of a project management firm and some sector studies. Universities and research institutes may be included in shortlists as a source of consultancy services, provided they possess the relevant qualifications and have no conflict of interest. In such cases, QBS or CQS (for small assignments) would be used, if the shortlist also includes consulting firms. If the assignment is below US$ 500,000, the shortlist may be comprised entirely of national consultants (firms registered or incorporated in the country).

30. **Training and Workshops**. Plans for training and workshops will be developed by ZPMO, and will be included in project's annual work plan for Bank review. Actual expenditures incurred in accordance with the approved plans for training and workshops will be the basis for reimbursement. For training and workshops to be organized with the assistance of a service provider, the training needs should be pre-assessed during project appraisal. Selection of service provider shall be based on competitive selection or shopping or framework method depends on the value of the contract and the contract duration.

31. **Procurement Plan.** A Procurement Plan for the first 18 months of project implementation has been prepared by ZPMO and will be made available on the Bank's external website. The Procurement Plan will be updated annually or as required to reflect implementation needs and improvements in institutional capacity.

32. **Frequency of Procurement Supervision**. In addition to prior review, the Bank mission will also carry out procurement post review on an annual basis utilizing a sampling rate of one in ten contracts.

33. **Thresholds for Procurement Methods and Prior Review**. The procurement plan shall set forth those contracts subject to prior review. The remaining contracts will be subject to procurement post review on a sample basis. The thresholds provided in Table A3.4 are indicative.

34. **Advance Contracting and Retroactive Financing.** The procurement plan shall set forth those contracts which will be procured in advance together with the relevant Bank review procedures. Retroactive financing for contracts signed prior to the loan signing shall be within the limits specified in the Loan Agreement.

Table A3.4 Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value Threshold (US$ thousands)	Procurement Method	Prior Review Threshold (US$ thousands) [1/]
Goods and Non-Consulting Services	>= 3,000	ICB	All ICB contracts
	< 3,000	NCB	First NCB contracts in prefecture and each county/city and all contracts valued ≥1,000
	< 100	Shopping	First Contract in each county/city, irrespective of value
		Direct Contracting	All
	<3,000	Framework Agreement	First contract of the project
Works and Supply and Installation of Plant and Equipment	>=25,000	ICB	All
	< 25,000	NCB	1st NCB contracts in prefecture and each county/city and all contracts valued ≥10,000
	< 500	Shopping	1st Contract in each county/city, irrespective of value
Consultants	>= 300,000	QCBS/QBS	All
	< 300,000	CQS	1st Contract in each county/city, irrespective of value.
	--	Individual Consultant	Only in Exceptional Cases
	--	Single-Source Selection (firm)	All
		Single-Source Selection (individual)	>=20

1/ All contracts to be financed through retroactive financing will be subject to prior review. A contract whose cost estimate was below the Bank prior review threshold is subject to prior review if the price of the lowest evaluated responsive bid (or, in the case of consulting services, the financial offer of the selected firm) exceeds such threshold at the bid/proposal evaluation stage.

Environmental and Social Safeguards

Social

35. The project has significant social benefits. It supports the improvement of basic services in villages and small towns in selected counties in Zhejiang Province by strengthening infrastructure, supporting capacity of water and sanitation utilities and supporting towns to absorb and service the growing rural migrant population without incurring environmental pollution. At this stage, 259 village communities in the four cities/counties have been selected.

36. **RAP and RPF**. Four resettlement action plans (RAP) were prepared to address the land acquisition and resettlement in the 4 cities/counties and a consolidated RAP was prepared to brief the main contents of those 4 RAPs. A resettlement policy framework (RPF) was prepared to guide the resettlement activities for the second stage of the selected village communities. The RAPs provided details on resettlement policy procedures and requirements to be followed during project implementation, including compensation rates, mitigation measures to restore livelihoods, and institutional and monitoring arrangements. The RAP has been disclosed through Bank's InfoShop on June 18, 2014. A RPF will be prepared to address any changes in project components and linked projects that might lead involuntary resettlement in the cities prior to the closing of the project.

37. **Public Participation.** Public consultations and participatory processes during project preparation have enabled the project to incorporate key stakeholders' concerns and demands, refine the project design, and reduce the number of people affected by land acquisition and resettlement.

38. **Land Acquisition and Resettlement.** The subprojects already appraised (53 percent of the total investment) will require the permanent acquisition of 6.1 hectares of land, including 3.3 hectares of cultivated land and 2.8 hectares of state owned land. The dominant current land use is rice growing. 75.1 hectares of land will be used temporarily during pipeline installation. The project will require 24,418 square meters of structures, including 6,976 square meters of rural structures and 17,442 square meters of enterprise structures. As a result, these subprojects will impact 518 people by permanent land acquisition and resettlement, and 1,094 people by temporary land use. No tombs were affected.

39. During the project preparation process and the different stages of project design, public consultations were conducted. The resettlement offices in the engaged cities/counties and also the independent resettlement monitoring agency will continue to conduct consultations during implementation. Project information was disseminated to displaced families in refining the project design, selection of project components and location of the subprojects.

40. The project contracted Hehai University to conduct population and social surveys, social impact analysis and public consultations. This will contribute significantly to the preparation of

RAPs, minimum or avoidance of any housing structural demolition and land acquisition. Villages and farmer groups will be consulted and participate in the resettlement planning process and the preparation of the project. Their feedback will be incorporated into the RAP.

41. Resettlement offices at county level will be established to implement resettlement programs and ZPMO will supervise resettlement implementation. The city land and resources bureaus will be responsible for land acquisition approval. An experienced national consulting team will be contracted to serve as the independent monitoring agency for the resettlement program. The project will be monitored and the living standards of the project-affected people will be evaluated over the course of project implementation. The monitoring results will be regularly reported twice a year and, if needed, remedial actions will be devised.

42. **Minority Communities**. The task team undertook screening of minority communities in the project areas. The project area is made up of Han population without any Chinese minority community in the project area. The Han population is not identified as minority by the Bank. The task team concluded that there no Indigenous Peoples as identified by the Bank are present in, or have collective attachment to, the project area.

43. **Gender Analysis and Development.** A disaggregated gender analysis in the affected villages/communities was undertaken by Hehai University with support from local agencies, listening to women's expectations on WSS service improvements and tariffs, and collecting ideas and recommendations that were incorporated in the designs of the project. Gender disaggregated information was also collected and used in the RAP to ensure women's interests could be safeguarded during any resettlement implementation. Women will play increasingly important roles in project implementation. The task team and resettlement monitoring institute will continue to monitor gender impacts during project implementation. The project is consistent with the Bank's approach to promote inclusion as a tool to help increase productivity and reduce disparities. The population currently living in rural villages is mostly comprised of women who have stayed back to take care of the family due to the migration of young and middle-age men for work. In this connection, the project will explore the possibility of providing training for women so that they can assist with basic maintenance of assets created under the project which could also provide an additional source of income for women.

44. **Participation Strategy.** Focused group discussions and key informant interviews were used to consult with potentially affected persons, beneficiary groups in villages and obtain views and preferences regarding resettlement impacts and mitigation measures, including land compensation and the resettlement budget to be supported by the engaged cities/counties. These views and preferences were taken into account during RAP preparation and the majority of potentially affected persons agree that the resettlement and rehabilitation measures planned under the RAPs were adequate to address and mitigate any adverse impacts. PMOs at the engaged cities will mobilize village committee-based project volunteer teams consisting of the head of the village committee, head of the Women's Association, and highly respected elders in each village. This team will participate in the project preparation process and later on monitoring of civil works.

