



# REQUEST FOR CEO ENDORSEMENT/APPROVAL

PROJECT TYPE: FULL-SIZED PROJECT

THE GEF TRUST FUND

Submission Date: November 15, 2011

## PART I: PROJECT INFORMATION

GEFSEC PROJECT ID:4092

GEF AGENCY PROJECT ID: 108592

COUNTRY(IES): People's Republic of China

PROJECT TITLE: Huai River Basin Marine Pollution Reduction

GEF AGENCY(IES): World Bank

OTHER EXECUTING PARTNER(S): Shandong Provincial Government

GEF FOCAL AREA(S): International Waters

GEF-4 STRATEGIC PROGRAM(S): IW-SP2

NAME OF PARENT PROGRAM/UMBRELLA PROJECT: GEF/WB Strategic Partnership Investment Fund for Pollution Reduction in the Large Marine Ecosystems of East Asia.

Expected Calendar (mm/dd/yy)	
Milestones	Dates
Work Program (for FSPs only)	03/2010
Agency Approval date	11/2011
Implementation Start	01/2012
Mid-term Evaluation (if planned)	12/2013
Project Closing Date	12/31/2015

### A. PROJECT FRAMEWORK (Expand table as necessary)

Project Objective: To demonstrate innovative and effective water pollution control practices in Guangli river catchment of Dongying Municipality, contributing to pollution reduction in the Bohai Sea.								
Project Components	Indicate whether Investment, TA, or STA <sup>2</sup>	Expected Outcomes	Expected Outputs	GEF Financing <sup>1</sup>		Co-Financing <sup>1</sup>		Total (\$) c=a+ b
				(\$ a)	%	(\$ b)	%	
<b>A. Wetland Construction and Sluice Gate Operation Optimization</b>	Investment	(a) nutrient and pollution reduced from the constructed wetland;	(a) reduction of 430 ton of COD, 215 ton of BOD, 129 ton of NH <sub>3</sub> -H, 12 ton of TP in 2014 from the constructed wetland;	<b>1,843,000</b>	<b>6.3</b>	<b>27,253,000</b>	<b>93.7</b>	<b>29,096,000</b>
A1. Constructed Wetland at Dongbalu		(b) improved sluice gate operation;	(b) upgraded automatic control system in operation for five sluice gates;	1,843,000	8.6	19,469,000	91.4	21,312,000
A2. Sluice Gate Operation Optimization				0	0	992,000	100.0	992,000
A3. Resettlement Compensation				0	0	6,792,000	100.0	6,792,000
<b>B. Agricultural Pollution Control and Rural Waste Management</b>	Investment, TA, STA	(a) agricultural non-point pollution reduced;	(a) reduction of 9.3 ton of COD and 4.6 ton of SS in 2014 from rural waste management facilities;	<b>1,839,000</b>	<b>40.1</b>	<b>2,752,000</b>	<b>59.9</b>	<b>4,591,000</b>
B1. Rural Waste Management		(b) reduced pollution from rural waste to Guangli river ;	(b) rural waste water treatment facilities constructed in 8 villages;	857,000	38.0	1,398,000	62.0	2,255,000
B2. Agricultural Pollution Control				692,000	34.5	1,311,000	65.5	2,003,000
B3. Establishment and Operation of FEPAs				290,000	87.0	43,000	13.0	333,000

		management	<p>(c) reduction of 78.3 ton of COD; 0.743 ton of TP; and 5.883 ton of TN in 2014 from construction of livestock manure storage tanks;</p> <p>(d) reduction of 1.71 ton of TN, 0.123 ton of TP in 2014 from agricultural pollution control practices in pilot villages;</p> <p>(e) 80% of farmers in participating villages adopt comprehensive and balanced fertilization application and other new technologies;</p> <p>(f) 22 FEFAs established;</p>						
<b>C. Capacity Building and Policy Studies</b>	TA, STA	(a) increased public and targeted group awareness and education;	(a) 1 education and training center established;	<b>1,011,000</b>	<b>54.6</b>	<b>840,000</b>	<b>45.4</b>	<b>1,851,000</b>	
C1. Education and Training Center		(b) overall institutional capacity strengthened;	(b) training and workshops organized and provided for 9,000 persons in project management, implementation and community participation;	0	0.0	193,000	100.0	193,000	
C2. Capacity Building		(c) nutrient/pollution management in Guangli river watershed strengthened;	(c) two policy studies (the Impact on Pollution Reduction through Constructed Wetlands in Guangli River, and Evaluation Study and Management	240,000	30.8	538,000	69.2	778,000	
C3. Policy Studies				771,000	87.6	109,000	12.4	880,000	

			Planning for Agricultural and Rural Pollution Reduction in Guangli River Catchment) carried out and 1 replication strategy developed and disseminated;					
<b>D. Project Management and Implementation Support</b>	Investment, TA, STA	(a) project management capacity strengthened;	(a) adequate resources provided on a timely basis;	<b>307,000</b>	<b>13.4</b>	<b>1,983,000</b>	<b>86.6</b>	<b>2,290,000</b>
D1. Implementation Support		(b) project M&E improved;	(b) monitoring reports submitted as stipulated in grant agreement;	250,000	13.5	1,599,000	86.5	1,849,000
D2. Monitoring and Evaluation				7,000	7.6	84,000	92.4	91,000
D3. Project Management			(c) project progress reports submitted semi-annually;	50,000	14.3	300,000	85.7	350,000
<b>Total Project Costs</b>				<b>5,000,000</b>	<b>13.2%</b>	<b>32,828,000</b>	<b>86.8%</b>	<b>37,828,000</b>

<sup>1</sup>List the \$ by project components. The percentage is the share of GEF and co-financing respectively of the total amount for the component.

