1. Country and Sector Background

Socio-Economic and Urban Development Trends in Zhejiang. Zhejiang Province is located in the southern wing of the Yangtze River Delta, one of China’s largest urban agglomerations, and has experienced rapid economic growth over the past decade. In 2009, with only 1% of the nation’s land area and 3.8% of its total population, Zhejiang’s GDP reached RMB 2.28 trillion, accounting for 6.8% of China’s total GDP. Its GDP per capita was USD 6,490, ranked 4th after Beijing, Shanghai and Tianjin. Zhejiang is also one of the most urbanized regions in China with 57.9% of the population living in cities and towns in 2009, compared to the national average urbanization rate of 46.6%. It is expected that by 2020, Zhejiang’s urbanization rate will reach 72% which will add 5 to 6 million people to the urban population. A very distinct feature of Zhejiang’s urbanization trajectory has been that small towns, although at the lowest level in the urban hierarchy, have served as a major engine of economic growth. While fully recognizing the benefits of agglomeration economies and the role of larger cities, Zhejiang’s 11th Five Year Plan also aims to further promote the development of small towns, including in their role as the connecting tissue between rural and urban areas.

Environmental Challenges in the Qiantang River Basin. The Qiantang River, known as the “mother river” of Zhejiang, is the province’s largest river and one of eight major water bodies in the province. With a total area of 49,113 km², the Qiantang River Basin covers five municipalities, including Hangzhou, Quzhou, Jinhua, Shaoxing and Lishui, consisting of 27 counties/cities/districts and 188 towns. With a total population of 15 million, the Qiantang
River Basin accounts for about 32% of Zhejiang’s total population and 35.3% of its GDP. However, Zhejiang’s rapid growth and urbanization has put significant pressures on the water quality of the Qiantang River. The most recent Zhejiang Environmental Status Report (2008) found that although 73% of the Qiantang River can meet Class I to III water quality, only 62% of the monitored river water quality is meeting its stipulated quality standard. The equivalent pollution loads from industrial, domestic and non-point sources are 45%, 36% and 19% respectively. Given that the Qiantang River is the water source for 80% of Hangzhou City and most counties in the basin, the environmental pollution poses serious threat to the living conditions and safety of drinking water to a large number of urban and rural residents.

**Environmental Infrastructure Services in Small Towns.** Zhejiang’s larger cities, such as Hangzhou, Ningbo and Shaoxing have made good progress in addressing urban environmental challenges with marked, increased urban environmental infrastructure service coverage rates. However, small towns are significantly lagging behind. For example, water supply is estimated to be safe in only 29% of Zhejiang’s small towns; wastewater treatment coverage rate in small towns is only 26%, compared to 73% for cities (including county towns) and sanitary solid waste disposal facilities are almost non-existing. One of the reasons for lower service coverage rates is the much weaker financial position of small towns and the resulting lower public infrastructure investment rates. For example, fiscal revenue per capita in the towns included in this project is estimated to be only 5% to 40% of that in the provincial capital, Hangzhou.

**Limited Institutional and Management Capacity.** In addition to financial constraints, the institutional and technical capacity to manage urban environmental infrastructure is very limited. Small towns are only at the beginning of introducing basic institutional reforms, with solid waste and wastewater entities not corporatized, and services provided, if at all, in a highly fragmented manner. Revenues from tariffs are not sufficient to cover full costs with wastewater tariffs as low as RMB 0.4-0.5/m3 and solid waste fees, if applied, only inconsistently collected. Some private sector participation in infrastructure exists but mainly in form of BOTs for wastewater treatment plants, but often with mixed results due to a lack of integrated planning for network connections or financial constraints. Even in bigger cities, the challenges of operating urban environmental infrastructure in a sustainable manner cannot be underestimated with many wastewater treatment plants in Zhejiang’s cities not operating at their design capacities. These facts are symptomatic of the challenges of providing urban infrastructure service provision in China, which are likely to be more acute the lower down in the urban hierarchy services are provided.

**Zhejiang’s Response to Environmental Problems in the Qiantang River Basin.** Zhejiang Provincial Government has fully recognized these challenges and has put in place provisions to improve urban environmental infrastructure services, including in the 11th Five Year Plan for Qiantang River Basin, the Eco-Province Construction Plan, and the most recent Environmental Protection “811” Action Plan. The overall government strategy is to provide financial and technical support to counties/ towns to invest in the urban environmental infrastructure and to prioritize environmental protection in the Qiantang River Basin. The goal of the government is to ensure that, by 2020, the required water quality standard for the Qiantang River is fully met. Given that the larger cities in the Qiantang River Basin are more advance in terms of improving their urban environment, increasing sustainable service provision in small towns is a key next generation environmental management challenge. The Provincial Government’s specific targets
for small towns are to increase, by 2020, service coverage for safe water supply to 100%; for wastewater treatment to 70%; and for sanitary solid waste collection and disposal to 90%. The overall goal is to reach 100% of the required water quality standard in the Qiantang River by 2020.

