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R2016-0120/1

June 27, 2016

**Closing Date: Friday, July 15, 2016  
at 6 p.m.**

FROM: Vice President and Corporate Secretary

**China - Ningbo Sustainable Urbanization Project**

**Project Appraisal Document**

Attached is the Project Appraisal Document regarding a proposed loan to China for a Ningbo Sustainable Urbanization Project (R2016-0120) which is being processed on an absence-of-objection basis.

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The World Bank

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Report No: PAD1578

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$150.00 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

NINGBO SUSTAINABLE URBANIZATION PROJECT

June 7, 2016

Social, Urban, Rural and Resilience Global Practice  
East Asia and Pacific Region

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective as of April 5, 2016)

Currency Unit = Renminbi (RMB)  
RMB 6.47 = US\$1  
US\$1 = RMB 0.15

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

|      |   |
|------|---|
| AAA  | Analytic and Advisory Activities                      |
| BP   | Bank Policy   |
| CPS  | Country Partnership Strategy                          |
| DA   | Designated Account                                    |
| DRC  | Development and Research Center                       |
| EA   | Environmental Assessment                              |
| EIRR | Economic Internal Rate of Return                      |
| EMP  | Environmental Management Plan                         |
| ENPV | Economic Net Present Value                            |
| ESMF | Environment and Social Management Framework           |
| FM   | Financial Management                                  |
| FMM  | Financial Management Manual                           |
| FSR  | Feasibility Study Report                              |
| FPIU | Fenghua Project Implementation Unit                   |
| FYP  | Five Year Plan  |
| GHG  | Green House Gas                                       |
| GDP  | Gross Domestic Product                                |
| GRS  | Grievance Redress Service                             |
| IBRD | International Bank for Reconstruction and Development |
| ICB  | International Competitive Bidding                     |
| IDA  | International Development Association                 |
| IPF  | Investment Project Financing                          |
| ITS  | Intelligent Transport System                          |
| LID  | Low-impact Development                                |
| M&E  | Monitoring and Evaluation                             |
| MOF  | Ministry of Finance                                   |
| MTR  | Mid-term Review                                       |
| NCB  | National Competitive Bidding                          |

|      |   |
|------|---|
| NDRC | National Development and Reform Commission    |
| NPC  | National People's Congress                    |
| NPV  | Net Present Value                             |
| NMFB | Ningbo Municipal Finance Bureau               |
| NMT  | Non-motorized Transportation                  |
| NPIU | Ninghai Project Implementation Unit           |
| NPMO | Ningbo Municipality Project Management Office |
| O&M  | Operations and Maintenance                    |
| OP   | Operational Policy                            |
| PCR  | Physical Cultural Resources                   |
| PDO  | Project Development Objective                 |
| PIP  | Project Implementation Plan                   |
| PIU  | Project Implementation Unit                   |
| PMO  | Project Management Office                     |
| RAP  | Resettlement Action Plan                      |
| RF   | Results Framework                             |
| RPF  | Resettlement Policy Framework                 |
| SA   | Social Assessment                             |
| SORT | System Operations Risk-Rating Tool            |
| SWMM | Storm Water Management Model                  |
| TOR  | Terms of Reference                            |
| VOC  | Vehicle Operating Cost                        |
| WACC | weighted average cost of capital              |
| WBG  | World Bank Group                              |
| XPIU | Xiangshan Project Implementation Unit         |
| YRD  | Yangtze River Delta                           |

|                                  |                          |
|----------------------------------|--------------------------|
| Regional Vice President:         | Victoria Kwakwa          |
| Country Director:                | Bert Hofman              |
| Senior Global Practice Director: | Ede Jorge Ijjasz-Vasquez |
| Practice Manager:                | Abhas K. Jha             |
| Task Team Leader:                | Alessandra Campanaro     |
| Co-Task Team Leader:             | Wanli Fang               |

**CHINA**  
**Ningbo Sustainable Urbanization Project**

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# PAD DATA SHEET

China

Ningbo Sustainable Urbanization Project (P149485)

## PROJECT APPRAISAL DOCUMENT

EAST ASIA AND PACIFIC

Social, Urban, Rural and Resilience Global Practice

Report No.: PAD1578

| Basic Information                                  |   |  |  |
|--|---|--|--|
| Project ID<br>P149485                              | EA Category<br>B - Partial Assessment                       | Team Leader(s)<br>Alessandra Campanaro |  |
| Lending Instrument<br>Investment Project Financing | Fragile and/or Capacity Constraints [ ]                     |  |  |
|  | Financial Intermediaries [ ]                                |  |  |
|  | Series of Projects [ ]                                      |  |  |
| Project Implementation Start Date<br>15-Jul-2016   | Project Implementation End Date<br>30-Nov-2021              |  |  |
| Expected Effectiveness Date<br>15-Dec-2016         | Expected Closing Date<br>30-Nov-2021                        |  |  |
| Joint IFC<br>No                                    |   |  |  |
| Practice Manager/Manager<br>Abhas Kumar Jha        | Senior Global Practice Director<br>Ede Jorge Ijjasz-Vasquez | Country Director<br>Bert Hofman        | Regional Vice President<br>Victoria Kwakwa |
| Borrower: People's Republic of China               |   |  |  |
| Responsible Agency: NINGBO PMO                     |   |  |  |
| Contact:<br>Telephone No.: 0574-87280409           | Title: Director<br>Email: nbpmo@outlook.com                 |  |  |
| Project Financing Data(in USD Million)             |   |  |  |
| [ X ] Loan   | [ ] IDA Grant   | [ ] Guarantee                          |  |
| [ ] Credit   | [ ] Grant   | [ ] Other                              |  |
| Total Project Cost:                                | 317.50  | Total Bank Financing:                  | 150.00                                     |
| Financing Gap:                                     | 0.00  |  |  |
| Financing Source                                   |   | Amount                                 |  |
| Borrower   |   | 167.50                                 |  |

|   |        |
|---|--------|
| International Bank for Reconstruction and Development | 150.00 |
| Total   | 317.50 |

#### Expected Disbursements (in US\$, Millions)

| Fiscal Year | 2016 | 2017  | 2018  | 2019  | 2020  | 2021   | 2022   | 0000 | 0000 | 0000 |
|-------------|------|-------|-------|-------|-------|--------|--------|------|------|------|
| Annual      | 0.00 | 10.00 | 20.00 | 30.00 | 35.00 | 30.00  | 25.00  | 0.00 | 0.00 | 0.00 |
| Cumulative  | 0.00 | 10.00 | 30.00 | 60.00 | 95.00 | 125.00 | 150.00 | 0.00 | 0.00 | 0.00 |

#### Institutional Data

##### Practice Area (Lead)

Social, Urban, Rural and Resilience Global Practice

##### Contributing Practice Areas

##### Cross Cutting Topics

- [ X ] Climate Change  
 [ ] Fragile, Conflict & Violence  
 [X] 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 % |
|---|---|-----|--------------------------|--------------------------|
| Public Administration, Law, and Justice | Public administration-Financial Sector                | 15  | 11                       | 3                        |
| Transportation                          | Urban Transport                                       | 45  |                          | 23                       |
| Water, sanitation and flood protection  | General water, sanitation and flood protection sector | 40  | 7                        |                          |
| 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   | %  |
|--|---|----|
| Environment and natural resources management | Pollution management and environmental health | 10 |
| Urban development                            | Urban planning and housing policy             | 25 |
| Urban development                            | Municipal finance                             | 15 |



|   |   |          |
|---|---|----------|
| Urban development   | City-wide Infrastructure and Service Delivery | 50       |
| Total   |   | 100      |
|   |   |          |
| Proposed Development Objective(s)   |   |          |
| The objective of the project is to improve the use of urban public space, improve urban mobility and reduce flood risk in selected counties in Ningbo Municipality. |   |          |
|   |   |          |
| Components  |   |          |
| Component Name  | Cost (US\$, Millions)                         |          |
| Component 1: Urban Regeneration   | 108.50  |          |
| Component 2: Urban Transport  | 132.10  |          |
| Component 3: Flood Risk Management  | 72.30   |          |
| Component 4: Technical Assistance and Capacity Building   | 4.60  |          |
|   |   |          |
| Systematic Operations Risk- Rating Tool (SORT)  |   |          |
| Risk Category   | Rating  |          |
| 1. Political and Governance   | Low   |          |
| 2. Macroeconomic  | Moderate                                      |          |
| 3. Sector Strategies and Policies   | Moderate                                      |          |
| 4. Technical Design of Project or Program   | Substantial                                   |          |
| 5. Institutional Capacity for Implementation and Sustainability   | Moderate                                      |          |
| 6. Fiduciary  | Moderate                                      |          |
| 7. Environment and Social   | Moderate                                      |          |
| 8. Stakeholders   | Low   |          |
| 9. Other  | —   |          |
| OVERALL   | Moderate                                      |          |
|   |   |          |
| 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 [ ]   |
| 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                             |          | <b>X</b> |
| Pest Management OP 4.09                        |          | <b>X</b> |
| Physical Cultural Resources OP/BP 4.11         | <b>X</b> |          |
| Indigenous Peoples OP/BP 4.10                  |          | <b>X</b> |
| Involuntary Resettlement OP/BP 4.12            | <b>X</b> |          |
| Safety of Dams OP/BP 4.37                      |          | <b>X</b> |
| Projects on International Waterways OP/BP 7.50 |          | <b>X</b> |
| Projects in Disputed Areas OP/BP 7.60          |          | <b>X</b> |

#### **Legal Covenants**

| <b>Name</b>                       | <b>Recurrent</b> | <b>Due Date</b> | <b>Frequency</b> |
|-----------------------------------|------------------|-----------------|------------------|
| Project Implementation Plan (PIP) | <b>X</b>         |                 | Yearly           |

#### **Description of Covenant**

*Project Agreement, Section I.A.2 of Schedule:* Throughout the project implementation, the project implementing entity, shall apply, and shall cause each Project Implementation Unit (PIU) to apply, the PIP in a timely and efficient manner satisfactory to the Bank. The project implementing entity shall not amend, suspend, or waive the PIP without the prior written agreement of the Bank.

| <b>Name</b>      | <b>Recurrent</b> | <b>Due Date</b> | <b>Frequency</b> |
|------------------|------------------|-----------------|------------------|
| Annual Work Plan | <b>X</b>         |                 | Yearly           |

#### **Description of Covenant**

*Project Agreement, Section I.A.3 of Schedule:* The project implementing entity shall, and shall cause each PIU to, prepare and furnish to the Bank by September 30 in each year, beginning in 2016, a draft Annual Work Plan for review and comment, summarizing the implementation progress of the project for the said year and the project activities to be undertaken in the following calendar year, including the proposed annual budget for the project, and taking into account the Bank's comments, finalize and furnish to the Bank no later than November 30 in each year, beginning in 2016, the Annual Work Plan, satisfactory to the Bank.

### **Team Composition**

#### **Bank Staff**

| <b>Name</b>          | <b>Role</b>                              | <b>Title</b>                           | <b>Specialization</b> | <b>Unit</b> |
|----------------------|--|--|-----------------------|-------------|
| Alessandra Campanaro | Team Leader (ADM Responsible)            | Senior Urban Specialist                | Urban Planning        | GSU08       |
| Zheng Liu            | Procurement Specialist (ADM Responsible) | Procurement Specialist                 | Procurement           | GGO08       |
| Yi Geng              | Financial Management Specialist          | Senior Financial Management Specialist | Financial Management  | GGO20       |
| Aimin Hao            | Safeguards Specialist                    | Social Development Specialist          | Social Safeguard      | GSU02       |

|                          |                       |                                 |   |       |
|--------------------------|-----------------------|---------------------------------|---|-------|
| Alejandro Alcala Gerez   | Counsel               | Senior Counsel                  | Legal   | LEGES |
| Eduardo Ferreira         | Team Member           | Senior Financial Specialist     | Sr. Financial Specialist - Climate Change Co-benefit- | GCCCF |
| Huiying Guo              | Team Member           | Program Assistant               | Team Assistant  | EACCF |
| Inneke Herawati Ross     | Team Member           | Senior Program Assistant        |   | GSU08 |
| Jose Ramon R. Pascual IV | Counsel               | Senior Counsel                  |   | LEGCF |
| Min Zhao                 | Team Member           | Senior Economist                | Economy   | GGO14 |
| Paul Procee              | Team Member           | Program Leader                  | Urban Planning  | LCC5C |
| Peter Leonard            | Safeguards Advisor    | Regional Safeguards Adviser     | Safeguard   | OPSPF |
| Shunong Hu               | Team Member           | Senior Water Engineer           | Water Engineering                                     | GWA02 |
| Wanli Fang               | Co-TTL                | Urban Economist                 | Urban Economics                                       | GSU08 |
| Weimin Zhou              | Team Member           | Transport Specialist            | Transport   | GTI02 |
| Wenyan Dong              | Team Member           | Operations Analyst              | Operational Analysis                                  | GSU08 |
| Xin Ren                  | Safeguards Specialist | Senior Environmental Specialist | Environment   | GEN02 |
| Yan Li                   | Team Member           | Consultant                      | Economy   | GSU08 |
| Zhuo Yu                  | Team Member           | Finance Officer                 | Disbursement  | WFALN |

#### Extended Team

| Name              | Title                                      | Office Phone             | Location |
|-------------------|--|--------------------------|----------|
| Li Du             | Senior Economist                           |                          |          |
| Rajagopal S. Iyer | Consultant, GSURR                          |                          |          |
| Rufei Zhang       | Urban Planner and Institutional Specialist |                          | Shanghai |
| Yang Jiang        | Director of Urban Planning and Transport   | +86 10 8526 1955 ext.103 |          |

#### Locations

| Country | First Administrative Division | Location | Planned | Actual | Comments |
|---------|-------------------------------|----------|---------|--------|----------|
| China   | Zhejiang Sheng                | Ningbo   |         | X      |          |

#### Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required?      Consultants will be required



## I. STRATEGIC CONTEXT

### A. Country Context

1. More than half of China's population now lives in cities. China's rapid urbanization has been highly successful in supporting high gross domestic product (GDP) growth, economic transformation, productivity increases, and employment creation. Over the next 20 years, urbanization is projected to reach about 65 to 70 percent, adding another 300 million urban inhabitants. By 2030, about one billion people will be living in China's cities, seeking jobs, housing, infrastructure, and other services.

2. The Government of China has recently launched a "*New Urbanization Plan*"<sup>1</sup> to sustain the country's economic growth by promoting further urbanization. The *New Urbanization Plan* emphasizes the 'quality' of urbanization and equalization of basic urban services provision to all residents, including migrants. It gives higher priority to develop cities and towns at the lower tiers of the urban hierarchy, recognizing their role in linking major cities and rural areas and their potential to accommodate rural-urban migration. The key features of the policy include (a) agglomeration of smaller cities and neighborhood towns, which have sufficient specialization and linkages to major urban areas; (b) mixed-use, transit-oriented and pedestrian-friendly urban development to limit low-density, fragmented urbanization, encroachment on farmlands and nature reserves, and economic provision of infrastructure and services; and (c) improved connectivity between and within cities to facilitate access to local, regional, and global markets.

3. Ningbo Municipality, which is located in the northeastern part of Zhejiang Province, is facing enormous challenges in addressing economic development disparities within its jurisdiction, accommodating millions of migrant workers, and coping with increasing climate change risks. Spatial expansion in Ningbo has been oriented towards motorized traffic, contributing to further fragmenting the urban core and challenging the delivery of quality basic urban services. In 2013, per capita GDP in the main urban areas of Ningbo was a little over US\$30,000 but it was merely a third of that amount in the counties of Xiangshan, Ninghai and Fenghua. These counties, which are located in coastal areas, are vulnerable to flood risks.

4. Ningbo has been selected by the State Council as one of the 62 pilot cities for realizing new urbanization in China. An important goal of Ningbo's New Urbanization Strategy is to promote inclusive cities for low-income people and migrant workers. The Ningbo Urban Master Plan for 2006-2020 (2015 revision) was approved by the State Council in March 2015.

### B. Sectoral and Institutional Context

5. **Population and Urbanization.** Ningbo and the counties/county-level cities within its jurisdiction are among the fastest urbanizing areas in China: between 1990 and 2010, the urban footprint of core towns grew twenty times.<sup>2</sup> Urbanization rates in Xiangshan, Ninghai and Fenghua Counties are lower than the average of Ningbo Municipality (68.3 percent) as well as that of Zhejiang Province (61.6 percent). Economic prosperity has attracted migrant workers to

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<sup>1</sup> China's New Urbanization Plan for 2014-2020 was officially released in March 2014 by the State Council and is available at the national government's website: [http://www.gov.cn/zhengce/2014-03/16/content\\_2640075.htm](http://www.gov.cn/zhengce/2014-03/16/content_2640075.htm).

