PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT FROM THE
GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF US$5 MILLION

TO THE

PEOPLE’S REPUBLIC OF CHINA

FOR THE

HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT

January 20, 2012

China and Mongolia Sustainable Development Unit
Sustainable Development Department
East Asia and Pacific Region

This document is being made publicly available prior to Board consideration. This does not imply a presumed outcome. This document may be updated following Board consideration and the updated document will be made publicly available in accordance with the Bank’s policy on Access to Information.
CURRENCY EQUIVALENTS

(Exchange Rate Effective June 30, 2011)

Currency Unit  =  Renminbi (RMB) Yuan
RMB Yuan 1.0  =  US$ 0.16
US$ 1.0  =  RMB Yuan 6.3

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

COD  Chemical Oxygen Demand
CPS  Country Partnership Strategy
CWRAS  Country Water Resources Assistance Strategy
DA  Designated Account
DPLG  Dongying Project Leading Group (PPLG)
DPMO  Dongying Project Management Office
EA  Environmental Assessment
EIRR  Economic Internal Rate of Return
EMP  Environmental Management Plan
FEPA  Farmer Environmental Protection Association
FMM  Financial Management Manual
FSR  Feasibility Study Report
GEF  Global Environmental Facility
GOC  Government of China
HRBFMDI  Huai River Basin Flood Management and Drainage Improvement Project
IEG  Independent Evaluation Group
IPM  Integrated Pest Management
KPIs  Key Performance Indicators
MIS  Management Information System
MOF  Ministry of Finance
MTR  Mid-Term Review
MWR  Ministry of Water Resources
M&E  Monitoring and Evaluation
NDRC  National Development and Reform Commission
O&M  Operation and Maintenance
PAP  Project Affected People
PDO  Project Development Objectives
PIP  Project Implementation Plan
PIU  Project Implementation Unit
PPLG  Provincial Project Leading Group
PMP  Pest Management Plan
PPMO  Provincial Management Office
RAP  Resettlement Action Plan
RPF  Resettlement Policy Framework
SAAS  Shandong Academy of Agricultural Sciences

Vice President:  Pamela Cox
Country Director:  Klaus Rohland
Sector Director:  John Roome
Sector Managers:  Paul Kriss/N. Vijay Jagannathan
Task Team Leader:  Xiaokai Li
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Project Map
## CHINA

**GEF HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT**

**PROJECT APPRAISAL DOCUMENT**

**EAST ASIA AND PACIFIC**

(EASCS)

<table>
<thead>
<tr>
<th>Date:</th>
<th>January 20, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country Director:</td>
<td>Klaus Rohland</td>
</tr>
<tr>
<td>Sector Director:</td>
<td>John Roome</td>
</tr>
<tr>
<td>Sector Managers:</td>
<td>Paul Kriss and Vijay Jagannathan</td>
</tr>
<tr>
<td>Team Leader:</td>
<td>Xiaokai Li</td>
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<tr>
<td>Project ID:</td>
<td>P108592</td>
</tr>
<tr>
<td>Lending Instrument:</td>
<td>GEF Grant</td>
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**Proposed terms:**

- [ ] Loan
- [ ] Credit
- [X] Grant
- [ ] Guarantee
- [ ] Other:

### Project Financing Data:

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<th>Source</th>
<th>Total Amount (US$M)</th>
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<td>IDA</td>
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<td>GEF</td>
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**Recipient:** People’s Republic of China

**Responsible Agencies:**

Dongying Municipal Government, Shandong Province

Contact Person: Director, Shandong Project Management Office

Office of International Economic Cooperation

Shandong Provincial Water Resources Department

No. 127 Lishan Road, Lixia District, Jinan, Shandong Province

Postal Code: 250014

Telephone No.: 86-531-8697.4010

Fax No.: 86-531-8694.2489
**Estimated Disbursements (Bank FY/US$ m)**

<table>
<thead>
<tr>
<th>FY</th>
<th>2013</th>
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<th>2015</th>
<th>2016</th>
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<tr>
<td>Annual</td>
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<td>1.06</td>
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<td>0.12</td>
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<tr>
<td>Cumulative</td>
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<td>3.90</td>
<td>4.88</td>
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**Project Implementation Period:**  
Start: September 1, 2012  
End: June 30, 2015

**Expected effectiveness date:** September 1, 2012

**Expected closing date:** December 31, 2015

Does the project depart from the CAS in content or other significant respects?  
○ Yes  ● No

If yes, please explain:

Does the project require any exceptions from Bank policies?  
○ Yes  ● No

Have these been approved/endorsed (as appropriate by Bank management)?  
○ Yes  ○ No

Is approval for any policy exception sought from the Board?  
○ Yes  ● No

If yes, please explain:

Does the project meet the Regional criteria for readiness for implementation?  
● Yes  ○ No

If no, please explain:

**Project Development Objective:** Demonstrate innovative and cost-effective water pollution control practices in Guangli river catchment of Dongying Municipality, contributing to pollution reduction in the Bohai Sea.

**Project Description:** The proposed project has the following components:

**Component A Wetland Construction and Sluice Gate Operation Optimization:** (a) Construction of wetlands at Dongbalu consisting of free-surface flow wetlands, an ecological retention pool, an entrance gate, a gated overflow weir and a pumping station, and provision of related equipment; (b) Upgrading the automatic gate control system covering three sluice gates on the Guangli River, and the gates at the entrance and exit of the Dongbalu wetlands; and (c) Provision of cash transfers to Affected Persons of the wetlands construction.

**Component B Agricultural Pollution Control and Rural Waste Management:** (a) Wastewater, human and livestock waste collection and treatment in Participating Villages; (b) Introduction of agricultural pollution reduction technologies and management practices in Participating Villages through comprehensive and balanced fertilizer applications, provision and use of insect luring lamps, and construction of eco-trenches and buffer strips in crop fields; and monitoring of the results of implementation of these technologies and practices; and (c) Establishment, equipping and operation of FEPAs in Participating Villages.

**Component C Capacity Building and Policy Studies:** (a) Establishment and operation of an environmental protection education and training centre to be located in Dongying Municipality for training and dissemination of technologies and good practices in environmental protection, nutrient management and pollution reduction; (b) Capacity building activities to provide technical and Project management training for staff involved in Project implementation and monitoring; and
(c) Evaluation study of the effectiveness of constructed wetlands in the treatment of polluted water based on the analysis of the Project monitoring results; development of an agricultural pollution reduction and rural waste management strategy and plan for the Guangli River Watershed in the Dongying Municipality, including an evaluation study of the related Project interventions for the purpose; and development of a Huai River Basin-wide replication strategy for cost-effective water pollution control, including dissemination and training and workshops as required for the purpose.

**Component D Project Management and Implementation Support:** (a) Provision of technical assistance for the review of technical designs and tendering documents, construction quality of Project facilities, and for Project reporting; (b) Project monitoring and evaluation; and (c) Support for Project management by the PMOs and PIUs.

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<td>Forests (OP/BP 4.36)</td>
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<td>Pest Management (OP 4.09)</td>
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<td>Physical Cultural Resources (OP/BP 4.11)</td>
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<tr>
<td>Indigenous Peoples (OP/BP 4.10)</td>
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<td></td>
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<td>Projects in Disputed Areas (OP/BP 7.60)</td>
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### Conditions and Legal Covenants

<table>
<thead>
<tr>
<th>Grant/Project Agreements Reference</th>
<th>Description of Condition/Covenant</th>
<th>Date Due</th>
</tr>
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<tbody>
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<td>PA: SCHEDULE, Section I, D</td>
<td>Shandong shall make the principal amount of the Grant available to Dongying Municipality under arrangements satisfactory to the Bank, and ensure that Dongying Municipality provide counterpart funding for the Project implementation including financing of the cash transfer referred to in Part A of the Project.</td>
<td>As needed</td>
</tr>
<tr>
<td>PA: SCHEDULE, Section I, E, 1</td>
<td>Shandong shall cause Dongying Municipality and the FEPAs to carry out the FEPA Development Plan.</td>
<td>As specified</td>
</tr>
<tr>
<td>PA: SCHEDULE, Section I, E, 2</td>
<td>Shandong shall through the Dongying Municipality, prior to commencing the bidding process for any of the works or goods required for implementation of Part B(a) or (b) of the Project in a Participating village, enter into an agreement satisfactory to the Bank with the respective FEPA setting forth their respective obligations.</td>
<td>Before physical activities of Part B(a) and (b) start</td>
</tr>
<tr>
<td>PA: SCHEDULE, Section I, F</td>
<td>Shandong shall (a) prior to authorizing disbursements of any Subsidy Payment for the respective FEPA verify that the crop has been planted in accordance with requirements satisfactory to the Bank; and (b) (i) not later than June 30, 2013 review the acceptability of the Unit Costs being financed under Subsidy Payments, and propose to the World Bank any modifications as may be required for the financing any Subsidy Payments; and (ii) thereafter, modify the amount financed as Subsidy Payments as shall have been approved by the World Bank.</td>
<td>As specified</td>
</tr>
</tbody>
</table>
I. STRATEGIC CONTEXT

A. Country Context

1. Over the past 30 years, China has seen impressive and unprecedented economic growth. However, such rapid growth, compounded by population growth and fast urbanization, has been achieved at the cost of, among many other sacrifices, deteriorating water environment caused mostly by land-based pollution from industries, farming and domestic sources. The majority of the rivers and lakes in the country have been polluted to different degrees. This has alerted Chinese policy makers and general public to give much higher priority to pollution reduction and control and is clearly articulated in the 12th Five-Year Plan (2011-2015), which aims to follow a green growth path. Water management is one of the pillars of green growth.

B. Sectoral and Institutional Context

2. The Huai River Basin covers four provinces: Shandong, Jiangsu, Anhui and Henan. The key development challenge in the Huai River Basin is to maintain the balance between socio-economic development and environmental protection. With rapid economic growth in the region, the Huai River Basin has become one of the most polluted rivers in China, and discharges increased quantities of nutrients and pollutants into the Bohai Sea and Yellow Sea, contaminating these international waters. Shandong Province, which has the longest coastlines of the Bohai Sea and the Yellow Sea within the Huai River Basin, contributes more pollutant loads to these seas than any of the other three provinces.