45. The affected persons will play a key role in determining and implementing their livelihood restoration programs. For example, after land compensation amounts are calculated, each community will determine how land compensation can be best used to improve, or at least restore, local income-earning potential. Since the project will support village based development activities, all of the villagers will participate into the village development programs, specific to those affected individuals.

46. The subproject offices based in the Project Counties will implement the resettlement activities and ZPMO will set up procedures to supervise land compensation use. Both internal and independent monitoring of the resettlement program will be conducted regularly during project implementation.

47. **Institutional Arrangements**. Resettlement offices at county level will be established to implement the resettlement programs and ZPMO will supervise resettlement implementation. The project county land and resources bureaus will be responsible for the land acquisition approval. An experienced national consulting team will be contracted to serve as the independent monitoring agency of the resettlement program. The project will be monitored and the living standards of the project-affected people (PAP) will be evaluated over the course of project implementation. The monitoring results will be regularly reported twice a year and, if needed, remedial actions will be devised.

48. **Linked Projects.** The task team conducted due diligence reviews and concluded that no locally funded linked projects within two years prior to the project identification were identified.

Environment

49. Based on environmental screening, the Bank policy OP 4.01 Environmental Assessment is triggered. The project is Category B project as per the Bank's OP 4.01 Environmental Assessment, as the major impacts are site-specific and few would be irreversible.

50. An Environmental Impact Assessment (EIA) was carried out for the proposed project components, as well as a freestanding environmental management plan (EMP) to determine the mitigation measures, environmental monitoring program and necessary institutional arrangement as well as capacity building development. The documents have been prepared on the basis of Chinese legal and policy framework for environmental protection, master plans and environmental plans as well as applicable Bank safeguard policies.

51. **Environmental Benefit.** The project will have significant benefits in terms of providing improved water and wastewater infrastructure and services in the project areas, which are rural (259 villages in the initial phase of the project and up to 500 villages for the entire project) and remote mountainous areas in four counties of Zhejiang Province. Investments under Component 1 and 2 include civil works for water and wastewater infrastructure such as water supply pipes, wastewater collection pipes and treatment facilities, depending on the scale and actual needs of each project component. It is estimated that about 1.5 million people would be served by the project, with newly increased water supply capacity of 24.69 million tons per year and newly added wastewater collection capacity of 53.05 million tons per year. Furthermore, it is expected

that 12,987 tons of COD and 5,934 tons of BOD would be reduced annually when collected wastewater to be treated reducing water pollution.

52. Potential environmental and social impacts include: (i) construction impacts related to disturbance to rivers and streams, short term water quality degradation, soil erosion, noise, dust, and shipping and disposal of construction waste; as well as (ii) operational impacts related to wastewater treatment capacity with increased wastewater collection, and management capacity at township and village level.

53. **Public Consultations and Information Disclosure.** Two rounds of public consultations have been carried out during the EA process. The technique used for the public consultations included surveys using public opinion questionnaires, focus group discussions, public meetings with key stakeholders and interviews with some project affected persons. The issues raised during consultations have been incorporated in the EIA and EMP. Furthermore, feedbacks to the concerns and issues raised during public consultation have been provided to the concerned groups and documented in the EA. The environmental safeguards documents and other project related documents have been disclosed locally through websites and newspapers on March 7, 2014, as required by national and Bank's policies. The environmental safeguards documents have been disclosed through Bank's InfoShop on June 18, 2014.

54. **Physical Cultural Resources (OP/BP 4.11).** Although there were no physical cultural relics found through screening and site surveys, this policy is triggered in case of chance finding of cultural relics during project implementation. In the EMP, mitigation measures in line with Bank policy and the national regulatory and legal framework concerning cultural heritage have been included, and chance find procedures will be included in all construction contracts.

55. **Safety of Dams (OP4.37).** The project triggers the Safeguards Policy on Safety of Dams (OP4.37) since the project financed water supply facilities will draw water from dams formed by nine existing dams - Tianzigang, Fenghuang, Laoshikan, and Fushi Dams in Anji City, and Yanzhangxi 1, Yanzhangxi 2, Ruixiang 1, Ruixiang 2, and Zhuyang Dams in Longquan City. Those dams are from 8m to 89m in height and between 2.1 million and 218 million cubic meters in terms of reservoir capacities. The independent dam safety expert hired by the Borrower will (a) inspect and evaluate the safety status of existing dams, their appurtenance, and performance history; (b) review and evaluate the owners' O&M procedures; and (c) provide written reports of findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dams to an acceptable standard of safety. ZPMO and CPMOs would assign special staff to assist the Bank team and the dam safety expert to ensure the project is implemented in line with the OP4.37. Dam safety plans and emergency preparedness plans have been prepared for the existing dams. During implementation, the Borrower will prepare Annual Dam Safety Action Plans and provide relevant dam safety information to the dam safety expert and the Bank and arrange field trips when necessary to review the safety status of the relevant dams, and take dam safety measures recommended by the dam safety expert to improve the safety status when necessary to ensure the safety of dams.

Attachment 1 to Annex 3

Framework for Component 1 Implementation

A. Rational and Key Principles

1. Given the large number of subprojects which will be part of this project, especially in rural villages and towns, it is unfeasible to identify all subprojects at appraisal. In order to streamline project preparation and implementation, a framework approach has been adopted. With this approach, up to 53 percent of the investment has been appraised. During implementation, the remaining 47 percent will be screened, appraised and implemented.

2. **Program-Based Approach.** A program-based approach will be used for component 1 since the exact number and the details of villages and towns that will take part in the project are unknown. Selection of villages and towns will be carried out using the selection criteria set out in the framework. The Project Counties are responsible for submitting the list of villages and towns in accordance with this framework approach.

3. **Learning-by-Doing Pilot.** The preparation and implementation of the first batch of 259 villages and rural towns will serve as a demonstration and learning experience. Based on the lessons learned, the implementation methodology will be refined for the remaining villages which will be appraised batch by batch according to a framework approach.

B. Project Cost and Financing Plan of Component 1

4. The amount of the Bank loan and investment for component 1 to be identified and implemented following the framework approach is set out in Table A3.5. The repayment of the IBRD loan and provision of local funds will be the responsibility of Project County.

Table A3.5 Project Cost and Financing Plan of Component 1

	Total Project Cost			Appraised		Unallocated	
By Components	**Total**	**IBRD**	**Local**	**IBRD**	**Local**	**IBRD**	**Local**
Component 1: Improving Water Supply and Sanitation (WSS)							
1.a. Anji County	102.71	53.21	49.50	17.05	14.57	36.16	34.93
1.b. Fuyang City	115.11	58.05	57.06	43.68	39.32	14.37	17.74
1.c. Tiantai County	78.66	43.54	35.12	13.08	9.91	30.46	25.21
1.d. Longquan City	59.39	38.70	20.69	21.34	9.10	17.36	11.59
Sub-Total	**355.87**	**193.5**	**162.37**	**95.15**	**72.90**	**98.35**	**89.47**

C. Subprojects Selection Criteria and Procedures for Screening, Submission and Implementation

5. Subprojects must meet the following criteria to be eligible for project financing:

- PDO Compliance: the subproject should contribute to the achievement of the Project Development Objective;
- Location: the subproject should be located in one of the four project counties;

6. In addition, the following specific criteria must be met for villages sanitation improvements:

- The villages are prioritized by Project Counties for water and sanitation improvements;
- At least 70 percent of households in the village must agree to participate in the project;
- The villages committee agrees to implement the sewer household connection, with support and guidance from CPMO and PIU (local water company), and provide assistance necessary to the implementation and operate and maintain the investment;
- The per capita investment should not exceed the ceiling as specified in the project operation manual

7. The procedures for subproject screening, submission and implementation are referred to in Figure A3.2.

D. Implementation Arrangement

8. Participating water companies (PIUs) are responsible for implementation of the project following the framework approach, with support of the CPMOs, County Finance Bureau and consultants hired by ZPMO.