<sup>2</sup>TA=Technical Assistance; STA = Scientific and Technical Analysis.

#### B. SOURCES OF CONFIRMED FOR THE PROJECT (expand the table line items as necessary)

<i>Name of Co-financier (source)</i>	<i>Classification</i>	<i>Type</i>	<i>Project</i>	<i>%*</i>
Dongying Municipal Government	Local Gov't	cash	30,148,000	79.7
Dongying Municipal Government	Local Gov't	In-kind	1,181,000	3.1
Shandong Academy of Agricultural Sciences	Academic NGO	In-kind	123,000	0.3
Participating Farmers	Beneficiaries	cash	1,376,000	3.7
<b>Total Co-financing</b>			<b>32,828,000</b>	<b>86.8</b>

\* Percentage of each co-financier's contribution at CEO endorsement to total co-financing.

#### C. FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	<i>Project Preparation a</i>	<i>Project B</i>	<i>Total c = a + b</i>	<i>Agency Fee</i>	<i>For comparison: GEF and Co-financing<sup>1</sup> at PIF</i>
GEF financing		\$5,000,000	5,000,000		5,000,000
Co-financing		\$ 32,828,000	32,828,000		30,660,000
<b>Total</b>		<b>37,828,000</b>	<b>37,828,000</b>		<b>35,660,000</b>

**D. GEF RESOURCES REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES)<sup>1</sup>**

GEF Agency	Focal Area	Country Name/ Global	(in \$)		
			Project (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
World Bank	International Waters	China	5,000,000		5,000,000
<b>Total GEF Resources</b>					

<sup>1</sup>No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

<sup>2</sup>Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee. Includes PPG amount.

**E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:**

Component	Estimated person weeks	GEF amount(\$)	Co-financing (\$)	Project total (\$)
Local consultants*	1,040	840,000	668,000	1,508,000
International consultants*				
<b>Total</b>	1,040	840,000	668,000	1,508,000

\* Details to be provided in Annex C.

**F. PROJECT MANAGEMENT BUDGET/COST**

Cost Items	Total Estimated person weeks/months	GEF amount (\$)	Co-financing (\$)	Project total (\$)
Local consultants*	109	257,000	603,000	860,000
International consultants*				
Office Facilities, equipment, vehicles and communications*			31,000	31,000
Travel*				
Others*		50,000	1,349,000	1,399,000
<b>Total</b>		307,000	1,983,000	2,290,000

\* Details to be provided in Annex C. \*\* For others, it has to clearly specify what type of expenses here in a footnote.

Others include incremental operating costs (GEF \$50,000); and management fee, project management staff salary and non-consultant services for survey, feasibility study, design, supervision and insurance (Covered by counterparts funds/co-financing).

**G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? yes no**

(If non-grant instruments are used, provide in Annex E an indicative calendar of expected reflows to your agency and to the GEF Trust Fund).

**H. DESCRIBE THE BUDGETED M&E PLAN:** The achievement of the project development objectives will be measured through the two Key Performance Indicators: (a) annual reduction of pollutants and nutrients flowing from Guangli River into Bohai Sea through implementation of the project; and (b) annual reduction of pollutants and nutrients through the constructed wetlands at Dongbalu. Annex 1 shows the key performance indicators and intermediate output indicators for tracking project progress and results. The Dongying PMO will set up and maintain a M&E system, it will consolidate and report regularly on the monitoring results, with assistance from implementation support consultants. The 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 the Dongying PMO. The Dongying municipal government is committed to long-term monitoring beyond the completion of the project. Scope, approach and activities for monitoring and evaluation, relevant indicators and M&E arrangements will be detailed in the Project Implementation Plan. The government committed a long-term monitoring for the project to extend the monitoring activities for at least five years which is beyond the completion of the project implementation.

### **Monitoring and Evaluation Activities**

Scope of Monitoring	Monitoring Activities	Budget (US\$)		
		Total	Of which, GEF	Budgeted under
Constructed wetland	Take water samples and test in the lab to monitor COD, BOD, NH3-N and TP values on a monthly basis; report in annual monitoring report;	6,800	0	Component D2
Rural waste water plants	Take samples and test in the lab to monitor COD and SSS on a monthly basis; report in annual monitoring report;	7,000	7,000	Component D2
Agricultural non-point pollution reduction	Install monitoring devices; take soil and water (surface and ground) samples, lab test on a monthly basis to monitor TN and TP; report in annual monitoring report;	199,900	76,700	Component B2
Safeguard policies - environmental impact and pest management	Monitor if the Bank's relevant environmental impact and pest management policies are complied with; ensure mitigation actions are taken if required; report in semi-annual progress report and in annual monitoring report;	76,700	0	Component D2
Safeguard policies - involuntary resettlement	Monitor if the Bank's involuntary resettlement policies are complied with; ensure mitigation actions are taken if required; report in semi-annual progress report and in annual monitoring report;	167,000	0	Component A3
Progress and performance	Record implementation progress and evaluate performance by project sub-component; report in semi-annual progress report and ICR;	32,500	0	Component D3
<b>TOTAL</b>		<b>489,900</b>	<b>83,700</b>	