3. Coastal cities such as Dongying in Shandong Province are both significant contributors to, and direct victims of, such pollution. The delicate eco-system of Dongying city is heavily impacted by increasing water pollution from a population of about 1.8 million, as well as growth in oil, natural gas, and salt, which are its major resources. Water pollution in Dongying originates from point and non-point sources in urban and rural areas. In spite of the government’s efforts in point source pollution control over the years, total nutrients and pollutants (organics) discharged into the Bohai Sea from Dongying city, in terms of COD, BOD, TN and TP, have yet to be further reduced to an acceptable level. A recent survey by Dongying Environmental Protection Bureau identified municipal sewage (60%) and industrial sewage (8%), rural wastes and agricultural runoff (30%) as the main sources of pollution for Guangli River, which contributes to water pollution and eutrophication in the Bohai Sea.

4. Main Development Issues. The main issues with existing water pollution control practices are:

   (a) Lack of a balanced and integrated approach to water pollution management. Experience from previous water pollution management investments in Dongying and elsewhere point to the need for balancing the supply-driven and infrastructure-focused approach with demand-side management interventions (awareness raising, policy incentives, behavior change) and management practices (introducing new/clean production technologies and environmentally-friendly practices).
(b) **Lack of effective institutional mechanism for managing non-point source (NPS) pollution in rural and agricultural areas.** The results of significant government efforts in reducing NPS pollution through various subsidized investment programs (e.g., biogas generation from human and livestock wastes, and balanced fertilizer applications) have not been satisfactory, and often the facilities built or management practices introduced cannot be sustained. This is due to the lack of an institutional mechanism to identify, prioritize, implement, and maintain these investments with the direct involvement of beneficiary communities in an organized manner.

5. Guangli river, a man-made drainage channel for Dongying district and Kenli county, was selected as the pilot area, based on detailed analysis and stakeholder consultation, because: (a) it is the main river following through Dongying city to Bohai Sea, and is thus a significant pollution contributor; (b) there is in the watershed a substantial wastewater treatment capacity in operation, and it is covered under the municipality’s major water pollution control program; and (c) it is entirely within the jurisdiction of Dongying City and is not subject to interference from external pollution sources.

6. **Government strategy.** The Master Plan for Dongying Water City Development (2009) sets the goal to transform Guangli River into an eco-corridor during the “12th Five-Year Plan” period, through improving the water quality and environment. The government has sought GEF project to: (a) reduce nutrient and pollution loads from agricultural and rural sources through pilot interventions, complementary to the existing sewage treatment systems; (b) there is in the watershed a substantial wastewater treatment capacity in operation, and it is covered under the municipality’s major water pollution control program; and (c) it is entirely within the jurisdiction of Dongying City and is not subject to interference from external pollution sources.

7. **Rational for Bank Involvement.** The proposed project supports the government’s priorities in systematically controlling pollution in heavily polluted river basins including Huai River and Hai River, etc., in reducing land-based pollutants to international waters such as Bohai Sea and Yellow Sea. It is consistent with the current Bank Group’s Country Partnership Strategy for China (CPS dated May 23, 2006), which requires that the Bank Group help mainstream environmental concerns into the development process. "Taking steps to minimize water pollution" and piloting and scaling up "policies and mechanisms to address agriculture non-point pollution" are among priority Bank engagement areas. The project also fits with the regional PEMSEA strategy (of which the IF is a partner), which promotes sustainable development in the region.

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

8. The project contributes to China’s objective of improved water resources management and pollution control. As part of the Bank’s program to assist China in water resources and environmental management, the proposed project is well aligned with the Government’s Long-term Strategic Plan for Water Pollution Management and Control in Key Basins and Seas, as well as one of the main pillars of the Banks’ Country Partnership Strategy (CPS) for China for the period 2006 – 2010: ‘managing resource scarcity and environmental challenges’. It is also
expected to be consistent with CPS for 2011 – 2015, which is currently under preparation and will be aligned with China’s 12th Five Year Plan.

9. The proposed project is part of the World Bank and GEF Strategic Partnership Investment Fund for Pollution Control in Large Marine Ecosystems of East Asia (the IF), a program approved by GEF in 2005 to finance innovative demonstration projects for pollution control. The IF is managed in cooperation with the PEMSEA that has developed a Regional Sustainable Development Strategy of the Seas of East Asia. PEMSEA is also part of the regional implementation plan of the UNEP’s Global Program of Action (GPA) for the Protection of the Marine Environment from Land-based Activities. The project is also expected to provide incremental benefits to the baseline Bank-financed China Huai River Basin Flood Management and Drainage Improvement Project (HRBFMDI Project) which became effective in January 2011.

II. PROJECT DEVELOPMENT OBJECTIVES

A. Project Development Objectives (PDO)

10. The project development objective is to demonstrate innovative and cost-effective water pollution control practices in Guangli river catchment of Dongying Municipality, contributing to pollution reduction in the Bohai Sea.

B. Project Beneficiaries

11. A total of about 1.8 million people in Dongying city (of whom 0.9 million will be women) will benefit directly or indirectly from the project. Beneficiaries would include: (a) farmers benefiting from improved production practices and production cost savings; (b) rural and urban residents benefiting from improved living environment and reduced water pollution in Guangli river; and (c) fishermen benefiting from reduced threat of eutrophication in the Bohai Sea.

C. PDO Level Results Indicators

12. The main outcome indicators of the proposed project are: (a) project-induced reduction in pollutant and nutrient loads entering Bohai Sea from Guangli River Watershed; and (b) reduction in pollutants and nutrients through the constructed wetlands at Dongbalu.

III. PROJECT DESCRIPTION

A. Project Components

13. The Project would have the following four components (See Annex 2 for details).

Component A. Wetland Construction and Sluice Gate Operation Optimization (Base Cost: US$27.19 million):
(a) Construction of wetlands at Dongbalu consisting of free-surface flow wetlands, an ecological retention pool, an entrance gate, a gated overflow weir and a pumping station, and provision of related equipment;

(b) Upgrading the automatic gate control system covering three sluice gates on the Guangli River, and the gates at the entrance and exit of the Dongbalu wetlands; and

(c) Provision of cash transfers to Affected Persons of the wetlands construction.

Component B. Agricultural Pollution Control and Rural Waste Management (Base Cost: US$4.59 million):

(a) Wastewater, human and livestock waste collection and treatment in Participating Villages;

(b) (i) Introduction of agricultural pollution reduction technologies and management practices in Participating Villages through comprehensive and balanced fertilizer applications, provision and use of insect luring lamps, and construction of eco-trenches and buffer strips in crop fields; and (ii) monitoring of the results of implementation of these technologies and practices; and

(c) Establishment, equipping and operation of FEPAs in Participating Villages.

Component C. Capacity Building and Policy Studies (Base Cost: US$1.85 million):

(a) Establishment and operation of an environmental protection education and training centre to be located in Dongying Municipality for training and dissemination of technologies and good practices in environmental protection, nutrient management and pollution reduction;

(b) Capacity building activities to provide technical and Project management training for staff involved in Project implementation and monitoring; and

(c) (i) Evaluation study of the effectiveness of constructed wetlands in the treatment of polluted water based on the analysis of the Project monitoring results; (ii) development of an agricultural pollution reduction and rural waste management strategy and plan for the Guangli River Watershed in the Dongying Municipality, including an evaluation study of the related Project interventions for the purpose; and (iii) development of a Huai River Basin-wide replication strategy for cost-effective water pollution control, including dissemination and training and workshops as required for the purpose.

Component D. Project Management and Implementation Support (Base Cost: US$2.29 million):

(a) Provision of technical assistance for the review of technical designs and tendering documents, construction quality of Project facilities, and for Project reporting;

(b) Project monitoring and evaluation; and
(c) Support for Project management by the PMOs and PIUs.

**B. Project Financing**

**Lending Instrument**

14. The lending instrument for the proposed project is a stand-alone GEF Grant. Project interventions and targets are well defined and can be completed within the agreed implementation period and a specific investment project is considered the most appropriate instrument.

**Project Cost and Financing**

15. The total project cost is estimated to be US$37.828 million, of which the GEF grant will finance US$5 million; the remainder will be financed by Dongying Municipal Government and beneficiary rural households. Table below summarizes the project cost by component and the GEF contribution for each.

<table>
<thead>
<tr>
<th>Component</th>
<th>Project Costs (US$’000)</th>
<th>GEF Financing (US$’000)</th>
<th>(%)</th>
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<tr>
<td><strong>A. Wetland Construction and Sluice Gate Operation Optimization</strong></td>
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<td>1,843</td>
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<td>Constructed Wetland at Dongbalu</td>
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<td>A2</td>
<td>Sluice Gate Operation Optimization</td>
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<td>A3</td>
<td>Resettlement Compensation</td>
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<td><strong>B. Agricultural Pollution Control and Rural Waste Management</strong></td>
<td>4,591</td>
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<td>Rural Waste Management</td>
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<td>Agricultural Pollution Control</td>
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C. Lessons Learned and Reflected in the Project Design

16. Project design takes into account Bank experiences with water pollution reduction and management interventions in China and elsewhere (e.g., the GEF Baltic region agricultural pollution control program). These include:

(a) Effective water pollution management in a basin or catchment requires an integration of pollution reduction at source and treatment of polluted water;

(b) Pollution reduction measures need to be prioritized in line with the government strategy and priority programs, as well as the interests of other key stakeholders, particularly for local communities;

(c) Design of wetlands should be adapted to local conditions, both in terms of water quality and the operating environment (e.g. temperature), and avoid excessive landscaping;

(d) A community-based approach is essential for sustainable agricultural non-point pollution control and rural waste management;

(e) Monitoring and evaluation arrangements are crucial to track the effectiveness of innovative pilot interventions, and should include baselines and realistic targets; and

(f) Raising the awareness of stakeholders and the general public, as well as dissemination of project information and the results of the pilot are important for successful replication of new technologies and management practices.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

17. The project proposes to adopt a tiered organizational structure involving: the Huai River Basin Commission, Shandong Province, Dongying Municipality (including project implementation units), and the villages/communities. At the basin level, the Huai River Basin Commission, through the central project management office (CPMO) of the HRBFMDI Project, will provide technical guidance to the project and participate in the implementation of the institutional development and capacity building component. The Provincial Project Leading Group (PPLG) and the Provincial Project Management Office (PPMO), established for Shandong Province Component of the HRBFMDI Project, will serve as the PPLG and the PPMO for this project to oversee project implementation and provide necessary guidance. The Dongying Project Leading Group (DPLG) and the Dongying Project Management Office (DPMO) have been established for project preparation and implementation, with Project Implementation Units (PIUs) established in the three implementing agencies (Water Resources Bureau, City Management Bureau, Agricultural Bureau and the Participating Villages).
18. At the village level, Farmer Environmental Protection Associations (FEPAs) will be established in each of the participating villages. They will operate as long-term community self-management institutions for village-level environmental protection, with support and guidance from the Dongying Agricultural Bureau, the Dongying Environmental Protection Bureau, and the local governments.