<sup>2</sup> Wang Lei, Li Congcong, Ying Qing, Cheng Xiao, Wang Xiaoyi, Li Xueyan, Hu Luanyun, Liang Lu, Yu Le, Huang Huabing, Gong Peng. 2012, "Measuring Urbanization in Chinese Cities during 1990-2010 Using Remote Sense Maps", Science Bulletin. 57(16): 1388-1399.

Ningbo from all over the country. Table 1 summarizes basic socio-economic information for the three counties; Annex 5 contains more details.

**Table 1: County Profiles**

| County    | Population<br>(person) | Number of<br>Migrants<br>(person) | Buildup<br>area (km <sup>2</sup> ) | Per Capita<br>GDP<br>(RMB) | GDP<br>Growth<br>Rate<br>(percentage) | Urbanization<br>Rate<br>(percentage) |
|-----------|------------------------|-----------------------------------|------------------------------------|----------------------------|---------------------------------------|--------------------------------------|
| Xiangshan | 543,800                | 80,125                            | 28.45                              | 67,121                     | 8.0                                   | 54.9                                 |
| Ninghai   | 619,300                | 124,404                           | 33.7                               | 62,262                     | 9.1                                   | 56.2                                 |
| Fenghua   | 483,700                | 227,291                           | 18.75                              | 60,037                     | 6.7                                   | 48.8                                 |

*Data source:* Ningbo Statistical Yearbook 2014, urbanization rate comes from the 2010 population census, number of migrants also from 2010 population census.

**6. Urban Regeneration.** Xiangshan, Ninghai and Fenghua Counties experienced fragmented urbanization with new construction occurring in suburban and rural areas. The lack of quality public space and dilapidated urban infrastructure (landscaping, lighting, shelter, resting seats and recreational facilities) in the existing urban centers are among the factors that have driven urban sprawl. Public space of acceptable quality is separated from people by car-dominated roads. This contributes to a population desiring to move away from degraded and poorly serviced areas. Meanwhile, at the outskirts of the county towns, existing villages have been surrounded by new land development and become part of the urban footprint. Basic infrastructure and services such as drainage, solid waste collection, and street lighting do not fully cover these “urban villages”, where most dwellers are migrant workers because of relatively low rental prices. The urban villages often have historical buildings that could be turned into cultural assets and tourism destinations. This is particularly true for the waterfront area of Xikou Township in Fenghua County. Evidence shows urban regeneration that aims at improving land use efficiency and quality of built-up environment presents a powerful tool to curb sprawl and provide convenient access for people to various kinds of urban amenities and services. This project was selected to implement some of the key recommendations of China’s New Urbanization Plan and the joint report by World Bank and Development and Research Center (DRC) of the State Council on China’s urbanization; both emphasized the need to have people-centered development with a shift toward more compact and mixed-use land development patterns to contain urban sprawl, maximize resource efficiency, curtail the negative externalities of pollution and congestion, and create more livable and productive cities.

**7. Urban Transport.** Despite gradual growth in the urban population, the county towns have invested considerably in expanding their urban area and building new transport infrastructure, while there are still missing links for the existing urban road network. Wide roads with multiple lanes have favored motorized traffic and further fragmented the city. In Xiangshan for example, while 69 percent of the daily trips by local resident are still made by bike or on foot and only 20.3 percent of the trips are by car, as income rises, motorization is taking place rapidly, at an annual rate of 30 percent in recent years.<sup>3</sup> Meanwhile, the number of accidents increased substantially - around 45 percent from 2010 to 2014. Interventions need to be developed to stop this tendency, gain greater safety, and overall improve urban mobility. To reduce the decline in non-motorized trips and increasing motorization, it is critical that the county towns reinvest in the existing downtown area and improve the quality of transport

<sup>3</sup> The car ownership in Xiangshan County has reached 160 cars per thousand capita. Shanghai Lishi Environmental Technology Co. Ltd. Social Economic Development Evaluation Report for Xiangshan, 2014.

infrastructure and safety of pedestrians, bikes and electric bikes and provide a more efficient and accessible public transport system for longer journeys. Xiangshan's public transport has made some progress, but service quality remains unsatisfactory due to poorly maintained bus stops/stations, low-frequency, ineffective schedule information sharing, and an aging fleet. Traffic management and the intelligent transport system are at their initial stage, and traffic efficiency and safety need to be improved. The mode share for public transport has been declining and was 3.69 percent in 2014 while annual public transport passengers in Xiangshan were 14.5 million in 2013. The public transport satisfaction survey carried out during project preparation, highlights that only 28 percent of passengers were fully satisfied with the bus service and 33 percent expressed dissatisfaction. The county aims at increasing the public transit mode share to 10 percent by 2020, which requires enormous new investments in infrastructure and substantial improvement in service quality. Likewise, in Ninghai County, it was reported that bus services ends too early—only 4 lines out of 19 are in operation after 7:30pm. In addition, no bus service is available to connect the city center to the industrial park, where most migrant workers find their jobs. The elderly, children, and lower-income families will especially benefit from improved access by walking, biking, and riding public transport to jobs, education services, and health facilities. In accordance with China's urban transport development strategy, this project aims at enhancing sustainable transport systems through improvements on the road network connectivity, public transit services, intelligent transport systems, and non-motorized mobility in the participating counties.

**8. Flood Risk Management.** Zhejiang Province typically experiences the heaviest economic losses from tropical cyclones in China.<sup>4</sup> The total economic losses from tropical cyclones amount to around 0.38 percent of the country's GDP.<sup>5</sup> Of the top ten costliest tropical cyclones during the period 1983-2006, six hit the province. Urbanization in Ningbo has been expanding to low-lying land with higher risk of flooding. The average elevation of urban area in Ningbo used to be 7.99 m in 1990, but it dropped to 6.11 m in 2000 and 4.82 m in 2010, as new development mostly occurred on lower flood plains<sup>6</sup>. Moreover, in recent years, Xiangshan and its neighboring counties started to reclaim coastal areas to make room for urbanization, and this further exacerbates the cities' exposure to flood risks. Urban flooding has significant impacts on urban transport infrastructure, utility supply, and the overall livability of cities. This is a particularly urgent issue in counties such as Xiangshan as it is hit every year by typhoons and storms, with impacts such as slowed traffic, blocked access and increased accidents.<sup>7</sup> The latest national Five-Year Plan calls for a reduction in vulnerability of cities and towns to natural disasters, such as floods and typhoons in the coastal region. Integrated flood risk management strategies that involve good water management, protection of green space, and roadway drainage design solutions can reduce the volume and slow down the rate at which rain water runs off roads and other paved surfaces, reducing the damage caused by floods.

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<sup>4</sup> Zhai Panmao, Wang Cuicui, and Li Wei. 2007. "A Survey of the Research on Changes in Extreme Precipitation Events" *Advances in Climate Change Research* 3 (3): 144–48. Zhai Panmao, Xuebin Zhang, Hui Wan, and Xiaohua Pan. 2005. "Trends in Total Precipitation and Frequency of Daily Precipitation Extremes over China." *Journal of Climate* 18: 1096–1108.

<sup>5</sup> Ibid.

<sup>6</sup> Wang Lei, Li Congcong, Ying Qing, Cheng Xiao, Wang Xiaoyi, Li Xueyan, Hu Luanyun, Liang Lu, Yu Le, Huang Huabing, Gong Peng, 2012, "Measuring Urbanization in Chinese Cities during 1990-2010 Using Remote Sense Maps", *Science Bulletin*, 57(16): 1388-1399.

<sup>7</sup> In 2014, Typhoon Phoenix landed in Xiangshan and caused a total economic loss of RMB 252 million, with over 144,000 residents severely affected. In July 2015, Typhoon Chan-hom put 18 low-lying districts in Xiangshan under water, with 2,400 households flooded and 998 factories suspending production. The storm also cut off 7 expressways and 146 power supply lines and caused serious damages to hydraulic facilities and irrigation systems.

9. **Climate Change Adaptation and Mitigation.** Growing evidence suggests that China's climate is indeed changing, especially at the regional level. Along with rising temperatures and changing precipitation regimes, the distribution of extreme weather events has also shifted. According to the government's estimate, direct economic losses from extreme weather events amount to 1–3 percent of China's annual GDP.<sup>8</sup> New construction is often taking place in risk-prone areas. Rapidly growing automobile ownership is gradually changing China's urban landscape, exacerbating the already acute air pollution in many parts of urban China, while adding to global environmental concerns. The project investment and design have taken climate change as a key consideration. On the adaptation front, a suite of flood management and road construction measures have been adopted to reduce runoffs to low-lying floodplains in Xiangshan. On the mitigation front, the project interventions include retrofitting the public transport system with a new fleet of cleaner more fuel-efficient buses; promoting non-motorized transport (NMT) in core urban areas through urban regeneration investments, and so on. See Annex 2 for details on measures adopted on both fronts. The summary table at the end of Annex 2 provides detailed estimates and breakdowns of the project investments; in the areas of climate adaptation and mitigation.

10. **Institutional Setting.** The Planning Bureau and the Bureau of Housing and Urban-Rural Construction are responsible for developing urban regeneration plans in the urban cores of counties, adjusting land use zoning as needed, coming up with financing arrangements, and issuing permits for civil works. Urban regeneration is often included as a special section in the county master plan and near-term construction plan. The Transport Bureau is in charge of developing investment plans for the construction of urban transport facilities and the traffic police play an important role in traffic management. A state-owned company that receives subsidies from the county, normally provides public transit service. The Water Conservancy Bureau leads the development of long-term flood management plans and yearly construction plans of the counties. At the township level these responsibilities are assigned to designated local government officials, subject to supervision from the county-level bureaus.

### C. Higher Level Objectives to which the Project Contributes

11. **Country Partnership Strategy (CPS).** The project is consistent with the World Bank Group's China CPS for 2013-2016 (Report No. 67566-CN) dated October 11, 2012 and focuses on two of its strategic themes: (a) supporting greener growth; and (b) promoting more inclusive development. It will contribute to three of the CPS outcomes of enhancing urban environmental services, enhancing opportunities in rural areas and county towns, and improving transport connectivity for more balanced regional development.

12. **Twin Goals.** The project is aligned with the Bank Group's twin goals of ending extreme poverty and boosting shared prosperity (especially the latter) by targeting the vulnerable groups (for example, migrants, the elderly, and students) to provide them with equal access to public infrastructure and services as well as climate-resilient infrastructure. Taking Xiangshan County as an example, the migrant population has higher rates of relative poverty (defined as people with annual income below 40 percent of the citywide average) than local residents across all but one urban community *Baihe* (where no migrant worker is reported)<sup>9</sup>. Improving the socio-

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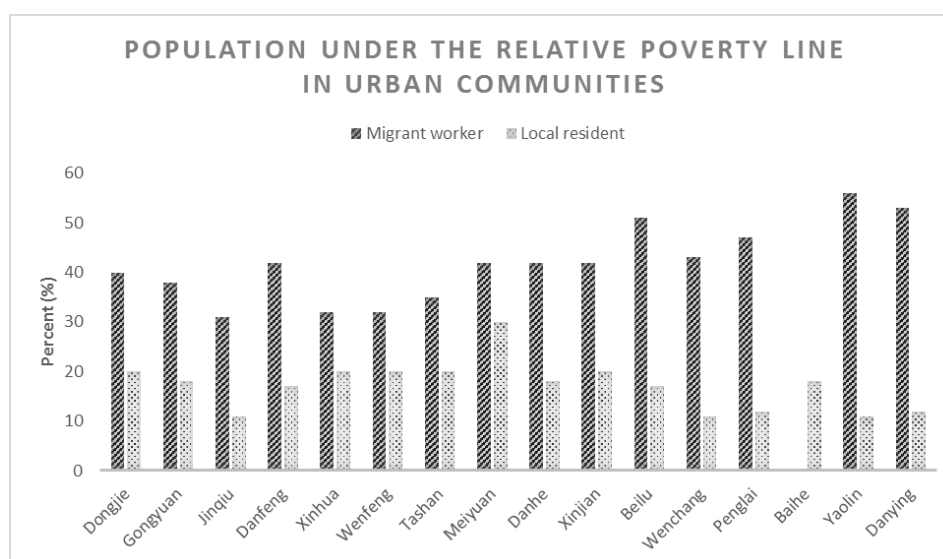
<sup>8</sup> Chris Sall, 2013, "Climate Trends and Impacts in China", Discussion paper of the World Bank.

<sup>9</sup> The other two counties have similar poverty profiles based on the observation during the team's field visits and detailed information of the distribution of poverty will be obtained when these sub-components get fully appraised.



economic status of migrant workers will be a key step towards inclusive development and shared prosperity.

**Figure 1 Distribution of Relative Poverty in Xiangshan**



*Note:* Darker shades indicate the percentage of poorer population in the urban core that are migrant workers, while the lighter shades refer to the same measurement for local residents. See Annex 5 for the spatial distribution of poor population in Figure A5-1. (Source: World Bank own elaboration and data provided by local authorities.)

## II. PROJECT DEVELOPMENT OBJECTIVES

### A. PDO

13. The objective of the project is to improve the use of urban public space, improve urban mobility and reduce flood risk in selected counties in Ningbo Municipality.<sup>10</sup>

### B. Project Beneficiaries

14. Direct beneficiaries are identified as the residents of (a) the central urban area of Xiangshan County Town; (b) the central urban area of Ninghai County Town; (c) urban areas of Xikou and Xiwu Township of Fenghua County; and (d) the urban area of Changjie Township of Ninghai County. Table 2 provides a summary of project beneficiaries by county and gender. About 38% of the beneficiaries are migrant workers.

**Table 2: Project Beneficiaries by County**

| County    | Project Area       | 2014 Population | Of which female |
|-----------|--------------------|-----------------|-----------------|
| Xiangshan | Central urban area | 230,000         | 113,390         |
| Fenghua   | Xikou Town         | 75,000          | 54,064          |
|           | Xiwu Town          | 34,000          |                 |
| Ninghai   | Central urban area | 301,000         | 150,213         |

<sup>10</sup> The weighted contribution by components to the Project Development Objective is Urban Regeneration (35%), Urban Transport (42%) and Flood Management (23%).

|  |               |                |                |
|--|---------------|----------------|----------------|
|  | Changjie Town | 10,000         |                |
|  | <b>Total</b>  | <b>650,000</b> | <b>317,667</b> |

### C. PDO Level Results Indicators

15. Achievement of the PDO will be measured through the following key performance indicators:

- a) Direct project beneficiaries (number), of which female (percentage)- *Core Sector Indicator*
- b) Increase of pedestrian and bicycle flows and stationary activities<sup>11</sup> in areas with urban regeneration intervention (percentage, to assess use of urban space)
- c) Increase in the number of public transport users in the urban areas (percentage, to assess urban mobility)
- d) Public transport user satisfaction (to assess urban mobility and citizen engagement)
- e) Area provided with new and improved drainage services (to assess flood risk management)

## III. PROJECT DESCRIPTION

### A. Project Components

16. The project comprises four components, as described in the following paragraphs; Annex 2 contains a detailed project description.

#### **Component 1. Urban Regeneration (Estimated Costs: US\$108.5 million; IBRD Loan: US\$49 million)**

17. The objective of this component is to create a vibrant and safe urban environment by improving the quality of public space following people-centered design strategies and expanding the coverage and upgrading the service level of urban utilities<sup>12</sup>. This component will fund activities among others: upgrade of public space along main transport corridors and commercial streets to improve attractiveness of the existing urban center; comprehensive regeneration of lagging urban settlements by providing modern utilities (water supply, drainage system, sewage treatment and solid waste collection, lighting, and parking) and open spaces; and improvement of road safety for pedestrians and cyclists with better design of crossings and intersections and traffic management efficiency using information and communication technology and electric devices.

#### **Component 2. Urban Transport (Estimated Costs: US\$132.1 million; IBRD Loan: US\$67.8 million)**

18. The objective of this component is to strengthen urban mobility by completing the urban road network and improving the capacity, reliability, and service quality of the bus system<sup>13</sup>.

<sup>11</sup> The term “stationary activities” is used by urban designers in public life studies to describe a variety of activities by people who are not simply passing by but rather spending some time in the public space, including doing physical exercise, being seated, shopping, waiting for public transit, and so on.

<sup>12</sup> Urban regeneration refers to a comprehensive package of investments in public infrastructure and service delivery in existing urban areas. Priority will be given to activities that provide lower-income households, migrant workers, and women with affordable transport options to travel to job centers, offer the elderly and the youth safe access to medical and educational institutions, and/or contribute to the preservation of cultural identity and improvements of social inclusion in local communities.

<sup>13</sup> Typically, the public transport network has very low ridership and there are still missing links for the urban road network to be enhanced. These investments are closely linked to Component 1 and ensure that a stronger and more sustainable urban transport

This component will fund activities including completion of the city road network; improvement of bus terminal and depots; rehabilitation and construction of bus stops and facilities; and upgrade and expansion of the bus fleet.