## **PART II: PROJECT JUSTIFICATION:**

(In addition to the following questions, please ensure that the project design incorporates key GEF operational principles, including sustainability of global environmental benefits, institutional continuity and replicability, keeping in mind that these principles will be monitored rigorously in the annual Project Implementation Review and other Review stages.)

### **A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:**

#### *Background and Context*

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. Majority of the rivers and lakes in the country have been polluted to different degrees, leading to very dire consequences. This situation has alerted Chinese policy makers and general public to give much higher priority to pollution reduction and control. This is clearly articulated in the 12<sup>th</sup> Five-Year Plan (2011-2015), which aims to sustain the rapid and steady development of China's "socialist market economy" following a green growth path. Water management is one of the pillars of green growth.

The Huai River Basin covers four provinces, i.e. 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, many river systems in the Huai River Basin have become increasingly polluted rendering it one of the most polluted rivers in China, and consequently more and more nutrients and pollutants are discharged into the Bohai Sea and Yellow Sea contaminating these international waters. Official statistics show that Shandong Province, with the longest coastlines of the Bohai Sea and the Yellow Sea within the Huai River Basin, is contributing more polluting loads to these seas than any of the other three provinces.

Coastal cities such as Dongying in Shandong Province are both significant contributors to and direct victims of such pollution. Dongying has been the central city of the Yellow River delta since its establishment in 1983, with over 350 km coastlines along the Bohai Sea, and a total population of some 1.8 million. Oil, natural gas, salt, coal and geothermal energy are the major resources of Dongying. Over the past two decades, the city has seen continued growth in these sectors. However, the delicate eco-system of Dongying city is being heavily impacted by increasing water pollution.

Water pollution in Dongying originates from different sources: both urban and rural areas, point and non-point sources. In spite of the government's efforts in point source pollution control over the years, the 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. The observed concentrations of COD and NH<sub>3</sub>-N in the water discharged into Bohai Sea end 2010 from Guangli River estuary were 64.60 and 2.11 mg/L respectively. Based on a survey by Dongying Environmental Protection Bureau, municipal sewage (60%), industrial sewage (8%), rural wastes and agricultural runoff (30%) are identified as the main sources of pollution for Guangli River, which contributes to pollution and eutrophication of Bohai Sea.

### Issues to be Addressed

The main issues with existing water pollution control practices are basically twofold: (a) need for a more balanced and integrated approach to water pollution management: experiences from previous water pollution management investments in Dongying and elsewhere, all point to the fact that effective pollution management calls for balancing the supply-driven and infrastructure-focused approach with likely more cost-effective demand-side management interventions (awareness raising, policy incentives, behavior change) and management practices (introducing new/clean production technologies and environmentally-friendly practices). Many investment programs did not achieve intended effect or fail to sustain because of this reason; and (b) lack of effective institutional mechanism for managing non-point source (NPS) pollution in rural and agricultural areas. Despite the fact that much efforts have been made by the government in reducing NPS pollution through various subsidized investment programs such as biogas generation from human and livestock wastes, and balanced fertilizer applications, the results are usually not very satisfactory, and very often the facilities built or management practices introduced can not be sustained. The major reason for such failures is the lack of an institutional mechanism with which the investment activities are identified, prioritized, implemented and then maintained with direct involvement of beneficiary communities in an organized manner. Such an mechanism requires establishment of a self-managed community organization which is at the core of community-based approach to pollution management. The proposed GEF project attempts to pilot an integrated and community-based approach to address the above issues in Dongying Municipality (City).

Based on stakeholder consultation, Guangli river watershed in Dongying City of Shandong Province, was selected as the pilot area. Guangli river is a man-made drainage channel for Dongying district and Kenli county, with an annual average flow of 2 m<sup>3</sup>/s. The river is 48.8km long and has a catchment area of 792km<sup>2</sup> covering one urban district and a county with a total population of 745,000. It is chosen as the demonstration watershed because: (a) it is easier to measure and evaluate reliably the project impact, as this watershed is entirely within the jurisdiction of Dongying City and is not subject to interference from external pollution sources; (b) it is the main river following through Dongying city to Bohai Sea, and thus a significant pollution contributor; and (c)

there is in the watershed a substantial wastewater treatment capacity in operation, and it is covered under municipality's major water pollution control program.

### Client's Commitment

The \$5 million GEF grant is set to leverage some \$33 million of co-financing from the government of the Dongying Municipality and participating villagers and farmers. Both Dongying municipal and Shandong provincial governments as well as Huai River Basin Commission are committed to replicating successful experience and practices from the project to much wider areas within their respective jurisdictions with potentially much larger government financing for water pollution management.