9. The village committee will be the PIU of the household sewer connections. Shopping will be the procurement method and the contractor will be paid directly by the County Finance Bureau on the advice of the village committee. The cost of household connections will be covered by the Project Counties.

E. O&M of the Investment

10. Participating local water companies (PIUs) are responsible for the O&M of the investments in towns and villages with support of the villages committee i.e., regular patrolling, removing blockage/clogging, recording and reporting facility failure.

11. The O&M cost of the investment will be a combination of tariffs collected and subsidies provided by government. The Project Counties are liable for covering the cost difference between actual O&M costs and tariffs collected.

F. Procurement and Financial Management

12. National Competitive Bidding and Shopping are the two major procurement methods. At the beginning of project implementation, the scale of the bids could be small as the PIUs are

inexperienced with Bank projects. However, it will be aggregated with project implementation in order to attract competent contractors and improve procurement efficiency.

13. The implementation of subprojects should follow the financial management arrangements agreed at appraisal.

G. Safeguard Policies Compliance

14. The implementation of the framework approach must comply with Bank safeguard policies detailed in EMP, RAP, RPF, Dam Safety Action Plan, and chance finds procedures.

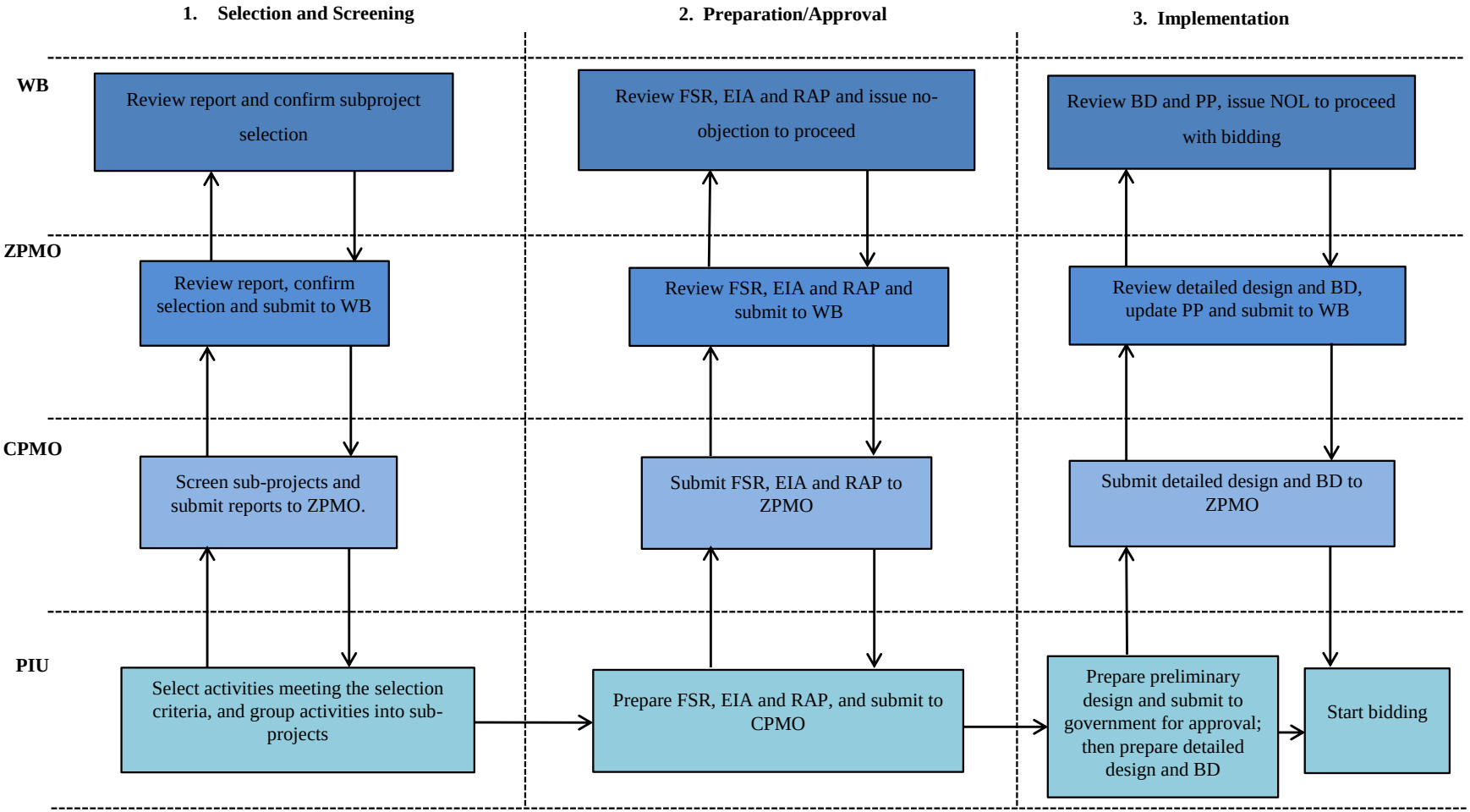
H. Technical

15. Selected subprojects pass the cost-effectiveness analysis and alternative analysis as part of the screening and appraisal process. The effluent quality should meet the national code and the discharge limit for rural sanitation improvement.

I. Project Operation Manual

16. A comprehensive Project Operation Manual (POM) has been prepared to guide the implementation of the framework approach, of which the above sections are further detailed. The POM may be fine-tuned from time-to-time during the implementation of subprojects, as part of a learning-by-doing pilot.

Figure A3.2 Procedures for Subproject Screening, Submission and Implementation



Annex 4: Operational Risk Assessment Framework (ORAF)

CHINA: Zhejiang Rural Water Supply and Sanitation Project

<table>
<tr><th colspan="7">Project Stakeholder Risks</th></tr>
<tr><td>Stakeholder Risk</td><td>Rating</td><td colspan="5">Moderate</td></tr>
<tr><td rowspan="2">Risk Description:

The project stakeholder risks include:

At the Provincial and County Level. Zhejiang Province has been demonstrating strong commitment to the project. However, the staffing and technical capability of ZPMO is weak; none of the staff having been previously involved in a Bank project.

Project Affected People (PAP). Villagers and residents of the small towns will eventually benefit from the improved water and sanitation infrastructure and services but will also be negatively affected by the construction process. Their attitude towards the implementation of the project during the construction period therefore might not be positive.</td><td colspan="6">Risk Management:

Consolidated support to ZPMO and CPMO will be provided by the Project Management Consultant (PMC) during project implementation. PMC will allocate experienced resident engineers to work with ZPMO and CMPOs. Trainings on fiduciary, safeguard and other Bank policies will also be provided for ZPMO and PIUs during project implementation.

Comprehensive public consultation procedures have been included in the Project Operation Manual, in which communication with local residents and villagers is highlighted and education is also included. EMP and RAP has been properly prepared; implementation will be closely monitored by the independent consultants to minimize the impact of construction activities on affected people.</td></tr>
<tr><td>Resp: Both</td><td>Status: In Progress</td><td>Stage: Implem-entation</td><td>Recurrent: ☑</td><td>Due Date:</td><td>Frequency: Yearly</td></tr>
<tr><th colspan="7">Implementing Agency (IA) Risks (including Fiduciary Risks)</th></tr>
<tr><td>Capacity</td><td>Rating</td><td colspan="5">Substantial</td></tr>
<tr><td rowspan="2">Risk Description:

Both ZPMO and county PMOs were recently established for the Project and do not have Bank project experience, and there is a risk of non-compliance of Bank fiduciary and safeguard requirements.