B. Results Monitoring and Evaluation

19. The monitoring and evaluation arrangements for the project include implementation performance and results monitoring (see Annex 1), specialized monitoring, and safeguards compliance monitoring. Project implementation performance monitoring will be undertaken by Dongying PMO, with inputs from the PIUs and Dongying Environmental Protection Bureau, and with the assistance of implementation support consultants. Specialized monitoring (e.g., water quality of wetlands inflow and outflow, water quality of treated rural wastewater, effect of changes in fertilizer use on surrounding water quality) will be carried out by the Dongying Environmental Protection Bureau, the Dongying Agricultural Bureau PIU, and the external consultant teams. Safeguards compliance monitoring, based on the EMP, PMP and RAP, will be conducted by external environmental and resettlement supervision consultants.

C. Sustainability

20. Project design addresses sustainability as indicated below:

(a) **Technical Sustainability.** Project interventions are based on technologies and methodologies that are cost-effective, reliable, replicable and environmentally sustainable. The project follows an integrated approach with focus on technical solutions adapted to local conditions, and are easy to operate and maintain at low cost. They integrate pollutant and nutrient reduction at source and mitigation in water body, and combines technical measures with behavior change.

(b) **Institutional Sustainability.** The Government is committed to providing necessary support for successful project implementation, including establishment of project organizations at each level and provision of sufficient counterpart funding during project implementation, and financial resources for O&M upon completion of the Project. Institutional sustainability will be enhanced by the FEPAs, and by building the capacity of implementing agencies, PMOs and beneficiary communities.

(c) **Long-term Sustainability.** To ensure long-term sustainability, specific project interventions include: (i) development of a replication strategy and plan; (ii) specialized training; (iii) empowering FEPAs, local communities, and other stakeholders; and (iv) dissemination of pilot results.
V. KEY RISKS AND MITIGATION MEASURES

21. The Operational Risk Assessment Framework (ORAF, see Annex 4) assesses the risks to achieving the PDO in the various risk categories and lists the proposed mitigation measures. The overall risk rating for the project during implementation is Medium – Impact (low likelihood – high impact). Implementing agencies’ capacity and project complexity are both rated Medium – I. The principal mitigation measures include: (a) setting up a multi-sectoral project leading group, and agreeing upfront on the division of responsibility division amongst the different agencies and the coordination mechanism; (b) hiring competent technical and implementation support consultants, and providing targeted training for project staff; (c) enhancing ownership of beneficiary communities through continued public awareness raising activities, financial subsidy and affordable contributions, and establishing FEPAs to institutionalize communities’ self-management; and (d) provision of implementation support on technical aspects and on project management by qualified staff during Bank missions.

VI. APPRAISAL SUMMARY

A. Economic

22. The economic benefits and costs of the project are identified and quantified to the extent possible. The main benefits include cost savings associated with reduced application of chemical fertilizer and pesticides, increased productivity in agriculture and fisheries, and increase in the value of surrounding land. Indirect benefits include improvement in water quality, biodiversity protection in the Bohai and the Yellow Seas, and carbon emission reduction. The economic costs of the project are capital costs and O&M costs.

23. The economic internal rate of return (EIRR) of the project is 13.8%, while the EIRR of wetland construction and the treatment of pollution from rural areas and agricultural production are 14.5% and 12.3% respectively. The net present value (NPV) of the project at a discount rate of 8% is estimated at is RMB153.6 million. Sensitivity analysis conducted by increasing capital costs by 10% and decreasing benefits by 10%, as well as a combination of the two, yielded EIRR in excess of the discount rate of 8%.

B. Technical

24. The proposed project interventions are prioritized and selected based on sound pollution source survey and analysis. The project design is in line with the water pollution control and ecological city master plan of Dongying Municipality, and is well aligned with the government’s priority programs and local communities’ interests. Treatment of polluted water through constructed wetlands at the downstream end of Guangli River, combined with pollution reduction measures at source (rural villages and crop fields in the upper reaches), represents an integrated approach to water pollution management in a watershed.

25. The proposed free surface wetland (FSW) is considered a cost effective option, appropriate for the local conditions. Similarly, the on-site treatment of rural domestic wastewater
is cost-effective, because of the low capital investment, scattered nature of houses and availability of waste lands to dispose tail water, and ease of maintenance. Agricultural pollution control measures, such as accurate/balanced fertilizer application and agricultural runoff treatment, reflect some of the international best practices in the field. These interventions at the village level are expected to demonstrate effective reduction of pollutant and nutrient loads at source. The innovative community-based approach to non-point pollution management through FEPAs lays a solid foundation for replication of best management practices and for sustainability of project investments.

C. Financial Management

26. The GEF Grant and the Designated Accounts will be managed by Shandong Provincial Finance Bureau (SPFB). A financial management assessment has been conducted and mitigation actions to strengthen the project financial management capacity have been agreed with the implementing agencies. The assessment has concluded that with the implementation of these actions, the proposed financial management arrangements will satisfy the Bank’s minimum requirements under OP/BP 10.02. Annex 3 provides additional information on financial management.

D. Procurement

27. Procurement will be carried out by the Dongying Project Management Office (DPMO). The procurement capacity assessment of DPMO identified the principal risk as the procurement staff’s lack of experience under Bank-financed projects. This risk will be mitigated through appropriate setting of prior review thresholds, close coordination with PPMO and guidance from PPMO, targeted training and capacity building of DPMO staff, close supervision by PPMO and implementation support from the Bank. Further enhancement and refresher procurement training will be provided during implementation, and a procurement manual has been prepared to guide staff responsible for processing and approving procurement. More detailed information on procurement is provided in Annex 3.

E. Social

28. The project has positive social impacts in terms of reduced pollution levels, which will benefit farmers and fishermen, as well as rural and urban population in the Guangli river watershed. The project has a potential negative social impact from the construction of wetlands at Dongbalu, as it requires a change in land use for land owned land by the state-owned Shandong Shengli Petroleum Company. This land use change will entail relocation of seven small-sized enterprises that leased the land for their businesses, and will also affect some power lines and fish ponds. Based on an impact survey and inventory, as well as consultation with affected enterprises and persons, an abbreviated RAP sets forth appropriate compensation and restoration measures for the relocation impact and the enterprises’ business, in accordance with the relevant national laws and regulations, as well as the Bank OP4.12 requirements.
F. Environment

29. The project Environment Assessment (EA) confirms that project interventions will have positive environmental impacts in terms of pollution reduction. Negative impacts are associated mainly with construction activities, including dust emission, noise, spoil disposal, and short disruption to local community life. These impacts are expected to be minimal, site specific, reversible, and easily mitigatable. An EMP has been developed, laying out necessary mitigation measures, institutional arrangements, and a monitoring plan to avoid or minimize adverse impacts. Additional information on EMP implementation can be found in Annex 3.

30. The project will reduce the use of pesticides in the pilot villages by promoting the use of non-chemical approach such as insect luring lamps, and by providing farmers with related training and technical support. A Pest Management Plan (PMP) has been developed to help farmers reduce the use of chemical pesticides.

31. In accordance with Bank Safeguard policies and applicable national regulations, public consultations were conducted during the environmental assessment process, including a questionnaire survey and meetings with the project affected people and other stakeholders. Feedback received and concerns expressed have been taken into account in the EA process and project design. The safeguard documents were locally disclosed and uploaded to the Dongying Municipal Government website in May 2011, and were disclosed at the Bank InfoShop in June 2011. Updated safeguards documents were disclosed locally and in the InfoShop in August 2011.
## Annex 1: Results Framework and Monitoring

### CHINA: GEF HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT

### Results Framework

**PDO Indicators**

**PDO:** To demonstrate innovative and cost-effective water pollution control practices in Guangli river catchment of Dongying Municipality, contributing to reduction in pollution to the Bohai Sea.