### Project Description

The Project would have the following four components.

**Component A. Constructed Wetland and Sluice Gate Operation Optimization (Base Cost: US\$27.19 million).** This component will treat Guangli River water through constructed wetlands to improve water quality, and increase the carrying capacity of the river through sluice gate regulation. It supports: (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.

The resettlement compensation sub-component will provide transfer payment 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 need to be compensated with counterpart funding from Dongying Municipal Government per agreed resettlement action plan (RAP) which was prepared by a consultant upon detailed impact survey and consultation with affected people/enterprises and local authorities. The RAP has been developed in compliance with Bank safeguard policy and applicable national laws and government regulations, and has been reviewed by the Bank and disclosed publicly.

**Component B. Agricultural Pollution Control and Rural Waste Management (Base Cost: US\$4.59 million).** The component finances facilities and management practices for agricultural pollution reduction and rural waste management to reduce nutrient/pollutant loads in selected pilot areas. It covers: (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 (Base Cost: US\$1.85 million).** This component intends to strengthen the pollution management capacity of Dongying government and farmer communities. It would support: (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 with recommendations for improvement/replication, 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 this 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 (Base Cost: US\$2.29 million).** This component would finance project management and implementation support activities to ensure timely and efficient implementation. The main activities include: (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.

The project would provide information and prepare Experience Notes to GEF's 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., its biannual IW LEARN conference, and PEMSEA's triennial East Asia Seas Congress; and join UNEP's Best Practices and Success Stories Global Network, and report annually on the GEF 4 output indicators using the IW Tracking Tool.

### Expected Global Environmental Benefits

Set as the project development objective, the project is to demonstrate innovative and effective water pollution control practices in Guangli river catchment of Dongying Municipality, contributing to pollution reduction in the Bohai Sea. Though the project's tangible impact on water pollution in Bohai Sea is negligible, pollution reduction in the Bohai Sea is expected to be achieved through implementation of a replication strategy developed under the project to replicate the successful experiences and practices piloted under the project in much larger areas in Dongying Municipality, Shandong Province and other provinces in Huai River Basin bordering the Bohai Sea.

### Sustainability

The project's sustainability depends on several key factors: (a) government commitment to sustainable water resources management and pollution control; (b) ownership of the project activities by implementing agencies and beneficiary communities; and (c) replication of good practice experiences from the pilot over large areas. These factors are well reflected in this project. Government at all levels has assured the Bank of the high priority of this project. There is strong ownership of the project by the project entities and beneficiaries in Dongying. The project is designed with sustainability in mind as indicated below:

- **Technical Sustainability.** To the extent possible, project interventions will be 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 applicable to local conditions that are easy to operate and maintain at low cost. It integrates pollutant and nutrient reduction at source and mitigation in water body, and combines technical measures with behavior change.
- **Institutional Sustainability.** The Government is committed to providing all the necessary government support needed 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 establishing and empowering the FEPAs, and by building capacity of implementing agencies, PMOs and beneficiary communities.
- **Long-term Sustainability.** The project is expected to yield limited direct impact on water quality of Guangli River and the Bohai Sea because the selected project area represents a fraction of the total land-

based nutrient and pollution load discharged. A noticeable nutrient and pollution reduction can be achieved through the replication of the demonstrated practices throughout Dongying municipality and other areas around the Bohai Sea. To ensure long-term sustainability through replication, 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.

**B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL AND/OR REGIONAL PRIORITIES/PLANS:**

Dongying Municipal Government has recognized the gravity of water pollution. The Master Plan for Dongying Water City Development (2009) sets the goal to transform Guangli River into an eco-corridor during the “12<sup>th</sup> Five-Year Plan” period, through improving the water quality and environment. The government’s strategy is to seek through the GEF project to: (a) reduce nutrient and pollution loads from agricultural and rural sources through pilot interventions, complementary to the M&I sewage treatment being covered by government programs; (b) treat the water in the Gunagli river through a constructed wetland at the downstream end of the river; and (c) increase the carrying capacity of the river system by improving the circulation of water through optimal operation of regulating sluice gates along the river. Farmer environmental protection associations (FEPA) would be established as pilot to demonstrate community-based pollution management in rural areas. The project serves dual purposes: to help improve water environment in Guangli river contributing to pollution/eutrophication reduction in Bohai Sea, and to gain experience for replication over a much wider scope, in Dongying Municipality, Shandong Province and Huai River Basin.

The project contributes towards the country’s long term objective of sustainable economic growth and poverty reduction through 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 will focus on demonstrating innovative and cost-effective water pollution control practices which are well aligned with the Government’s Long-term Strategic Plan for Water Pollution Management and Control in Key Basins and Seas, and the current Bank’s Country Partnership Strategy (CPS), a main pillar of which is ‘managing resource scarcity and environmental challenges’.

The proposed project supports the government’s priorities in systematically controlling pollution in heavily polluted river basins such as Huai River, in reducing land-based pollutants to international waters such as Bohai Sea and Huanghai 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.

**C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH AND STRATEGIC PROGRAMS:**

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. Compliant with the IF, the proposed project is 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. The project also fits with the regional PEMSEA strategy (of which the IF is a partner), which promotes sustainable development in the region.

**D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES:**

As mentioned above, the GEF resources are set to leverage over US\$33 million of counterpart funding from the local government and beneficiaries with the high replication potential of influencing much larger investment programs and policies over much wider areas in Dongying Municipality and Shandong province as well as other provinces in Huai River Basin. The financing will generate much needed capacity and knowledge to stimulate

the policy shift towards effective nutrient/pollution reduction in the Bohai Sea through successful pollution reduction practices demonstrated under the project and their replication.

**E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES**

In project preparation, the Bank team kept close communication with the Bank regional GEF coordinator for East Asia, GEF IW team and agreed on project adjustments. The meeting minutes are attached in Annex B. Key lessons were drawn from similar projects implemented by the Bank. These include Ningbo Water and Environment Project, Livestock Waste Management in East Asia Project, Shanghai Agricultural and Non-Point Pollution Reduction Project and other government funded projects. The lessons learned are reflected in the project design (see Section III/C of the Project Appraisal Document for more detail). The provincial Project Leading Group (PLG) and provincial PMO for this project are shared with the IBRD-funded China HRBFMDI Project to provide a closer coordination between the two projects and ensure a higher potential for replication. Key government agencies in Dongying Municipality are members of Dongying PLG under a local government institutional coordination mechanism to better coordinate between this project and other relevant government funded programs in the area.

**F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH :**

This project takes a comprehensive and coordinated approach in a relatively enclosed Guangli river catchment area to (a) address both point and non-point pollution issues; (b) cover both urban and rural areas; (c) integrate technological solutions, policy development; monitoring, training and dissemination; and (d) involve agencies at municipal, province and Huai River Basin levels to achieve the Project objectives. The proposed project is designed to provide innovative and demonstrative experience to catalyze further investments for nutrient and pollution reduction to international waters which can be replicated in Dongying Municipality, Shandong Province and other provinces in Huai River Basin. Replication may take place in other countries in the region under the support of the IF and PEMSEA. The proposed project is incremental to the IBRD-funded China HRBFMDI Project. Without GEF grant support, the following will not be considered as priorities by the local government in the next few years due mainly to its focus on urban pollution issues and limited budget available for environmental protection: (a) comprehensive approach in nutrient and agricultural pollution reduction; (b) actions to reduce nutrient and pollution loads to international waters; and (c) control of rural non-point source pollution through community-based approach.

**G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MANAGEMENT MEASURES:**

The World Bank task team carried out operational risk assessment for the project, the results of which together with agreed mitigation measures are detailed in the Annex 4, Operational Risk Assessment Framework (ORAF) of the Project Appraisal Document (PAD). The main risks of the project are implementation agencies' capacity in technical aspect, procurement, financial management, safeguards management and results monitoring, cross-sector coordination, and main stakeholders' (beneficiaries') ownership in the pilot areas. Mitigation measures include: (a) designing the pilot and project interventions based on close consultation with local governments and communities; (b) enhancing ownership of beneficiary communities through continued public awareness raising activities, financial subsidy and affordable contributions, and establishing FEPAs to institutionalize communities' self-management; (c) hiring competent technical and implementation support consultants, and providing targeted training for project staff during preparation and implementation on key project aspects; and (d) setting up multi-sectoral project leading group, and agreeing upfront on clear responsibility division and coordination mechanism among different sectoral agencies involved in the project.

Climate change related risk to the project due to potential sea level rise is considered negligible. Potential sea level rise is not expected to have significant impact on the proposed project because: (a) wetlands under the project will have functions to improve flood management and drainage, and buffer against storm surge; (b) the

project area has an average elevation of 6-8 meters above the sea level and is not subject to immediate impacts of sea level rise in short and medium terms; (c) Dongying Municipality will benefit from an improved flood management and drainage system in Shandong Province under the IBRD-funded HRBFMDI Project. In addition, the sluice gates under this project will further improve the flood management capacity in the project areas and mitigate the impact of potential sea level rise, if any.

#### **H. EXPLAIN HOW COST-EFFECTIVENESS IS REFLECTED IN THE PROJECT DESIGN:**

The project takes an integrated approach to water pollution and nutrient management, with technological and institutional innovations and taking into considerations of incentives for beneficiary communities, potential for replication and O&M costs. The technologies the project will introduce are cost-effective, for instance, the constructed wetland is of low cost design with virtually single function of water treatment; the on-site treatment schemes for rural domestic wastewater treatment are inexpensive in capital costs and O&M costs; so are the cases of anaerobic and aerobic processes for livestock waste treatment and agricultural pollution control measures; optimal use of existing infrastructure (water gates and monitoring stations) is another example. Pollution reduction in rural areas through the FEPAs to be established under the project offers a cost-effective institutional mechanism to implement and maintain project interventions funded by the GEF grant.

The project will keep full time staff to minimum, limited to ensuring compliance with the Bank's fiduciary policies. Government counterpart staff at all levels will be responsible for the implementation of the project. To the extent possible training programs are designed to be delivered on site, and consultant services are also largely drawing on the national expertises.

### **PART III: INSTITUTIONAL COORDINATION AND SUPPORT**

#### **A. INSTITUTIONAL ARRANGEMENT:**

The project adopts a tiered organizational structure involving Huai River Basin Commission through the central project management office (CPMO) of the HRBFMDI Project, Shandong Province, Dongying Municipality (including project implementation units) and community levels. The following figure shows the institutional arrangements and responsibility division for the project. The project is institutionally linked to the WB/GEF Strategic Partnership for Sustainable Development of the Large Marine Ecosystems of East Asia, its financing arm— Strategic Partnership Investment Fund for Pollution Reduction in the Large Marine Ecosystems of East Asia—and its regional agency, PEMSEA.

### **Institutional Arrangements for Project Implementation**

## **B. PROJECT IMPLEMENTATION ARRANGEMENT:**

The detailed responsibilities of each party and the coordination mechanisms are reflected in the Project Implementation Plan (PIP) and Project Feasibility Study Report (FSR). The project implementation arrangement is set as the following:

**At River Basin Level.** The Huai River Basin Commission will provide technical guidance to the project and participate in the implementation of the institutional development and capacity building component.

**At Provincial Level.** The Shandong Provincial Project Leading Group (PPLG) of the HRBFMDI Project would also function as the PPLG for the GEF Project, and the Provincial Project Management Office (PPMO) of the HFMDIP Project would function as the Provincial Project Management Office (PPMO) for the GEF project to oversee project implementation and provide necessary guidance. The PPLG would include members from Central Project Management Office of the HFMDI Project and Dongying Municipal Government and the PPMO would include members from Provincial Financial Bureau (PFB). The PFB will take main responsibilities of the project management together with Provincial Water Resources Bureau.

**At Municipal Level.** The Dongying Project Leading Group (DPLG) and the Dongying Project Management Office (DPMO) have been established for project preparation and implementation. Project Implementation Units (PIUs) are established in each of the three implementing agencies: Dongying Water Resources Bureau, Dongying City Management Bureau, and Dongying Agricultural Bureau. Staff has been assigned to Project Management Office. The DPMO would include members from Dongying Water Resources Bureau, Financial Bureau, Development and Reform Bureau, Environmental Protection Bureau, Agricultural Bureau, City Management Bureau, and other related municipal government line bureaus. Each of the three PIUs would have a designated project management group to manage implementation of the respective sub-component(s), with assistance from external consultant teams on need basis.

**At Community Level.** Farmer Environmental Protection Associations (FEPAs) will be established in each of the pilot villages to organize FEPA members in participating in the implementation of agricultural/rural pollution management activities. They will operate as long-term community self-management institution for village-level environmental protection, with support and guidance from Dongying Agricultural Bureau and Environmental Protection Bureau, and local governments.

## **PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIF:**

All key project elements remain unchanged from PIF i.e. project objectives; overall project design; total project investment (higher) and GEF grant amounts; and project location. However, some necessary adjustments have been made in response to the latest development in project area. These adjustments were reconfirmed with the Client during the Bank appraisal mission from July 25 to August 2, 2011 and summarized below. The following table provides a comparison of project Components and Sub-components listed in approved PIF and agreed with the Client.

- The wetland in Shaying (Comp. A(a)) was dropped due to reallocation of the wetland as a result of Dongying city's land use plan review. This is not expected to adversely affect the overall water quality in Guangli river, and it is compensated by introducing agricultural and rural pollution control measures in the upper catchment of Guangli River.
- Construction of the waste water treatment plant (Comp. B(c)) was dropped due to the fact that construction of the waste water treatment plant was completed as planned, in the process of the GEF project preparation. The construction was financed entirely by Dongying municipal government.
- Number of water gate to be upgraded (Comp. B(a)) was reduced from five to three due to the fact that upgrading of two water gates conceived under the project has been completed, in the process of GEF project preparation. The upgrading was financed entirely by Dongying municipal government.
- Agricultural pollution control (Comp. B1) and Rural pollution management (Comp. B2) were added to the project to (a): pilot a comprehensive approach towards water pollution management; and (b) relocate the budget savings from the dropped sub-components above.
- Project components and sub-components were reorganized for more effective implementation management.

### A Comparison of Project Components and Sub-components

At PIF Submission	Link	Agreed with the Client
Comp. A: Wetland Construction		Comp. A: Wetland System and Gate Regulation
(a) Wetland at Shaying	dropped	A1. Constructed wetland at Dongbalu
(b) Wetland at Dongbalu	=A1	A2. Water gate and automatic control
(c) Education and training center	=C1	A3. Resettlement compensation
Comp. B: Innovative Nutrient and Pollution Control Practice Demonstration		Comp. B: Agricultural and Rural Pollution/Nutrient Management
(a) Water gate	=A2	B1. Agricultural pollution management
(b) Farmer Environmental Protection Association	=B3	B2. Rural pollution management
(c) Waste Water Treatment Plant	dropped	B3. Farmer Environmental Protection Association development
Comp. C: Policy Development		Comp. C: Institutional Development and Capacity Building
(a) Preparation of an Action Plan	=C3	C1. Education and training center
(b) Development of a Replication Strategy	=C3	C2. Capacity building
Comp. D: Project Monitoring and Capacity Building	=C2 & D2	C3. Policy development
Comp. E: Project Management	=D3	D. Project Management and Implementation Support
		D1. Technical support