Some project counties may lack sufficient counterpart funding which can delay project implementation.</td><td colspan="6">Risk Management:

PMC will be hired to provide daily project management support for ZPMO and CPMOs. In addition, training on Bank policies, procedures, project management, financial management as well as safeguards will be provided to ZPMO, county PMOs and PIUs throughout implementation.

Local Agricultural Committees have been financing investment in rural areas in Zhejiang Province, including WSS. County Agricultural Committees (or affiliated agencies) have been incorporated into the project, forming part of CPMO. The subprojects proposed for financing under the project, especially in villages, must already be in the investment priority list of the Project County; therefore provision of counterpart funding is more likely. Close monitoring of counterpart funds allocation and frequent talks with high rank of government officials will be conducted to secure the timely and sufficient counterpart funds allocation during project implementation stage.</td></tr>
<tr><td>Resp: Both</td><td>Status: In Progress</td><td>Stage: Implem-entation</td><td>Recurrent: ☑</td><td>Due Date:</td><td>Frequency: Yearly</td></tr>
</table>

Project Risks						
Design	Rating	Moderate				
Risk Description: A large number of natural villages and some rural towns will be involved in the project and some of them might drop out of proposed list during project implementation. The water and sanitation improvement requirements in in large numbers of villages and towns may result in large number of contracts and be difficult to manage.	**Risk Management:** A framework approach is adopted during implementation to effectively manage changes in subprojects if some drop during implementation. The procurement of village sanitation will be grouped and, if possible, combined with that of rural towns to reduce the number of contracts. A design-build-like contract will be used to minimize the number of contract variation orders.					
	Resp: Both	Status: In Progress	Stage: Implem-entation	Recurrent: ☑	Due Date:	Frequency: Yearly
Social and Environmental	Rating	Moderate				
Risk Description: Both ZPMO and PIUs have weaknesses regarding the management of environmental and social safeguards, which may result in non-compliance with safeguard policies during project implementation.	**Risk Management:** ZPMO and CPMO will hire experienced consultants to monitor implementation of EMP, RAP as well as safeguard framework documents. Trainings will be provided to ZPMO, CPMOs and PIUs during implementation.					
	Resp: Both	Status: In Progress	Stage: Implem-entation	Recurrent: ☑	Due Date:	Frequency: Yearly
4.4 Delivery Monitoring and Sustainability	Rating	Substantial				
Risk Description: Funds might be insufficient to ensure the sustainability of rural sanitary facilities.	**Risk Management:** Realistic discharge limits have been determined for rural sanitation to select low-cost and easy-to-operate wastewater treatment technologies. Tariffs will be properly adjusted. Legal covenants are in place requiring local government to take necessary steps to ensure water companies can break-even.					
	Resp: Both	Status: In Progress	Stage: Implem-entation	Recurrent: ☑	Due Date:	Frequency: Yearly

5. Project Team Proposed Rating Before Review
Overall Implementation Risk: Substantial
Risk Description: The biggest risk for project implementation is that some subprojects may be dropped and that there will be insufficient counterpart funding. The framework approach will greatly reduce these risks as it will provide flexibility during the project's implementation. However, given the number of villages involved, the risk is still substantial.

Annex 5: Implementation Support Plan

CHINA: Zhejiang Rural Water Supply and Sanitation Project

Strategy and Approach for Implementation Support

1. The strategy for implementation support has been developed based on the nature of the project and its risk identified during project preparation. Given the nature of this project, it will aim at making implementation support to the client more flexible and efficient, and will focus on implementation of risk mitigation measures defined in the ORAF.

2. **Technical Assistance and Supervision**. World Bank technical experts and consultants will support ZPMO and counties in reviewing technical designs, terms of reference and assist in capacity building activities, especially in enhancing the O&M capability of local water companies. The specialists will share best practices and experiences from other projects and ensure investments are cost-effective, based on realistic demands and take into account the long-term O&M costs and the capacity of the borrower to ensure the long-term sustainability of the proposed investments.

3. **Procurement**. The World Bank procurement specialist will provide training to members of ZPMO, CPMOs, PIUs and the selected tendering agency, as well as staff from the consulting firm responsible for procurement. Training will cover areas of World Bank procurement policy and procedures throughout the entire implementation period. The Bank team will also review procurement documents and provide timely feedback and guidance on the relevant Bank Procurement policies and procedures. The procurement plan and implementation plan will be closely monitored by the Bank's task team.

4. **Financial Management**. The supervision strategy for this project is based on its financial management (FM) risk rating, which will be re-evaluated on a regular basis by the Bank's FM Specialist in line with the World Bank's Financial Management Practice, and in consultation with task team leader. The FM Specialist will join supervision missions to review implementation of the FM Manual. The specialist would also provide technical support to PIUs and help provide timely resolution to potential FM issues. FM training will be provided by the task team before the commencement of project implementation.

5. **Environmental and Social Safeguards**. The Bank task team will supervise implementation of the Environmental Management Plan and the Resettlement Action Plan, ensuring that responsibilities are clearly defined and understood by the different agencies and the contractors, and provide guidance to the ZPMO, CPMO and PIUs on how to address issues. Training will be provided in the early stages of project implementation to ensure all agencies are aware of their roles and responsibilities and overall reporting requirements.

6. **Utilization of Staff in the Bank's Beijing Office.** Most of the Bank's team members will be Beijing-based or from other country offices in the region to ensure timely, efficient and effective implementation support to the client. Formal supervision and field visits will be carried out semi-annually. Detailed inputs from the Bank team are outlined in the paragraphs below.

Table A5.1 Main focus in terms of implementation support

Time	Focus	Skills Needed	Resource Estimate (Staff Weeks)
First 12 months	Team Leadership	TTL	4
	Technical supervision, design and bidding document review	Water and Sanitation Expert	4
	Financial management and disbursement	Financial Management Specialist	1-2
	Procurement training, review and supervision	Procurement Specialists	1-2
	Environmental training and supervision	Environmental Specialist	1-2
	Social/Resettlement training and supervision	Social/Resettlement Specialist	1-2
	Public finance review and training	Public Finance Specialist	2
	Capital Investment and Asset Management training	Urban service management specialist	2
	Project administration and coordination	Team assistant	6
12-60 months	Team Leadership	TTL	20
	Technical supervision, design and bidding document review	Water and Sanitation Expert	24
	Financial management and disbursement	Financial Management Specialist	10
	Procurement training, review and supervision	Procurement Specialists	10
	Environmental training and supervision	Environmental Specialist	10
	Social/Resettlement training and supervision	Social/Resettlement Specialist	10
	Public finance review and training	Public Finance Specialist	6
	Project administration and coordination	Team assistant	22

Table A5.2 Staff Skills Mix Required on an Annual Basis

Skills Needed	Number of Staff Weeks	Number of Trips
Team Leader	4	2
Water and Sanitation Expert	5	2
Financial Management Specialist	2	2
Procurement Specialist	2	2
Environmental Specialist	2	2
Social specialist	2	2
Municipal finance specialist	2	2
Team assistant	5	1

Annex 6: Economic and Financial Analysis

CHINA: Zhejiang Rural Water Supply and Sanitation Project

Economic Analysis

Water Supply Investment

1. **Rational.** As a result of economic growth and urbanization, a growing number of rural populations have been migrating to towns where secondary and tertiary industries are being developed. Demand for safe and reliable water supply in towns is growing as a result. In addition, many rural villages, drinking water relies on the crude collection and distribution from spring water sources. Access to safe drinking water supply is a critical need in such villages. In other villages, rehabilitation of ageing pipelines is needed to reduce high levels of water loss and potential drinking water contamination. Demands for clean water supply of the subprojects included in the project are detailed in Table A6.1.