<table>
<thead>
<tr>
<th>Items</th>
<th>Core? (Yes/ No)</th>
<th>Unit</th>
<th>Baseline</th>
<th>Target</th>
<th>Frequency</th>
<th>Data Sources</th>
<th>Responsible Agencies</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO-1: Project-induced reduction in pollutant/nutrient loads entering Bohai Sea from Guangli River Watershed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD</td>
<td>Yes</td>
<td>T/a</td>
<td>0</td>
<td>13.8</td>
<td>240.3</td>
<td>517.6</td>
<td>12/a</td>
<td>On-line concentration monitoring, by monitoring stations (MS)</td>
</tr>
<tr>
<td>BOD</td>
<td></td>
<td>T/a</td>
<td>0</td>
<td>0</td>
<td>92</td>
<td>215</td>
<td>12/a</td>
<td>Manual monitoring methods, by MS</td>
</tr>
<tr>
<td>NH₃-N</td>
<td></td>
<td>T/a</td>
<td>0</td>
<td>2.5</td>
<td>60</td>
<td>134</td>
<td>12/a</td>
<td>On-line concentration monitoring, by MS</td>
</tr>
<tr>
<td>TP</td>
<td></td>
<td>T/a</td>
<td>0</td>
<td>1.1</td>
<td>8.6</td>
<td>12.9</td>
<td>12/a</td>
<td>Manual monitoring methods, by MS</td>
</tr>
</tbody>
</table>

In 2011, the total amount of COD, BOD, NH₃-N, and TP that enter Bohai Sea from Guangli River will amount to 2,700 tons, 900 tons, 360 tons, and 45 tons, respectively. The annual average discharge from Guangli River to Bohai Sea is estimated to be 45 MCM. The amount of each pollutant discharged is calculated based on the flow and concentration obtained through real-time monitoring. The concentration of each pollutant is calculated based on the average of the concentrations measured by Dongying Environment Protection Stations every month. This indicator is the total amount of pollution reduction from (a) Dongbalu wetlands, (b) agricultural non-point pollutant reduction, and (c) pollution reduction due to the rural waste water treatment project.
PO-2: Reduction in pollutants/nutrients through constructed wetlands at Dongbalu.

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Unit</th>
<th>Annual Volume</th>
<th>COD</th>
<th>BOD</th>
<th>NH$_3$-N</th>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Construction and Sluice Gate Operation Optimization</td>
<td>COD</td>
<td>T/a</td>
<td>0</td>
<td>0</td>
<td>185</td>
<td>430</td>
<td>12/a</td>
</tr>
<tr>
<td></td>
<td>BOD</td>
<td>T/a</td>
<td>0</td>
<td>0</td>
<td>92</td>
<td>215</td>
<td>12/a</td>
</tr>
<tr>
<td></td>
<td>NH$_3$-N</td>
<td>T/a</td>
<td>0</td>
<td>0</td>
<td>55</td>
<td>129</td>
<td>12/a</td>
</tr>
<tr>
<td></td>
<td>TP</td>
<td>T/a</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>12</td>
<td>12/a</td>
</tr>
</tbody>
</table>

| Component B: Agriculture Pollution Control and Rural Waste Management | COD | T/a | 0 | 0 | 9.3 | 9.3 | 12/a |
| SS | T/a | 0 | 0 | 4.6 | 4.6 | 12/a |

Intermediate Output Indicators

After the construction of wetlands, water quality monitoring stations will be built at both the entrance to and the exit of wetlands. Based on pollutant concentrations measured at the exit of Dongbalu Wetlands and the volume of treated waste water at wetlands, the amount of treated pollutants in wetlands can be calculated, which is the reduction in pollution.

Manual monitoring methods, by MS Dongying PMO, Dongying EPB.

On-line concentration monitoring, by MS Dongying PMO, Dongying EPB.

Project Progress Report Dongying PMO, Dongying City Management Bureau.

Dongying PMO, Dongying EPB.

Dongying PMO, Dongying EPB.

Dongying PMO, Dongying EPB.
| IO-2.2: Livestock Waste pollution reduction in participating villages. | COD | Yes | T/a | 0 | 13.8 | 46.0 | 78.3 | 2/a | By monitoring and calculation method. Monitor physical progress semi-annually and calculate the annual quantity. | Dongying PMO, Dongying Agricultural Bureau. | Based on implementation pace of 30%, 40% and 30% in the first 3 years and calculated at mid-year. Assumes that 50% of livestock wastes are currently discharged into Guangli river. |
|---|---|---|---|---|---|---|---|---|---|---|
| TN | T/a | 0 | 0.131 | 0.437 | 0.743 | 2/a |
| TP | T/a | 0 | 1.038 | 3.460 | 5.883 | 2/a |
| IO-2.3: Agricultural pollution/nutrient load reduction in participating villages. | NH3-N | Yes | T/a | 0 | 2.5 | 5 | 5 | 12/a | By direct measurement and calculation. Measured once a month to calculate the annual quantity, which is the sum of monthly quantities. | Dongying PMO, Dongying Agricultural Bureau. |
| | | | | | | | | | |
| TP | T/a | 0 | 0.054 | 0.103 | 0.123 | 12/a | By direct measurement and calculation. Measured once a month to calculate the annual quantity, which is the sum of monthly quantities. | Dongying PMO, Dongying Agricultural Bureau. |
| IO-2.5: Number of farmers environmental protection associations operational. | --- | Yes | --- | 0 | 4 | 10 | --- | 2/a | Project Progress Report. | Dongying PMO |

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13
### Component C: Capacity Building and Policy Studies

<table>
<thead>
<tr>
<th>Component</th>
<th>Number of people trained</th>
<th>Description</th>
<th>Project Progress Report</th>
<th>Responsible PMOs</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IO-3.1.</td>
<td>No Persons 0 1500 3000 4500 2/a</td>
<td>Complete the outline</td>
<td>Project Progress Report</td>
<td>Dongying PMO</td>
<td>Accumulated amount, including project management, implementation and training for villagers in pilot villages.</td>
</tr>
<tr>
<td>IO-3.2.</td>
<td>No Description</td>
<td>Complete the outline</td>
<td>Project Progress Report</td>
<td>Provincial and municipal PMOs.</td>
<td></td>
</tr>
<tr>
<td>IO-3.3.</td>
<td>Yes Description</td>
<td>Develop a strategic plan</td>
<td>Project Progress Report, Bank Supervision Report.</td>
<td>Dongying PMO</td>
<td></td>
</tr>
</tbody>
</table>

T/a: Tonnes per annum
Annex 2: Detailed Project Description

CHINA: GEF HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT

1. **Background.** Four provinces in China, including Shandong, border the Bohai Sea which has lost part of its ecological service and productive functions owing to water pollution. A 2009 Government report indicates that over 12,000 km² of Bohai Sea are polluted, with concentrated belts of pollution in Bohai Gulf, Eastern Liaoning Province and Eastern Shandong Province (including Dongying City). In the summer of 2009, the total area of eutrophication in Bohai Sea reached 17,900 km² (or 23%) which covers part of the coast of Dongying. Monitoring reports of Dongying Oceanic Environment Monitoring and Forecasting Center indicate that the main pollutants entering the Bohai Sea from Guangli River are COD, NH₃-N and oil.

2. A survey by Dongying Environment Protection Bureau in April 2009 showed that the main pollution sources are: (a) municipal sewage, which contributes to about 60% of the COD loads into the river; (b) agricultural runoff (including irrigation return water) and rural wastewater and wastes (livestock and human) carrying pollutants and nutrients into the river, which account for around 30% of the total pollution loads; and (c) industrial wastewater accounts for some 8% of the COD discharged into the river. During the dry season, due to lack of sufficient water inflow from precipitation and other catchments, water environment further deteriorates in Guangli river, resulting in worse than Class V water quality.

3. Dongying Municipal Government has developed a water-city master plan to transform Guangli River into an ecological corridor in the 12th Five-Year Plan period. During the 11th Five-Year Plan period Dongying municipal government made a series of investments, ranging from sewage collection networks and treatment plants, storm-water pumping stations, sluice gates and automatic water quality monitoring stations. In early 2010, the government issued “Regulations on Water Pollution Prevention and Management in Guangli River Catchment of Dongying City”. Table below summarizes the wastewater treatment plants (WWTPs) that are either in operation or under preparation in the Guangli river catchment. These WWTPs would be able to treat all the urban wastewater in the medium term.

<table>
<thead>
<tr>
<th>WWTPs in the Catchment Area of Guangli River</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of WWTP</strong></td>
</tr>
<tr>
<td>Shengtuo</td>
</tr>
<tr>
<td>Dongying Economic Development Zone</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Shaying</td>
</tr>
<tr>
<td>Chengnan</td>
</tr>
</tbody>
</table>

4. The GEF project is designed in line with government priority programs to complement the above investments, by integrating rural and agricultural pollution reduction at source, and enhancement of in-stream water treatment and carrying capacity through constructed wetland and optimization of sluice gate operation, as well as capacity building and institutional development interventions. Project interventions have been selected based on in-depth
consultation with the farmer communities to serve the dual purpose of improving their living environment through production cost saving and reducing nutrient/pollution discharge into the Guangli River. The proposed Project has four Components (Parts), as described below.

5. **Component A. Wetland Construction and Sluice Gate Operation Optimization.**
   
   This component comprises three sub-components:

   (a) *Constructed Wetland at Dongbalu.* This sub-component will support construction of a wetland (1.8 km²) at Dongbalu, about 20 km downstream of the city center, and about 15 km above the estuary. The site is a wasteland, about 3,500 m from south to north and some 500 m from east to west, with a few structures. The constructed wetland will consist of water regulation structures (inlet control gate to control river water flow into the wetland and a pumping station to pump the effluent to replenish the surface water system), a bio-retention pond, and free surface wetlands (FSW). It will treat about 70,000 m³/day (2,900 m³/hr) between March and November, and 25,000 m³/day (1,040 m³/hr) between December and February, i.e., about 43% and 15% of total river flow (50 to 60 million m³/year) during the summer and the winter seasons respectively. The hydraulic loading is 0.04 m³/m²/day (summer) and 0.015 m³/m²/day (winter). The design parameters of effluent from the wetlands are: COD - 40 mg/L; BOD - 10 mg/L; ammonia - 2.0 mg/L; TP - 0.4 mg/L.

   The selected option of free surface wetland (FSW) will function as follows a bio-retention pond, installed with solar aerators acting as pre-treatment system to remove suspended solids (SS) and pollutants such as BOD and ammonia, and increase dissolved oxygen (DO) concentration in the influent to the wetland. The FSW will have native emergent and submergible plants, mostly cattail (*Typha angustifolia*), common reeds (*Phragmites karka*), and bulrush (*Scirpus mucronatus*). The FSW will have three stages, with the first two stages serving as main treatment cells, and the third stage giving a final quality polish. The dense wetland flora would provide habitats and resting sites for many bird species.