**Component 3. Flood Risk Management. (Estimated Costs: US\$72.3 million; IBRD Loan: US\$28.3 million)**

19. The objective of this component is to reduce the vulnerability of the counties to the risks of floods. The selected structural and non-structural measures will help the county towns be better prepared and protect critical assets and vulnerable people from being affected by potential floods, and the measures, among others, will be (a) structural investments, including (i) renovation and upgrading of existing rain grits, inlets, outlets, and drainage pipes, (ii) restoration of natural storm water drainage systems, (iii) construction of pumping stations at critical locations, and (iv) construction of low-impact-development (LID) demonstrations in suitable public areas; and (b) non-structural investments, including, as appropriate, (i) establishment of pre-warning systems, (ii) preparation of emergency preparedness plans, (iii) study and adjustment of land-use plans, and (iv) introduction and improvement of the flood insurance system.

**Component 4. Technical Assistance and Capacity Building. (Estimated Costs: US\$4.6 million IBRD Loan: US\$4.6 million)**

20. The objective of this component is to create more livable local communities by supporting local governments in finding cost-effective solutions based on sound financing plans. This component will fund activities, such as, technical assistance to local governments in reviewing and, as appropriate, updating policies, codes, and capital investment plans to integrate transportation, housing, and economic development; technical support to counties to develop information and tools for full-cycle management of infrastructure assets, including asset inventory, valuation, planning and budgeting, and to develop capital investment plans; technical support to develop innovative financing mechanisms to improve public financing systems; and project management and supervision, including strengthening the institutional capacity of the Project Management Office (PMO) and Project Implementation Units (PIUs), monitoring and evaluation (M&E) activities, training and study tours, and consulting services.

**B. Project Financing**

21. The lending instrument is Investment Project Financing (IPF). The loan will be a single currency of US dollar, variable spread loan of US\$150 million, with a final maturity of 30 years, including a 5-year grace period, and a front-end fee of 0.25 percent being paid out of the loan proceeds.

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system is created to improve the overall network efficiency and service quality within the city by better integrating non-motorized systems at the neighborhood level with public bus systems for longer-distance trips within the county paying attention to the vulnerable groups including women, migrants, and the elderly.

## C. Project Cost and Financing

**Table 3 Project Cost and Financing**

| <b>Project Components</b>                        | <b>Project cost*<br/>(US\$ million)</b> | <b>IBRD or IDA<br/>Financing<br/>(US\$ million)</b> | <b>Percent<br/>Financing<br/>(%)</b> |
|--|---|---|--------------------------------------|
| 1.Urban Regeneration                             | 108.5                                   | 49.0  | 45                                   |
| 2.Urban Transport                                | 132.1                                   | 67.8  | 51                                   |
| 3.Flood Risk Management                          | 72.3                                    | 28.3  | 39                                   |
| 4. Technical Assistance and Capacity<br>Building | 4.6                                     | 4.6   | 100                                  |
| Total Project Costs                              | 317.5                                   | 149.6   | 47                                   |
| Front-End Fees                                   | 0.375                                   | 0.375   | 100                                  |
| <b>Total Financing Required</b>                  | <b>317.9</b>                            | <b>150.0</b>  | <b>47</b>                            |

Note: \* Exchange rate at RMB 6.4 to US\$ 1

## D. Lessons Learned and Reflected in the Project Design

22. The project draws key lessons from the Bank's comprehensive and tailored urbanization study for China and is also informed by the Bank's global knowledge products on pathways toward resilient, livable and accessible cities. The project has also benefited from the Bank's long involvement in urban development in a number of municipalities and small town in various provinces of China, including Chongqing, Sichuan, Tianjin, Shaanxi and Anhui. In addition, the project design builds on the Bank's international experience in the area of people-oriented urban development, regeneration and resilience in Vietnam, Brazil, Mexico, India and Georgia.

23. **Regeneration of existing cities is the key to curb urban sprawl and promote sustainable development.** Many cities and towns in China have been investing in Greenfield development of new towns rather than focusing on improving the quality of life within the existing city, often draining resources from existing built up areas. As recommended in the *Urban China Report*,<sup>14</sup> increasing land use efficiency, reinvesting in existing core urban area and regenerating compact and mixed-use communities will reduce the costs of providing basic public services and increase the number of direct beneficiaries of the project.

24. **Public transit and NMT are the remedy to rapid motorization and car-oriented development.** Best practices from cities in various countries indicate that investments in public transit help cities provide affordable and low carbon mobility to people in an effective way. The Bank study "*Sustainable Low-Carbon City Development in China*"<sup>15</sup> notes that the physical environment for NMT has been deteriorating in the past decades and proposes the following changes: (a) redesign the urban transport network to better serve pedestrians and cyclists; (b)

<sup>14</sup> World Bank; Development Research Center of the State Council, China. 2014. Urban China: Toward Efficient, Inclusive, and Sustainable Urbanization. Washington, D.C.: World Bank.

<sup>15</sup> Baeumler, Axel; Ijjasz-Vasquez, Ede; Mehndiratta, Shomik. 2012. Sustainable Low-Carbon City Development in China. World Bank, Washington, DC.

resolve last-mile connectivity; (c) provide basic infrastructure for resting, sheltering and recreation; and (d) pay special attention to road safety. This project incorporates these lessons by contributing to the improvement of public transport and mobility, traffic management, and NMT, together with effective urban regeneration measures.

**25. Use of a holistic and preventive approach to flood risk management to address flood risk and flood damage in cities.** Based on a review of international experience, the Bank report “*Cities and Flooding*”<sup>16</sup> highlights that “the most successful flood risk management strategies will balance the implementation of short-run, quick gain, non- structural measures with a vision of the best suite of structural and non- structural measures to be implemented for the longer term”. Therefore, the project will finance both structural and non-structural investments to address urban flood risks in the most cost-effective manner.

**26. Sustainable management of urban assets is as important as new investment in urban infrastructure.** Decision-makers often give higher priority to new infrastructure over operation and maintenance of existing infrastructure. As China expands its urban infrastructure portfolio, the costs of maintaining these assets will be enormous. To further improve overall town management and service delivery, the project will assist selected counties through technical assistance support to introduce key management improvements, including the preparation and implementation of improved operations and maintenance (O&M) action plans and asset management plans; these plans will link asset management requirements with sustainable budget preparation and financing processes.

## **IV. IMPLEMENTATION**

### **A. Institutional and Implementation Arrangements**

**27.** The Ningbo Municipal Project Management Office (NPMO) will coordinate and manage the preparation and implementation of the project. County-level PIUs have already been established in Xiangshan (XPIU), Ninghai (NPIU) and Fenghua (NPIU) for project execution and for coordination among different relevant county government agencies. Project Leading Groups (PLGs) have been established at both Ningbo Municipal level and the county level of Xiangshan, Ninghai and Fenghua with the purpose of ensuring strategic guidance.

**28.** The NPMO has more than 20 years of working relationship with the Bank, thus in depth experience with Bank-financed operations. It is expected to play a strong leadership role during the project implementation and guide the county PIUs who have little knowledge on Bank’s operational policies and procedures.

**29.** The Feasibility Study Reports (FSRs) of about half of the investments have been appraised; pre-feasibility studies are in place for the remaining investments (see Annex 2 for details). Consultants have been hired to support the PIUs with the preparation of FSRs, the Social Assessment (SA) and Environmental Assessment (EA) of the project, and the preparation of the Project Implementation Plan (PIP). A PIP is in place with detailed institutional arrangements, key workflow procedures (including the process to finalize all projects in pipeline,

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<sup>16</sup> Jha, Abhas K.; Bloch, Robin; Lamond, Jessica. 2012. *Cities and Flooding: A Guide to Integrated Urban Flood Risk Management for the 21st Century*. World Bank.

from selection criteria to safeguard aspects), and a time-bound schedule covering the entire project cycle, including all key activities (such as resettlement, design and construction). The PIUs will prepare annual work plans, which will include the Procurement Plan for the coming year and assurance of counterpart funds availability.

## **B. Results Monitoring and Evaluation**

30. The Results Framework (RF) describes the PDO-level outcome indicators and the component-specific intermediate indicators, including core sector indicators, and respective baselines and targets (Annex 1) for all counties and all project activities. M&E arrangements and responsibilities are described in detail in the PIP. Project M&E will be the responsibility of the NPMO and the county/district PIUs. A designated M&E officer will be appointed in the PMO for compiling M&E data for consolidation into the semi-annual project progress report. Key information needed for monitoring will be extracted on regular basis from routine data collection of the local Census Bureau as well as from customized surveys conducted by consultants as needed. During the mid-term review (MTR), target values of all indicators will be reviewed and adjusted as required.

## **C. Sustainability**

31. As Ningbo is one of the pilot cities for implementing China's new urbanization strategy, the overall sustainability of this project is ensured by the national policy as well as the commitment of Ningbo and the local governments to improve the quality of life, urban environment, resilience and economic development in the participating counties.

32. **Physical Sustainability.** The selection of project activities is demand-driven and districts and sectors that are in urgent need of infrastructure and service quality improvements have been prioritized. Urban regeneration activities are based on county master plans and zoning regulations. Rezoning and urban design for targeted areas are either underway or planned to support project implementation. The project introduces best practices of physical improvements for NMT and public transport, traffic management measures, and the Intelligent Transport System (ITS); these interventions are concentrated on selected corridor to maximize demonstration effects. The flood management component combines 'low-regret' engineering solutions and improvement in the drainage system; these investments will address future uncertainties caused by climate change and rapid urbanization.

33. **Institutional Sustainability.** The technical assistance component will contribute to improving capacity and developing plans to integrate planning and financing of new and existing urban infrastructure to optimize resources and to effectively manage socio-economic activities of the city towards sectoral integration. Proper operation and maintenance of project assets requires sustained, adequate human resources. The PMO will allocate sufficient staff and provide them necessary training to maintain infrastructure developed under the project. The projects will be housed under the local bureaus responsible for each sector, to create ownership and to integrate these investments in the asset portfolio of each county town.

34. **Financial Sustainability.** The fiscal analysis confirms that the county towns have the fiscal capacity to sustain the project. Counterpart funds to cover the costs of capital investments and maintenance will be included in each county's yearly budget.

## **V. KEY RISKS**

### **A. Overall Risk Rating and Explanation of Key Risks**

35. The overall risk rating of the project is Moderate. The main risks associated with the technical design rating (only category rated Substantial) are: (a) technical complexity in developing cross-sectoral investment plans with numerous sub-components at multiple locations; (b) overdesign of infrastructure due to overly optimistic projections of population and GDP growth; (c) the concepts of walkable public space, prioritization of public transits, and climate-risk-resilient infrastructure are new to the PMO and PIUs, and such unfamiliarity may lead to risks that could undermine the achievement of PDO; and (d) the client's willingness to adopt new ITS technology and renewable energy solutions may put them under the potential risk of cost overruns due to changes in technology or operational practices as well as fluctuation in national/provincial policy of providing subsidies.

36. The following Measures will be taken to mitigate these risks.

(a) With support from the NPMO, the Bank has worked closely with county agencies to develop a set of clearly defined project selection criteria to minimize negative externalities and ensure synergy among different sub-components; projects in pipeline will be fully assessed following exactly the same technical standards and safeguard policies. Additionally, the Bank team ensured that adequate technical capacity is in place at the PIU level for all the counties and people from different sectoral backgrounds can work collaboratively with each other.

(b) A detailed review of the population projection has been undertaken during project preparation and designs are being carried out according to conservative estimates compared to the ones in the current master plans, effectively managing the risk of overdesign at onset.

(c) The Bank team will bring in knowledge of best practices through technical assistance and systematic training activities to raise public awareness around the new concepts of sustainable urban development. Moreover, it will also mobilize international and domestic experts who have experience in similar sectoral engagements to enhance the quality of detailed project design and implementation.

(d) The client will retain experts who can advise on selection of ITS equipment and associated operational and technical support service packages, based on the availability of technical options in the market and cost-benefit analyses that reflect changes in price. The same strategy will be adopted for the selection and procurement of renewable energy facilities and flood risk mitigation utilities.

## **VI. APPRAISAL SUMMARY**

### **A. Economic and Financial Analysis**

1. **Economic Analysis.** A cost-benefit analysis was carried out to assess the economic viability of selected project investments in Xiangshan in the Urban Regeneration, Urban Transport, and Flood Risk Management components. Project investments in Xiangshan are expected to yield an economic internal rate of return (EIRR) of 13.3 percent, thus exceeding the

hurdle rate of 6 percent and an economic net present value (ENPV) of RMB482.2 million at a 6 percent discount rate. The estimated EIRRs of the individual components also exceed 6 percent, as shown in Table 4. Sensitivity analysis indicates that the project's EIRR remains greater than 10 percent even with a 15 percent increase in capital and O&M costs. Investments in other counties are similar in nature and scope to project investments in Xiangshan and are expected to have EIRRs similar to Xiangshan. See Annex 5 for more details.

**Table 4 Outcomes of the Economic Analysis**

|   | <b>EIRR<br/>(%)</b> | <b>ENPV @ 6 %<br/>(RMB millions)</b> |
|---|---------------------|--------------------------------------|
| Urban roads, public transportation and urban regeneration | 13.9                | 288.6                                |
| Flood control management                                  | 12.2                | 135.7                                |
| <b>Total</b>  | <b>13.3</b>         | <b>424.3</b>                         |

37. **Fiscal Analysis.** A fiscal assessment of Ningbo and the selected counties was carried out to assess their capacity to provide the required counterpart funds for project implementation and for subsequent O&M, as well as to service project related debt. The analysis found that (a) the required government counterpart funds for project implementation over five years is less than 0.2 percent of the local fiscal budget, and is within the local governments' budgetary capacity; (b) the Ningbo Municipal Government will provide a commitment letter for the portion to be financed by local government bonds<sup>17</sup>; (c) as of end 2014, local government debts were about 68 percent of local GDP; (d) additional debt undertaken for the project will amount to nearly 1 percent of the local GDP (or nearly 2 percent of the local governments' outstanding debt), which is considered manageable; (e) project investments in urban regeneration and flood control measures will yield moderate O&M cost savings due to efficiency improvements, while incremental O&M costs associated with additional urban infrastructure constructed (for example, pump stations and the West Ring Road in Xiangshan) are relatively small and can be accommodated in the municipal budget.

## **B. Technical**

38. **An Integrated Approach.** The multi-sectoral approach of concentrating urban and flood related interventions along the targeted transport corridors will maximize project impact. Project activities will be/are in accordance with Chinese construction standards, regulations and norms, and take into account cost-effectiveness, available technology, construction conditions and mandatory requirements. Innovative solutions oriented towards green and climate change designs, as well as new technology and local materials, will be adopted to the extent feasible.

39. **Urban Regeneration.** Urban regeneration under the project will: (a) be human-oriented and user-friendly, with special attention paid to the needs of women, the elderly, youth, and people with disabilities; (b) respect the local cultural identity, with the design of street furniture, facades, and public spaces along urban roads and waterways in harmony with the overall architectural style of existing buildings; (c) adapt to climate change and improve resilience that is, the project will use permeable pavements that avoids adding to the surface run-off during the

<sup>17</sup> According to the new State Budget Law(2014 revised version) and the October 2014 State Council Directive number 43 on "Strengthening Sub-national Debt Management" provincial governments can borrow based on their own credit-worthiness and on behalf of city and county governments. Province-level government bond issuance will be subject to market discipline, central government-set limits, and approval by National People's Congress (NPC).



raining season, build public facilities that are robust in extreme weather, and incorporate pocket parks and sidewalk plantations with onsite and rooftop storm water management facilities; and (d) increase energy efficiency and reduce carbon emissions by encouraging the use of renewable energy and local materials and adoption of other energy saving facilities, for example, by using LED bubbles and solar-powered lamps for street lighting over traditional options. Local plants will be used for landscaping.

40. **Urban Transport.** Future demand for different transport modes has been estimated through transport surveys, in-depth diagnostics, and a transport model. Accordingly, transport infrastructure activities that are proposed support sustainable urban mobility in the urban core of the selected county towns by promoting NMT and public transport, and by completing missing links in the urban road network. In Xiangshan County the transport survey identified unreliable service and low frequency, poor junction designs/controls, and the mixed traffic with freight trucks as the key congestion and safety concerns. Public transport infrastructure investments in Xiangshan will reduce the average waiting time by optimizing bus schedules and procuring new hybrid-energy buses to increase service frequency. The bus terminals that are selected provides safe overnight parking spaces for new buses, and the design will focus on optimizing pedestrian flows to/from bus terminals and optimizing bus transfers inside the terminal. Electronic bus schedule signs will be installed along three major bus corridors. Roads have been selected to complete the missing links in the existing network and to provide alternative routes for freight-traffic and alignments were carefully examined for cost-benefit optimization. The procurement of electric devices for the ITS is informed by careful investigation of different technical options.

41. **Flood Risk Management.** Based on the risk assessment carried out using two hydrodynamic models (that is, Mike and Storm Water Management Model), the causes of urban flooding in the urban core of Xiangshan were identified and the designs of flood risk mitigation measures were verified. Based on flood risk assessment and economic analysis, the flood risk management strategy is to build infrastructure to handle 20-year storms and install non-structural measures for handling storms beyond the 20-year magnitude. A preliminary analysis shows that climate change may increase the peak or total volume of a storm by 5 to 8 percent, which has been taken into account in the risk assessment<sup>18</sup>. A similar diagnostic is being prepared for the other counties. Different technical alternatives have been reviewed to compare costs and benefits. The identified technical solutions were screened to determine the least-cost solutions. The specific interventions to be funded under the project have been determined based on a cost-benefit analysis.

### C. Financial Management

42. Bank loan proceeds, including oversight of the designated account (DA), will be managed by the Ningbo Municipal Finance Bureau (NMFB). The NPMO will prepare the consolidated project financial reports and review all disbursement applications. Detailed project financial management (FM) and disbursement work will be the responsibility of the county PIUs. Considering NMFB's extensive experience and the nature of traditional infrastructure FM work, the overall FM risk is proposed as "Moderate".

43. The FM capacity assessment identified the major FM risk to be the complex

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<sup>18</sup> NDRC, "China's National Climate Change Program", Beijing, June 2007:

implementation structure. To mitigate the risk, the following actions will be taken: (a) NMFB and NPMO will jointly guide project FM; (b) the project Financial Management Manual (FMM) prepared by NMFB will standardize project FM and disbursement procedures; (c) training and peer learning will be provided to project staff throughout the implementation period; and (d) the Bank will closely monitor project FM arrangements and their satisfactory implementation. With the implementation of the proposed actions, the project's FM arrangements satisfy the Bank's requirements under OP/BP10.00.

#### **D. Procurement**

44. The main procurement risk identified is that the county-level PIUs and line agencies have little knowledge to the implementation of Bank-financed operations. They are only familiar with domestic procurement practices. The following actions will be taken to address these risks: (a) the NPMO will hire a procurement agent with qualification and experience in procurement for projects financed by the Bank or other multilateral financial institutions, under terms of reference (TOR) acceptable to the Bank; (b) the Bank will provide on-going procurement training during project implementation, initially focusing on the difference between Bank procurement policies and procedures and local regulations; (c) a Procurement Management Manual will be prepared; and (d) a consultant will be hired by the NPMO to assist with project management. However, in view that procurement under the project is expected to be straightforward and the county-level PIUs can get guidance from the NPMO and NMFB for project implementation, the overall procurement risk is rated as "Moderate".

#### **E. Social**

45. **Involuntary Resettlement OP/BP 4.12.** Land acquisition and resettlement will be unavoidable in project implementation; therefore the Bank's Involuntary Resettlement Policy (OP/BP4.12) is triggered. In Xiangshan County, Dandong, Danxi, and Dongchenxiang communities will be affected by land acquisition and house demolition. A total of about 347.03 mu (23.13 ha) of collective land will be acquired, affecting an estimated 798 people from 203 households. Land acquisition and resettlement needs in other project counties are not yet known, as the FSRs for the various activities have not yet been prepared.

46. A Resettlement Action Plan (RAP), acceptable to the Bank, has been prepared to guide land acquisition and resettlement. A Resettlement Policy Framework (RPF), acceptable to the Bank, has also been developed to guide safeguards compliance in activities for which land acquisition and resettlement needs are not yet known. An external monitoring team will be commissioned to monitor resettlement activities, and submit reports to the Bank every six months. The Xiangshan PIU will need training on social safeguards implementation, and the capacity of other PIUs to coordinate and manage resettlement work will also need to be improved.

47. **Gender.** The SA used gender-disaggregated methods, especially to identify transportation needs. Women accounted for 58 percent of the total visited population during questionnaire and focus group discussions; seven focus group discussions were held with only women participants. The proposed improvements in connectivity through public transportation are in response to women's needs, as women use buses more often than men. Traffic safety education and measures to improve transportation safety focus on the protection of women and

children, as they are more exposed to traffic risks. The project will focus on women during traffic safety education activities to raise awareness on self-protection.

48. **Citizen Engagement.** The project approached citizen engagement through: (a) consultations; (b) citizen participation in data collection and recording/reporting; (iii) grievance redress; (c) capacity building; and (d) citizen participation in monitoring. There was wide consultation during the SA, and the findings from the SA were fed into the project design. Grievance redress and citizen participation in monitoring will be achieved through the setting up of a hotline by the PMO for complaints, recommendations, and feedback. There will be regular public postings near project construction sites to update local communities on project progress and actions taken to address public complaints and respond to suggestions from the public.

49. **Information Disclosure.** The RAP/RPF/SA were disclosed on Ningbo local website on December 10, 2015, and the revised version of these documents were disclosed on February 17, 2016. The RAP and RPF were disclosed at the Bank's InfoShop on February 18, 2016 and the SA were disclosed at the InfoShop on February 26, 2016.

## **F. Environment**

50. **EA.** The project's major environmental impacts are construction related, e.g., noise, dust, spoil disposal and temporary storage on-site, soil erosion at borrow pits, wastewater discharge, vegetation loss, traffic impact, social disturbance, and safety. Off-site impacts caused by disposal of spoil from road construction and dredged material for flood control will demand more attention. The main operational impacts include noise and emissions from road traffic, road safety, sewage, and garbage generated by the bus terminals. Most of these impacts are of temporary nature and limited to the sites. The project has, therefore, been classified as environmental Category B under OP4.01- Environmental Assessment.

51. For the identified sub-projects in Xiangshan County, the EA has been carried out in accordance with the Bank's safeguard policies and relevant domestic regulations. The EA was conducted in parallel with the feasibility studies to integrate environmental and social considerations in the technical designs. Measures to address the environmental impacts are specified in the Environmental Management Plan (EMP) developed for the project.

52. For those sub-projects (for example, in Ninghai and Fenghua Counties) for which the EA can only be conducted during project implementation, an Environment and Social Management Framework (ESMF) acceptable to the Bank, has been prepared. The ESMF describes the environmental and social screening procedures, as well as the preparation, implementation, and monitoring of sub-projects according to the relevant Bank safeguard policies. The EA/EMP on the identified activities in Xiangshan will serve as a model for the preparation of EAs for activities for which FSRs and technical designs will be finalized during implementation.

53. **Public Consultation and Information Disclosure.** Two rounds of public consultation were undertaken: in September 2015 after the project and the TOR for the EA were disclosed in a local newspaper and the official websites of Ningbo and Xiangshan and in mid-November 2015 after the draft EA and EMP were disclosed. The primary objective of these consultations was to obtain the views of the public on the project, the EA findings and the appropriateness/adequacy of the mitigation measures. Measures to address these concerns have been incorporated in the EA/EMP. The Chinese language versions of the EA/EMP and ESMF

were disclosed on the websites of Ningbo and the project counties on November 6, 2015, and February 23, 2016 respectively. The EA was first disclosed at the Bank's InfoShop on December 10, 2015, and a revised version was disclosed on February 26, 2016. The ESMF was disclosed at the Bank's InfoShop on February 23, 2016.

## **G. Other Safeguards Policies Triggered**

54. **OP4.09 Physical Cultural Resources.** A survey of physical cultural resources (PCRs) conducted during EA preparation found that there are several local temples beside the new alignment of the West Ring Road in Xiangshan County. Relevant measures, including a chance-find procedure, have been included in the EMP to address the potential impacts of the project on these PCRs. Relevant provisions have been included in the ESMF, in case PCRs are uncovered or affected during the implementation of investment activities for which FSRs are to be prepared during project implementation.

55. **OP4.04 Natural Habitats.** The project will have a positive impact on streams and rivers running through the urban area as a result of dredging and clean up. A survey during EA preparation confirms that project activities in Xiangshan do not affect any sensitive areas (for example, nature reserves) or important habitats as defined by this policy. The ESMF includes provisions to identify and avoid impacts on important habitats and ecosystems through proper sub-project and site selection.

## **H. World Bank Grievance Redress**

56. Communities and individuals who believe that they are adversely affected by a Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project affected communities and individuals may submit their complaint to the Bank's independent Inspection Panel that determines whether harm occurred, or could occur, as a result of the Bank's non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the Bank's attention and Bank management has been given an opportunity to respond. For information on how to submit complaints to the Bank's corporate GRS, please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org).

## Annex 1: Results Framework and Monitoring

### CHINA: NINGBO SUSTAINABLE URBANIZATION PROJECT (P149485)

#### Project Development Objectives

PDO Statement

To improve the use of urban public space, improve urban mobility, and reduce flood risk in selected counties in Ningbo Municipality.

These results are at

Project Level

#### Project Development Objective Indicators

| Indicator Name  | Cumulative Target Values |             |                   |                    |                    |                    | End Target<br>2021 |
|---|--------------------------|-------------|-------------------|--------------------|--------------------|--------------------|--------------------|
|   | Baseline<br>2015         | YR1<br>2016 | YR2<br>2017       | YR3<br>2018        | YR4<br>2019        | YR5<br>2020        |                    |
| Direct project beneficiaries (number), of which female (percentage) - Core Sector Indicator (CSI)                             | 0                        | 0           | 72,421<br>(49.23) | 302,951<br>(49.35) | 521,575<br>(49.36) | 569,284<br>(49.36) | 569,284<br>(49.36) |
| Increase of pedestrian and bicycle flows and stationary activities in areas with urban regeneration intervention (percentage) | 0                        | 0           | 0                 | 0.3                | 3                  | 9                  | 15                 |
| Increase in the number of public transport users in the urban areas (percentage)  | 0                        | 0           | 3                 | 10                 | 15                 | 21                 | 27                 |
| Public transport user satisfaction (percentage)   | 29                       | 31          | 34                | 38                 | 50                 | 60                 | 60                 |
| Area provided with new and improved drainage services (hectare) - adapted CSI   | 0                        | 0           | 0                 | 0                  | 3,686              | 9,036              | 9,036              |

#### Intermediate Results Indicators

| Indicator Name   | Cumulative Target Values |             |             |             |             |             | End Target<br>2021 |
|--|--------------------------|-------------|-------------|-------------|-------------|-------------|--------------------|
|  | Baseline<br>2015         | YR1<br>2016 | YR2<br>2017 | YR3<br>2018 | YR4<br>2019 | YR5<br>2020 |                    |
| Area of urban regeneration (hectare)   | 0                        | 0           | 0           | 29.54       | 86.70       | 86.70       | 86.70              |
| Reduction in number of reported traffic accidents per 10,000 people (percentage)                                     | 0                        | 0           | 3           | 6           | 9           | 12          | 15                 |
| Increased total length of road (kilometer)   | 0                        | 0.71        | 3.56        | 7.87        | 12.28       | 16.69       | 16.69              |
| Reduction in flooded area that is not free of water within 24 hours after a major—1 in 10 years—rain event (hectare) | 0                        | 0           | 97.3        | 210.8       | 364.3       | 409.7       | 409.7              |
| Adoption of the multiyear capital investment and asset management plan for road maintenance and operation (Yes/No)   | No                       | No          | No          | No          | No          | Yes         | Yes                |

## Indicator Description

### Project Development Objective Indicators

| Indicator Name  | Description   | Frequency | Data Source / Methodology              | Responsibility for Data Collection          |
|---|---|-----------|--|---|
| Direct project beneficiaries (number), of which female (percentage) - Core Sector Indicator (CSI)                             | a) It is assumed the direct project beneficiaries are people in urban areas with project components located; b) it is assumed that only after the project component finished that local people would be the beneficiaries; c) the increasing of local population (natural or migration) is ignored; d) assuming the percentage of female is constant;   | Yearly    | From local yearly statistical bulletin | PIUs  |
| Increase of pedestrian and bicycle flows and stationary activities in areas with urban regeneration intervention (percentage) | a) Monitoring will not be conducted during construction periods; b) activities in public space are jointly measured by people who are pedestrians, cyclists and those who stay for various purposes; c) assuming the site will have activities recovered to its original level after the 6 months of construction completion; d) with the completion of construction, the activity level will increase in a speed of 0.5% per month; e) the aggregate percentage increase will be weighted by the baseline flows in each county; f) activities in upgraded urban areas will be monitored through field survey following the methodology adopted in the baseline survey completed. | Yearly    | Field survey                           | PIU hiring consulting team to do the survey |
| Increase in the number of public transport users in the urban areas (percentage)  | a) It is assumed that the project component impact could only be observed when the project component has been completed; b) the current bus ridership is 14,640,000 for Xiangshan and 29,200,000 for Ninghai as of 2014.  | Yearly    | Public bus company data                | PIUs  |
| Public transport user satisfaction (percentage)   | Baseline data have been obtained from satisfaction survey and repeated rounds of surveys will be conducted to evaluate the post-project satisfaction.   | Yearly    | Field survey                           | PIU hiring team to do the survey            |
| Area provided with new and improved drainage services (hectare) - adapted CSI   | a) Improvement of drainage service will be recorded upon completion of the projects; b) Ninghai has the potential of partial improvement of drainage service before all construction components are finished because of the structural separation of its drainage system; c) the improved drainage area in Xiangshan urban area is from the report provided by Artelia & LIISHI consultancy team on the hydraulic study and modeling.   | Yearly    | Progress report                        | PIUs  |

### Intermediate Results Indicators

| Indicator Name   | Description   | Frequency | Data Source / Methodology                            | Responsibility for Data Collection         |
|--|---|-----------|--|--|
| Area of urban regeneration (hectare)   | a) This is estimated according to project investment plan; b) the area of urban space upgrading has been estimated based upon available satellite image and information provided by SMEDI | Yearly    | Progress report                                      | PIUs                                       |
| Reduction in number of reported traffic accidents per 10,000 people (percentage) | a) This indicator applies to Xiangshan County only; b) the current rate is about 60 accidents per 10, 000 people in Xiangshan urban area.   | Yearly    | Yearly report of Xiangshan traffic management office | XPIU coordinated with local traffic police |
| Increased total length of road (kilometer)                                       | This is estimated according to project investment plan.   | Yearly    | Progress report                                      | PIUs                                       |

|  |  |                               |   |                               |
|--|--|-------------------------------|---|-------------------------------|
| Reduction in flooded area that is not free of water within 24 hours after a major—1 in 10 years—rain event (hectare) | Estimated flooded areas that are not free of water is from the report provided by Artelia & LIISHI consultancy team on the hydraulic study and modeling. | After flood event or modeling | Local summary report from Civil Affairs Bureau after a flood disaster | PIUs                          |
| Adoption of the multiyear capital investment and asset management plan for road maintenance and operation (Yes/No)   | -  | Yearly                        | Progress report   | PMO in coordination with PIUs |

## ANNEX 2: DETAILED PROJECT DESCRIPTION

### China: Ningbo Sustainable Urbanization Project

1. The government of China has recently launched a “*New Urbanization Plan*”<sup>19</sup> to sustain the country’s economic growth by promoting further urbanization. The *New Urbanization Plan* emphasizes the ‘quality’ of urbanization and equalization of basic urban services provision to all residents, including migrants. It gives higher priority to develop cities and towns at the lower tiers of the urban hierarchy, recognizing their role in linking major cities and rural areas and their potential to accommodate rural-urban migration. The key features of the policy include: (a) agglomeration of smaller cities and neighborhood towns, which have sufficient specialization and linkages to major urban areas; (b) mixed-use, transit-oriented and pedestrian friendly urban development to limit low density, fragmented urbanization, encroachment on farmlands and nature reserves, and economic provision of infrastructure and services; and (c) improved connectivity between and within cities to facilitate access to local, regional, and global markets.
2. Ningbo Municipality, which is located in the northeastern part of Zhejiang Province, is facing enormous challenges in addressing economic development disparities within its jurisdiction, accommodating millions of migrant workers and coping with increasing climate change risks. Spatial expansion in Ningbo has been oriented toward motorized traffic, contributing to further fragmenting the urban core and challenging the delivery of quality basic urban services. In 2013, per capita GDP in the main urban area of Ningbo was a little over US\$30,000 but it was merely a third of that amount in the counties of Xiangshan, Ninghai and Fenghua. These counties, which are located in coastal areas, are vulnerable to flood risks.
3. Ningbo has been selected by the State Council as one of the 62 pilot cities for realizing new urbanization in China. An important goal of Ningbo’s New Urbanization Strategy is to promote inclusive cities for low-income people and migrant workers. The *Ningbo Urban Master Plan for 2006-2020* (2015 revision) was approved by the State Council in March 2015.
4. The project comprises four components - Urban Regeneration; Urban Transport; Flood Risk Management; and Technical Assistance and Capacity Building – and will focus on three counties in Ningbo Municipality.

#### **Component 1. Urban Regeneration (Estimated Costs: US\$108.5 million; IBRD Loan: US\$49 million)**

5. The objective of this component is to create a vibrant and safe urban environment by improving the quality of public space following people-centered design strategies and expanding the coverage and upgrading the service level of urban utilities. Urban regeneration refers to a comprehensive package of investments in public infrastructure and service delivery in existing urban areas. Priority will be given to activities that provide lower income households, migrant workers and women with affordable transport options to travel to job centers, offer the elderly

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<sup>19</sup> China's New Urbanization Plan for 2014-2020 was officially released in March 2014 by the State Council, and is available at the national government's website: [http://www.gov.cn/zhengce/2014-03/16/content\\_2640075.htm](http://www.gov.cn/zhengce/2014-03/16/content_2640075.htm).



and the youth safe access to medical and educational institutions, and/or contribute to the preservation of cultural identity and improvements to social inclusion in local communities. This component will fund , among others, activities in the following typologies:

- *Upgrade of public space along main transport corridors and commercial streets to improve attractiveness of existing urban centers.* A public life and public space survey conducted in Xiangshan reveals that street parking often occupies sidewalks and bike lanes, and many sections of roads/streets have very dull and unattractive open space. To address these issues, the project will provide or rearrange space for street parking, upgrade pavement on sidewalks and dedicated bike lanes, add landscaping, leisure facilities, street furniture, guiding maps and signs, improve lighting and shelter, and reallocate space from cars to NMT. In Xiangshan County, the project will upgrade Wenchang Street (370 meters) and Tian'an Road (4 km) in the county's main business district by funding the installation of bike parking facilities and street furniture for resting, unification of signage systems, canopy, and advertisement boards, and replacement of the pavement as well as renovation of the street façade of publically used space. At Dannan Road, it will provide a safer and more pleasant environment for pupil pickup at the gate of an elementary school, add waiting seats, redesign and upgrade pedestrian crossings, install a parking monitoring system, and eliminate illegal street vendors. Similar activities have been proposed for South Taoyuan Road of Ninghai County and a street in Changjie Township.
- *Comprehensive regeneration of lagging urban settlements by providing modern urban utilities and open space.* The project will help selected vulnerable settlements that have limited access to modern urban utilities to develop and implement plans for infrastructure expansion and upgrading. It will provide basic urban infrastructure and public services, ranging from water supply, drainage system, sewage treatment, and solid waste collection to lighting, parking, and green spaces. These activities will be based on a holistic diagnosis of urgent needs and flood prevention action plans. Proposed project sites include the historic districts of Xikou Township and Xiwu Township in Fenghua County. Urban regeneration in Xiwu will build basic utilities such as public toilets, sewer pipelines, a firefighting system, solid waste collection and street lighting, and retrofit shanty buildings and a local market.
- *Improve road safety for pedestrians and cyclists with better design of crossings and intersections and traffic management efficiency using Information and Communication Technology and electric devices.* Some issues that the task team observed during site visits include: right-turning vehicles running at high speed at the intersections, making it dangerous for pedestrians and cyclists, and some pedestrian crossings at major transport corridors not facilitating the desired crossing patterns of pedestrians, creating unsafe situations. The project will therefore improve the environment for pedestrians and cyclists by optimizing the design of junctions and crossings. It will also enhance road safety and reduce congestion through effective traffic management. The project will help cities install an ITS, such as e-police cameras to reduce red light violations, a variable traffic guidance system to avoid congestion and a dynamic parking guidance system to reduce idling. Such investments will be funded in the downtown areas of Xiangshan County and Xikou Township in Fenghua County. In the urban core of Xiangshan, 16 e-police cameras, 7

high-resolution video monitors and 13 dynamic parking guidance electronic signs will be installed at major intersections; information collected will be transmitted to the existing central traffic control system.

**Component 2. Urban Transport (Estimated Costs: US\$132.1 million; IBRD Loan: US\$67.8 million)**

6. The objective of this component is to strengthen urban mobility by completing the urban road network and improving the capacity, reliability, and service quality of the bus system. Typically, the public transport network has very low ridership and there are still missing links in the urban road network. These investments are closely linked to Component 1 and will ensure that a stronger and more sustainable urban transport system is created to improve overall network efficiency and service quality within the city by better integrating non-motorized systems at the neighborhood level with public bus systems for longer-distance trips within the county, while paying particular attention to vulnerable groups, including women, migrants and the elderly. This component will fund, among others, activities in the following typologies:

- *Complete City Road Network.* In Xiangshan County, this sub-component will finance the construction of Baohai Road (702 meters) to enhance connection to the resettled community (*Jin Xiu Jia Yuan*) and the West Ring Road (3,704 meters) to connect the new industrial zone in the urban area to highways, thus providing diversion routes to avoid freight-traffic passing through the urban core. Alternative alignments for the road were carefully analyzed in the feasibility study, taking into account technical difficulties, social impacts and environmental impacts to ensure cost-benefit optimization. This sub-component will also finance similar activities in the other two counties, for example, a road to divert pass through traffic in Changjie Town, Ninghai County.
- *Bus Terminal/Depot.* Existing bus terminals in the old downtown areas are outdated and unattractive and are not functionally designed. The project will replace key terminals with better integrated terminals, offering inter-modal transfers between inner city public transport and long-distance buses. The new multi-modal terminals will include parking space and rolling stock maintenance facilities. This sub-component will be implemented in all three counties, in particular in Xiangshan County (Tashan, Xincheng and Jiuqing terminals) and in Ninghai County (Ninghai County bus terminal and Changjie Town long-distance bus terminal).
- *Bus Stops and Facilities.* The project will rehabilitate outdated bus shelters that were constructed before 2005 and provide electronic bus stop signs with bus approach information, mainly along core commercial roads in the downtown areas of the city. It will also build new bus stops to accommodate the developing bus network and the increasing demand for quality bus services. In Xiangshan County the investments will include upgrading 28 bus stops, creating 30 new bus stops, and setting up 38 electronic bus signs. Bus stops in Ninghai County will also be upgraded.
- *Upgrade and Expand Bus Fleet.* To improve service quality and attract more ridership, the counties plan to increase the number of buses in the next few years. The cities aim to reduce carbon emissions by using clean energy buses. The project will co-finance the procurement

of new clean energy buses, some of which will serve planned new lines, while others will replace old buses and add buses to existing lines. New buses will significantly increase the capacity of the bus system and reduce average waiting time by increasing bus frequency. In Xiangshan County 45 hybrid-energy buses will be procured; similar buses will also be purchased for the urban core of Ninghai County.

**Component 3. Flood Risk Management. (Estimated Costs: US\$72.3 million; IBRD Loan: US\$28.3 million)**

7. The objective of this component is to reduce the vulnerability of the counties to the risks of floods. The selected structural and non-structural measures will help the county towns to be better prepared and protect critical assets and vulnerable people from being affected by potential floods. Investments are designed with the following principles and features: improvement of the existing urban storm water drainage system; restoration of the natural storm water drainage system to the extent possible; and introduction of non-structural measures to reduce flood damage from storms above the design standard. This component will fund, among others, activities in the following typologies:

- *Structural Investments.* The project will support investments in county towns where urban flooding or water logging occurs frequently due to rapid urban development, improper design of the storm drainage system, and poor operation and maintenance. Each county is being considered at the river basin catchment level and from an integrated flood risk management perspective, taking into account both upstream and downstream conditions. The interventions include: (a) renovation and upgrading of existing rain grits, inlets, outlets, and drainage pipes that will restore the drainage capacity of the system and improve storm water collection efficiency; (b) restoration of natural storm water drainage systems through the renovation of key canal and river sections to improve conveyance capacity; (c) construction of pumping stations at critical points of the canals and rivers to empty the river system before the storm or improve the storm discharge capacity of the system when the downstream water level or tide level is high; and (d) construction of LID demonstrations in public areas (where suitable) to increase the retention capacity and land infiltration in catchments to reduce peak run-off. In Xiangshan County, activities to be financed will include: renovation of 25.7 km of storm drainage pipes and 5,800 rain grits/manholes; dredging and renovation of key urban sections along 49.77 km of drainage canals and 86.55 km of rivers; construction of three storm water drainage pumping stations; and construction of 2,000 m<sup>2</sup> of swales and 2,000 m<sup>2</sup> of pedestrian space with permeable tiles for LID demonstration. Similar activities will be financed in the urban cores of Ninghai and Fenghua Counties, as well as in Changjie Township.
- *Non-Structural Investments.* The project will help address issues related to flood damage caused by storms over the 20 year return period through: (a) establishment of pre-warning systems; (b) preparation of emergency preparedness plans; (c) study and adjustment of land-use plans to enhance the LID concept for future land development; (d) introduction and improvement of the flood insurance system initiated by the government; and (e) introduction and development of public education to raise public awareness of the flood risk management.

**Component 4. Technical Assistance and Capacity Building. (Estimated Costs: US\$4.6 million; IBRD loan: US\$4.6 million)**

8. The objective of this component is to create more livable local communities by supporting local governments in finding cost-effective solutions based on sound financing plans. This component will fund activities, *inter alia*, in the following typologies:

- *Sustainable Local Development and Planning.* The project will support local governments in reviewing and possibly updating policies, codes, and capital investment plans to integrate transportation, housing, and economic development. Activities may include analysis and review of local master plans, zoning codes, and building codes, either at a county level or in a specific community, district, or corridor to promote mixed-use development, affordable housing, reuse of existing buildings and structures for new purposes, and street and corridor revitalization.
- *Capital Investment and Asset Management.* The project will support counties to develop information and tools for full-cycle management of infrastructure assets, including asset inventory, valuation, planning and budgeting. It will be complemented by capital investment plans that help municipal governments focus on local development goals and public service needs, encourage more efficient program administration, identify economically sound means of funding, and enhance credit ratings.
- *Innovative Financing Mechanisms for Public Service Delivery.* The project will support the development of innovative financing mechanisms to improve public finance systems and attract private investments in infrastructure and service delivery. Options that will be considered include concessions and public-private partnerships. The public-private finance facility at the Ningbo Municipal level will be evaluated, as well as the Capital Investment and Asset Management Plans for the transport and water sectors.
- *Project Management and Supervision.* This sub-component will support the implementation of the PIP and strengthen the institutional capacity of implementing agencies. Specifically, it will support M&E activities; training and study tours to enhance both project management skills and the technical capacity of the PMOs and implementation agencies at all levels; FM, procurement, safeguards, supervision and other consulting services.

9. **Readiness for Implementation.** The table A2-1 below provides a “Summary of the Proposed Activities” under Components 1, 2, and 3 in each county. FSRs have been appraised for investments in Xiangshan County. For Ninghai and Fenghua Counties, pre-FSRs have been appraised. The table below indicates project costs by sector and county.

**Table A2-1 Summary of Proposed Investment Activities**

| County                          | Project Description   |   | Mitigation co-benefit estimated (%) | Adaptation benefit estimated (%) |
|---------------------------------|---|---|-------------------------------------|----------------------------------|
| Component 1: Urban Regeneration |   |   |                                     |                                  |
| Xiangshan                       | Public space upgrading Jinnan Street*                               | Street furniture, façade upgrade, parking management, porous pavement, green design street lighting   | 5                                   | 10                               |
|                                 | Wenchang Street*  | Street furniture, façade upgrade, parking management, porous pavement, green design street lighting   | 5                                   | 10                               |
|                                 | Tian'an Road*   | Street furniture, leisure facilities, parking management, porous pavement, green design street lighting   | 5                                   | 10                               |
|                                 | Dannan Road*  | Pedestrian crossing, parents waiting seats, temporary shops locations, , porous pavement, green design street lighting  | 5                                   | 10                               |
| Ninghai                         | Old Urban Area : South Taoyuan Rd and Middle Taoyuan Rd upgrading** | Street furniture, façade upgrade, porous pavement, green design street lighting, –and so on   | 5                                   | 10                               |
|                                 | Changjie Town Street X404 urban upgrade and traffic management**    | Traffic control, street façade upgrading, green design street lighting, parking management  | 5                                   | 10                               |
| Fenghua                         | Xikou Town-old urban area upgrading**                               | Installation and upgrading of drainage, sewerage, water supplying and other public service network, installation of parking area, public space, old house reinforcement, greenery area, traffic monitoring, information center, information monitoring in parking lot, parking information system | 5                                   | 25                               |
|                                 | Xiwu Town**   | Space upgrading toward gardens, lighting, street facade of 13 streets   | 5                                   | 10                               |
| Subtotal                        | US\$108.5 million   | Of which Bank Funded  | US\$49 million                      |                                  |
| Component 2: Urban Transport    |   |   |                                     |                                  |
| Xiangshan                       | Jiuqing terminal*   | Bus terminals/depots upgrading  | 100                                 | -                                |
|                                 | Public Transport*   | Purchase of 50 buses  | 100                                 | -                                |
|                                 | Transport corridor: Tian'an Road*                                   | Junction upgrade, Pedestrian crossing, Intelligent transport, bus network optimization and stop upgrade   | -                                   | -                                |
|                                 | Transport Corridor: Intelligent Transport System*                   | E-police system (red light violation), traffic variable guidance system, and parking guidance system, which will be connected with the existing traffic police control system, CCTV   | -                                   | -                                |
|                                 | Road Network: West Ring Road*                                       | Freight construction diversion road. Danshan Rd-Binhai Avenue   | -                                   | -                                |
|                                 | Road Network: Baohai Road*  | From Laixun Rd - Xinyi Rd   | -                                   | -                                |

|   |   |  |                   |                  |
|---|---|--|-------------------|------------------|
|   | Bus terminals/depots Tashan Terminal**                | New construction (terminal, public service area, parking)  | 100               | -                |
|   | Public Transport: Bus stop signs and smart transport* | Electronic and ordinary stop signs showing the information on the bus approaching                                      | 100               | -                |
| Ninghai   | Road Network: Renming Rd upgrading **                 | Enlargement and inclusion of a NMT lane  | 20                | -                |
|   | Bus terminals/depots and bus procurement **           | New construction (terminal and public service area), and bus procurement   | 100               | -                |
|   | Traffic diversion road**                              | Diversion of traffic from old town center  | -                 | -                |
| Subtotal  | US\$132.1 million                                     | Of which WB Funded   | US\$67.8 million. |                  |
| Component 3: Flood Risk Management                      |   |  |                   |                  |
| Xianshan  | Upgrading drainage pipes*                             | drainage pipe cleaning, drainage inlet and manhole upgrading, re-arranging and installation of drainage pipe           | -                 | 20               |
|   | River dredging*                                       | water channel dredging, river dredging   | -                 | 20               |
|   | Installation of pump station*                         | Baishihe River pump station; Nandahe River pump station with intake tank, Xinhuahe River pump station with intake tank | -                 | 20               |
|   | Installation of low impact development facilities*    | Vegetated swale, roof garden and porous pavement -   | -                 | 20               |
| Ninghai   | Central Urban Area**                                  | Interventions to be finalized  | -                 | 20               |
|   | Changjie Town**                                       | Upgrading and installation of street drainage facilities, river rehabilitation, Intercept flood ditch, etc.            | -                 | 20               |
| Fenghua   | Xiwou**   | Rain and Sewage Diversion System and Drainage Pipes Construction   | -                 | 20               |
| Subtotal  | US\$72.3 million                                      | Of which WB funded   |                   | US\$28.3 million |
| Component 4: Technical Assistance and Capacity Building |   |  |                   |                  |
| Subtotal  | US\$4.6 million                                       | Of which WB funded   | 0                 | US\$4.6 million  |
|   | US\$317.5 million                                     |  |                   | US\$150 million  |

Note: \*Activities for which FSR will be ready and completed by appraisal; \*\* Activities for which pre-FSR will be ready and completed by appraisal.

## **ANNEX 3: IMPLEMENTATION ARRANGEMENTS**

### **China: Ningbo Sustainable Urbanization Demonstration Project**

#### **Project Institutional and Implementation Arrangements**

1. Project Leading Groups (PGLs) have been established at both the Ningbo Municipality level and the county level of Xiangshan, Ninghai and Fenghua. They are chaired by municipal or county vice governors and housed in municipal or county Development and Reform Commissions. Senior leadership of all project-related line departments and bureaus at the municipal and county level jointly participate in these groups. They are responsible for providing strategic guidance and support to the project and help to facilitate any key issues which hinders the project from progressing smoothly.
2. The NPMO will coordinate and manage the preparation and implementation of the project. County-level PIUs have already been established in Xiangshan (XPIU), Fenghua (FPIU) and Ninghai (NPIU) for project execution and for coordination among different relevant county government agencies, including: the Water Resource Bureau, Transport Bureau, Planning Bureau, Environmental Protection Bureau, Housing and Construction Bureau, and Land Bureau, depending on local capacity and pipeline needs.
3. The NPMO has been providing guidance and technical support to ensure that all necessary studies and documents are prepared in accordance with the government and Bank requirements. Consultants have been hired to support the PIUs with the preparation of FSRs, SAs and EAs, and preparation for the PIP. A detailed overview of implementing mechanism and the relationship between agencies will be included in the PIP.

#### **Financial Management, Disbursements, and Procurement**

##### *Financial Management*

4. Bank loan proceeds, including oversight of the DA, will be managed by NMFB. The NPMO will prepare the consolidated project financial reports and review all disbursement applications. Detailed project FM and disbursement work will be the responsibility of the county PIUs. The NMFB has contributed, jointly with the NPMO to successfully implementing several Bank- financed projects. Their financial management performance has been continuously assessed as satisfactory. No material non-compliance or internal control issues were noted in past project audit reports. This project preparation has benefited from NMFB's extensive experience and strong capacity. The financial management and disbursement work are expected to be in line with general infrastructure projects. Thus, the overall FM risk is proposed as "Moderate".
5. The FM capacity assessment identified the major FM risk to be the complex implementation structure. To mitigate the risk, the following actions have been or will be taken: (a) NMFB and NPMO will jointly guide project FM; (b) the project FMM prepared by NMFB will standardize project FM and disbursement procedures; (c) training and peer learning will be provided to project staff throughout the implementation period; and (d) the Bank will closely

monitor project FM arrangements and their satisfactory implementation. With the implementation of the proposed actions, the project's FM arrangements satisfy the Bank's requirements under OP/BP 10.00.

6. Funding sources for the project include the Bank loan and counterpart funds. The Bank Loan Agreement will be signed by the Bank and the Ministry of Finance (MOF), and the Subsidiary Loan Agreement will be entered into by MOF and Ningbo Municipal Government, which will further on-lend to the project counties of Xiangshan, Ninghai and Fenghua. The county governments will provide counterpart funds for their project activities.

7. **Budgeting.** Each PIU will prepare the annual construction and financing plan (including the various sources of funds) based on the implementation plan for each activity. The plan will be reflected in the respective counties' annual construction plan and budget allocation, and approved by the People's Congress. The overall budget preparation and execution will be a part of the government system. Budget execution will be closely monitored throughout the year and necessary adjustments will be made to address budget variances.

8. **Funds flow.** The Bank loan DA will be opened and managed by the NMFB. To request Bank loan proceeds, each PIU will prepare a Bank loan request with supporting documents and submit it to the respective County Finance Bureaus to review. The requests will then be processed by the NPMO and consolidated before submission to the NMFB. NMFB will review the requests and transfer funds from the DA to respective County Finance Bureaus, who in turn will then transfer the funds to PIUs. The detailed disbursement application/request and funds-flow arrangements are described in the project's FMM.

9. **Accounting and financial reporting.** The project's administration, accounting and reporting will be established in accordance with Circular #13: "*Accounting Regulations for World Bank-financed Projects*" issued by the MOF in January 2000. Each PIU will manage, monitor and maintain project accounting records for project activities for which it is responsible. A commonly used computerized accounting system (for example, "*Yongyou*") will be adopted by each PIU to maintain the accounting and financial reporting. The NPMO will prepare consolidated project financial statements as well as unaudited semi-annual project financial reports. The latter will be provided to the Bank as part of semi-annual progress reports, no later than 60 days following each semester.

10. **Internal controls.** The MOF has issued the related accounting policy, procedures and regulations that govern project internal control. The FMM will align FM and disbursement requirements among implementing agencies.

11. **Audit.** The Ningbo Municipal Audit Office has been identified as the auditor for the project. The annual audit report on project financial statements will be issued by this office and will be due to the Bank within six months after the end of each calendar year (that is, by June 30 of each year). The audit report and audited financial statements will be publicly available on the websites of the Bank and the Ningbo Municipal Audit Office.



### *Disbursements*

12. Four disbursement methods are available for the project: (a) advance; (b) reimbursement; (c) direct payment; and (d) special commitment. The primary Bank disbursement method will be advances to a US dollar DA opened at a commercial bank acceptable to the Bank. Supporting documents required for Bank disbursement under different disbursement methods are specified in the Disbursement Letter issued by the Bank. The Bank loan will disburse against eligible expenditures (taxes inclusive), as indicated in the table A3-1.

**Table A3-1: Eligible Expenditures**

| Disbursement Categories                               | IBRD Loan                          |   |
|---|------------------------------------|---|
|   | Allocated Amount<br>(US\$ million) | Percentage of Expenditure to<br>be Financed (inclusive of<br>taxes) |
| A. Works  | 124.068                            | 65%   |
| B. Goods, Consultancies, Training,<br>Workshops, etc. | 25.557                             | 100%  |
| C. Front-end Fee                                      | 0.375                              | 100%  |
| <b>Total</b>  | <b>150.00</b>                      |   |

### *Procurement*

13. **Capacity assessment.** The procurement capacity assessment identified the lack of experience with Bank-financed projects of the procurement staff in the PMO and PIUs during project implementation and possible influence of domestic procurement practices which they are familiar with as the principal risks. In particular, the activities under the project will be implemented by multiple government agencies, whose experience in project management and implementation varies. The mitigation measures agreed include the following: (a) an experienced procurement agent will be recruited based on TOR prepared by the PMO and agreed to by the Bank.; (b) continuous procurement training to be provided by the Bank or a training institution acceptable to the Bank during project preparation and implementation to raise awareness of the differences between the domestic practices and the Bank's procurement policies and procedures; (c) a project management consultant to be hired by the PMO to assist with design review and contract management; and (d) the PMO to finalize a Procurement Management Manual acceptable to the Bank. The procurement under the project is expected to be straightforward, , i.e. most of the procurement will be carried out through National Competitive Bidding (NCB). The NPMO is well aware of the major deviations from the local practice in case of NCB and the PIUs are familiar with the relevant procedural requirement. The NMFB is committed to provide guidance for the PIUs on procurement as necessary.

14. **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; revised July 2014; "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011; revised July 2014; 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 China promulgated by Order of the

President of China on August 30, 1999 subject to the modifications stipulated in the Legal Agreement to ensure consistency with the Bank's Procurement Guidelines.

15. **Procurement of Works.** Works will be procured under this project for three components: Urban Regeneration, Urban Transport, and Flood Risk Management.

16. **Procurement of Goods.** Goods procured under this project will include equipment and instruments for all four project components.

17. **Selection of Consultants.** Consulting services will be procured for the Technical Assistance and Capacity Building component.

18. **Training, Workshops and Study Tours.** Plans for training and workshops will be developed by the PMO, and included in the project annual work plan for Bank review. Expenditures incurred in accordance with the approved plans for training and workshops will be the basis for reimbursement.

19. **Procurement Plan.** A Procurement Plan has been prepared by the PMO and will be finalized by project negotiation. It will be made available in the project's database and 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.

20. **Frequency of Procurement Supervision.** Prior review supervision will be carried out by the Bank. Procurement post reviews will be carried out by the Bank every 12 months. The procurement post review sampling ratio will be one out of ten contracts

21. **Thresholds for Prior-Review and Procurement Method.** The thresholds for prior review and procurement methods are shown in the table A3-2 and A3-3.

*Table A3-2 Thresholds for Procurement Method*

| Description         |                  | Thresholds |
|---------------------|------------------|------------|
| Works               | (--)             | ICB        |
|                     | < US\$25,000,000 | NCB        |
|                     | <US\$200,000     | Shopping   |
| Goods               | (--)             | ICB        |
|                     | < US\$3,000,000  | NCB        |
|                     | <US\$100,000     | Shopping   |
| Consultant Services | (--)             | QCBS/ QBS  |
|                     | <=US\$300,000    | CQS        |

*Table A3-3 Thresholds for Prior Review*

| Description |     | Contracts subject to Prior Review |
|-------------|-----|-----------------------------------|
| Works       | ICB | All                               |

|                     |                                 |  |
|---------------------|---------------------------------|--|
|                     | NCB                             | First NCB works contract by each PIU irrespective of value and all contracts >= US\$15,000,000 |
|                     | Direct Contracting              | All  |
| Goods               | ICB                             | All  |
|                     | NCB                             | First NCB goods contracts by each PIU irrespective of value and all contracts >=US\$3,000,000  |
|                     | Direct Contracting              | All  |
| Consulting Services | Consulting firm selection       | First contract for each selection method and all contracts >= US\$ 1,000,000                   |
|                     | Individual consultant selection | Only in exceptional cases  |
|                     | SSS (firm)                      | >=US\$100,000  |
|                     | SSS (individual)                | >=US\$50,000   |

ICB=International Competitive Bidding; NCB=National Competitive Bidding; QCBS=Quality and Cost Based Selection; QBS=Quality-Based Selection; CQS= Selection Based on the Consultants' Qualifications; SSS=Single Source Selection; IC=Individual Consultant selection procedure; ( - ) = Not Applicable

22. Contracts expected to be procured and signed in advance of loan signing have been identified in the agreed Procurement Plan for the project and are subject to the Bank's prior review.

### *Environmental and Social*

23. **Environmental Aspects.** The project is expected to have net positive environmental benefits by promoting urban livability, flood management, and public transport in selected county towns of Ningbo Municipality. There will be temporary moderate environmental impacts during the construction phase, such as dust, noise, waste disposal, vegetation loss, sewage discharge, traffic impact, workers' health and safety, and social and traffic disturbance. Longer term impacts will occur during operation, such as air pollution and noise from traffic, and road safety. Particular attention was paid to off-site impacts caused by disposal of spoil from road construction and dredged material for flood control.

24. The EA includes social and environmental baselines, project description, impact assessment, alternative analysis, and public consultation. Measures to address these negative impacts have been developed and specified in the EMP, based on experience from similar projects, the Bank Group General Guidelines on Environmental, Health and Safety, Chinese construction code of conduct, and recommendations from the EA and public consultations. The EMP will be incorporated in bidding documents and contracts.

25. The EMP specifies the supervision mechanism, institutional arrangements and monitoring plan. Supervision engineers will be primarily responsible for daily supervision of EMP measures during construction. The PMO, assisted by environmental experts, will carry out random inspections. During operation, the responsibility to implement the EMP will largely be shifted to relevant operators and government agencies.

26. Alternative analysis of different design options was undertaken as part of the EA process, including a “without project” scenario. Different alignments of new roads, especially the West Ring Road, were analyzed for their expected environmental and social impacts. Different configurations and ancillary facility designs for the bus terminal were compared and alternatives that were expected to have lower social and environmental impacts and were more user friendly were recommended. These recommendations have been incorporated in the feasibility studies and will feed into the design.

27. Capacity building during project preparation focused on PIUs at the county level. A budgeted training plan is included in the EMP and forms a part of the overall project training plan.

28. For those sub-projects (for example, in Ninghai and Fenghua Counties) for which the EA can only be conducted during project implementation, an ESMF acceptable to the Bank, has been prepared. The ESMF describes the environmental and social screening procedures, as well as the preparation, implementation, and monitoring of sub-projects according to the relevant Bank safeguard policies. The EA/EMP on the identified activities in Xiangshan will serve as a model for the preparation of EAs for activities for which FSRs and technical designs will be finalized during implementation.

29. The Chinese language versions of the EA/EMP and ESMF were disclosed on the websites of Ningbo and the project counties on November 6, 2015 and February 23, 2016 respectively. The EA was first disclosed at Bank’s InfoShop on December 10, 2015 and a revised version was disclosed on February 26, 2016. The ESMF was disclosed at Bank’s InfoShop on February 23, 2016.

30. **Social Aspects.** The project will upgrade public space facilities and improve public transportation with an emphasis on equal benefits to the poor and vulnerable groups. By promoting user-oriented sustainable urbanization, the project will bring substantial social benefits to the local counties.

31. **Social Safeguards.** The project has triggered OP/BP4.12, and a RAP has been prepared to guide land acquisition and resettlement. At least one staff from the PMO/PIU offices will be designated to oversee social safeguards policy compliance and coordinate the implementation of the RAPs.

32. **Citizen Engagement.** Through citizen engagement in project design, project activities have been streamlined to focus on the needs of the end users of improved public facilities and services. A variety of methods were adopted to ensure wide and extensive public consultation and participation: (a) 21 focus group discussions in 20 communities/villages, involving 128 people, with about 31 percent women, 35 percent elderly people, and 23 percent poor and disabled persons; (b) 50 key informant interviews, including representatives from local women’s federations, bureaus of ethnic affairs, civil affairs, labor and social security, transportation, planning, housing and urban rural development, local schools and neighborhood committees; (c) 40 unstructured in-depth interviews in 20 villages/communities to assess local people’s attitudes

towards planned project activities and potential risks to local people; and (d) 253 questionnaires in six sampled villages/ communities. Over 58 percent of the questionnaires were completed by women. The views obtained were communicated to the key planning departments, and these have been considered during project design. The planned installation of waiting seats for parents outside a school was a direct contribution from public consultation during the social assessment. The project will make changes to the frequency of bus dispatches to match the pattern of local people's travel schedules. Location and distance between bus stops will be decided considering suggestions received during public consultations. Management of traffic lights and street crossing will be improved; parking space will be included in project activities to avoid uncontrolled parking that has been blocking traffic during rush hours.

33. The project will utilize Traffic Safety Education Camps to provide traffic safety education to students. Traffic volunteers will be deployed at key intersections to monitor traffic control and promote traffic safety behaviors. A hotline will be set up to receive complaints on project construction, suggestions on improving project facility management and maintenance, as well as feedback on project achievements. External monitoring will review and promote the use of this hotline, and the external monitoring report will include feedback to improve public spaces and transport. Regular progress updates and project plans will be posted at public places near construction sites to inform the public on project progress, as well as actions taken to address suggestions and complaints received; the hotline numbers will be included in these public notices.

34. **Gender.** Women accounted for more than 58 percent of those interviewed during the social assessment. The social assessment recommended the following key actions: bus stops to consider the special needs of women and the elderly, for example, protection from rain/sun, availability of seats, and lighting; provision of railings and safety steps on buses; increased seats designated for the elderly and people with disabilities; installation of measures to reduce speeds at key intersections; installation of more traffic lights at pedestrian crossings; and requiring signatures of both male and female members of households receiving resettlement compensation.

35. **Information Disclosure.** The RAP/RPF/SA were disclosed on the Ningbo local website on December 10, 2015, and the revised versions of the documents were disclosed on February 17, 2016. The RAP and RPF were disclosed at the Bank's InfoShop on February 18, 2016 and the SA was disclosed at the InfoShop on February 26, 2016.

36. **Grievance Redress.** Designated personnel will be appointed at the PMO and the PIUs to handle complaints and grievances from project-affected people. Contact information, including telephone numbers and office addresses, of key members of staff answering grievances will be included in the information disclosure notice. The RAP contains a detailed description of grievance redress arrangements.

37. **Implementation of Resettlement Related Work.** The PIUs will designate at least one staff to coordinate social safeguards tasks, including preparation of the RAPs and RPF, drafting of semi-annual internal monitoring reports, and supervision and coordination of land acquisition and resettlement. The PIUs will be responsible for public disclosure of all safeguards documents, including RAP, RPF and SA Report



## ANNEX 4: IMPLEMENTATION SUPPORT PLAN

### China: Ningbo Sustainable Urbanization Demonstration Project

#### Strategy and Approach for Implementation Support

1. The strategy for the implementation support plan was developed based on the nature of the project and the risk assessment through the SORT process. It aims to make implementation support to Ningbo more flexible and efficient; it focuses on the weaknesses of the client, and the implementation of risk mitigation measures. The following risk categories have been rated as “Moderate” or “Substantial”: (a) macroeconomic; (b) sector strategies and policies; (c) technical design of project or program; (d) institutional capacity for implementation and sustainability; (e) fiduciary; (f) environment and social.

2. **Macroeconomics.** The moderate risk at the macroeconomic level reflects the potential impact of the economic slowdown and new fiscal rules on the provision of counterpart funds, especially for investment projects financed at the municipal/county level. The team will continue to closely monitor these aspects and ensure that the project is minimally affected.

3. **Sector Strategy and Policies.** Ningbo has established a clear strategy to promote better patterns of urbanizations and improved public transport service which is in line with the PDO. However, investments in flood management that are not stemming from thorough diagnostics but rather from ad hoc local pressures are a risk. The task team will work with the PMO and the counties to ensure that the selected investments are rationally and efficiently chosen according to the criteria selected in the PIP. The task team will also work closely with the PMO and the implementation agencies to monitor the sector development activities aligned with the project implementation, and to ensure that the sector strategy has been followed.

4. **Technical Design of the Project or Program.** The project includes work in three technical areas plus advanced skills capacity building through the technical assistance activities. The key difficulty is how link the intertwined aspects of the three sectors into each investments, supporting appropriate planning and inter-sectoral design and defining investment interventions that make sense from a holistic point of view for the county. For this purpose, the Bank task team has recommended that the NPMO leads coordination of all activities of design and operationalization. The Bank task team will work closely with the NPMO and PIUs and the design team and all concerned agencies, to engage experts, contribute to capacity building, assist on adequate survey and public consultation, advise on technical options during the project design and implementation, and help ensure that the project is implemented in an environmentally, financially, and socially sustainable manner. The task team will advise timely technical training needed at different stages and for different agencies and staff.