Table A6.1. Demand for Clean Water Supply of Subprojects

County	Township	**Actual** (m3/day)			**Projection** (m3/day)			
		2010	**2011**	**2012**	**2015**	**2020**	**2025**	**2030**
Longquan	L1: Longquan	16,800	18,400	18,900	23,360	27,371	31,816	36,933
	L3: Xiaomei	350	380	395	879	1,154	1,234	1,354
	L5: Anren	1,592	1,668	1,673	2,406	2,967	3,494	3,908
	L6: Badu	1,184	1,235	1,238	1,630	2,164	2,628	2,994
Anji	A2: Meixi (7 villages)	10,395	11,474	12,532	15,058	20,901	22,839	25,338
	A3: Tianhuangping	1,980	2,511	2,971	4,308	8,612	9,878	11,391
Fuyang	F2: Xindeng (12 villages)	7,376	7,854	8,670	11,402	12,936	14,630	14,785
	F4: Dayuan (9 villages)	2,896	2,668	2,668	3,558	4,744	5,566	6,518

2. **Project Investments.** The appraised project investments include: (i) construction and expansion of water treatment plants (WTPs) and associated networks in four towns; (ii) extension of water distribution networks to improve raw water sources in nine villages; (iii) rehabilitation of water distribution networks in 21 villages; and (iv) construction of pumping stations in one town. Table A2 provides a summary of project investments and their estimated costs.

Table A6.2 Summary water supply subprojects and costs

County	Towns	Activities	**Costs** (US$ million)
Longquan	L1: Longquan	Rehabilitation and expansion of WTP of 50,000m3/day; and construction of water distribution pipelines	14.00
	L3: Xiaomei	Construction of WTP of 3,000 m3/day and construction of raw water and water distribution pipelines	
	L5: Anren	Construction of WTP of 5,500 m3/day; and construction water distribution pipelines	

County	Towns	Activities	Costs (US$ million)
	L6: Badu	Construction of WTP of 4,000 m3/day; and construction water distribution pipelines	
Anji	A2: Meixi (7 villages)	Construction of water distribution pipelines 7 villages	9.17
	A3: Tianhuangping	Construction of water supply, pumping station for the region; and construction of distribution networks in 2 villages	
Fuyang	F2: Xindeng (12 villages)	Rehabilitation of water distribution pipelines in 12 villages	5.96
	F4: Dayuan (9 villages)	Rehabilitation of water distribution pipelines in 9 villages	

3. Benefits of the water supply investments include: (i) provision of clean water to meet growing demands in four project towns, 9ii) improved quality of water supply in nine project villages; (iii) reduction of system losses in all project towns and villages; and 9iv) environmental and public health benefits.

4. **Cost-effectiveness Analyses** were carried out for most of the above mentioned subprojects as the benefits are difficult to quantify. For each subproject, the costs of various alternatives were assessed over a period of 20 years at a discount rate of 10 percent. Both the present values (PVs) and the average incremental costs (AICs) were assessed. The final recommendation was made on a least-cost basis, dominated by the PV cost and checked by the AIC. Table A6.3 provides a summary of the least-cost analysis of the water supply investments.

Table A6.3 Least cost analysis on the water supply investments

County	Township	Options	PV Cost (RMB million)	AIC (RMB million)	Selected Option (marked with X)
Longquan	L1: Longquan	Rehabilitate current WTP of 25,000 m3/d plus an expansion of 25,000 m3/d	8,644	0.64	X
		A new WTP with 50,000 m3/d	9,864	0.73	
	L3: Xiaomei	Current WTP plus expansion of 1,000 m3/d	1,238	1.54	
		A new WTP with 3,000m3/d	1,264	4.27	X
	L5: Anren	A new WTP with 4,000m3/d, mixer + corrugate reactor + D filter + disinfection	672	0.63	X
		A new WTP with 4,000m3/d, mixer + settler + D filter + disinfection	760	0.71	
		A new WTP with 4,000m3/d, mixer + integrated clarifier + disinfection	717	0.67	
	L6: Badu	A new WTP at 4,000m3/d, mixer + corrugate reactor + D filter + disinfection	758	0.72	X
		A new WTP at 4,000m3/d, mixer + settler + D filter + disinfection	852	0.39	
		A new WTP at 4,000m3/d, mixer + integrated clarifier + disinfection	771	0.71	

Anji	A3: Tianhuangping	Construct 15 PSs to supply water stage-by-stage to the villages located at different altitudes	4,787	1.85	
		Construct 1 PS to transfer water to a high-altitude tank, install 5,300 pressure-relief valves for end-users	4,765	1.85	
		Construction 1 PS to supply water to the villages located in the low and high altitude separately	4,462	1.73	X

5. **Cost-effectiveness of the Pipeline Investments.** At the feasibility stage, two types of pipeline materials were considered. They are polyethylene pipes and ductile cast iron pipes. An estimate of the lifecycle costs of using each material for pipelines of different dimensions indicated that: i) polyethylene has a cost advantage of 12-35 percent over ductile cast iron as material for thinner branch pipes (DN100-200); and ii) ductile cast iron has a cost advantage of 21-47 percent over polyethylene as material for the water main (DN200-600). Therefore, polyethylene was chosen for branch pipes and ductile cast iron for the water main on a least-cost basis.

Sanitation Investment

6. **Rational**. Inadequate sewerage collection and treatment are the main sanitary issues in the Project Counties. To improve rural sanitation, the project will invest in the construction and rehabilitation of septic tanks, sewerage collection networks and WWTPs in both villages and towns. As specified in Attachment 1 to Annex 2, three options are considered for village sanitation improvement, being

- **Option 1:** collect wastewater in the villages of a region and transfer to a WWTP located in the nearby town for treatment;
- **Option 2:** collect wastewater in a village and treat locally in a small-scale treatment station normally built on the edge of the village; and
- **Option 3:** collect wastewater in villages of a region and transfer to a small-medium scale WWTP located in the region for treatment.

7. **Project Investments.** The first phase project investments include the construction of: (i) WWTPs, wastewater and storm water collection networks and pumping stations in five project towns, and ii) end-of-pipe small scale sewer collection and treatment facilities in 259 project villages. Table A6.6 provides a summary of the estimated investment costs.

Table A6.6 Summary of sanitation investments and costs

County	Township	Activities	Costs (US$ million)
Anji	A2: Meixi	Construction of sewerage system in 7 villages	22.45
	A3: Tianhuangping	Construction pumping station and sewage system in 47 villages	
	A7: Anji	Construction of sewerage collection and treatment facilities in 50 villages	
Fuyang	F1: Fuyang town	Upgrading and expansion of Fuyang WWTP. The treated effluent will comply with Class 1A discharge standard after completion.	77.04

County	Township	Activities	Costs (US$ million)
	F2: Xindeng	Rehabilitation and expansion of sewers and storm pipelines in 12 villages	
	F3: Dayuan	Rehabilitation and expansion of sewers in 9 villages	
	F4: Fuyang	Construction of sewerage collection facilities for 18 villages	
	F5: Fuyang	Construction of sewerage collection and treatment facilities for 6 villages	
Longquan	L1: Longquan	Construction of sewers and storm pipelines	16.44
	L2: Xiaomei	Construction of a WWTP and sewers	
	L3: Anren	Construction of a WWTP and sewers	
	L4: Badu	Construction of a WWTP and sewers	
	L5: Longquan	Construction and improvement of water supply and sanitation facilities in rural villages	
	L6: Longquan	Upgrade of water supply and sanitation facilities in inner city	
Tiantai	T1: Tiantai Basin	Collection of sewerage from 61 villages in the region	22.99
	T4: Tiantai County	Sanitation improvement for 27 villages	

8. Benefits of the project investments include: (i) increasing wastewater treatment capacity in five project towns; ii) improving sanitation services in 259 project villages; and iii) improving environmental, public health as living conditions in the project areas.