		D2. Monitoring and evaluation
		D3. Project management

**PART V: AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.

Agency Coordinator, Agency name	Signature	Date	Project Contact Person	Telephone	Email Address
Karin Shepardson Program Manager, ENVC World Bank		11/15/2011	Jiang Ru	202 473-8677	jru@worldbank.org

## ANNEX A: PROJECT RESULTS FRAMEWORK

PDO Indicators											
<i>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.</i>											
	Items	Core? (Yes/ No)	Unit	Baseline	Target			Frequency	Data Sources	Responsible Agencies	Notes
				2011	2012	2013	2014				
PO-1: Project-induced reduction in pollutant /nutrient loads entering Bohai Sea from Guangli River Watershed	COD	Yes	T/a	0	3.8	240.3	517.6	12/a	On-line concentration monitoring, by monitoring stations (MS)	Dongying PMO, Dongying Environment Protection Bureau (EPB)	In 2011, the total amount of COD, BOD, NH <sub>3</sub> -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 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.
	BOD		T/a	0	0	92	215	12/a	Manual monitoring methods, by MS	Dongying PMO, Dongying EPB	
	NH <sub>3</sub> -N		T/a	0	2.5	60	134	12/a	On-line concentration monitoring, by MS	Dongying PMO, Dongying EPB	
	TP		T/a	0	1.1	8.6	12.9	12/a	Manual monitoring methods, by MS	Dongying PMO, Dongying EPB	
PO-2: Reduction in pollutants/nutrients reduction through constructed wetlands at Dongbalu	COD	No	T/a	0	0	185	430	12/a	On-line concentration monitoring, by MS	Dongying PMO, Dongying EPB	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
	BOD		T/a	0	0	92	215	12/a	Manual monitoring methods, by MS	Dongying PMO, Dongying EPB	

	NH <sub>3</sub> -N		T/a	0	0	55	129	12/a	On-line concentration monitoring, by MS	Dongying PMO, Dongying EPB	treated pollutants in wetlands can be calculated, which is the reduction in pollution.
	TP		T/a	0	0	5	12	12/a	Manual monitoring methods, by MS	Dongying PMO, Dongying EPB	

**Intermediate Output Indicators**

**Component A: Wetland Construction and Sluice Gate Operation Optimization**

IO-1.1. Annual volume of treated waste water at wetlands	—	No	1 m m <sup>3</sup> /a	0	0	9.25	21.5	2/a	Project Progress Report	Dongying PMO, Dongying City Management Bureau	Accumulated
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**Component B: Agriculture Pollution Control and Rural Waste Management**

IO-2.1: Rural wastewater pollution load reduction in participating villages	COD	Yes	T/a	0	0	9.3	9.3	12/a	Based on the volume of treated waste water. Measure once per month to calculate the annual quantity, which is the total of the monthly quantities.	Dongying PMO, Dongying Agricultural Bureau	Incremental
	SS		T/a	0	0	4.6	4.6	12/a	Based on the volume of treated waste water. Measure once per month to calculate the annual quantity, which is the total of the monthly quantities.	Dongying PMO, Dongying Agricultural Bureau	
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 the physical	Dongying PMO, Dongying Agricultural Bureau	Based on implementation pace of 30%, 40% and 30% in the first 3 years and calculated in mid-year. Assumed 50% of livestock wastes
	TN		T/a	0	0.131	0.437	0.743	2/a			

	TP		T/a	0	1.038	3.460	5.883	2/a	progress semi-annually and calculate the annual quantity.		are currently discharged into Guangli river.
IO-2.3: Agricultural pollution/nutrient load reduction in participating villages	NH3-N	Yes	T/a	0	2.5	5	5	12/a	By directly measure and calculation method. Measure once per month to calculate the annual quantity, which is the total of the monthly quantities.	Dongying PMO, Dongying Agricultural Bureau	By June 2012, construction of ecological intercepting ditch will be completed. In 2012, 2013 and 2014, pollution reduction as a result of changes in application of chemical fertilizer will be 50%, 100% and 100%, respectively. In 2012, the amount of NH <sub>3</sub> -N and TP that enter Guangli River due to agricultural non-point pollution will be 6.163 tons and 1.71 tons, respectively.
	TP		T/a	0	0.054	0.103	0.123	12/a	By directly measure and calculation method. Measure once per month to calculate the annual quantity, which is the total of the monthly quantities.	Dongying PMO, Dongying Agricultural Bureau	
IO-2.4: Proportion of farmers adopting integrated and balanced fertilizer application technology in participating villages	—	No	%	0	15	35	80	2/a	Project Progress Report and Project Monitoring Report	M&A team of 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	
<b>Component C: Capacity Building and Policy Studies</b>											
IO-3.1. Number of people trained	—	No	Persons	0	1500	3000	4500	2/a	Project Progress Report	Dongying PMO	Accumulated amount, including project management, implementation and training for villagers in pilot villages

IO-3.2. Study of the impact on pollution reduction through constructing wetlands in Guangli River	—	No	Description			Complete the outline	Complete	2/a	Project Progress Report	Provincial and municipal PMOs
IO-3.2. Evaluation study and management planning for Agricultural and Rural Pollution Reduction in Guangli River Catchment	—	No	Description			Complete the outline	Complete	2/a	Project Progress Report	Provincial and municipal PMOs
IO-3.3. Development and dissemination of Huai River basin-wide replication strategy	—	Yes	Description		Develop a strategic plan	Compile a draft	Complete and to disseminate	2/a	Project Progress Report, Bank Supervision Report	Dongying PMO

**ANNEX B: RESPONSES TO PROJECT REVIEWS** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF)

1. Response to GEF Secretariat comments:

Items worth noting at CEO Endorsement: At time of CEO endorsement, it is expected that the output indicators will be quantifiable and include target values, as to enable the project to report project progress using the IW TT. Please, at time for Request for CEO Endorsement, include wording to support the use of the IW TT. (September 10, 2009)

Response: the output indicators are now quantifiable and include target values. The wording to support the use of the IW TT has been included in the PAD.

2. No comment was received from STAP reviewer.

## ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT USING GEF RESOURCES

<i>Position Titles</i>	<i>\$/ person week*</i>	<i>Estimated person weeks**</i>	<i>Tasks to be performed</i>
<b>For Project Management</b>			
Local			
Project implementation support	2,570	100	To provide services to (a) review technical designs, tendering documents and construction quality of project facilities, including constructed wetlands, gates, wastewater treatment and livestock waste storage facilities and eco-trenches for agricultural pollution control, etc; and (b) provide other necessary support/technical assistance to Dongying PMO and different PIUs in project implementation and management, such as monitoring results consolidation and project reporting.
International			
Justification for Travel, if any:			
<b>For Technical Assistance</b>			
Local			
Monitoring and evaluation for agricultural pollution control	1,000	78	To provide monitoring and evaluation services to (a) monitor results of all technologies introduced under agricultural pollution control sub-component; (b) construct a monitoring site and install essential equipment in a participating village for cotton crop; (c) collect and lab test soil and water samples from all dominant crop lands in the participating villages; (d) prepare and submit semi-annual monitoring reports to Dongying PMO; (e) share about 60% of the total cost for this sub-component. Agreement has been reached that the consultant will carry out a long term results monitoring program to cover a period of 5 years or beyond.
Monitoring and evaluation for rural waste management	800	9	To provide M&E services by an independent consulting team to (a) collect and lab test water samples to monitor water quality of treated rural wastewater; (b) carry out site visits to monitor performance (efficiency and effectiveness) of the rural waste management facilities; and (c) prepare and submit semi-annual monitoring reports to Dongying PMO.
Technical support for buffer strip and eco-trench	2,200	7	To provide technical support during the entire project implementation period in the areas of (a) site selection, (b) technical design, (c) plant selection, (d) operation and maintenance
Comprehensive & balanced fertilization by a technical expert panel	1,800	17	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 to offer professional advices and technical suggestions on: (i) appropriate fertilizers; (ii)

			crop-specific and customized nutrient fertilization; (iii) accurate fertilizer application; (iv) alternative organic and biological fertilizer; (v) quantity, timing and methodology; (vi) introduction of fine crop varieties; and (vii) crop planting management skills. The expert panel members will pay frequent visits to all participating villages to provide on-site technical support and training.
FEPA establishment and operation specialist	1,600	30	To provide technical support on participatory consultation, FEPA registration, establishment, operation, and mini-PIP preparation.
Consulting firm for evaluation study of the constructed wetlands	1,600	58	To carry out evaluation study of the effectiveness of constructed wetlands in treatment of polluted water based on the analysis of the Project monitoring results.
Consulting firm for development of agricultural pollution control and rural waste management strategy and action plan	1,600	67	To develop an agricultural pollution control and rural waste management strategy and action plan for Guangli River Watershed in Dongying including evaluation study of the project interventions under Component B, and formulation of a strategy and action plan for scaling up the pilot interventions from this project, over the entire catchment area of Guangli River, during the project period.
Consulting firm for Replication Strategy development	1,600	288	To draft, test and finalize a replication strategy which will incorporate implementation experience of all project components, inputs from all PIUs, Dongying PMO, Shandong PMO and Huai River Basin Commission, and be in line with the government mainstream strategies and programs.
International			
Justification for Travel, if any: Travel expenses are required for consultants from locations other than Dongying municipality e.g. Jinan (capital city of Shandong province) and other cities in the country. For simplicity reason, travel expenses are included in the unit cost estimate calculated at an average rate of \$80 person week, one week each trip assumed at 60% of consultants from Dongying municipality (no travel expenses), 20% of consultants from Jinan and other cities within Shandong province (\$600 each round trip inclusive), 20% of consultants from other cities in the country (\$1,000 each round trip).			

\* Provide dollar rate per person week. \*\* Total person weeks needed to carry out the tasks.



**ANNEX E: CALENDAR OF EXPECTED REFLOWS**

Provide a calendar of expected reflows to the GEF Trust Fund or to your Agency (and/or revolving fund that will be set up)