   Plants chosen for the wetland are salt-tolerant and can grow properly in a cold climate. To provide continuous flow, treated water will be circulated back to the Guangli river network with regulation. In this regard, the government has already built a small regulating reservoir in the upper reaches of Guangli River to store provide 15 MCM additional water to Guangli River annually.

   (b) *Sluice Gate Operation Optimization.* This sub-component will support upgrading an existing automatic gate control system, covering three sluice gates on the Guangli River, and the construction of one sluice gate each at the entrance and exit of the Dongbalu wetland. These facilities will regulate the river flow to increase the carrying capacity of the water body, and to adjust the water balance of the wetland.

   (c) *Resettlement Compensation (Cash Transfer).* This sub-component will provide funds to compensate the affected enterprises and persons. Seven small-sized enterprises and some attachments to the land (such as power lines and fish pounds) within Dongbalu wetlands area would be affected, and will be compensated through funds from Dongying Municipal Government, as per the agreed RAP.
6. **Component B. Agricultural Pollution Control and Rural Waste Management.** This component will introduce proven and cost-effective technologies and practices for environment-friendly agricultural pollution control and rural waste management to reduce point and non-point nutrient/pollutant loads in selected areas through three sub-components:

   (a) *Rural Waste Management.* This sub-component would support the construction of rural domestic wastewater treatment works for on-site treatment of domestic wastewater. Eight villages located in the upper reaches of the Guangli River Basin will be selected to participate in the program. Public sewers will be installed to collect wastewater from households, and the wastewater will flow by gravity into a centralized septic tank. Effluent from the tank will be pumped into wastewater stabilization ponds (WSPs) for treatment to meet the discharge standard for land applications (drainage field).

   In addition, this sub-component would also support the construction of about 1,500 manure storage tanks in three sizes (1m$^3$, 5m$^3$ and 10m$^3$) on livestock farms of participating villages, to meet different needs of the livestock farmers with non-registered farms. These tanks will store both solid and liquid livestock wastes for composting or temporary placement before they are disposed of, and will stop direct discharge of these wastes into public water bodies. In the case of registered livestock farmers, necessary actions, including awareness raising activities, training, and regulatory actions, would be taken to enforce the environmental regulations in the participating villages. FEPAs would be the primary force in participating villages to work with. A centralized composting facility would be constructed, which would include (i) a manure collecting system to collect livestock wastes from all animals in Shangzhuang and Huangdian villages, (ii) an aerobic composting workshop to treat collected manure and produce organic fertilizer, and (iii) a liquid distribution system to convey livestock liquid wastes for irrigation and land application.

   (b) *Agricultural Pollution Control.* This sub-component would address key agricultural pollution sources, including chemical fertilizer and agricultural chemicals, through the introduction of the following three key technologies in a number of participating villages:

   (i) **Comprehensive and balanced fertilizer application.** Soil samples of representative crop land would be collected, laboratory tested and analyzed three times during a crop season to determine the soil characteristics and base nutrient values. An expert panel consisting of municipal, provincial and national experts in soil, crop nutrient, plant protection and agricultural environment would study the soil test results and provide a comprehensive technical advisory package for fertilizer application in the form of a soil-crop-village specific report. The report would provide guidance on appropriate fertilizers, crop-specific and customized nutrient fertilization, accurate fertilizer application, alternative organic and biological fertilizers, quantity, timing and methodology, introduction of fine crop varieties, and crop planting management skills. The panel would visit participating villages from time to time to provide on-site technical support and training. About 2,278 ha of crop land in six participating villages would be supported by this technology.
(ii) Use of insect luring lamps. A total of 100 solar powered lamps will be used in crop field where insects and pests are active, with each lamp providing protection for about 2 to 3 ha of crop land.

(iii) Construction of buffer strips and eco-trenches. These technologies would be introduced in all six participating villages with a total of about 36.5 ha of buffer strips and associated eco-trenches.

(iv) Results monitoring and evaluation. Shandong Academy of Agricultural Sciences (SAAS) will provide monitoring and evaluation services for this sub-component, submit semi-annual monitoring reports to Dongying PMO, and carry out a long term results monitoring program over a period of at least five years.

(c) Establishment and Operation of FEPAs. A total of 22 FEPAs will be established (based on existing farmer community organizations where possible) to enable farmer communities to participate collectively in implementing project interventions, and to take responsibility for O&M, and replicating proven best practices in their respective villages. The sub-component would finance the expenditures for FEPA establishment (registration fee, workshops), member training, office furniture, equipment and supplies, and other small expenses incurred for operation of FEPAs. A minimum of eight FEPAs would be established for project activities under sub-components B(a) and B(b). Other FEPAs would be established for pollution reduction activities financed by non-project funds as a part of project replication. The procedures for FEPA establishment are described in the FEPA Development Plan to be carried out by Dongying Municipality, while the detailed responsibilities of the FEPA will be stipulated in the Implementation Agreement to be signed between the FEPA and DPMO. Project activities under Sub-components B(a) and B(b) can be started only after the Agreement has been signed.

7. Participating Village Selection Criteria. The Agricultural Pollution Control and Rural Waste Management Component will be implemented by FEPAs in selected villages. The participating villages will be selected based on the following criteria:

(a) An administrative village where (i) significant agricultural and rural pollution sources exist and the current pollution situation is representative of the project area; (ii) at least 80% of the villagers are interested in participating and are willing to contribute; (iii) an FEPA will be established based either on an existing farmer community organization or as a new organization; and (iv) a mini-PIP acceptable to Dongying PMO and the Bank being submitted;

(b) Priority is given to villages in the five rural townships of Dongying municipality;

(c) High potential for replication and no major change in land use is envisaged in the near term; and

(d) Alignment with government strategies and mainstream programs.
8. **Component C. Capacity Building and Policy Studies.** This component comprises three sub-components:

(a) *Education and Training Center.* The project would support the establishment of an Education and Training Center within Dongying Vocational College through financing the purchase of essential training facilities and development of training materials, funded entirely by government counterpart funds. Technical training would focus on pollution reduction through a constructed wetland, agricultural pollution control and livestock waste management.

(b) *Capacity Building.* A capacity building program will be developed by the Provincial and Dongying PMOs, which will include training, and domestic and international study tours necessary for all components, including capacity for efficient project management and implementation.

(c) *Policy Studies.* Policy studies include: (i) Agricultural Pollution Control and Rural Waste Management Strategy and Action Planning for Guangli River Watershed in Dongying, including an evaluation of project interventions under Component B, and formulation of a strategy and action plan for scaling up the pilot interventions over the entire catchment area of Guangli River; (ii) evaluation of the effectiveness of constructed wetlands in treatment of polluted water, based on an analysis of the Project monitoring results; and (iii) Huai River Basin-wide Replication Strategy for cost-effective water pollution control.

9. **Component D. Project Management and Implementation Support.** This component would finance consultant services, office equipment and incremental operating costs to ensure that adequate technical support is provided for timely and efficient project management. It comprise three sub-components:

(a) *Implementation Support.* This sub-component would finance technical assistance consultants to review the technical designs and tendering documents, as well as the construction quality of project investments. It will also support technical assistance to Dongying PMO and the PIUs in project implementation and management, including project reporting.

(b) *Monitoring and Evaluation.* This sub-component would support the monitoring and evaluation of Project results, through an M&E system to be set up by the Dongying PMO. Dongying PMO, the PIUs and the FEPAs will monitor project progress. Dongying Environmental Protection Bureau and the monitoring consultants will monitor water quality along the Guangli river and at constructed wetlands.

(c) *Project Management.* This will be implemented jointly by the Provincial PMO, Dongying PMO and PIUs. It includes: (i) supporting project institutions in project management activities, including day to day project administration, project programming and reporting, preparation and dissemination of project documentation, etc; (ii) facilitating World Bank supervision missions; and (iii) supporting collaboration with PEMSEA, the Bank’s partner responsible for the Regional Component of the Strategic Partnership.
10. The project would provide information and prepare Experience Notes for the GEF IW LEARN hub, set up a project website according to the guidelines from IW: LEARN, and participate in GEF’s information sharing activities, e.g., bi-annual IW LEARN conference, and PEMSEA’s triennial East Asia Seas Congress; and join the UNEP Best Practices and Success Stories Global Network, and report annually on the GEF 4 output indicators, using the IW Tracking Tool.
Annex 3: Implementation Arrangements

CHINA: GEF HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT

A. Project institutional and implementation arrangements

1. Project management organizations have three levels: provincial, municipal and community. These include Shandong Provincial Project Leading Group (PPLG), Huai River Basin Commission, Shandong Provincial PMO (PPMO), Dongying Municipal Project Leading Group (DPLG), and Dongying Project Management Office (DPMO). At the provincial level, the PPLG and the PPMO are shared with the HRBFMDI Project. The PPLG, headed by a vice-governor, is responsible for overall leadership and coordination, decisions on and oversight of policy matters. The PPMO, headed by a deputy director general of the Provincial Finance Department, will act as the chief coordination body for the project, assisting the PPLG in reviewing and making decisions on strategic and policy issues, and as the project’s focal point for communication with the Bank, GEF and central government. Huai River Basin Commission, through the Central Project Management Office (CPMO) of the HRBFMDI Project, will participate in the PPLG and provide technical advice and support to project implementation, particularly on the preparation and dissemination of the replication strategy, and the design and implementation of M&E activities under the project.

2. At the municipal level, DPLG will lead project implementation, reporting to the Dongying Municipal Government and the PPLG. DPMO, hosted by the Dongying Water Resources Bureau, is comprised of senior officials and staff from the Bureaus of Finance, Development and Reform, General Administration, Water Resources, Agriculture, City Management, Environmental Protection, Marine and Fishery, Forestry, Urban Planning, Land Resources, Housing Construction and Meteorology. Under the leadership of both DPLG and PPMO, it will coordinate among different line agencies and project implementing agencies or PIUs, organize, guide and monitor project implementation, and assist in resolving implementation issues.

3. Project implementing agencies include Dongying City Management Bureau (CMB), Dongying Agriculture Bureau (DAB), and Dongying Water Resources Bureau (WRB). CMB will implement sub-components A1: constructed wetland at Dongbalu and A3: resettlement compensation. DAB will implement component B, including B1: rural waste management, B2: agricultural pollution control, B3: establishment and operation of FEPAs, as well as sub-component C1: education and training center. WRB will implement and operate sub-component A2: sluice gate operation optimization. DPMO will implement sub-components C2 and C3, and Component D. CMB will be responsible for wetland operation, and the FEPAs for rural waste management and agricultural pollution control facilities, under guidance of DAB. Each of the project implementing agencies will set up a project implementation unit (PIU) to implement their respective project activities. Detailed responsibilities of the different project organizations are described in the project implementation plan (PIP). The project management structure is shown in Figure 3.1.
Figure 3.1: Institutional Arrangements for Project Implementation

MOF

World Bank/GEF

Provincial Project Leading Group

Central Project Management Office of HFMDIP

Guidance

Dongying Project Leading Group

Shandong Provincial PMO

Dongying PMO

Dongying City Management Bureau

Dongying Agriculture Bureau

Dongying Water Resources Bureau

A1: Constructed Wetland
A3: Resettlement Compensation
B2: Agricultural Pollution Control
B1: Rural Waste Management
B3: Establishment and operation of FEPAs
C1: Education and Training Center
C2: Capacity Building
D: Project Management

A2: Sluice Gate operation optimization
C3: Policy Studies
4. At the Community (Village) Level, FEPAs will be established in each of the participating villages and will function as long-term community self-management institutions for village-level environmental protection, with support and guidance from Dongying Agricultural Bureau and Environmental Protection Bureau, and local governments. The first FEPA was established in Huangdian Village prior to Grant negotiations. The DAB PIU and FEPAs will be responsible for implementing the agreed FEPA Development Plan.

B. Financial Management, Disbursements and Procurement

Financial Management

5. The financial management capacity assessment identified the principal risks as lack of previous experience with Bank financed projects on the part of the finance staff in the DPMO and the PIUs. The financial management risk pre and post-mitigation has been assessed as “modest”. Mitigation measures agreed include: (a) PPMO will work with SPFB to provide necessary training to help project financial staff get familiar with World Bank requirements and procedures on financial management and disbursement; and (b) preparation of a financial management manual (FMM) to uniformly align project financial management policies among various implementing agencies. The FMM will be distributed to all relevant finance staff before the project starts.

6. Budgeting. The DPMO will prepare an annual implementation budget. The project will conduct variance analysis at least twice a year to ensure that project activities can be implemented as planned.

7. Funds flow. SPFB will be directly responsible for the management, maintenance and reconciliation of the DA activities. Supporting documents required for Bank disbursements will be prepared and submitted by the respective PIUs through the MPMO, municipal finance bureau and the PPMO for verification and consolidation, before sending to the provincial finance bureau for further disbursement processing. Reimbursed funds will be delivered from the DA to the PIU through the municipal finance bureau. Delivery of counterpart funds will follow domestic procedures.

8. Accounting and financial reporting. “Accounting Regulations for World Bank Financed Trust Funds” issued by MOF will be used for project accounting and financial reporting. The standard set of project financial statements has been agreed between the Bank and MOF. Each PIU will individually decide whether they would utilize a computerized financial management information system or manually record and maintain project accounting books. Original supporting documents for project activities will be retained by each PIU. Each PIU will prepare the financial statements on its implemented components, which will then be used by the DPMO and SPFB for preparing consolidated project financial statements submitted to the Bank for review and comment on a regular basis. The unaudited semi-annual consolidated project financial statements (in accordance with the aforementioned format) will be furnished to the
Bank as part of the Progress Report within forty-five days after the end of each semester, in form and substance satisfactory to the Bank.

9. **Internal control.** The related accounting policy, procedures and regulations have been issued by MOF and the FMM will guide the financial management and disbursement requirements among PMOs and PIUs.

10. **Audit.** Shandong Provincial Audit Office (SPAO) has been identified as the auditor for the project. Annual audit reports will be issued by SPAO and will be subject to reviews by the China National Audit Office (CNAO). The annual audit report of the project financial statements will be due to the Bank within six months after the end of each calendar year.

**Disbursement**

11. Four disbursement methods will be available for the project: advance, reimbursement, direct payment and special commitment. Supporting documents required for Bank disbursement under different disbursement methods are documented in the Disbursement Letter. One designated account (DA) denominated in US dollars will be established at a commercial bank acceptable to the Bank and will be managed by SPFB. The ceiling of DA for the grant is documented in the Disbursement Letter.

12. The agreed disbursement arrangement for the project is summarized below. **Retroactive financing** of US$500,000 from the GEF Grant may be availed to support priority activities implemented on or after August 1, 2011 and within 12 months prior to the Grant signing date.

### GEF Grant Disbursement Arrangement

<table>
<thead>
<tr>
<th>Category*</th>
<th>Amount of the Grant Allocated (US$, inclusive of Taxes)</th>
<th>Percentage of Expenditures to be Financed</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Works for Part A(a) of the Project</td>
<td>1,843,000</td>
<td>100%</td>
</tr>
<tr>
<td>(2) Works, goods, training, and consultant services for Part B(a), (b) and (c) of the Project</td>
<td>1,211,000</td>
<td>100%</td>
</tr>
<tr>
<td>(3) Subsidy Payments</td>
<td>489,000</td>
<td>100%</td>
</tr>
<tr>
<td>(4) FEPA Operating Costs</td>
<td>139,000</td>
<td>100%</td>
</tr>
<tr>
<td>(5) Training and consultant services for Part C(b) and (c) of the Project</td>
<td>1,011,000</td>
<td>100%</td>
</tr>
<tr>
<td>(6) Consultants services for Part D (a) and (b) of the Project</td>
<td>257,000</td>
<td>100%</td>
</tr>
<tr>
<td>(7) Incremental Operating Costs for Part D(c) of the Project</td>
<td>50,000</td>
<td>100%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5,000,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
13. **Disbursement for Unit-Cost Based Subsidy.** Financial subsidy will be provided under the project through FEPA's to participating farmers at 30 percent of average fertilizer cost for the main crops in the participating villages, i.e., cotton, wheat, corn and paddy rice, and will be disbursed based on average fertilizer costs per ha. The table below shows the disbursement arrangement for unit-cost based subsidy.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Unit Average Fertilizer Cost (US$/Ha)</th>
<th>Disbursement in % of Unit Cost</th>
<th>Disbursement in US$ per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton</td>
<td>600</td>
<td>30%</td>
<td>180</td>
</tr>
<tr>
<td>Wheat</td>
<td>508</td>
<td>30%</td>
<td>152</td>
</tr>
<tr>
<td>Corn</td>
<td>415</td>
<td>30%</td>
<td>125</td>
</tr>
<tr>
<td>Paddy Rice</td>
<td>600</td>
<td>30%</td>
<td>180</td>
</tr>
</tbody>
</table>

14. Shandong shall: (a) prior to authorizing disbursements of any Subsidy Payment for the respective FEPA verify that the crop has been planted in accordance with requirements satisfactory to the Bank; and (b) not later than June 30, 2013 review the acceptability of the Unit Costs being financed under Subsidy Payments, propose to the World Bank any modifications as may be required for the financing any Subsidy Payments, and modify the amount financed as Subsidy Payments as approved by the World Bank.

**Procurement**

15. The DPMO will be responsible for the procurement of all project contracts. The procurement capacity and risk assessment identified the following principal risk: procurement staff in the DPMO does not have experience with Bank financed projects. The overall risk for procurement is considered “Substantial”. Mitigation measures include: (a) procurement training has been provided during project preparation, and procurement staff will be further trained before and during project implementation; and (b) a procurement manual (PM) has been prepared and will be issued to standardize project procurement procedures and provide guidance to project staff responsible for processing and approving procurement. Procurement for the proposed project would be carried out in accordance with the World Bank’s “Guidelines: Procurement under IBRD Loans and IDA Credits” dated May 2004 and revised October 2006 and May 2010; and “Guidelines: Selection and Employment of Consultants by World Bank Borrowers” dated May 2004 and revised on October 2006 and May 2010.

16. **Procurement of Works.** Works procured under this project will include construction of wetland and agricultural pollution control facilities, rural wastewater treatment facilities and livestock manure storage tank and composting plant, etc. Procurement will be based on the National MBD (Model Bidding Documents) agreed with or satisfactory to the Bank for all National Competitive Bidding.
17. **Procurement of Goods.** Goods procured under this project will include wetland operational and management equipment and office equipment, moth-killing lamp, etc. Procurement will be carried out using National MBD agreed with or satisfactory to the Bank for all National Competitive Bidding.

18. **Procedures for Community Participation in Procurement.** Construction of eco-trenches and buffer strips in crop fields under Part B(b) (i) of the Project would be procured through community participation. Dongying Agriculture Bureau PIU will be responsible for oversight of the procurement. The following procurement procedures will be applicable:

(a) *Local Shopping for Procurement of Works.* Quotations will be obtained through the invitation of several (at least three) qualified contractors to submit quotations on the basis of simplified quotation requests. Quotations should be opened at the same time and to the extent possible in the presence of community members. As a general rule, the contractor who offers the lowest price and also can meet technical requirements should be awarded the contract. The threshold for local shopping for procurement of civil works is below the equivalent of US$100,000 per contract.

(b) *Community Force Account.* Communities may mobilize their own labor and use their own equipment to carry out the works. Works to be constructed under force account should have a detailed description, including a set of technical specifications. A supervision team will carry out check of quality and quantities. Payment would be made based on pre-estimated unit costs for works against completed works as certified by the communities.

19. **Selection of Consultants** includes consultant services for: (a) monitoring and evaluation for agricultural pollution control; (b) monitoring and evaluation for rural waste management; (c) technical support for buffer strip and eco-trench; (d) comprehensive & balanced fertilizer application by a technical expert panel; (e) FEPA establishment and operation; (f) evaluation study of the effectiveness of constructed wetlands in treatment of Guangli river water; (g) evaluation study and action planning for Agricultural Pollution Control and Rural Waste Management in Guangli River Catchment; (h) development of Huai River Basin-wide Replication Strategy for cost-effective water pollution control; and (i) project implementation support. Consultant for results monitoring and evaluation of agricultural pollution control activities may be selected on a single-source basis, with due justification and the Bank’s prior agreement.

20. **Procurement Plan.** A Procurement Plan for the project, acceptable to the Bank, has been prepared by DPMO. It will also be available in the Project’s database and in the Bank’s external website. The Procurement Plan will be updated annually, or as required, to reflect project implementation needs and improvements in institutional capacity.
21. **Frequency of Procurement Supervision.** In addition to the prior review supervision to be carried out from the Bank offices, the Bank will carry out post review of procurement actions every twelve months. The post review sampling ratio will be one out of five contracts.

22. **Prior-Review Thresholds.** The prior review thresholds are specified in the Procurement Plan and indicated in the table below.

### Procurement Thresholds

<table>
<thead>
<tr>
<th></th>
<th>Prior Review Thresholds (US$ million)</th>
<th>Procurement/Selection Method Thresholds (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ICB</td>
<td>NCB</td>
</tr>
<tr>
<td><strong>Works</strong></td>
<td>All ICB; All contracts ≥ 5; the first contract for NCB and all direct contracting.</td>
<td>≥20</td>
</tr>
<tr>
<td><strong>Goods</strong></td>
<td>All ICB; All contracts ≥ 0.3; the first contract for NCB and all direct contracting.</td>
<td>≥1.0</td>
</tr>
<tr>
<td><strong>Community Participation</strong></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Consulting Services</strong></td>
<td>≥ 0.1 for firms, ≥ 0.05 for individuals. SSS: all</td>
<td>---</td>
</tr>
</tbody>
</table>

--- No Threshold

23. The following is a list of consulting contracts subject to international competition under the project. No ICB goods or works contracts are envisaged under the Grant.

### QCBS Consulting Packages

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description of Assignment</th>
<th>Selection Method</th>
<th>Review by Bank (Prior / Post)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-1-C-1</td>
<td>Consultant service for project implementation support (design and tendering document review, construction quality oversight, project reporting and completion report)</td>
<td>QCBS</td>
<td>Prior</td>
</tr>
</tbody>
</table>

27
C. Environmental and Social

24. Three Bank safeguards policies which are triggered by the proposed project: Environmental Assessment (OP/BP 4.01); Pest Management (OP/BP 4.09); and Involuntary Resettlement (OP/BP 4.12).

25. **Environmental Assessment (OP/BP 4.01).** The Environment Assessment (EA) for the project indicates that the project as a whole has positive environmental impacts with benefits well exceeding negative impacts. The project will introduce a set of environmentally friendly technologies and best practices in the participating villages, which include: (a) use of green/organic fertilizers, comprehensive and balanced fertilizer application for agricultural production; (b) managing agricultural run-off through buffer strips and eco-trenches; and (c) collection and treatment of livestock wastes and rural domestic wastewater. These interventions will contribute to the reduction of fertilizer use and nutrient and pollutant loads discharged into the Guangli River. Constructed wetlands will further reduce pollutant and nutrient loads by removal of pollutants and nutrients from polluted water before it is discharged to the Bohai Sea. Farmer Environmental Protection Associations established at the community level, will enhance sustainability of project interventions.

26. The principal potential adverse impact are mainly associated with construction, including dust emission, noise, spoil disposal, and brief disruption to local communities. Negative impacts are expected to be minimal, site specific, reversible, and can be easily mitigated. An EMP lays out necessary mitigation measures, institutional arrangements, and a monitoring plan to minimize adverse impacts associated with the project. The EMP forms a part of the implementation plan and its implementation will be monitored closely.

27. **Pest Management (OP4.09).** The project will reduce the use of pesticides in the project areas by promoting non-chemical pest control alternatives such as insect luring lamps, and by providing farmers with training and awareness raising activities. It will neither finance any pesticides nor pesticide application equipment. A Pest Management Plan (PMP) has been developed and will be implemented to guide farmers in reducing reliance on chemical pesticides.

28. **Involuntary Resettlement (OP/BP 4.12).** Project Component A includes construction of a wetland (with an area of about 169 ha.) on the state-owned land (mostly wasteland) which was previously regulated by the state-owned Shandong Shengli Petroleum Company. Dongying Municipal Government has paid the Company for land use transfer. Part of the land was contracted to Company staff individually to build fish ponds, which were mostly abandoned during winter. In addition, seven small enterprises leased 15 ha on this land, and need to be relocated. In view of the potential housing demolition and relocation of enterprises, as well as the impact of the closure of the fish ponds, Dongying PMO has prepared an abbreviated RAP, which is in compliance with Bank requirements as well as applicable national laws and government regulations.
29. The abbreviated RAP inventories and analyzes the land transfer and relocation impacts, and sets forth compensation measures for building demolition, enterprise relocation and loss of attachments to the land (power lines, fish ponds, abandoned oil wells, etc.). Five of the seven affected enterprises will be re-established in new places, owned and leased by the Shengli Petroleum Company, and the other two will receive cash compensation. RMB39.30 million has been included in the project budget for the resettlement program.

30. Stakeholder Consultations and Disclosure. In accordance with World Bank requirements and applicable national regulations, public consultations were conducted during the environmental assessment, the preparation of the PMP and the abbreviated RAP, including questionnaire survey, meetings with the project affected people and other stakeholders. Feedback received and concerns expressed have been taken into account in the preparation of the safeguard documents and in project design. The safeguard documents were locally disclosed and uploaded to the of Dongying Municipal Government website in June and August 2011 respectively, and sent to the Bank Info Shop for disclosure in June 2011. The updated EA and EMP were re-disclosed in August 2011.

D. Monitoring and Evaluation (M&E)

31. Annex 1 shows the key performance indicators and intermediate output indicators for tracking project progress and results. Dongying PMO will set up and maintain the M&E system and will consolidate and report results regularly, with assistance from implementation support consultants. Monitoring and data collection for wetland inflow and outflow water quality, water quality monitoring at Minghai Sluice Gate and along Guangli River will be the responsibility of Dongying Environmental Protection Bureau (Monitoring Division). Monitoring and data collection for the agricultural pollution reduction and rural waste management component under the Project will be undertaken by the SAAS (agricultural pollution control sub-component) and other consultants under Dongying Agriculture Bureau PIU. Monitoring of safeguards policy compliance will be carried out by consultants hired by Dongying PMO. Dongying municipal government is committed to long-term monitoring beyond the completion of the project. The scope, approach and activities for monitoring and evaluation, relevant indicators and M&E arrangements are detailed in a Project Implementation Plan prepared for guidance of staff.
### Annex 4. Operational Risk Assessment Framework (ORAF)

**CHINA: GEF HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT**

#### Project Development Objective(s)

The project development objectives and global environment objectives are to demonstrate innovative and cost-effective water pollution control practices in Guangli river catchment of Dongying Municipality, contributing to reduction in pollution to the Bohai Sea.

<table>
<thead>
<tr>
<th>PDO Level Results Indicators:</th>
<th>1. Project-induced reduction in pollutant and nutrient loads entering Bohai Sea from Guangli River Watershed.</th>
<th>2. Reduction in pollutants and nutrients through the constructed wetlands at Dongbalu.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Risk Rating</th>
<th>Risk Description</th>
<th>Proposed Mitigation Measure</th>
</tr>
</thead>
</table>
| 1. Project Stakeholder Risks | Medium-L | Ownership of the project by local governments (district and township) and communities in the pilot areas. | a. Pilot and intervention design based on close consultation with local governments and communities.  
b. Enhancing ownership of beneficiary communities through continued public awareness raising activities, grant incentives and affordable contributions.  
c. Establishing and empowering FEPAs to institutionalize communities’ self-management. |
| 1.1 Stakeholder | Medium-I | Inadequate technical and management capacity of DPMO and PIUs as well as lack of cross-sectoral coordination are the main risks at implementing agency level. | Mitigation measures include hiring of competent technical and implementation support consultants, targeted training for project staff during preparation and implementation on key project aspects, establishing multi-sectoral project leading group, and clear responsibility division and coordination mechanism agreed upon upfront |

| 3. Implementing Agency Risks (including FM & PR Risks) | Medium-I | | |
| 4. Project Risks | Medium-I | The integrated design and community-based approach add complexity to project design and implementation. | a. The project will adopt innovative approach but proven technologies and management practices.  
b. DPMO will hire experienced consultants to provide technical assistance during implementation and train the operators of project facilities before completion.  
c. Bank team will engage specialized international experts to enhance project quality. |
| 4.1 Design | Medium-L | The resettlement action plan (RAP) and environmental mitigation and management plan (EMP) are not properly implemented, leading to unsatisfactory results in rehabilitating livelihoods of affected persons and/or residual environmental impacts. | a. Training on Bank resettlement and environmental assessment policies and RAP/EMP implementation monitoring will be provided before project start.  
b. A qualified organization will be engaged to advise Dongying City Management Bureau team on RAP implementation.  
c. Construction related environmental mitigation measures will be included in bidding and contract documents. |
| 4.2 Social & Environmental | Medium-L | Weak contract management and/or inadequate M&E may lead to poor construction quality and project performance. O&M arrangements for project facilities may not be in place for sustainable use. | a. Construction supervision engineer will be appointed to supervise work quality for each sub-components of Component A and B.  
b. M&E consultants will be recruited at the beginning of implementation to track project progress and performance.  
c. Agreement will be signed with FEPAs and/or concerned beneficiaries before investment starts on rural and agricultural pollution reduction.  
d. Concerned line agencies will make arrangements to take over O&M responsibilities of respective project facilities. |
<p>| 4.3 Delivery Quality |</p>
<table>
<thead>
<tr>
<th>Overall Risk Rating: Preparation</th>
<th>Overall Risk Rating: Implementation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium-I</td>
<td>Medium-I</td>
<td>The overall rating for preparation and implementation is medium-I. Dongying government is highly committed to the project as it fits in well with the Market Plan for Dongying Water City. Mitigation measures for risks identified have been discussed and agreed with the client; a detailed PIP and a FEPA development plan have been prepared; counterpart funding commitment has been provided; training of project staff on safeguards and fiduciary aspects has been carried out; and international TA team will be hired to support project implementation. The Bank will monitor project implementation closely through regular implementation support missions and through on-demand support from the Beijing office.</td>
</tr>
</tbody>
</table>

Medium-L: High Likelihood – Low Impact  
Medium-I: Low Likelihood – High Impact
Annex 5: Implementation Support Plan

CHINA: GEF HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT

1. The implementation support plan has been developed based on the project risk profile, with focus on the main risks identified. These risks include implementation agencies’ capacity on technical aspects, procurement, financial management, safeguards management and results monitoring, cross-sector coordination, and main stakeholders’ (beneficiaries’) ownership in the pilot areas. The key principle underpinning this plan is to make it flexible and efficient as much as possible.