9. **Cost-effectiveness analyses** were carried out because most of the above-mentioned benefits are difficult to quantify. For each of the 259 project villages, three sanitation design scenarios were evaluated in terms of the PVs of their costs and AICs. The final recommendation was made on a least-cost basis for each village, dominated by the PV cost and checked by the AIC. The three scenarios are: (i) centralized facilities at the township level; (ii) centralized facilities for village clusters; and (iii) individual facilities at the village level. Table A6.7 provides a summary of the least-cost analysis.

Table A6.4 Least Cost Analysis for Village Sanitation Improvement (RMB million)

County	Group of Villages	Option 1			Option 2			Option 3		
		PV Cost	AIC	Selection	PV Cost	AIC	Selection	PV Cost	AIC	Selection
Anji	A2: Villages in Meixi Town	737	2.52	X	865	2.96		896	3.07	
	A3: Villages in Tianhuang Ping Town	2,979	10.38	X	3,026	10.54		3,253	11.33	
	A7: A group of 35 Villages	4,020	11.97		2,321	6.91	X	2,521	7.51	
	A7: A group of 15 Villages	1,081	13.01		782	9.41	X	675	8.12	
Fuyang	F2: Villages in Xindeng Town	7,375	0.49	X	8,398	0.35		8,161	0.30	
	F4: Villages in Dayuan Town	3,820	10.14	X	4,372	11.55		3,987	11.22	
	F6: A group of 18 villages	5,206	31.82	X	7,011	46.86		6,935	42.74	
	F8: 1 village	576	13.22		358	8.23	X	444	10.20	
	F8: A group of 5 villages	1,841	20.56		1,026	11.46		991	11.06	X
Tiantai	T1: A group of 61 villages	6,751	11.92	X	6,939	12.25		7,013	12.38	
	T4: A group of 17 villages	7,215	47.33		1,906	12.51	X	2,248	14.75	
	T4: A group of 10 villages	4,051	30.01		1,629	12.07		1,494	11.07	X
Longquan	L3: Village in Xiaomei Town	977	4.93		792	3.99	X	914	4.61	
	L7: A group of 5 villages	1,733	17.42		951	9.56	X	2,423	24.35	
	L7: A group of 2 villages	423	10.15		404	9.70		397	9.53	X

Financial Analysis

17. The project will invest in water supply and sanitation improvement initiatives in the Project Counties in Zhejiang Province. Water supply and wastewater treatment facilities under the project will be constructed and operated by Anji Guoyuan Water Co., Ltd. for Anji subprojects, Fuyang Water Affairs Company Ltd. for Fuyang subprojects, Longquan Water Supply and Drainage Company Ltd. and Longquan Rural & Towns Water Supply Station for Lounquan subprojects, and Tiantai County Water Supply Company Ltd. for Tiantai subprojects. During the financial analysis, the financial situation of each company over past 3 years was first analyzed and then the financial viability of each company for next 20 years was projected.

A. Anji County

18. Anji Guoyuan Water Co., Ltd. is the PIU for Anji County Subcomponent. It was established in January 2014 by Anji County Government. The main business of Anji Guoyuan Water Co., Ltd. is to supply water, collect and treat wastewater, and mobilize funds for the development and operation of water-related infrastructure within Anji County. Now it has one WTP – Fenghuang WTP which has a capacity of 50,000 m^3/d and is now under commissioning.

19. There are five WTPs and four WWTPs within Anji County territory, among which 1 WTP and 2 WWTPs are involved in the project. However, this WTP and WWTPs are operated under concessional contracts which are exclusive. To implement the project, Anji Guoyuan Water Go., Ltd. is negotiating with the operators of WTP and WWTPs about the operation of the assets created under the project.

20. Up to now, Anji Guoyuan Water Co., Ltd. has no water supply or wastewater treatment operations. This subcomponent is the first investment and operation for Anji Guoyuan Water Co., Ltd.

B. Fuyang City

21. Fuyang Water Affairs Co., Ltd. is the project implementation unit for Fuyang City Subcomponent. It was setup in December 2008 by Fuyang City Government. The main business of Fuyang Affairs Water Co., Ltd. involves investment, construction, operation of the water supply and wastewater treatment facilities.

22. The following table presents a summary of the financial situation of Fuyang Water Co., Ltd. from 2010 to 2013.

Table A6.6 Summary Financial Situation - Fuyang Water Affairs Co., Ltd., 2010 – 2013 (RMB million)

	2010	2011	2012	2013
Total Assets	680.51	691.63	749.99	767.41
incl. Current Assets	192.88	145.59	176.33	186.12
Total Liabilities	219.29	163.84	202.45	184.76
incl. Current Liabilities	60.34	75.68	54.47	153.47

Equity	461.22	527.79	547.54	582.65
Current Ratio	*3.2*	*1.9*	*3.2*	*1.2*
Debt Asset Ration	*32%*	*24%*	*27%*	*24%*
Total Revenues	86.29	102.90	456.11	406.58
Profits	-0.85	3.15	2.26	33.63
Net Income	-0.85	3.15	2.26	33.63
Full Cost Recovery Rate	*0.99*	*1.03*	*1.00*	*1.09*
Working Ratio	*0.9*	*0.9*	*1.0*	*1.0*

23. The analysis shows that Fuyang Water Co., Ltd. has a good short-term financial strength and operates safely. Its working ratio shows that the revenues of Fuyang Water Co., Ltd. currently just cover its operation cost.

C. Longquan City

24. Longquan Water Supply and Drainage Co., Ltd. is the PIU for water supply and wastewater collection in the old city area under Longquan City Subcomponent. It was established in July 2004 by Longquan City Government. Its main business includes water supply and wastewater treatment. The results of the analysis of its financial statements over the past four years show Longquan Water Supply and Drainage Co., Ltd. has a good short-term financial strength, but is highly leveraged. Most of its revenues are used to recover its operational costs. The following table summarizes the financial situation of Longquan Water Supply and Drainage Co., Ltd.

Table A6.7 Summary of Financial Situation (RMB million)
– Longquan Water Supply and Drainage Co., Ltd., 2010 – 2013

	2010	2011	2012	2013
Total Assets	53.32	53.59	56.01	48.63
incl. Current Assets	27.19	27.65	30.76	11.64
Total Liabilities	40.39	38.31	39.87	16.00
incl. Current Liabilities	18.86	16.77	18.34	16.00
Equity	12.92	15.29	16.15	32.63
Current Ratio	1.44	1.65	1.68	0.73
Debt Asset Ration	76%	71%	71%	33%
Total Revenues	1,305.45	1,579.14	1,484.11	59.65
Profits	-89.55	185.69	81.49	3.00
Net Income	-94.85	175.83	73.47	1.49
Full Cost Recovery Rate	0.93	1.13	1.05	1.03
Working Ratio	1.1	0.9	1.0	1.0

25. Longquan Rural & Towns Water Supply Station is the PIU for water supply and wastewater treatment in both villages and towns under Longquan City Subcomponent. It was setup jointly in January 1994 by Longquan Hydropower General Station and Longquan Badu Town Government. Its main business consists of water supply in the township and wastewater

treatment. The financial statements of Longquan Township Water Supply Station over past four years were analyzed and the results are presented in the following table.

Table A6.8 Summary of Financial Situation (RMB million)
- Longquan Rural & Towns Water Supply Station, 2010 – 2013

	2010	2012	2012	2013
Total Assets	8.93	8.31	7.83	8.27
incl. Current Assets	3.32	3.12	3.11	3.44
Total Liabilities	4.82	4.71	4.23	4.53
incl. Current Liabilities	4.82	4.71	4.23	4.53
Equity	4.11	3.61	3.61	3.73
Current Ratio	0.69	0.66	0.74	0.76
Debt Asset Ratio	54%	57%	54%	55%
Total Revenues	0.55	0.66	0.79	1.07
Profits	-0.51	-0.48	-0.00	0.05
Net Income	-0.50	-0.00	0.05	1.09
Full Cost Recovery Rate	0.5	1.0	1.1	-56.1
Working Ratio	2.2	2.0	1.0	0.9

26. The analysis shows that although the financial situation of Longquan Rural & Towns Water Supply Station has improved, it is not in good financial health and most of its operating revenues are used to recover its operating cost.

D. Tiantai County

27. Tiantai County Water Supply Co., Ltd. is the PIU for the Tiantai Subcomponent. It was established in April 1990 by Tiantai County Government. Its main business comprises water supply and wastewater treatment. The following table shows the financial situation of Tiantai County Water Supply Co., Ltd. over past four years and the results of analysis as well.

Table A6.9 Summary of Financial Situation (RMB million)
- Tiantai County Water Supply Co., Ltd. 2010 – 2013

	2010	2011	2012	2013
Total Assets	67.2	200.5	280.8	257.7
incl. Current Assets	64.5	69.8	154.8	136.0
Total Liabilities	66.8	74.2	157.4	134.6
incl. Current Liabilities	35.9	41.4	94.4	73.6
Equity	0.4	126.2	123.4	123.1
Current Ratio	*1.8*	*1.7*	*1.6*	*1.8*
Debt Asset Ratio	*1.0*	*0.4*	*0.6*	*0.5*
Total Revenues	16.3	18.8	20.4	20.2
Profits	(3.6)	(2.2)	(5.4)	(2.5)
Net Income	(3.6)	(2.2)	(5.4)	(2.5)
Full Cost Recovery Rate	*0.82*	*0.89*	*0.79*	*0.89*
Working Ratio	*1.0*	*0.9*	*0.9*	*0.9*

28. The analysis shows that Tiantai County Water Supply Co., Ltd. is in a good financial position, but most of its revenues are used to recover operating cost.

29. In addition to the analysis of the financial situation over past four years, financial projections for the next 20 years for each PIU were also carried out. The following assumptions were used when the projections was made:

a) The lifespan of the project is about 25 years including 6-year construction period.
b) Additional volumes of water were projected by technical experts.
c) The average water tariffs were used to calculate the incremental revenues.
d) The average operating costs of water supply or wastewater treatment over the past 4 years were used as the operation costs of the assets created under the project.
e) The depreciation of assets was calculated at 4.8 percent of the original value annually.
f) Full cost recovery requirement will be met one year before the completion of the project by adjusting the tariff.

30. The following tables summarize the results of financial projection for each PIU between 2014 and 2021 which is the most difficult year for PIU.

Table A6.10 Summary of Financial Projection (RMB million)
- Anji Guoyuan Water Co., Ltd., 2014 – 2021

	2014	2015	2016	2017	2018	2019	2020	2021
Total Assets	380.07	396.35	575.86	701.75	730.38	747.07	751.53	737.24
incl. Current Assets	326.26	256.13	187.13	127.08	68.74	84.48	120.13	141.38
Total Liabilities	352.70	323.35	366.08	390.90	373.10	389.20	390.88	373.66
incl. Current Liabilities	56.79	64.00	60.39	62.20	61.30	61.75	61.52	61.63
Equity	27.37	73.00	209.77	310.85	357.27	357.87	360.65	363.58
Current Ratio	5.7	4.0	3.1	2.0	1.1	1.4	2.0	2.3
Debt Asset Ratio	93%	82%	64%	56%	51%	52%	52%	51%
Total Revenues	423.13	815.73	2,485.56	3,285.82	3,781.21	4,068.70	6,786.73	7,046.97
Profits	(163.61)	(683.20)	352.00	(201.45)	(845.88)	(1,595.66)	158.98	390.22
Net Income	(163.61)	(683.20)	264.00	(201.45)	(845.88)	(1,595.66)	119.23	292.66
Full Cost Recovery Rate	0.72	0.54	1.12	0.94	0.82	0.72	1.02	1.04
Working Ratio	1.4	1.5	0.7	0.7	0.7	0.7	0.5	0.5

Table A6.11 Summary of Financial Projection
- Fuyang Water Affairs Co., Ltd., 2014 – 2021 (RMB million)

	2014	2015	2016	2017	2018	2019	2020	2021
Total Assets	730.08	870.95	1,078.45	1,325.42	1,518.83	1,589.13	1,590.38	1,548.87
incl. Current Assets	162.57	238.96	307.40	383.82	465.62	532.34	592.09	626.02
Total Liabilities	93.04	169.84	268.23	380.42	457.23	473.15	462.80	427.86
incl. Current Liabilities	53.62	59.44	55.38	55.85	56.07	56.69	56.00	56.15
Equity	637.05	701.11	810.22	944.99	1,061.60	1,115.98	1,127.58	1,121.01
Current Ratio	3.0	4.0	5.6	6.9	8.3	9.4	10.6	11.1
Debt Asset Ration	13%	20%	25%	29%	30%	30%	29%	28%
Total Revenues	122.71	126.39	129.55	132.52	135.58	138.72	161.06	164.58
Profits	50.72	41.75	40.23	35.69	30.37	19.62	3.24	-8.76
Net Income	38.04	31.31	30.18	26.77	22.78	14.72	3.24	-6.57
Full Cost Recovery Rate	1.45	1.33	1.30	1.25	1.20	1.12	1.02	0.96
Working Ratio	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5

Table A6.12 Summary of Financial Situation (RMB million)
- Longquan Water Supply and Drainage Co., Ltd., 2014 – 2021

	2014	2015	2016	2017	2018	2019	2020	2021
Total Assets	59.65	84.83	108.59	122.06	123.13	124.29	128.89	131.32
incl. Current Assets	13.58	16.87	18.95	25.11	31.58	38.42	48.70	56.81
Total Liabilities	18.12	31.65	43.36	52.12	52.13	52.17	52.07	49.88
incl. Current Liabilities	13.87	12.49	9.30	9.54	9.55	9.59	9.50	9.54
Equity	41.53	53.18	65.23	69.95	71.01	72.12	76.82	81.44
Current Ratio	*0.98*	*1.35*	*2.04*	*2.63*	*3.31*	*4.00*	*5.13*	*5.95*
Debt Asset Ration	*30%*	*37%*	*40%*	*43%*	*42%*	*42%*	*40%*	*38%*
Total Revenues	84.83	108.59	122.06	123.13	124.29	128.89	131.32	129.08
Profits	2.91	2.59	1.88	1.42	1.49	6.27	6.16	6.84
Net Income	2.25	2.18	1.94	1.41	1.06	1.12	4.70	4.62
Full Cost Recovery Rate	*1.03*	*1.02*	*1.02*	*1.01*	*1.01*	*1.01*	*1.04*	*1.04*
Working Ratio	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.6*	*0.6*

Table A6.13 Summary of Financial Situation (RMB million)
- Longquan Rural & Towns Water Supply Station, 2014 – 2021

	2014	2015	2016	2017	2018	2019	2020	2021
Total Assets	24.98	71.95	139.81	204.24	263.28	304.75	317.01	312.23
incl. Current Assets	5.02	6.24	7.52	8.49	8.29	8.04	23.38	34.79
Total Liabilities	10.09	28.59	46.82	64.37	83.70	99.12	103.60	98.39
incl. Current Liabilities	4.57	4.51	4.46	4.52	4.52	4.50	4.50	4.51
Equity	15.72	44.18	93.82	140.70	180.40	206.45	214.24	214.66
Current Ratio	*1.10*	*1.38*	*1.69*	*1.88*	*1.84*	*1.79*	*5.19*	*7.71*
Debt Asset Ratio	*40%*	*40%*	*33%*	*32%*	*32%*	*33%*	*33%*	*32%*