2. Objectives

The project development objective is to assist Zhejiang Province in increasing access to sustainable urban environmental infrastructure in selected cities, districts and towns in the Qiantang River Basin. This will be achieved by supporting infrastructure investments in the water supply, wastewater and solid waste sectors, as well as institutional reform and capacity building activities to ensure long term sustainability of the assets created.

As the project constitutes only a small part of Zhejiang Province’s large investment program to upgrade urban environmental infrastructure services in small towns, the project aims to contribute to the Province’s own activities by helping to create models for sustainable small town environmental infrastructure services, especially in the area of institutional, operational and financial sustainability.

3. Rationale for Bank Involvement

The World Bank has to date implemented two urban projects in Zhejiang Province, one of which, the Zhejiang Urban Environmental Project, is still ongoing and expected to close in FY11.1 These projects have focused on improving urban environmental infrastructure and protecting cultural heritage in the larger cities in Zhejiang, including in Hangzhou, Ningbo, Shaoxing, and Wenzhou. As mentioned above, Zhejiang has made good progress on enhancing environmental protection in most of its larger cities. Service coverage rates are increasing and institutional reforms are progressing steadily with service providers fully corporatized, and in the case of Ningbo, regional consolidation of wastewater service provision gradually increasing. It is therefore a natural progression to address, through the new Bank-financed project in the Province, the next generation of urban environmental infrastructure challenges, namely those pertaining to small towns.

The project is also part of a series of recent urban projects in the Bank’s portfolio in China which increasingly focuses on small towns (i.e., Sichuan Small Towns Project), urban-rural integration (i.e., Chongqing Urban Rural Integration Project), and new country side development (i.e., Ningbo New Countryside Development Project). The importance of addressing critical development challenges in small towns is also highlighted by the 2008 World Development Report (WDR) on economic geography given the central role small towns play as the “connective tissue between urban and rural areas”.

4. Description

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1 There are also two Bank urban projects focusing on Ningbo Municipality. The Ningbo New Countryside Development Project and the Ningbo Water and Environment Project.
The project consists of four components. The total project costs are US$216 million (with contingencies and financial charges) which implies—with a 46% financing percentage—an IBRD loan of US$ 100 million.

- **Component 1: Water Supply Component** (US$36 million, of which the IBRD loan is US$19 million). This component covers Zhuji City of Shaoxing Municipality and Wucheng District of Jinhua Municipality. Under the component, water supply treatment plants with total capacity of 90,000 m³/day and clear water distribution networks will be built to enhance water supply for residents in the suburban areas and five adjacent towns and townships of Zhuji City, and four towns as well as one townships of Wucheng District.

- **Component 2: Wastewater Component** (US$158 million, of which the IBRD loan is US$68 million). This component consists of seven sub-components in Jiande City and Jiannan Town/ Tonglu County of Hangzhou Municipality, Youbu Town/ Lanxi County and Pan’An County of Jinhua Municipality, and Qujiang District and Longyou County of Quzhou Municipality. Under this component, four waste water treatment plants with total capacity of 50,000 m³/day together with associated sewers, storm water pipelines, roads, as well as river rehabilitation works will be constructed.

- **Component 3: Solid Waste Component** (US$20 million, of which the IBRD loan is US$11 million). This component covers Jiande City of Hangzhou Municipality. Under the component, the project will invest in the construction of the Qingshankejiawu landfill which will serve five towns and one community of Jiande City; the construction of a tertiary leachate treatment plant; the closure of three existing open dumps; and solid waste collection vehicles and equipment.

- **Component 4: Institutional Strengthening and Training (IST)** (US$2.0 million, of which the IBRD loan is US$2.0 million). This component consists of three packages, Package A: Project Management and Implementation Assistance, Package B: Master Planning of Small Town Urban Environmental Infrastructure in Zhejiang Province, and Package C: Trainings and Study Tours.

5. **Financing**

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<th>Source</th>
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<td>International Bank for Reconstruction and Development</td>
<td>100</td>
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<td><strong>Total</strong></td>
<td><strong>216</strong></td>
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6. **Implementation**

   **Provincial-level Project Implementation.** The implementation arrangements at the provincial level are the same as those for the existing Zhejiang Urban Environmental Project (ZUEP). The Provincial Leading Group is headed by the Vice Secretary-General of Zhejiang Provincial
Government and comprises all key Provincial Government agencies. The Provincial Project Management Office (PPMO) is housed at the Provincial Construction Commission and comprises members of the Provincial Development and Reform Commission (DRC) and the Finance Bureau. The PPMO Director is the Division Chief in the Foreign Economic Liaison Division in the Provincial Construction Commission. The PPMO is responsible for the overall coordination of project management and implementation.