5. **Institutional Capacity for Implementation and Sustainability.** The project will provide a comprehensive capacity-building program, including (a) training activities to the PMO by World Bank technical, procurement, FM and safeguard specialists; (b) focusing the technical assistance component on key aspects of design standards, urban planning, and asset management to give appropriate tools to the counties for financial sustainability and overall improved urban

development; and (c) capacity building activities for the municipal agencies, especially focusing on information platform development and operation.

6. **Fiduciary.** The organizational structure of the project is straightforward and relies on a heavily experienced PMO in Ningbo. However, low capacity at county level is a matter of fact and this will need to be coped up with through additional training and hand holding from the Bank team and the PMO in the early periods of project implementation. The task team has carried out early trainings before project appraisal and regular supervision missions with specific focus on fiduciary aspects to accompany the PIUs while processing their first contract.

7. **Environment and Social.** Implementation of EMP, RAP and RPF will be closely supervised by PIUs and experienced external monitoring consultants during the project implementation. The task team will carry out regular supervision and ensure that sufficient training on safeguards issues is conducted, and that adequate resources will be allocated for implementation of the EMP, RAP and RPF.

### Implementation Support Plan

8. Given the Project's characteristics and complexity, the level of technical support needed for implementation is considered substantial on the sector policy, the technical side, and institutional capacity. The Bank team will conduct on-average two to three implementation support missions per year (or more as needed), desk reviews, training, and field visits to follow-up on project implementation. The task team will be supported by technical, FM, procurement, social and environmental specialists. Detailed inputs from the Bank team are outlined in table A4-1:

**Table A4-1: Focus of Implementation Support**

| Time            | Focus  | Skills Needed  | Resource Estimate  |
|-----------------|--|--|--|
| First 12 months | <ul style="list-style-type: none"> <li>- Finalization of technical designs in Xiangshan county</li> <li>- Set up of capacity in all counties</li> </ul>  | Technical (urban development, transport, flood)<br>Procurement<br>Safeguards<br>FM | 7-8 staff, 2 to 3 trips per staff, some thematic trips as needed |
| 12-48 months    | <ul style="list-style-type: none"> <li>- Finalization of technical designs for additional counties</li> <li>- Project implementation</li> <li>- Procurement</li> <li>- Monitoring and supervision</li> </ul> | Technical (urban development, transport, flood)<br>Procurement<br>Safeguards<br>FM | 6-7 staff, 2 to 3 trips per staff, some thematic trips as needed |
| Other           |  |  |  |



**Table A4-2: Skills Mix Required**

| <b>Skills Needed</b>               | <b>Number of Staff Weeks</b> | <b>Number of Trips</b> | <b>Comments</b>  |
|------------------------------------|------------------------------|------------------------|--|
| Urban development specialist / TTL | 1 staff member: 10 weeks     | 10                     | 2 trips+2 weeks per project year+1 extra week                    |
| Urban transport                    | 1 staff member: 6 weeks      | 6                      | 2 trips +1 week per project year +1 extra week in the first year |
| Flood risk management              | 1 staff member: 6 weeks      | 6                      | 2 trips +1 week per project year +1 extra week in the first year |
| Public consultation                | 1 staff member: 2 weeks      | 2                      | 1 trip + 2 weeks for the first year                              |
| Procurement                        | 1 staff member: 5 weeks      | 5                      | 2 trips+1 week per project year                                  |
| FM                                 | 1 staff member: 5 weeks      | 5                      | 2 trips+1 week per project year                                  |
| Environment                        | 1 staff member: 5 weeks      | 5                      | 2 trips+1 week per project year                                  |
| Resettlement                       | 1 staff member: 5 weeks      | 5                      | 2 trips+1 week per project year                                  |
| Operations support / analyst       | 1 staff member: 6 weeks      | 5                      | 2 trips+1 week per project year+ 1 extra week in the first year  |

## ANNEX 5: ECONOMIC AND FINANCIAL ANALYSIS

### Economic Analysis

1. The project will invest in urban infrastructure for urban regeneration, urban transport, and flood risk management. A cost-benefit analysis was carried out to assess the economic viability of a sample portfolio of investments in Xiangshan county over a 25-year project life (inclusive of a five-year construction period from 2016-2020) at a discount rate of six percent.<sup>20</sup>

2. **Project investment costs** include costs in procuring and constructing urban roads, pedestrian walks, public transport vehicles and facilities, storm drainage, dredging along storm drainage canals and rivers, pumping stations, etc. to help improve urban livability, enhance public transportation and manage flood risk. Table 1 below provides a summary of investment costs in Xiangshan. Project financial costs were converted to economic costs by applying shadow prices or standard conversion factors: (a) a conversion factor of 1 for skilled workers and 0.8 for unskilled workers; (b) exclusion of all transfer and financial charges; and (c) exclusion of the cost of capacity building.

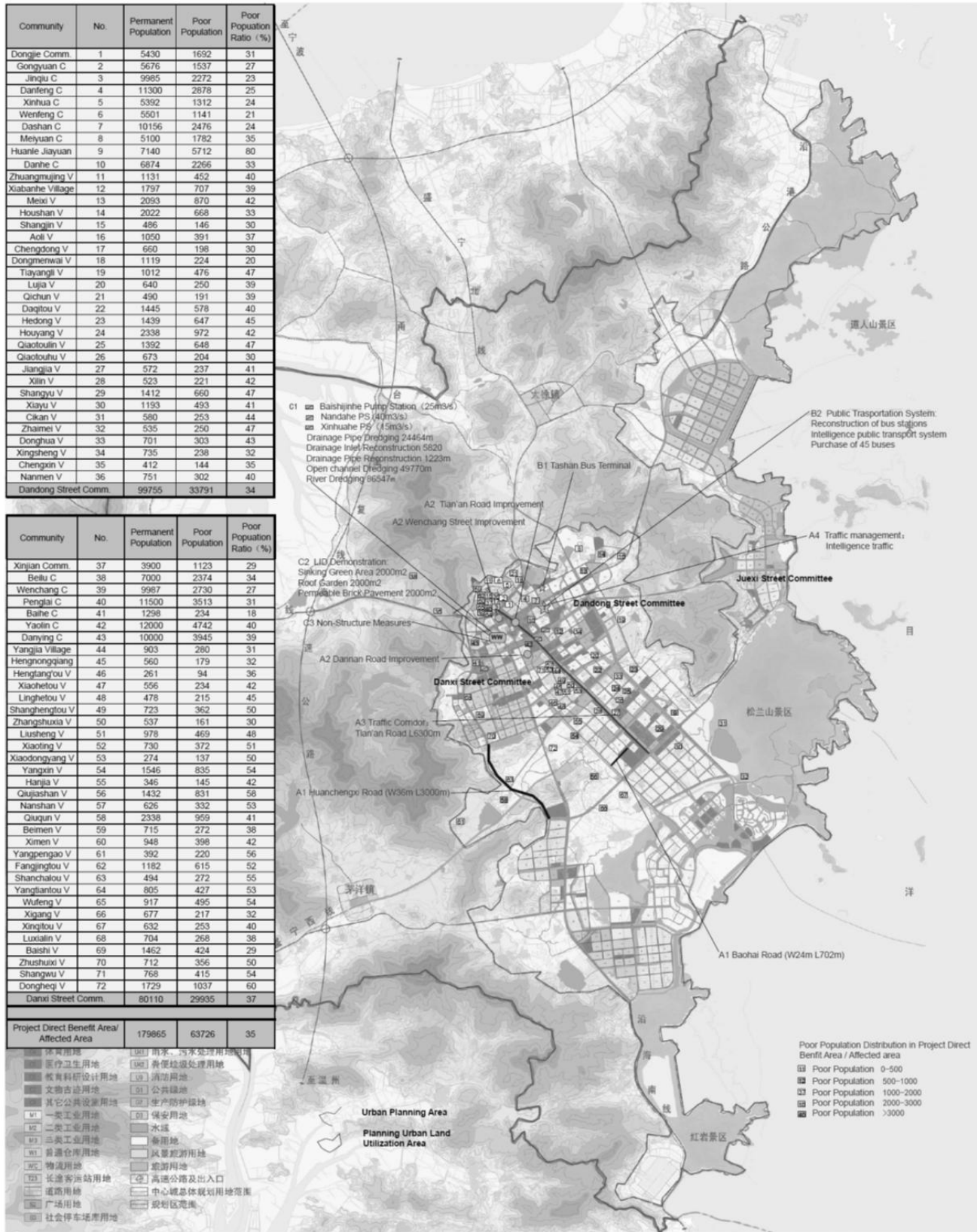
**Table A5-1. Cost of the Project Investments in Xiangshan Central Urban Area (in 2015 Real Price)**

|                       | <b>RMB million</b> | <b>US\$ million</b> |
|-----------------------|--------------------|---------------------|
| Urban roads           | 438.2              | 69.6                |
| Public transport      | 126.1              | 20.0                |
| Urban regeneration    | 13.0               | 2.1                 |
| Flood risk management | 262.9              | 41.7                |
| <b>Total</b>          | <b>840.2</b>       | <b>133.4</b>        |

3. **Operating and Maintenance Costs.** The following assumptions and estimates were used: (a) routine maintenance of road sections at RMB0.3 million per km per year, and major repairs and maintenance every 10 years at RMB3.0 million per km; (b) routine fixed O&M of bus operations at 10 percent of capital costs and a major repair every five years at 30 percent of the capital costs; (c) a variable cost of RMB19 per km for buses; (iv) routine O&M cost at 0.5 percent of the capital costs a year, a full repeat of pipeline cleaning every 10 years, and the costs of electricity for pumping every year.

<sup>20</sup> The economic analysis was carried out in accordance with both (a) the *World Bank Guidelines of Economic Analysis of Investment Operations and Economic Analysis Guidance Note*; and (b) the *Technical Note on Discounting Costs and Benefits in Economic Analysis of World Bank Projects*. The economic benefits and costs were expressed in domestic currency and constant 2015 prices. International costs were converted to local currency costs using an exchange rate of RMB 6.40 to US\$1.00.

Figure A5-1. Poor Population Layout in Xiangshan and Investments Layout



4. **Project Benefits.** – Investments in urban regeneration and urban transport will help (a) reduce the costs of public and private transportation; (b) increase economic output by reducing traffic congestion; (c) improve road safety and (d) appreciate rental property values and boost commercial revenue. The investments will also generate global environmental benefits by reducing GHG emissions in the transport sector through both reducing road congestion and replacing an aging fleet of gas-burning buses with a new fleet powered by cleaner fuel and more efficient engines. The West Ring Road will facilitate freight flow in and out of the upcoming logistics park, and help divert large volume of freight traffic from passing through the central urban area.

5. The economic values of savings in passenger time and vehicle operating costs (VOCs) were calculated based on the following assumptions:

- *Passenger Time Value.* Based on the GDP per capita around RMB 70,911 in 2014, the average car passenger time value in 2016 was estimated at around RMB 24 per hour, and at RMB 20 for the average public bus passenger in 2016. The GDP was assumed to grow at 6 percent a year over the lifetime of the project.
- *VOC.* A mathematical model was adopted from a Bank study for calculating unit VOC. The results are shown in Table A5-2.

**Table A5-2. Unit VOC (RMB per km)**

| Speed<br>(km per hour) | Car  | Bus  | Truck |        |       |
|------------------------|------|------|-------|--------|-------|
|                        |      |      | Small | Medium | Large |
| 30                     | 1.60 | 1.94 | 2.47  | 2.47   | 2.47  |
| 25                     | 1.69 | 2.11 | 2.58  | 2.58   | 2.58  |
| 20                     | 1.79 | 2.35 | 2.73  | 2.73   | 2.73  |
| 15                     | 1.93 | 2.70 | 2.91  | 2.91   | 2.91  |

Source: Feasibility Study Report

- *Reduction in GHG Emissions.* Table A5-3 summarizes unit emissions of different types of vehicles at various speeds.

**Table A5-3. Unit Emission (Kg CO<sub>2</sub> per 100 vehicle km)**

| Speed<br>(km per hour) | Car   | Bus    | Truck |        |        |
|------------------------|-------|--------|-------|--------|--------|
|                        |       |        | Small | Medium | Large  |
| 30                     | 23.21 | 87.21  | 53.66 | 79.23  | 82.69  |
| 25                     | 28.16 | 97.59  | 61.40 | 90.66  | 107.37 |
| 20                     | 32.93 | 114.06 | 73.53 | 108.58 | 108.02 |
| 15                     | 41.26 | 142.49 | 94.31 | 139.27 | 135.34 |

Source: Asian Development Bank/Ministry of Transport, Green Transport, March 2009

- *Property Appreciation and Commercial Revenue Boosts.* The urban regeneration investments will help boost the property value and commercial revenue along Wenchang Street and Tian'an Road. A 5 percent appreciation in rental property value along both streets is estimated to yield an additional RMB10.5 million in rent each year; and a 5 percent boost in revenue will yield an additional RMB165 million a year in commercial revenue (RMB16.5 million in profit at a 10 percent margin). In either case, the investment of about RMB 13 million in urban regeneration could be paid back in about a year.

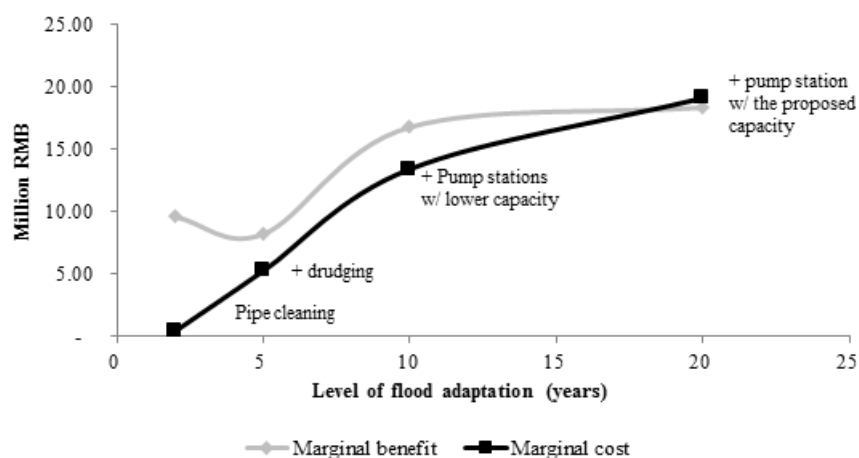
**Table A5-4. A Brief Survey of the Properties in the Areas of Urban Regeneration**

|  | Wenchang Street | Tian'an Road |
|--|-----------------|--------------|
| Commercial   |                 |              |
| - Number of business   | 168             | 96           |
| - Constructed area affected by the project (m <sup>2</sup> ) | 6,216           | 39,130       |
| - Revenue (RMB per m <sup>2</sup> per day)                   | 100-300         | 200          |
| - Rental (RMB per m <sup>2</sup> per month)                  | 200-300         | 100-200      |
| Residential  |                 |              |
| - Number of households                                       | 168             | 2600         |
| - Population   | 600             | 9,100        |
| - Living area affected (m <sup>2</sup> )                     | 12,600          | 233,700      |
| - Rental (RMB per m <sup>2</sup> per month)                  | 50              | 40           |

Source: PMO local survey

6. The Flood Risk Management component will derive its primary benefits from: (a) avoided public and private costs of flood damages as a result of reduced frequency and severity of flooding; (b) higher economic output through reduced fuel costs and wage loss related to flood-induced traffic delays in areas with improved drainage and flood-control facilities; and (c) improved land values, especially in low-laying, flood-prone areas. The investment will also generate less quantifiable public safety and health benefits through reduction in water-borne diseases and reduced medical costs. From a climate change perspective, project investments serve as a necessary adaptation mechanism against flood risks.

7. The economic analysis of the Flood Risk Management component was carried out using simulation outputs from United States Environmental Protection Agency's Storm Water Management Model. A range of flood-control intervention measures along with the associated costs and anticipated impact on flood mitigation, were evaluated. The optimal level of intervention was determined based on the estimated marginal benefit and cost of an additional year of flood adaptation to be achieved.

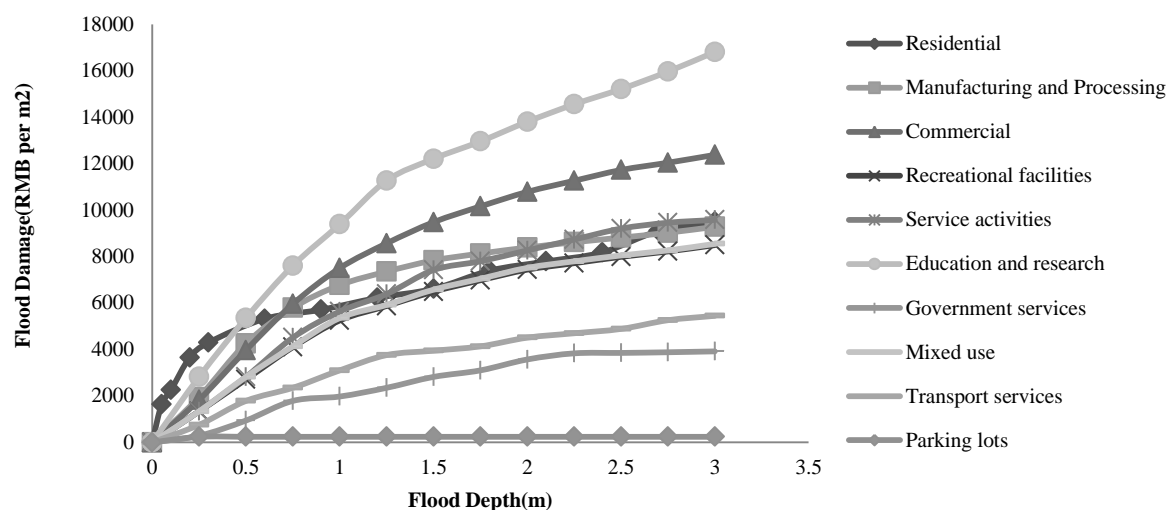
**Figure A5-2. Marginal Cost and Marginal Benefit of Different Flood Adaptation Measures**

Source: Feasibility Study Report

8. The economic impact of flood damage was estimated based on simulated estimates of: (a)

size of the flooded area; and (b) severity of the damage measured with regard to the depth of water. The economic impact of the flood was calculated based on the uniform economic output per square meter in the central urban area of Xiangshan. The figure A5-3 provides an indicative illustration of the relationship between flood damage and flood depth, based on data from the United Kingdom.

**Figure A5-3. Indicative Relationship between Flood Damage and Flood Depth**



Source: Feasibility Study Report

9. Economic benefits from flood risk management investments are expected to materialize in two areas:

- *Avoided Building Losses.* The total urban area that could be affected by flood is around 20 km<sup>2</sup>, with a split of around 70 /20 /10 percent between residential, commercial and industrial land. The estimated flood-related building damage costs are respectively around RMB2.63, RMB3.95 and RMB2.10 per m<sup>2</sup> for each type of constructed area.
- *Avoided GDP Losses.* The GDP impact was calculated based on unit land output estimates of around RMB1.19 and RMB2.28 per m<sup>2</sup> of industrial and commercial land, respectively.

10. **Impact on the Bottom 40 percent.** The low income population in Xiangshan resides primarily in the periphery of the city, farther away from public transit, and is more vulnerable to flood-related risks. Major typhoons in the past had severely affected households in low-laying districts, where there is a higher density of lower-income population. Thus, project interventions will bring direct benefit to the low income population.

11. **Results of the Economic Analysis.** Project investments in Xiangshan are estimated to yield an EIRR of 13.3 percent, exceeding the hurdle rate of 6 percent. The estimated EIRRs of project components also exceed 6 percent; Table A5-5 summarizes the results of the economic analysis. At a 6 percent social discount rate, the project investment is expected to yield an ENPV of RMB 424.3 million. The sensitivity analysis indicates that an increase of 15 percent in both investment costs and O&M costs will continue to yield EIRRs exceeding 10 percent.

**Table A5-5. Outcomes of the Economic Analysis**

|   | <b>EIRR</b><br>(percent) | <b>ENPV @ 6 percent</b><br>(RMB million) |
|---|--------------------------|--|
| Urban roads, public transportation and urban regeneration | 13.9                     | 288.6                                    |
| Flood control management                                  | 12.2                     | 135.7                                    |
| <b>Total</b>  | <b>13.3</b>              | <b>424.3</b>                             |

12. Investments in other counties are similar in nature and scope to project investments in Xiangshan and are expected to have EIRRs similar to Xiangshan.

### **A. Financial Analysis**

13. Urban infrastructure investments under the project will not generate revenues directly. In view of this, the financial analysis focuses on the impact of the project financing mix, especially the IBRD portion of debt financing, on Xiangshan County.

14. The project financing mix in Xiangshan comprises a 62/18/20 percent split of the IBRD loan, local government bonds, and local government equity contribution. The second-best alternative will be replacing the IBRD debt portion by the lowest cost commercial debt available. The proposed IBRD loan of US\$150 million is priced at a six-month US dollar London Interbank Offered Rate (LIBOR) plus a spread, and a front-end fee and a commitment charge of 0.25 percent. As of January 2016, the interest rate of IBRD loans was 1.6 percent for a maturity of 30-years, inclusive of a five-year grace period. The best commercial long-term borrowing alternative had an interest rate of 7 percent a year, and a five year maturity without any grace period.

15. To allow for sufficient free cash flow after debt servicing to fund the investment program, a commercial loan of US\$365 million will be needed over the course of the five year investment period. The considerably larger commercial borrowing required is due to the front-loaded debt service burden associated with commercial borrowing, resulting in heavy debt service obligations during the investment period. The longer tenor and grace period of the IBRD loan greatly reduces the up-front debt service burden and the leverage required to finance the investment program.

### **B. Fiscal Analysis**

16. A fiscal assessment of Xiangshan County was carried out to assess the (a) availability of counterpart funds during project implementation; and (b) debt service capacity.

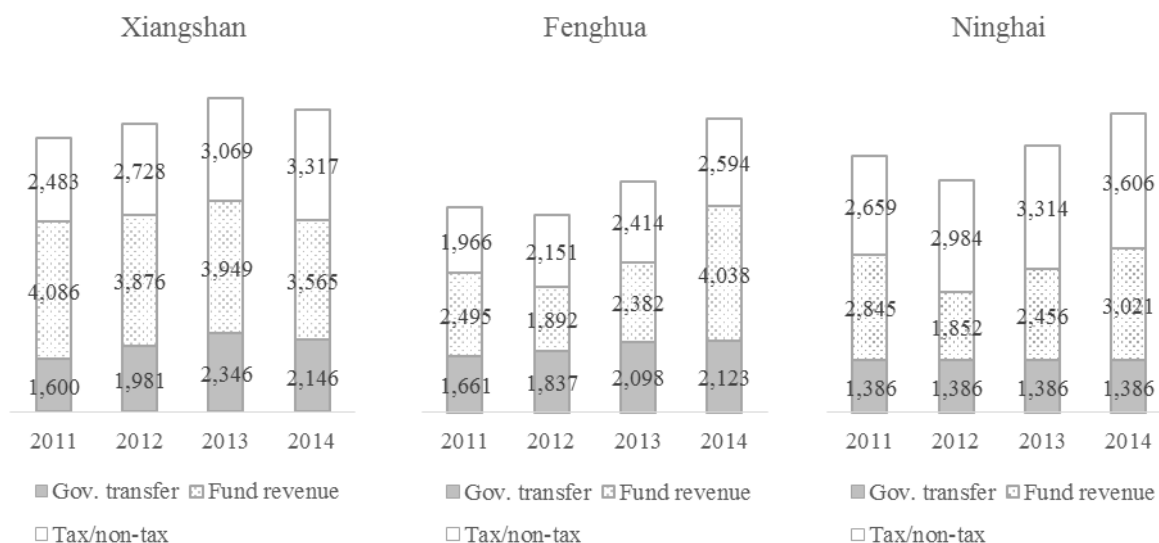
#### *Counterpart Fund*

17. Around 40 percent of the project investment will be financed by counterpart funds, half of which will be provided for by local government equity contributions from fiscal sources and the other half from the proceeds of local government bonds.

18. **Government Fiscal Revenue.** Fiscal revenues of county governments come from three main sources: (a) local tax revenues, along with miscellaneous local non-tax revenue sources; (b) transfers from upper-level governments; and (c) fund revenues, primarily from land-related

transactions. Of the three revenue sources, fund revenues are the most volatile. The figures and table below provide a summary of the sources of fiscal revenues in Xiangshan, Fenghua and Ninghai Counties during 2011-2014.

**Figure A5-4 Fiscal Revenues (RMB million)**



**Table A5-6. Fiscal Revenues (RMB million)**

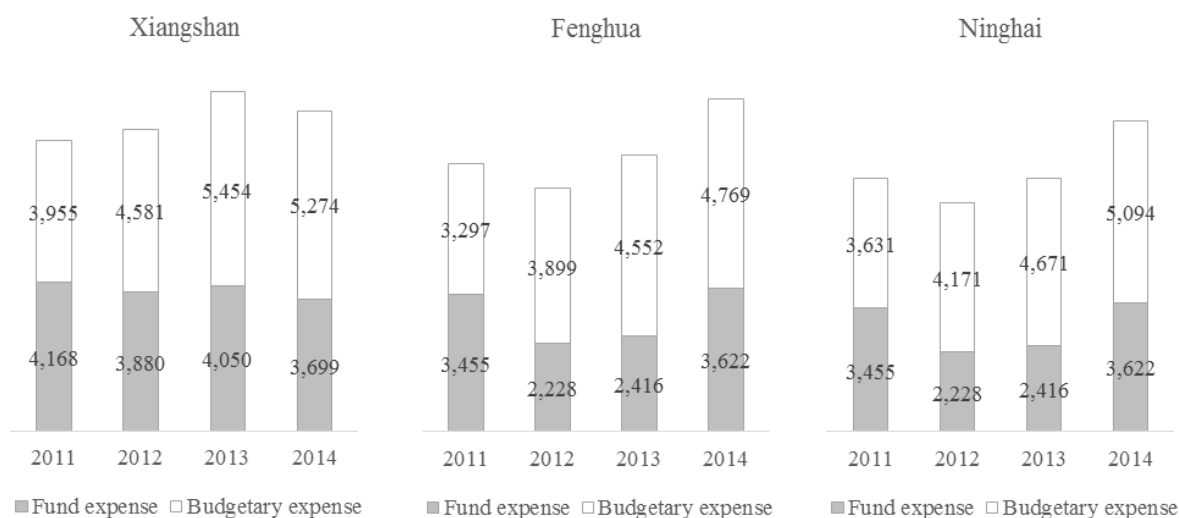
|               | Xiangshan    |              |              |              | Fenghua      |              |              |              | Ninghai      |              |              |              |
|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|               | 2011         | 2012         | 2013         | 2014         | 2011         | 2012         | 2013         | 2014         | 2011         | 2012         | 2013         | 2014         |
| Gov. transfer | 1,600        | 1,981        | 2,346        | 2,146        | 1,661        | 1,837        | 2,098        | 2,123        | 1,386        | 1,386        | 1,386        | 1,386        |
| Fund revenue  | 4,086        | 3,876        | 3,949        | 3,565        | 2,495        | 1,892        | 2,382        | 4,038        | 2,845        | 1,852        | 2,456        | 3,021        |
| Tax/non-tax   | 2,483        | 2,728        | 3,069        | 3,317        | 1,966        | 2,151        | 2,414        | 2,594        | 2,659        | 2,984        | 3,314        | 3,606        |
| <b>Total</b>  | <b>8,169</b> | <b>8,585</b> | <b>9,364</b> | <b>9,027</b> | <b>6,122</b> | <b>5,879</b> | <b>6,894</b> | <b>8,755</b> | <b>6,890</b> | <b>6,222</b> | <b>7,156</b> | <b>8,014</b> |

Source: Ningbo Municipality Finance Bureau

**19. Government Fiscal Expenditures.** County governments have two main categories of expenditures: (a) budgetary expense; and (b) fund expenses, primarily for land-related development. The figures and table below provide a summary of the fiscal expenditures of Xiangshan, Fenghua and Ninghai Counties during 2011-14.



**Figure A5-5 Fiscal Expenditures (RMB million)**



**Table A5-7. Fiscal Expenditures (RMB million)**

|                   | Xiangshan    |              |              |              | Fenghua      |              |              |              | Ninghai      |              |              |              |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                   | 2011         | 2012         | 2013         | 2014         | 2011         | 2012         | 2013         | 2014         | 2011         | 2012         | 2013         | 2014         |
| Fund expense      | 4,168        | 3,880        | 4,050        | 3,699        | 3,455        | 2,228        | 2,416        | 3,622        | 3,455        | 2,228        | 2,416        | 3,622        |
| Budgetary expense | 3,955        | 4,581        | 5,454        | 5,274        | 3,297        | 3,899        | 4,552        | 4,769        | 3,631        | 4,171        | 4,671        | 5,094        |
| <b>Total</b>      | <b>9,504</b> | <b>8,973</b> | <b>6,751</b> | <b>6,128</b> | <b>6,968</b> | <b>8,391</b> | <b>7,086</b> | <b>6,400</b> | <b>7,087</b> | <b>8,716</b> | <b>8,014</b> | <b>8,014</b> |

Source: Ningbo Municipality Finance Bureau

20. The required government equity contribution of about US\$50 million over five years is less than 0.2 percent of the local fiscal budget and is considered to be within the local governments' budgetary tolerance. The Ningbo Municipal government has agreed to provide a commitment letter for the portion to be financed by local government bonds.

#### *Local Government Debt Capacity*

21. **Government Debt Status.** Local government debt in China is classified as follows: (a) Class I debts are directly held on local government books; (b) Class II are contingent liabilities, e.g., guarantees; and (c) Class III are debts not on local government books, but are held by public institutions, for example, schools and hospitals. The three classes of debt together account for all debt and contingent liabilities held by local governments.<sup>21</sup>

22. As of end 2014, local government direct debt (Class I) stood at 25, 29 and 26 percent of the GDP of Xiangshan, Fenghua and Ninghai Counties respectively. All three classes of government debts in combination stood at 46, 73 and 68 percent of the local GDPs. Compared to Xiangshan, Fenghua and Ninghai Counties held a significantly higher level of Class III debt.

<sup>21</sup> Debt held under the local government Urban Development Investment Corporations (UDICs) are included in the three classes of local government debts.

**Table A5-8. Local Government Debt Composition as of end 2014**

|                  | <b>Xiangshan</b>    | <b>Fenghua</b>      | <b>Ninghai</b>      |
|------------------|---------------------|---------------------|---------------------|
|                  | RMB Million % GDP   | RMB Million % GDP   | RMB Million % GDP   |
| GDP              | 38,808              | 30,922              | 40,986              |
| Government debts |                     |                     |                     |
| - Class I        | 9,770 (25%)         | 9,074 (29%)         | 10,505 (26%)        |
| - Class II       | 710 (2%)            | 243 (1%)            | 848 (2%)            |
| - Class III      | 7,410 (19%)         | 13,221 (43%)        | 16,522 (40%)        |
| <b>Total</b>     | <b>17,890 (46%)</b> | <b>22,538 (73%)</b> | <b>27,875 (68%)</b> |

Source: Ningbo Municipality Finance Bureau

23. **Local Government Bonds.** Local governments in China have relied on special financing vehicles, such as urban development investment corporations (UDICs), to access debt financing for local government projects. As part of a comprehensive effort to better manage risk and increase transparency and accountability of local government debt, the central government is rapidly shifting toward and expanding the municipal bond market. In 2015, the central government issued nearly RMB 600 billion (US\$91.43 billion) in bonds and converted another RMB3.2 trillion in outstanding local government debt to low-interest bonds under a bond-for-debt swap program.

24. In 2015, under the bond-for-debt swap program, a total of RMB9.1 billion of local government direct debt was converted to bonds of varying maturity in Xiangshan, Fenghua and Ninghai. The bond yields are on par with sovereign debt of comparable maturity (see table A5-9 below). Going forward, MOF and Ningbo Municipal Government have committed to further bond issuance. The market has started demanding a risk premium over sovereign debt for municipal bonds, but the pricing and risk pricing are still a work in progress.

**Table A5-9. Local Government Bond Issued through the Bond-for-Debt Swap Program in 2015**

|              | <b>Yield</b> | <b>Xiangshan</b> | <b>Fenghua</b> | <b>Ninghai</b> |
|--------------|--------------|------------------|----------------|----------------|
| 3-year       | 3.26%        | 756              | 838            | 550            |
| 5-year       | 3.61%        | 1,060            | 1,028          | 660            |
| 7-year       | 4.00%        | 744              | 767            | 360            |
| 10-year      | 4.03%        | 1,040            | 867            | 430            |
| <b>Total</b> |              | <b>3,600</b>     | <b>3,500</b>   | <b>2,000</b>   |

Source: Ningbo Municipality Finance Bureau

25. By the end of the five year investment period, the additional debt undertaken for the Project, including both the IBRD loan and local bonds, will amount to nearly one percent of local GDP (nearly 2 percent of the local governments' total outstanding debt). Such a level of debt is considered to be in the manageable range.

26. Much of the project investments in urban regeneration and flood control measures will yield moderate O&M cost savings due to efficiency improvements. The incremental O&M costs associated with the additional urban infrastructure constructed, for example, pump stations and the West Ring Road in Xiangshan, are relatively small and are expected to be easily accommodated in the municipal budget.

## IBRD 41988