	2014	2015	2016	2017	2018	2019	2020	2021
Total Revenues	2.56	2.86	2.98	3.64	3.84	4.10	22.41	22.39
Profits	1.09	0.60	-1.05	-4.25	-8.65	-11.97	0.94	0.56
Net Income	0.41	-1.05	-4.25	-8.65	-11.97	0.70	0.42	0.26
Full Cost Recovery Rate	*1.2*	*0.7*	*0.4*	*0.3*	*0.2*	*1.2*	*1.0*	*1.0*
Working Ratio	*0.3*	*0.3*	*0.3*	*0.5*	*0.7*	*0.7*	*0.2*	*0.2*

Table A6.14 Summary of Financial Situation (RMB million)
- Tiantai County Water Supply Co., Ltd. 2014 – 2021

	2014	2015	2016	2017	2018	2019	2020	2021
Total Assets	276.2	397.2	553.9	678.5	754.0	775.5	779.3	760.5
incl. Current Assets	126.2	140.3	162.6	153.8	152.4	153.1	185.8	202.4
Total Liabilities	148.5	193.1	269.6	319.9	348.9	348.5	343.8	324.7
incl. Current Liabilities	61.3	67.7	74.3	69.2	68.1	69.8	70.4	69.4
Equity	127.7	204.1	284.3	358.6	405.1	427.0	435.5	435.8
Current Ratio	*2.1*	*2.1*	*2.2*	*2.2*	*2.2*	*2.2*	*2.6*	*2.9*
Debt Asset Ratio	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.4*	*0.4*	*0.4*
Total Revenues	19.7	28.3	47.8	52.8	56.5	59.3	76.5	76.7
Profits	(3.7)	(2.1)	(0.5)	(4.3)	(7.3)	(7.8)	7.8	0.4
Net Income	(3.7)	(2.1)	(0.5)	(4.3)	(7.3)	(7.8)	5.9	0.3
Full Cost Recovery Rate	*0.84*	*0.93*	*0.99*	*0.92*	*0.89*	*0.88*	*1.08*	*1.00*
Working Ratio	*0.9*	*0.7*	*0.5*	*0.5*	*0.5*	*0.5*	*0.4*	*0.4*

E. Tariff

31. The analysis shows that it is necessary for all project cities/counties to increase their tariffs so that the full costs of water supply or wastewater treatment could be met. The following table summarizes the current and adjusted tariffs which can help improve the financial performance.

Table 6. 15. Summary of Water and Wastewater Tariffs in Project Counties

	Water Tariff		Wastewater Tariff	
	Current	Projected	Current	Projected
Anji County	1.89	2.59	1.07 (town) No wastewater treatment (village)	1.43 (town) 6.91 (village)
Fuyang City	1.50	1.50	0.53	0.77
Longquan City – Urban	1.63	1.87	0.40	0.54
Longquan City – Rural	1.01	1.30	No wastewater treatment	1.68 (town) 4.93 (village)
Tiantai County	1.45	1.45	No wastewater treatment	1.26 (town) 5.33 (village)

F. Government Subsidies

32. In rural areas there is often no wastewater treatment. Rural residents and farmers discharge wastewater freely. Even in areas where local governments have invested and built wastewater treatment facilities, residents often do not need to pay wastewater tariffs. By implementing the project, the residents benefiting from the project will pay for the collection and treatment of wastewater. However, the tariff to be paid by for wastewater collection and treatment in villages is higher than towns and cities. It is necessary to expect that it will take time for the requirement of paying tariffs to be accepted. On the other hand, PIUs are commercial companies. They depend on collecting tariff to cover their costs for operation. Therefore, local governments agree to provide subsidies to companies by exempting the depreciation and debt service incurred for wastewater collection and treatment in rural areas.

33. By doing so, PIUs have to apply for subsidies every year and also collect small amounts of tariff from local residents to cover O&M costs. This small amount can be increased gradually by reducing subsidies from local governments.

G. Financial Performance Improvement Plan

34. Each PIU needs a financial performance improvement plan with financial targets which they can monitor and help them move toward financial sustainability. Such financial performance improvement plan should be prepared by each PIU, submitted to the Bank for comments before December 31, 2014 and begin to be implemented from July 1, 2015. Each year, the PIU should update and implement this financial performance improvement plan.

35. The financial performance improvement plan should include, but not limited to, the following aspects:

a) Difficulties faced by the PIU;
b) Actions the PIU will take to overcome these difficulties;
c) The financial results of these actions, including increases in revenues, decrease in costs, etc.; and
d) Simple projections of these financial impacts on the PIU's financial position.

H. Fiscal Impact

36. According to the project's financing plan, local governments of project cities/counties will provide counterpart funds to implement the project. These counterpart funds will mainly come from their fiscal revenues. An analysis was conducted to assess the impact of providing counterpart funds on the fiscal revenues of local governments.

37. The fiscal revenues of local governments include tax revenues, non-tax revenues, and transfer payments from central and provincial governments through tax-sharing arrangements, transfer payments, and earmarked funds. The main task of the fiscal impact analysis was to make projections of fiscal revenues for next 6 years. The following assumptions were used in making the projection:

a) The fiscal revenues which can be used as sources of counterpart funds include tax revenues, non-tax revenues, and transfer payments from central and provincial governments through tax-sharing arrangements and transfer payments, and other sources for which no specific purposes were named;
b) The average growth rate for past 5 years was used as the basis. This was then reduced by 20 percent every year until they reached 5 percent.
c) 3 percent is used as an indicator. If the counterpart funds account for 3 percent or more of fiscal revenues, it means the contribution to the project has an impact on local government's fiscal revenues.

38. The results of the fiscal revenue projection and comparison with local governments' required contribution to the project are summarized in the following table.

Table A.6.16 Summary of Fiscal Revenue Projection and Government Contribution (RMB million)

	2014	2015	2016	2017	2018	2019	2020
Anji County							
Fiscal Revenues	4,723	5,471	6,257	7,116	8,021	8,960	9,941
Contribution to Project	9	52	134	103	55	17	2
% of Fiscal Revenues	0.2%	1.0%	2.1%	1.4%	0.7%	0.2%	0.0%
Fuyang City							
Fiscal Revenues	8,279	9,463	10,763	11,899	12,952	14,274	15,591
Contribution to Project	16	66	94	108	94	40	8
% of Fiscal Revenues	0.2%	0.7%	0.9%	0.9%	0.7%	0.3%	0.1%
Tiantai County							
Fiscal Revenues	3,150	3,584	3,990	4,408	4,859	5,327	5,799
Contribution to Project	5	33	66	78	53	29	3
% of Fiscal Revenues	0.1%	0.9%	1.6%	1.8%	1.1%	0.6%	0.0%
Longquan County							
Fiscal Revenues	2,817	3,382	4,034	4,703	5,500	6,419	7,339
Contribution to Project	13	29	37	32	28	22	4
% of Fiscal Revenues	0.5%	0.9%	0.9%	0.7%	0.5%	0.3%	0.1%

39. The results show that none of the local governments will need to use 3 percent or more of their fiscal revenues to provide necessary counterpart funding. The percent ranges from 0.2 to 2.1 percent. The results of the analysis show that counterpart funding required for project implementation will not have a significant financial impact on the fiscal revenue of the participating local governments.

Annex 7: Project Map (IBRD 41019)

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