2. Technical Guidance and Results Monitoring. The Bank team technical specialists (wetlands, rural waste/water, and agricultural nutrient/pollution management) will review and provide advice to the government team and consultants on technical designs, implementation and results monitoring & evaluation, institutional development and policy studies, as well as on development of the replication plan. The Bank team will also facilitate the organization of important exchange visits for project personnel to learn from other pertinent pollution reduction projects and practices.

3. Procurement. Procurement implementation support will include: (a) facilitation in targeted training, at different stages, to procurement staff in Dongying PMO and implementing agencies; (b) reviewing procurement documents and providing timely feedback on the results of prior reviews and post review to the project management offices concerned; (c) providing detailed guidance on the Bank’s Procurement Guidelines to project procurement staff; and (d) monitoring procurement progress against the agreed Procurement Plan.

4. Financial Management. Financial management staff will join supervision missions and undertake desk reviews periodically, to provide technical support to project implementing agencies and to resolve related issues in a timely manner. The review and monitoring will include evaluation of the adequacy of the financial management arrangements in place, including accounting, auditing, budgeting, counterpart fund provision, financial reporting, internal control and funds flow. Financial management staff will also follow up on actions agreed during project appraisal and negotiations, as well as on observations derived from reviews of audit reports, management letters and IFRs.

5. Environmental and Social Safeguards. The Bank team will supervise the implementation of the agreed Environmental Management Plan (EMP) and Resettlement Action Plan (RAP), and provide guidance to implementing agencies and management offices concerned to address any outstanding issues. Training is required on environmental monitoring and reporting, and on implementation and monitoring of the RAP. In addition, guidance will be provided by the social development specialist to support the establishment and strengthening of FEPAs in the participating villages.
6. Most of the Bank team members are based in the China country office in Beijing to ensure rapid and effective response to the project agencies’ need for implementation support. Formal supervision and field visits covering all aspects of project implementation will be carried out semi-annually; in addition, there will be additional field visits by specialists, enhanced with needs-based visits by small groups. Estimated inputs from the various specialists during the different stages of project implementation are outlined below.

<table>
<thead>
<tr>
<th>Time</th>
<th>Focus</th>
<th>Resource Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>First twelve months</td>
<td>Procurement review, supervision and training</td>
<td>Procurement specialist(s) 1.5 SWs</td>
</tr>
<tr>
<td></td>
<td>FM and disbursement training and FM supervision</td>
<td>FM specialist 1.5 SWs</td>
</tr>
<tr>
<td></td>
<td>Resettlement and FEPA development</td>
<td>Social development specialist 3 SWs</td>
</tr>
<tr>
<td></td>
<td>Environmental training and supervision</td>
<td>Environmental specialist 1.5 SWs</td>
</tr>
<tr>
<td></td>
<td>Technical review and support</td>
<td>Wetlands/Rural/Agricultural pollution control specialists 6 SWs</td>
</tr>
<tr>
<td></td>
<td>Team leadership</td>
<td>TTL 4 SWs</td>
</tr>
<tr>
<td>13-42 months</td>
<td>Technical support for project implementation (Wetlands/Rural &amp; Agricultural pollution control)</td>
<td>Wetlands/Rural/Agricultural Pollution Control specialists 11 SWs</td>
</tr>
<tr>
<td></td>
<td>Environment and social safeguards (&amp; FEPAs) monitoring &amp; reporting</td>
<td>Environmental specialist(s) 3.5 SWs Social development specialist 6 SWs</td>
</tr>
<tr>
<td></td>
<td>Financial management &amp;disbursement and procurement review and support</td>
<td>FM specialist 4 SWs Procurement specialist 3.5 SWs</td>
</tr>
<tr>
<td></td>
<td>Monitoring &amp; Evaluation/Institutional</td>
<td>M&amp;E specialist 4 SWs</td>
</tr>
<tr>
<td></td>
<td>Task leadership</td>
<td>TTL 6 SWs</td>
</tr>
</tbody>
</table>

*Note: SW – Staff Week*

7. The skill mix of implementation support team required is summarized below.

<table>
<thead>
<tr>
<th>Skills Needed</th>
<th>Number of Staff Week</th>
<th>Number of Trip</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTL/Water Resources Management Specialist(s)</td>
<td>6 SWs annually</td>
<td>Two trips</td>
<td>Bank staff</td>
</tr>
<tr>
<td>Rural waste/Agricultural NPS pollution control Specialists</td>
<td>4 SWs annually</td>
<td>Two trips</td>
<td>Team consultants</td>
</tr>
<tr>
<td>Constructed Wetlands /Rural Wastewater Specialist(s)</td>
<td>3-4 SWs annually</td>
<td>Two trips</td>
<td>Team consultants</td>
</tr>
<tr>
<td>Procurement specialist</td>
<td>1.5 SWs annually</td>
<td>Two trips</td>
<td>Country office based</td>
</tr>
<tr>
<td>Social development specialist</td>
<td>2-3 SWs annually</td>
<td>Two trips</td>
<td>Country office based</td>
</tr>
<tr>
<td>Environment specialist</td>
<td>1.5 SWs annually</td>
<td>One-Two trips</td>
<td>Country office based</td>
</tr>
<tr>
<td>Financial management specialist</td>
<td>2 SWs annually</td>
<td>Two trips</td>
<td>Country office based</td>
</tr>
</tbody>
</table>
Annex 6: Team Composition

CHINA: GEF HUAI RIVER BASIN MARINE POLLUTION REDUCTION PROJECT

The World Bank staff and consultants who worked on the project are listed below:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xiaokai Li</td>
<td>TTL, Senior Water Resources Management Specialist</td>
<td>EASIN</td>
</tr>
<tr>
<td>Ximing Zhang</td>
<td>CO-TTL, Senior Water Resources Specialist</td>
<td>EASCS</td>
</tr>
<tr>
<td>Joe Zhao</td>
<td>Wastewater Management/Constructed Wetlands</td>
<td>Consultant</td>
</tr>
<tr>
<td>Weiguou Zhou</td>
<td>Rural Wastewater &amp; Agricultural Pollution Control Consultant</td>
<td></td>
</tr>
<tr>
<td>Peter Haase</td>
<td>Constructed Wetland/Wastewater Management Consultant</td>
<td></td>
</tr>
<tr>
<td>Zongcheng Lin</td>
<td>Senior Anthropologist</td>
<td>EASCS</td>
</tr>
<tr>
<td>Feng Ji</td>
<td>Environmental Specialist</td>
<td>EASCS</td>
</tr>
<tr>
<td>Jian Xie</td>
<td>Senior Environmental Economist</td>
<td>EASER</td>
</tr>
<tr>
<td>Yi Dong</td>
<td>Senior Financial Management Specialist</td>
<td>EAPFM</td>
</tr>
<tr>
<td>Yuan Wang</td>
<td>Procurement Specialist</td>
<td>EAPPR</td>
</tr>
<tr>
<td>Marta Molares-Halberg</td>
<td>Lead Counsel</td>
<td>LEGES</td>
</tr>
<tr>
<td>Robert O’Leary</td>
<td>Senior Finance Officer</td>
<td>CTRFC</td>
</tr>
<tr>
<td>Tomoko Kato</td>
<td>Operations Officer</td>
<td>EASIN</td>
</tr>
<tr>
<td>Vellet E. Fernandes</td>
<td>Program Assistant</td>
<td>EASIN</td>
</tr>
<tr>
<td>Hongwei Zhao/Dan Xie</td>
<td>Program Assistant/Team Assistant</td>
<td>EACCF</td>
</tr>
</tbody>
</table>

**Peer reviewers**

- Alexander Danilenko   Sr. Water & Sanitation Specialist   TWIWP
- Caroline Van Den Berg  Lead Water & Sanitation, Specialist MNSWA
- Rita Cessti            Sr. Rural Development Specialist OPCQC
EXISTING INFRASTRUCTURE:

- **Huang (Yellow) He**
- **Heze**
- **Jining**
- **Laiwu**
- **Laizhou Bay**
- **Qingdao**
- **Tianjin**
- **Weihai**
- **Wenzhou**
- **Weifang**
- **Yantai**
- **Zibo**
- **Zhangjiakou**

PROJECT ACTIVITIES:

- **Training Center**
- **Shengtou WWTP**
- **Construction of Wetlands**
- **Sluice Gate Operation Optimization—To Be Constructed**
- **Agricultural and Rural Pollution Reduction Pilot Area**

EXISTING INFRASTRUCTURE:

- **Huanghe Road Water System—Existing**
- **Wastewater Treatment Plant—Planned**
- **Shaotou Reservoir**
- **Expressways**
- **Main Roads**
- **Urban Area**

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For detail, see map below.