**Project City/County/Town-level Project Implementation.** All project cities and counties have established local Leading Groups, comprising all key government agencies. Local Project Management Offices (PMOs) and Project Implementing Units (PIUs) have also been established. Local PMOs will be responsible for overall project coordination and local PIUs for project implementation and the operation of the assets created under the project.

**Project Management and Implementation Support.** Given that all project cities and counties are new to the World Bank funding, DRA consultants will be engaged to provide support to the PPMO, PMOs, and PIUs in project management, contract management, detailed design review, bid document review, and project monitoring and reporting. The project implementation support will be provided at two levels: general project management support for the project as a whole and specific project management support to individual project components.

7. **Sustainability and Replicability**

Zhejiang Provincial and Local Governments’ commitment to improve urban environmental infrastructure in small towns and the experience the PPMO gained through past and existing Bank loans in project coordination and management assures a high probability that the project will be implemented at high-quality standards. However, long term institutional, operational, and financial sustainability are critical challenges under this project. To address these issues, during preparation, special attention was paid to ensuring appropriate technical designs (i.e., avoiding overdesign, least cost solutions), sustainable institutional arrangements (i.e., regional consolidation of services), and financing strategies (i.e., higher level government support and appropriate debt allocation). To support implementation, the IST components will cover three areas: i) Project Management and Implementation Assistance; Master Planning of Small Town Urban Environmental Infrastructure in Zhejiang Province, and iii) Trainings and Study Tours

8. **Lessons Learned from Past Operations in the Country/Sector**

**Institutional Sustainability.** Small towns oftentimes fall into a ‘management gap’: neither the community-based management models effective in rural areas, nor the utility models that work in larger urban centers can be easily applied. As a result, the project explored opportunities of horizontal and vertical consolidation of service provision. Where possible, existing water, wastewater, and solid waste companies in nearby towns or larger cities were selected as the responsible implementing agency. In some project cities this was achieved during the project preparation phase (i.e., the Jiande Solid Waste and Jiangnan Town Wastewater subprojects). For others, continued optimization of institutional arrangements will need to be supported during project implementation.
Financial Sustainability. Lessons learned from the Bank’s urban projects in China suggest that tariff increases follow agreed domestic procedures and are only in a very limited way, if at all, influenced by Bank projects, even if financial covenants are included. More attention was therefore paid to ensuring a balanced capital expenditure financing strategy and mobilizing higher level government grant support. Reflecting lessons learned on the gradual nature of tariff increases, the cost recovery objective is to cover only O&M costs as opposed to requiring full cost recovery, except for the water supply components where tariffs are already at cost recovery levels. The agreed debt allocation strategy is that for all components, except for water supply, debt is allocated to county governments and not the implementing agencies.

Counterpart Funding. Small towns often face difficulties in raising counterpart funding to support their proposed investments. As a result, the Provincial Government decided to provide grant support, using existing provincial regulations, to all project cities/counties totaling about 5% of total project investments. Furthermore, small towns with weak financial capacity were screened out by the Provincial Finance Bureau at the project identification stage. During project preparation, counterpart funding strategies were agreed with the Provincial Finance Bureau and all participating project cities and counties.

Technical Capacity. Technical capacity at small town level is generally found to be low—both in terms of project management and in terms of sustainable operations of the assets created. As a result, dedicated Design Review Advisory (DRA) consulting services are included in the project to ensure that all project cities, counties, and towns receive the required support to implement the project satisfactorily. Particular attention will be paid to in-depth reviews of all subprojects’ designs to minimizing contract variation orders. In addition, an IST components to build capacity through study tours and training in key technical areas is included.

Overdesign and Cost Estimates. Unreliable baseline information, inadequate sector planning and overoptimistic projections of economic development often lead to overdesign of the planned infrastructure investments. During project preparation designs of the proposed facilities were therefore developed based on a combination of accurate future demand projections, cost-effective technical specifications, and appropriate design standards. In addition, cost estimates were reviewed to ensure that they are as close to market prices (as opposed to norms) as possible.

9. Safeguard Policies (including public consultation)

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<td>Projects on International Waterways ([OP/BP 7.50])</td>
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10. List of Factual Technical Documents

- Draft final Consolidated Feasibility Study Report (CFSR) prepared by HydroChina Huadong Engineering Corporation and Groupe Huit. (May 2010)
- Draft final EIA report by HydroChina Huadong Engineering Corporation and Groupe Huit. (May 2010)
- Draft final of RAP prepared by Hohai University (May 2010)

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* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas