GEF Mainstreaming Integrated Water and Environment Management Project

Environmental and Social Management Policies Framework

(Amended Draft)

Foreign Economic Cooperation Office, Ministry of Environmental Protection
China Irrigation and Drainage Development Center, Ministry of Water Resources

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Annex 1-1

GEF Mainstreaming Integrated Water and Environment Management Project

Environmental Management Policy Framework

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Content

Ⅰ. Purpose and Scope of Environmental Management Policy Framework

1.1 Purpose for Preparing Environmental Management Policy Framework

With the reform and opening up of over 30 years, China has made remarkable achievements in such fields as deepening reform, promoting social and economic development. However, some prominent economic, social and environmental problems emerged accordingly. China is exposed to a key challenge of sustainable economic and social development in the future: how to use the scarce land resource as well water resource in a highly efficient and effective manner, to protect the eco-environment, safeguard national food safety, and further restore the ecosystem and provide services. As outlined in the 12th Five-year Plan, in order to address the above challenge, Chinese government proposes to improve the economic efficiency and sustainability of economic growth, improve the energy efficiency and protect the environment, promote the inclusive development and social harmony, and deepen the administrative mechanism reform, so as to achieve better public management and greater social responsibilities.

Under this new context, "GEF Mainstreaming Integrated Water and Environment Management Project" (hereinafter refers to "GEF Mainstreaming Project"), which is jointly applied and executed jointly by the Ministry of Water Resources and the Ministry of Environmental Protection, with the World Bank as the international executive agency, will systematically conclude, improve and promote the mainstreaming of integrated water and environment management (IWEM) approach in river basins and regions, which is conducive to China to implement the reform and development of highly efficient, cooperative and environment-friendly production method of the water resources and energy.

The overall development goals of GEF Mainstreaming Integrated Water and Environment Management Project are shown as follows: **(1)Mainstream ET/EC-based activities for integrated water and environment management；**

（2）Adopt the new technology to control the water consumption in sub-basins and groundwater overdraft regions and reduce water pollution emissions；（3）Promote the approach in the Hai River Basin, the Yellow River Basin and the Liao River Basin，to release more ecological flow and form mass outcomes in Bohai Rim.

GEF Mainstreaming Project aims to mainstream the IWEM approach and further integrate the application for Evapotranspiration (ET) and environmental capacity (EC), so as to maximize the water utilization in the selected regions. The project will mainly support the research project for technical assistance and capacity building activities, and the research outputs (such as monitoring, assessment and recommendation on water resources and environment management) will be applied and promoted in the project areas of the demonstration counties (cities, and districts). Therefore, the project will not cause any serious environmental or social problems. On the contrary, it is expected to bring environmental benefits on the whole. However, in order to reduce the water consumption and control the pollutant emission, the project may implement some technical assistance and small-scale water resources and environmental protection construction activities, which may exert certain short-term impacts on the surrounding environment. In order to avoid and mitigate, to the greatest extent, the adverse impact caused by the project activities, and ensure the smooth implementation of the GEF Mainstreaming Project, according to the relevant provisions of the World Bank safeguard policies, the project management agency entrusts relevant consultancy agency to prepare the GEF mainstreaming environmental management policy framework. With the policies and procedures of environmental impact against the project activities, this environmental management policy framework ensures that the project environmental management work complies with the requirements of relevant policies, laws and regulations of the Chinese government and local government, as well as the environmental assessment policies and steps stipulated in the World Bank’s environmental assessment

operational policies/procedures (OP/BP4.01).

- As for the selection and design decision-making of the project, the environmental problems shall be fully considered, relevant environmental protection laws and regulations shall be complied, and relevant requirements of World Bank safeguard policies shall be met, so as to ensure that the project will meet the environmental requirements, feature sustainability, and promote the project decision-making process;
- The positive, sustainable environmental and social output shall be strengthened;
- The environmental protection contents of the components shall be integrated into the research decision-making process of the project;
- The environment assessment procedures that will be complied during the implementation process shall be prepared to conduct environmental screening on components;
- The negative impacts caused by the components and the their cumulative effects shall be minimized;
- The project environmental management policy framework features a sound guidance and operability.

1.2 Scope and Content of Environmental Management Policy Framework

The relevant documents of the *Environmental Management Policy Framework* are applicable to all components under the GEF Mainstreaming Integrated Water and Environment Management Project. The environmental safeguard policy framework will include the following contents:

- Description of safeguard policies of national and local governments, and the World Bank's in relation to the project;
- Identify types of components and impacts of the activities;
- Identify the environmental impacts of components and procedures

for mitigating them;

- Mechanism to meet the requirements of the World Bank's safeguard policy documents (including the preparation of necessary environmental assessment and management plans, and etc.);
- Implementation agencies' capacity to carry out these activities, and the recommended measures of capacity building;
- Monitoring and reporting systems including the regular checkup mechanism during the implementing process;
- Relevant attachments and so on.

II. Project Description

The design of GEF Mainstreaming Project is based on comprehensive concluding and learning from the successful experience and advanced technologies of GEF Hai River Phase 1 Project, in combination with the construction of strictest water resources management system and Action Plan for Prevention and Control of Water Pollution ("Action Plan"), as well as the implementation of the 13th Five-year Plan for the economic and social development of the nation and local governments. Furthermore, the GEF Mainstreaming Project concept note (PCN) approved by GEF Council and GEF grant plan have been taken into consideration in the design.

According to the project design documents, the GEF Mainstreaming Project will include the following four aspects:

(1) Research on the mainstreaming IWEMP;

(2) Demonstration of IWEMP;

(3) Application and scaling up of IWEMP (in Hai River, the Yellow River, and the Liao River basins);

(4) Organizational support and project management.

GEF Mainstreaming Project includes 7 national water resources and environmental projects supported by domestic counterpart funds in the implementation of IWEMP. This concludes: reclaimed water utilization of Chengde Taipingzhuang sewage treatment plant, Kuancheng County Sewage Treatment Plan Phase II, medium and big integrated management projects for irrigation areas, management of emission outlets for major water function areas, water resources monitoring system, study on water resources reform and innovation.

Details of key construction content and structure of GEF Mainstreaming Project are shown in Figure 2-1.

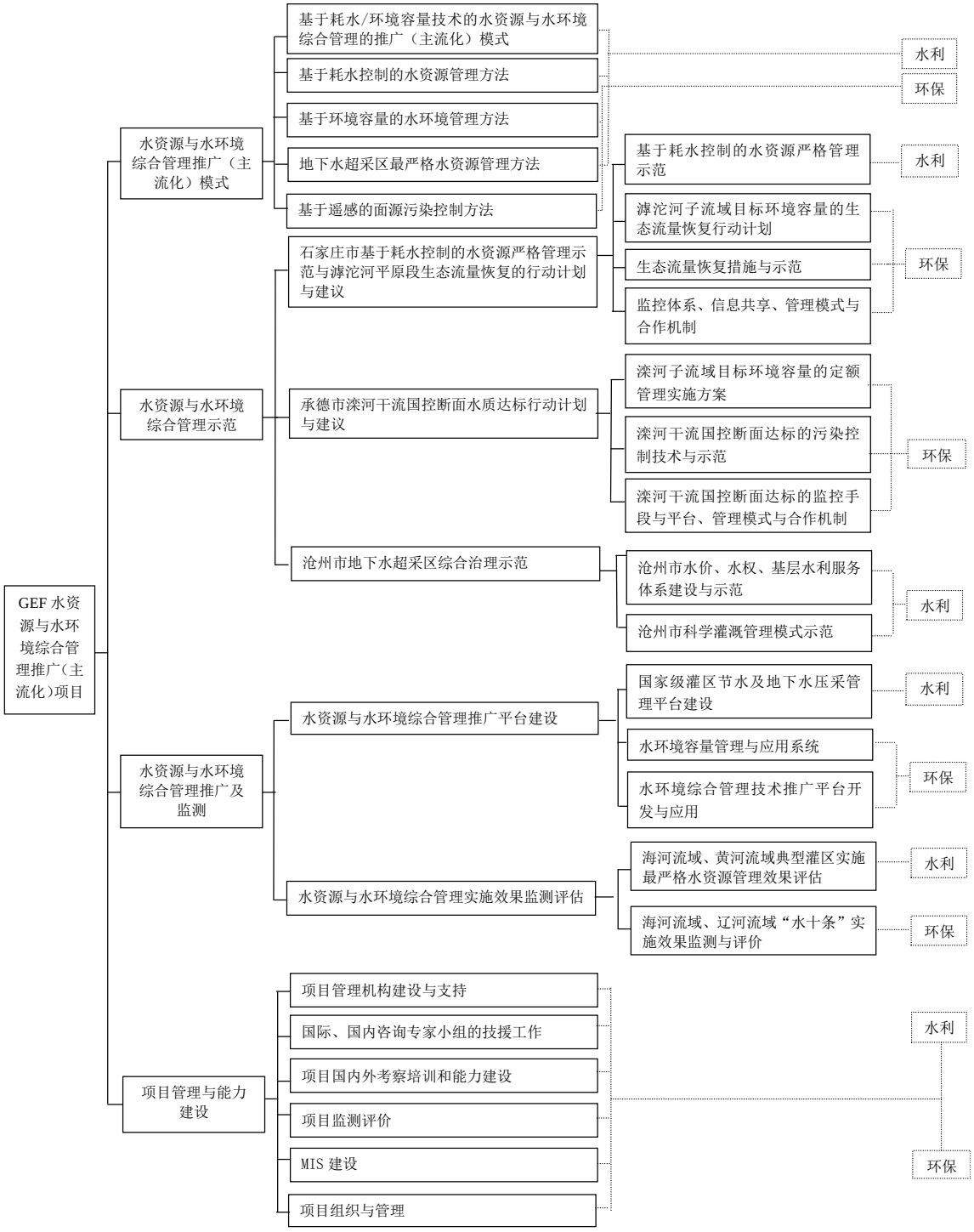


Figure 2-1 GEF Mainstreaming Project Structure

GEF Project Management Offices (PMOs) of the MWR and MEP will be responsible for the coordination and management of the project. The project implementation will be carried out by GEF PMOs of Hebei Province and relevant cities and demonstration counties (cities).

III. Applicable Laws, Regulations and Policies

3.1 China's Environmental Management Laws & Regulations

Any project carried out in China must comply with applicable laws and regulations of China. This project shall comply with the following laws and regulations (see Table 3-1 for details):

Table 3-1: Chinese laws and regulations applicable to this project

Laws, Regulations and Policies	Important Provisions
Environmental Protection Law of the People's Republic of China (2015)	Article 42 Enterprises, public institutions, and other production operators who discharge pollutants shall take measures to prevent such environmental pollutants or hazards as waste gas, waste water, waste residue, medical waste, dust, malodorous gas, radioactive substance, noise, vibration, light radiation, and electromagnetic radiation, etc. that appear in the process of production, construction or other activities.
Environmental Impact Assessment Law the People's Republic of China (2002)	Article 16 The country shall manage construction projects' environmental impact assessment by sorting according to their degree of environmental impact. A project owner shall prepare an *Environmental Impact Report*, *Environmental Impact Form*, or complete an *Environmental Impact Registration Form* (collectively, "environmental impact assessment documents") according to the following provisions: (i) An *Environmental Impact Report* should be prepared to assess environmental impacts in all aspects if a project may cause a significant environmental impact. (ii) An *Environmental Impact Form* should be prepared to analyze environmental impacts or carry out specific assessment if a project may cause a slight environmental impact. (iii) An *Environmental Impact Form* should be completed if a project has little environmental impact and no environmental impact assessment is needed. Article 22 A construction project owner shall submit environmental impact assessment documents to competent environmental protection department with examination and approval authority for approval. Where a project is administered by competent department in the industry, its environmental impact report or form should be submitted to competent

	environmental protection department with examination and approval authority for approval after reviewed by competent department in the industry. Article 24 If a construction project's nature, scale, location, production process or measures for preventing pollution and ecological damage change significantly after its environmental impact assessment documents are approved, the project owner shall re-submit the project's environmental impact assessment documents for approval.
Regulations of the People's Republic of China on the Administration of Construction Project Environmental Protection (1998)	Article 16 Any construction project that has an environmental impact must comply with the regulation that environmental protection facilities and principal works of the project are designed, built and put into use simultaneously (i.e. "tri-simultaneous" regulation).
Interim Measures for Public Participation in Environmental Impact Assessment (2006)	Article 2 The measures are applicable to public participation in environmental impact assessment of the following construction projects: (i) Construction projects which may cause a big environmental impact and for which an *Environmental Impact Report* should be prepared; (ii) Construction projects for which project owners should re-submit a environmental impact report for approval because the project's nature, scale, location, production process or measures for preventing pollution and ecological damage change significantly after its environmental impact report is approved; and (iii) Construction projects whose environmental impact report should be submitted to original approving authority for re-approval because such projects start five years after their environmental impact reports are approved

Other applicable laws and regulations

Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution (revised in 2000);
Law of the People's Republic of China on the Prevention and Control of Water Pollution (2008);
Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes (revised in 2004);
Law of the People's Republic of China on the Prevention and Control of Environmental Noise Pollution (1996);
Law of the People's Republic of China on Promoting Clean Production (2002)
Construction Project EIA Classification Administration Directory (2015)

Laws and regulations of Hebei Province:
Regulations of Hebei Province on Public Participation in Environmental Protection (2015);
Regulations of Hebei Province on the Reduction of Pollutants Discharged (2009);
Regulations of Hebei Province on the Prevention and Control of Atmospheric Pollution (2003);
Regulations of Hebei Province on Environmental Protection (2005)

3.2 World Bank Safeguard Policies

3.2.1 World Bank Safeguard Policies Relating this Project

(1) Environmental Assessment (OP 4.01)
(2) Natural Habitats (OP 4.04)
(3) EHS Guidelines

Table 3-2: World Bank Safeguard Policies in Relation to the Project

World Bank Policies	Abstract
Environmental Assessment (OP 4.01)	Environmental assessment (EA) is a process whose breadth, depth and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The World Bank favors preventive measures over mitigatory or compensatory measures, whenever feasible.
Natural Habitats (OP 4.04)	The World Bank does not support projects of significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs. If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to the Bank. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g. strategic habitat retention and post-development restoration) and establishing and maintaining an ecologically similar protected area. The Bank accepts other forms of mitigation measures only when they are technically justified. In projects with natural habitat components, project preparation, appraisal, and supervision arrangements include appropriate environmental expertise to ensure adequate design and implementation of mitigation measures.
EHS Guidelines	The *Environment, Health and Safety Guidelines* (EHS Guidelines) are technical reference documents. When one or more members of the World Bank Group are involved in a project, these EHS guidelines are applied as required by their respective policies and standards.

3.2.2 World Bank Safeguard Policies Not in Relation with the Project

Table 3-3: World Bank Safeguard Policies Not in Relation with the Project

World Bank Policies	Abstract
OP4.09 Pest Management	The project neither involves pesticide purchase, nor does it lead to the increase of pesticide dosage at the project site.
OP 4.10 Indigenous Peoples	No indigenous people event is involved in this project.
OP 4.12 Involuntary Resettlement	No resettlement is involved in this project.
OP 4.11 Physical Cultural Resources	No activity will be held at a place with an archaeological, paleontological, and historical value during implementation of the project.
OP 4.36 Forests	No commercial logging and primary forest is involved in the project.
OP 4.37 Safety of Dams	No activity relating support, construction and repair of dams or relying on existing dams or dams under construction will be held during implementation of the project.
OP 7.50 International Waterways	No international waterway is involved in both this project and its components.
OP 7.60 Projects in Disputed Areas	No disputed area is involved in this project.

IV. Potential Impacts or Risks

4.1 Previous Studies, Projects and Lessons

From September 2004 to June 2011, the MWR and MEP implemented the GEF Hai River Integrated Water and Environment Management Project (hereinafter referred to as "GEF Hai Rive Phase 1 Project") successfully. All tasks and investment plans were completed on schedule, bringing out remarkable outcomes. The project provided up-to-date ideas and related technologies and methods for strengthening basin water resource and integrated water environment management, laid a scientific foundation for improving the quality of Hai River Basin and Bohai eco-environment, and brought forward an overall strategic action plan for realizing sustainable utilization and development of water resources and water environment in the Hai River basin. It built a new basin and regional water resources & integrated water environment management mode for the first time, put into practice ET-based new water resource management concepts preliminarily, and developed a knowledge management (KM) system in the scope of Hai River Basin for the first time, and innovated new methods of basin and regional water resources and integrated water environment management plans (SPA/IWEMPs). In addition, this project provided helpful management experience and technical means for solving water deficiency and water environment deterioration problems in the arid and sub-arid regions in China, enhancing water saving practices and improved water use efficiency and water pollution prevention and control efforts in the Hai River basin and pilot areas (county, city, and district).

Strengthening water resource management and pollution control means a complicated systematic program and long-term strategic task in China. Based on the up-to-date ideas and technical means developed in the GEF Hai River Phase 1 Project, the GEF Mainstreaming Project will make a study of mainstreaming integrated management models and have them further deepened and improved. All these efforts will help change the current water resource consumption type development model into a development model emphasizing on the resource efficiency and decrease of water consumption and pollution, maximizing the

economic value of every drop of water and minimizing the impacts of water pollution, so as to realize green economic growth and sustainable development in China.

4.2 Potential Types of Activities

According to the planning and design documents, the GEF Mainstreaming Project will support the implementation of research projects, i.e. technical assistance and capacity building activities for basin and regional water resources and water environment integrated management, in some pilot sub-basins and pilot areas (county, city, and district) of demonstrative projects in combination with the construction of the strictest water resource management system and the Action Plan. Relevant research findings will be applied, scaled up, monitored, and assessed in some typical large irrigation regions and demonstrative project sites in Hai River, Yellow River, and Liao River basins.

According to the project design, component activities include policy studies, website building, and implementation of demonstrative projects and supporting projects. Among them, demonstration projects and construction of supporting projects include the following 3types:

1) medium and big integrated management projects for irrigation areas，: a high-efficiency water saving and irrigation area of 200,000 mu and 200 km Anti-seepage Canals in Shijiazhuang City.
2) Sewage treatment plant and supporting pipeline construction: sewage treatment plants or new sewage pipeline will be built in Taipingzhuang District, Kuancheng County, in Chengde City.
3) Water resources monitoring system:Construction of water control station, groundwater monitoring station, water function area water quality station in Shijiazhuang City.

4.3 Environmental Impacts in Relation with Project Activities

The GEF Mainstreaming Project will mainly support the research project for technical assistance and capacity building activities, and the research outputs (such as monitoring, assessment and recommendation on water resources and environment management) will be applied and promoted in the project areas of the demonstration counties (cities, and districts). Therefore, the project will not cause any serious environmental or social problems. On the contrary, it is expected to bring environmental benefits on the whole.

GEF Mainstreaming Project includes 7 projects supported by domestic counterpart funds in Chengde, Shijiazhuang cities of Hebei Province in the implementation of IWEMP. Construction projects mainly involve sewage treatment plant, medium and big integrated management projects for irrigation areas, water resources monitoring system and so on.. These component activities may exert impacts on local environment. However, with the implementation of environmental protection measures and strictest environmental management, these environmental impacts will be avoided and mitigated to the greatest extent. See the following Table 4-1 for preliminary screening results of environmental impacts caused by components under the GEF Mainstreaming Project.

Table 4-1 Preliminary Screening Results of Environmental Impacts Caused by Components under the GEF Mainstreaming Project

Project Components	**Environmental impacts caused?**	
	Yes	**No**
1. Mainstreaming of Innovative IWEM Approach	√	

1.1 Studies on application of policies and technologies on mainstreaming the IWEM approach	√	
(1) MEP: Assessment on Effectiveness of Water Pollution Prevention moving towards River Basin District (RBD) Approach (Pilot in Chengde)	√	
(2) MEP: Study on Assessment of EC for Urban Environment (Pilot in Chengde)	√	
(3) MEP: Study on Policies on Point Water Pollution Source Emission Rights and Their Trading (Pilot in Chengde)	√	
(4) MWR: Study on Policies on ET-based Water Rights and Trading (Pilot in Jin-Zhou of Shijiazhuang)	√	
(5) MWR: Study on Policies on Local Water Service Delivery System and Agricultural Water Pricing (Pilot in Jin-Zhou of Shijiazhuang)	√	
1.2 Preparation of operational manuals and guidelines for the IWEM approach	√	
(6) MEP/MWR: Operational Manual on ET/EC-based IWEM Approach (Pilot in Chengde and Shijiazhuang)	√	
(7) MEP: Operational Manual on RS-based None-Point Pollution Source Control Approach (Pilot in Chengde)	√	
(8) MEP: Operational Manual on IWEM based Integrated Toxic Symptoms (Pilot in Chengde)		√
(9) MWR: Operational Manual on ET-based Water Accounting and Auditing (Pilot in Chengde and Jinzhou of Shijiazhuang)	√	
(10) MWR: Operational Manual on ET-based Dual Control for Groundwater Management (Pilot in Gao-Cheng of Shijiazhuang)	√	
2. Demonstration in Hai Basin for IWEM Approach	√	
2.1 Application of the IWEM Approach in Chengde	√	
(1) Chengde/MEP/MWR: Preparation of ET/EC-based TVAP for Luan Sub-basin and IWEMP for Chengde	√	
(2) Chengde/MEP: Integrated Monitoring and Evaluation of Ecological and Water Quality Status in the Luan River Sub-Basin (Hai River Basin)	√	
(3) Chengde/MEP: Implementation of EC-based Quota Management in Sub-River Basin of the Luan River	√	
(4) Chengde/MEP: RS-based None-Point Pollution Source Control Approach	√	
（5）Construction of automatic water quality monitoring system for the middle and lower reaches of Luan River Basin	√	
（6）Plan of ecological conservation and development in Panlong Lake of Kuancheng County	√	
（7）Capacity building project of groundwater monitoring of Chengde	√	
（8）Phase I project of unified office system of environmental protection sector of Chengde	√	
（9）Reclaimed water utilization of Chengde Urban Sewage Treatment Plant	√	
（10）Kuancheng County Sewage Treatment Plant Phase II	√	
2.2 Demonstration of IWEM Approach in Shijiazhuang		
(6) Shijiazhuang/MWR/MEP: Preparation of ET/EC-based TVAP for Hutuo Sub-Basin (Hai Basin) and IWEMP for Shijiazhuang	√	
(7) Shijiazhuang /MWR: Demonstration on ET-based Dual Control for Groundwater Management (Gao-Cheng of Shijiazhuang)	√	

(8) Shijiazhuang /MWR: Demonstration on Scientific Irrigation Management at WUA (Gaocheng of Shijiazhuang)	√	
(9) Shijiazhuang/MWR/MEP: Demonstration on ET-based Water Accounting and Auditing in Industrial Area (Jinzhou of Shijiazhuang)	√	
(10) Shijiazhuang/MWR: Demonstration of Local Water Service Delivery System and Water Pricing (Jinzhou of Shijiazhuang)	√	
(11) Shijiazhuang/MWR: Demonstration of ET based Water Rights and Trading at WUA (Jinzhou of Shijiazhuang)	√	
(12) Study on salty water irrigation model	√	
(13) Water resources assessment for Hebei Province	√	
(14) Groundwater irrigation	√	
(15) Water resources bearing capacity	√	
(16) Study on the water-saving effects under different irrigation models	√	
3. Scaling up the IWEM Approach in Three River Basins		
3.1 Development of National Water Environment Technology Extension Platform at MEP		√
(1) MEP: National GIS Platform for EC-based River Basin Management		√
(2) MEP: Development, Operations and Management of Pollution Control Technology Extension Platform (3iPET)		√
3.2 Development of the national ET Monitoring and Management Platform at MWR		√
(3) MWR: Development of RS/ET-based Water Resources Assessment System		√
(4) MWR: Study on RS/ET-based Irrigation Information Acquisition and Model Development		√
(5) MWR: Study on RS/ET-based Assessment Approach on Net Groundwater Withdrawal and Model Development		√
(6) MWR: Study on RS/ET-based Analysis on Water Consumption for Irrigation Area		√
(7) MWR: Development of GIS Platform for Irrigated Agricultural Water Savings and Groundwater Management		√
(8) MWR: RS-based ET Data Production and Monitoring System of Irrigation Districts	√	
3.3 Scaling up the IWEM Approach in Liao River Basin		
(9) Liao River Basin/MEP: Annual M&E on scaling-up the IWEM Approach in Liao River Basin		√
3.4 Scaling up the IWEM Approach in Hai River Basin	√	
(10) Hai River Basin/MWR: Annual M&E on scaling-up IWEM Approach in Shijin Irrigation Area of Hebei Province	√	
(11) Hai River Basin/MEP: Annual M&E on scaling-up IWEM Approach in Water Pollution Areas selected		√
3.5 Scaling up the IWEM Approach in Yellow River Basin		
(12) Yellow River Basin /MWR: Annual M&E on Scaling up IWEM at Hetao Irrigation Area in Yellow River Basin		√
3.6 Construction of projects for scaling up IWEM approach	√	
(13) Medium and big integrated management projects for irrigation areas	√	
(14) Management project of emission outlets for major water function areas	√	
(15) Water resources monitoring system	√	

(16) Construction of water resources project management and local service system	√	
(17) Study on water resources reform and innovation	√	
4. Capacity Building and Project Management		√
4.1 IW Learning Activities		√
(1) Website development		√
(2) Preparation of two project experience notes		√
(3) Result summary notes		√
(4) IW bi-annual conferences		√
4.2 Technical assistance through consulting services		√
(5) Consulting services & technical assistance (international)		√
(6) Consulting services & technical assistance (domestic)		√
4.3 Training and workshops		√
(7) Training & workshops (international)		√
(8) Training & workshops (domestic)		√
4.4 Project monitoring and evaluation		√
(9) Project monitoring and evaluation		√
4.5 Project management		√
(10) Project management		√

As shown in the above table, the research projects and demonstration projects may cause relevant environmental impacts. Table 4-2 shows the possible environmental impacts and mitigation measures.

Table 4-2 Major Environmental Impacts and Mitigation Measures

No.	Activities	Major Potential Environmental Impacts	Mitigation Measures
1	medium and big integrated management projects for irrigation areas	**Construction period:** 1) Exhaust gas: tail emission from various construction machinery and transportation vehicles, dust from the construction work road, dust caused by large-area earth excavation, turning and stacking process, coal-fired gas from the construction workers' living, and etc.; 2) Wastewater: wastewater from pouring concrete and curing, as well as the construction worker's domestic wastewater; 3) Solid waste: waste earthwork, and construction workers' domestic garbage; 4) Noise and vibration: certain amount of noise and vibration may be generated by machinery equipment and transportation vehicles during the construction process; 5) Ecological impact: the earth excavation and backfill shall accelerate the water loss and soil erosion in a short-period. Due to the project occupying land, and construction site, it shall have destructive impact on the land vegetation. During the riverbed excavation and	**Construction period:** 1) Prevention and control measures of the air pollution: the generation and emission of the exhaust gas pollutants shall be reduced by taking measures like regularly overhauling the vehicles, covering the transportation vehicles, watering the work surface timely and so on during the construction period; the dust pollution can be prevented by stacking the earth and stone in designated area, which shall also be disposed timely, as well as watering the construction site road and the construction work surface; 2) Prevention and control measures of water pollution: the temporary settling basin shall be set in the backfill dumps, and the construction mud generation points, the silt rainwater and muddy water shall be discharged through the settling basin. The fecal sewage on the construction site shall be treated through the three-stage septic tank; 3) Prevention and control measures of solid pollution: unified treatment by the sanitation department; 4) Prevention and control measures of noise pollution:

		flexibly moving in the water-saving irrigation project, it shall exert certain impact on the biomass and habitation of the aquatic organisms in the canal and the sediment.	low-noise equipment and machinery shall be selected, and regularly overhaul the machinery equipment, the night construction is prohibited; 5) Mitigation measures of ecological impacts: the construction scope shall be strictly controlled, try to reduce the construction activity area, and compensate the vegetation damaged by construction after the completion of the construction; the appropriate construction period shall be selected, optimize the construction program, and speed up the construction schedule, so that restore as early as possible after the completion of the construction; the water quality shall be protected, so as to prevent the impact on the aquatic organisms; the prevention and protection of water loss and soil erosion shall be conducted during the construction period, keep the increase of river sediment not obvious, so as not to apparently influence the downstream river ecological water consumption; the management towards the construction activities and workers shall be strengthened during the construction period, water pollution from the project reach is prohibited, so as to mitigate the impact on the aquatic organisms.

2	Sewage treatment plant	**Construction period:** construction dust, wastewater and noise. **Operation period:** 1) Air pollutants: mainly indicate malodorous substances with composites of hydrogen sulfide, ammonia and etc.; 2) Noise: from various pumps and machinery equipment 3) Solid waste: mainly indicate grid slag, sludge and domestic garbage.	**Construction period:** the construction time and the use of construction machinery shall be arranged properly, the pile driver and other high-noise equipment are prohibited to be used at night, meanwhile the prevention and control measures of dust shall be implemented earnestly, so as to reduce the dust impact on the environment. The construction wastewater shall be disposed reasonably and discharged after it meets the standard. **Operation period:** 1) Prevention and control measures of air pollution: the safe and efficient operation of the deodorizing system shall be ensured, certain sanitary protection distance shall be ensured; 2) Prevention and control measures of water pollution: diversion between clean and waste water, and diversion between rain and sewage; 3) Prevention and control measures of noise pollution: reasonable arrangement, choose low-noise equipment, add the acoustic enclosures and other damping devices, strengthen the greening activity and so on; 4) Prevention and control measures of solid waste: the grid

			slag shall be regularly cleaned and disposed as the general solid waste according to the *Standards for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes*; reasonable storage, transportation and disposal methods of sludge shall include incineration, landfill and compost; and the domestic garbage shall be disposed regularly by the sanitation department; 5) Prevention and control measures of underground water pollution: the anti-seepage and anti-corrosion measures shall be taken in the project sewage treatment system, sewage pipeline laying and hazardous solid waste library surface to prevent the seepage water to pollute the underground water; regulated pollutant discharge port shall be set according to the relevant provisions of national standards, the online monitoring device shall be set, and the sign shall be erected.
3	water resources monitoring system	**Construction period:** 1) Wastewater: domestic sewage of construction workers, and the mechanical washing wastewater; 2) Exhaust gas: the dust caused by the earth and stone construction;	1)Prevention and control measures of water pollution: the domestic sewage shall be discharged through the sewage treatment facilities and after meet the standard; the wash wastewater shall be firstly settled, and then be used as the spraying water to remove dust;

		3) Noise: generated by construction machines, and road transportation; 4) Solid waste: domestic garbage of construction workers; building waste, such as concrete block, cement block, sand and gravel, and etc.; to the social and ecological environment.	2) Mitigation measures of air: dust: the construction site shall be watered at any time, the materials on the construction site shall be piled tensely, then covered, and etc.; 3) Prevention and control measures of noise pollution: low-noise equipment and processes shall be selected, strengthen the inspection, maintenance and repair of equipment, the construction time and layout shall be arranged reasonably; 4) Prevention and control measures of solid waste pollution: building materials and domestic garbage shall be managed and recycled by special personnel;

5. Environment Management Procedure

According to Policy OP/BP 8.00 of the World Bank, during the implementation of components, the environmental safeguarding, screening and evaluating framework will be used for guiding preparation of environmental safeguard planning and making the plan comply with the relevant standards.

The measures for screening, mitigating and managing environmental impacts will be developed and implemented according to the following steps:

Step 1 - Screening environmental impact of components;

Step 2 - Classifying components and identifying the type of the requisite environment documents;

Step 3 - The project organizations prepare the environment documents;

Step 4 - Public participation in environmental document;

Step 5 - Environment review and approval;

Step 6 - Supervision;

Step 7 - Report.

5.1 Project Preparation Stage

Step 1 Screening Environmental Impact of Components

The environmental experts / consultants hired by a PMO identify and select components based on Annex 2 of this document, Table for Screening Potential Environmental Problems. They conduct a preliminary evaluation of components, optimize the concepts and reduce or mitigate environmental impacts.

Step 2: Classifying Components and Identifying the Type of the Requisite Environment Document

After the environmental experts hired by the project management agency screen the environmental problems of a subproject activity, the type of the environment document and the breadth and depth of the environmental document should be screened and determined based on the type, location, sensitivity and scale of project activities, characteristics and size of potential

environmental impacts (see Annex 2 Table for Screening Potential Environmental Problems for details), Requirement (OP4.01) of the World Bank and *Classified Management Directory of Environmental Impact Assessment of Construction Project* (June 1, 2015).

In accordance with the safeguard policies of the World Bank, project types and the requisite environment safeguarding documents should be classified as follows:

Type A: such projects will have a significant negative environmental impact and the impact will be sensitive, broad or unprecedented. The affected region will be broader than the site of the specific project. Some of the proposed urban infrastructures may be classified as Type A, such as large landfills, large sewage treatment plants, water supply dams and reservoirs.

For such projects, environmental impact assessment reports and environment management plans should be prepared in accordance with the requirements of the World Bank. Moreover, all the tender documents shall contain a standard clause on finding opportunities of material and cultural resources (see the relevant guidance in the Operation Manual). The PMO will consult the project group of the World Bank in the process of preparing all documents of Type A. Both environmental impact assessment and environment management plans should be submitted to the World Bank for review and approval.

According to the design plan, GEF Mainstreaming Project will generate prominent environmental effects, without significant environmental restrictive factor, not involving a sensitive region or group. Consequently, GEF Mainstreaming Project does not include any Type A component activity.

Type B: such projects have some negative environmental impacts, but they are not so powerful as those in Type A. Such impacts are basically confined to the project site and are seldom irreversible; in most cases, mitigating measures can be designed easily. Most of the rehabilitation and reconstruction subprojects may fall into this type.

Environmental impact assessment or simplified EIA (as required by Chinese laws and regulations) and one environment management plan containing at least the standard specification for environment practice (if necessary, additional analysis should be provided) should be prepared for such projects (see policies of the World Bank). The specific environment management plan of a subproject and / or the standard specification for environment practice should contain content on finding opportunities of material and cultural resources, and be included in all construction contracts / tender documents.

Type C: such projects may contain minimal or no adverse environmental impacts. No environment safeguarding document is required to be prepared for such projects, but such projects must be registered according to China's regulatory requirements.

The project will mainly support the research project for technical assistance and capacity building activities, and the research outputs (such as monitoring, assessment and recommendation on water resources and environment management) will be applied and promoted in the project areas of the demonstration counties (cities, and districts). Therefore, the project will not cause any serious environmental or social problems. On the contrary, it is expected to bring environmental benefits on the whole. According to the classifying standards in the environment safeguarding policies of the World Bank, **the project was therefore listed as Type B Project.** For Type B projects, there is no need to prepare environmental impact assessment document and the environment management plan may be the only result of environmental assessment. Research subjects of the project also apply to the safeguard policies of the World Bank. Although there is no need to prepare any environmental impact assessment document for the research subjects, the work outline of the research subject should include content related to analysis of environmental and social impacts, as well as the requirements on how to deal with them.

Step 3: Preparation of the Environment Document

After the environmental problems are screened and the component is classified, if the component organization needs to prepare an environmental document, it shall prepare the corresponding environmental document according to the requirements of the project management agency and the requirements of the environmental management policy framework.

(a) Environmental Impact Assessment (EIA)

Component organizations shall be responsible for preparing the EIA document of the project, the contents of which shall comply with China's guidelines for environment protection and management and the safeguard policies of the World Bank. The subproject organization shall entrust an EIA agency that has been approved by a corresponding administrative department of environmental protection and has related qualifications and experience and prepare the EIA report.

(b) Environment Management Plan (EMP)

Component organizations shall be responsible for preparing the environment management plan (EMP), which shall include measures for environmental protection during project design, construction and implementation. Such measures should eliminate or compensate for the adverse impacts of project activities on the environment and society, or at least reduce the adverse effects to an acceptable level. Please refer to Annex 3 hereto for the template for the Environment Management Plan (EMP) of the project.

Step 4: Public Consultation

The subproject organization shall be responsible for public participation into the EIA document. The main responsibilities include: a) the public's right to know; b) opinion solicitation; c) recording important findings, conclusions and recommendations. The subproject organizations and their entrusted EIA agencies shall publish information in public places, declare the environment management document and collect views of the surrounding residents through questionnaires, seminars, hearings and the like, so as to collect views of the

surrounding residents on the environmental impacts of the subproject and determine those environment problems deemed important by the affected residents. Any important view arising from public participation will be incorporated into the environment management document.

The environment management agency or its consultant shall be responsible for auditing records of public participation and determining whether they meet the relevant requirements. If the contents of public participation in the environment management document of the project cannot meet the relevant requirements, the project management agency may require the management unit of the subproject to re-conduct public participation into the EIA document according to the relevant requirements.

Before soliciting public views, the management organization of the component should provide the public with a rough draft of the EIA document, so that the management unit of the subproject may consult with those affected people and other stakeholders more effectively. Finalized drafts of all EIA documents of the project shall be publicized through posters, brochures, newspaper, the internet, etc. in public locations that the affected people and other stakeholders can reach easily. The management organization of the subproject or the project management agency should publicize EIA document and EMP of the project on its special website.

Step 5: Review and Approval

After the EIA documents (including the EMP) of the project are completed, the subproject organization shall submit them to the local authority of environmental protection for review and approval according to the relevant requirements. Meanwhile, in order to make the contents of the final report on environmental impact assessment of the project meet the requirements of the World Bank, during the process of preparing EIA documents of the project, the component organization and the organization preparing the EIA documents of the project shall give full consideration to and adopt the relevant opinions put forward by the environmental experts of the environment management agency

and the World Bank. After the local administrative department of environmental protection approves the EIA documents, the component organization shall submit the approval document and the EMP to the project management agency.

If an EMP needs to be prepared, the component organization shall prepare the EMP and submit it to the project management agencies level by level.

5.2 Implementation Stage

Step 6: Supervision

During the project implementation process, the project management agencies at all levels will supervise implementation of the project with the local administrative department of environmental protection and the consultants, so as to ensure that implementation of the EMP will comply with the relevant requirements.

Step 7: Report

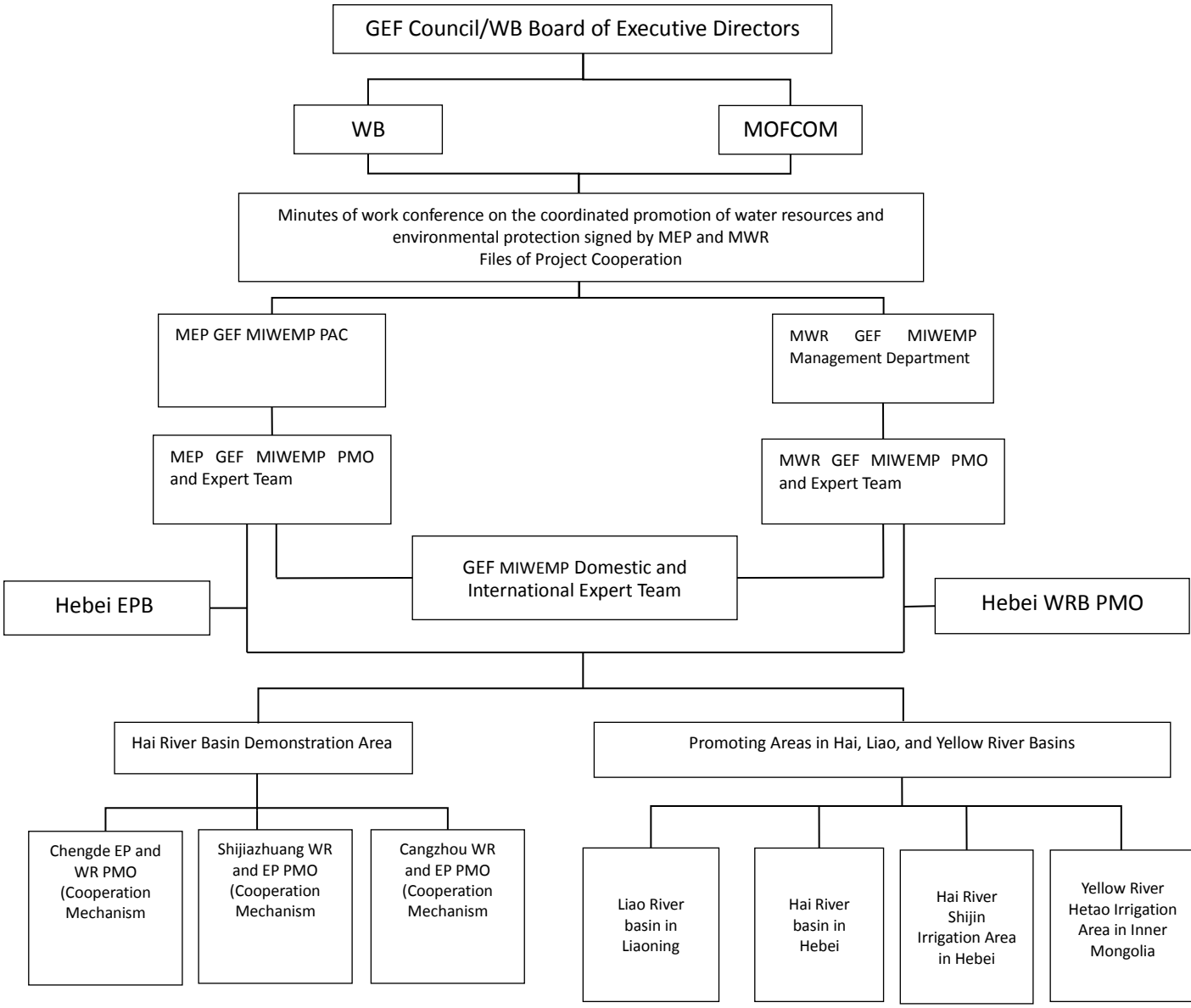
During implementation of the project, the project management agency will require the subproject organization to report implementation of the environment management plan (EMP) once every six months. The component organizations shall record the monitoring results carefully according to the monitoring plan in the EMP and determine those corrective or protective measures that must be taken during the monitoring period. The project progress report submitted by the subproject organization shall include implementation of the environment management plan (EMP) (such as mitigation measures and supervision), whether there are any significant environmental problems and solutions for related environmental problems. If the component organization has not conducted activities according to the EMP that has been approved, the project management agency may require it to submit reports more frequently. The project progress report prepared by the project management agency shall include progress of the EMP of the project, the implementation effects, etc.

6. Organization of Environment Management

1) Organization

Please refer to Figure 6-1 for framework diagram of environment management organizations for the “GEF Mainstreaming Project”:

Figure 6-1 Organizational Framework GEF Mainstreaming Project



2) Responsibilities of Environment Management Agencies at All Levels

According to the characteristics of the project, the environmental protection measures of the Project are subject to regulation by provincial department of environmental protection and local EPBs, as well as supervision by the relevant departments of the World Bank. The main responsibilities of the relevant environment management agencies are as follows:

(1) The World Bank

Supervising implementation of the EMP.

(2) Coordination Group of GEF Mainstreaming Project at MEP and its PMOs

Supervising implementation of the EMP of the components with the help of environmental experts and the local EPBs; reporting the implementation progress of the EMP components to the World Bank regularly.

(3) Mainstreaming Project leading group at province/municipality levels and their PMOs

With the assistance of consultants or agencies, preliminary screening environmental problems of components and determining the requirements for environment documents; auditing environment management plan documents submitted by the component organizations; and regularly reporting the implementation progress of EMP to GEF Mainstreaming Project Coordination Group at MEP and its PMOs.

(4) Provincial environmental protection departments, EPBs in cities/ counties

Approving EIA document (if any) according to the relevant provisions; supervising implementation of EMP of component organizations.

(5) PMOs of county (city or district) pilot and demonstration projects in prefectures (cities)

Being responsible for project planning, design and implementation; preparing environment management document as required; organizing public participation; carrying out activities according to approved environmental document; assisting project verification and supervision; submitting the progress report to the project management agency.

(6) EIA organization

Accepting entrustment of the component management organization; preparing the corresponding environment management document; assisting the management organization to implement the environment management plan (EMP).

(7) Construction contractor

Implementing the environment management plan (EMP) of the project or the regulations for implementation of environmental protection; carrying out supervision in cooperation with the management organization, environment management agencies and the local environmental protection departments.

7. Complaint Mechanism

In order to ensure that public opinions can be solicited, that the relevant information can be publicized and that communities can participate in the project during implementation of the GEF Mainstreaming Project, the component management organizations shall establish complaint mechanisms in the EIA management document.

The EIA management document shall include complaint mechanisms, so as to ensure that all complaints of the affected groups or individuals can be responded to in time. The component management organizations shall notify the affected groups or individuals of the complaint channels when they participate in the project. The complaint mechanisms should include: (a) recording and reporting system, including written complaints and verbal complaints; (b) complaint handling person of component management organizations; and (c) the deadline for processing complaint. The complaint processes should be as follows: the groups or individuals suffering from the adverse environmental impacts of the subproject complain to the component organization directly in an oral or written form; after receiving such complaint, the management organization shall reply within the prescribed time limit. If the complainant is not satisfied with the handling result of the management unit of the subproject, he may appeal to the local environmental protection authorities. If the complainant is still not satisfied with the handling results of the local environmental protection authorities, he may file a lawsuit with the local people's court.

8. Capacity Building

Project management agencies shall be responsible for managing the GEF Mainstreaming Project, assign personnel to manage environmental risks of the

project and ensure that the project can be implemented according to the procedures specified in the EMP. In addition, the project management agencies may hire competent environment consultants or bodies in China to help carry out activities specified under this framework document of environment management policies, i.e., assessing and managing environmental risk during project evaluation and implementation.

The consultant and (or) qualified advisory body hired by the project management agency will provide the management and other organizations with training on environmental safeguard. With the assistance of the consultant, the component management organizations shall prepare and implement the environment management plan (EMP). The technical training should include: 1) environmental laws and regulations related to this project; 2) procedures for environmental impact assessment; 3) environmental problems that may be caused by preparation and implementation of the project.

9. Budget for Implementation of Framework of Environment Management Policies

Under the item of environment management, monitoring and assessment, a certain amount of fee shall be arranged as expenses for the environmental safeguard system of the project and implementation of EMP. Such expenses shall include the expenses for development of various plans, training and monitoring. According to the project design, RMB1 million will be arranged for implementation of the EMP.

10. Public Consultation about and Publicity for Framework of Environment Management Policies

According to Safeguard Policy OP 4.01 of the World Bank, during preparation of the framework of environment management policies, the preparing body has consulted with and solicited opinions from the stakeholders, such as the MWR and MEP. On December 21, 2015, a meeting was held to solicit opinions on the first draft of the EMF and related feedback has been adopted and reflected in this document. On January 8, 2016, the first draft of

the EMF was publicized on the website of the Foreign Economic Cooperation Office, MEP (www.mepfeco.org.cn) and www.jsgg.com.cn of MWR.

11. Annexes

Annex 1 List of Activities that Are Not Supported

1) Not supporting production or sales of products or activities that violate any law or regulation of the host country or any international treaty or agreement;
2) Not supporting Type A activities stipulated by World Bank Safeguard Policy.
3) Not supporting any backward production process, product and technology that violates any national industrial policy, environmental policy or technology policy;
4) Not supporting any project involving any environmentally sensitive area (including natural habitats, forests, etc.);
5) Not supporting any irrigation activity that may result in increase in the use of pesticide in the project area;
6) Not supporting any activity that may affect archaeological, paleontological or historical value;
7) Not supporting any activity involving commercial logging act and primitive forests;
8) Not supporting dam construction and repairing activities;

Annex 2 Table for Preliminary Screening of Potential Environmental Problems

PMOs will use the form below to screen all the components:

• Name of the component: _____

• Project organization: _____

• Location of the component: _____

• A brief description of the project activities: _____

In order to meet domestic environmental regulations, is it necessary to prepare the following safeguard documents for the project?

• Environmental Impact Assessment: Yes: __ No: __

• Simplified Environmental Impact Assessment: Yes: __ No: __

• Other environmental requirements: Yes: __ No: __

The World Bank's list for screening environmental and social safeguard problems:

Problem	**Reply**		**If the reply is yes, the triggered policy of the World Bank is as follows:**
	Yes	**no**	
May the proposed subproject have minimal or no adverse environmental impact?			OP 4.01 Type C
May the subproject have any significant, sensitive, broad and unprecedented negative environmental impact?			OP 4.01 Type A, not supported by the Project
Will the scope of the impact go beyond the precincts of the project? Is the significant negative impact on the environment irreversible?			OP 4.01 Type A, not supported by the Project
Will the component belong to neither Type A nor Type			OP 4.01

C as defined above?			Type B
Will the component cause increase in the amount of pesticide in the project area?			OP4.09
Will the component support reconstruction and protection of material and cultural resources? Will the component have any adverse impact on material and cultural resources?			OP 4.11
Will a new dam be constructed in the component? Will the component rely on any existing dam or one under construction?			OP 4.37
Will the component result in conversion or degradation of any function of any important or unimportant natural habitat?			OP 4.04
Will the component involve involuntary land acquisition or previous land acquisition or demolition of any existing facility?			OP 4.12
Is there any minority community in the project area? Will such minority community be affected by the proposed component?			OP 4.10

Signature Form of Screening and Audit Personnel:

Signature of Environment Director of Project Office:

Name: _____

Title and Date: _____

Signature of Social Director of Project Office:

Name: _____

Title and Date: _____

Signature of Director of Project Office:

Name: _____

Title and Date: _____

The Project Office will reserve a copy of this form and copies of related documents. A copy shall be submitted to the World Bank. If necessary, a third

copy will be sent to the provincial authorities.

Annex 3 Environment Management Plan (EMP format)

The Environment Management Plan (EMP) of the project includes a series of mitigating, monitoring and institution-building measures that will be implemented during preparation and implementation of the project, so as to eliminate or compensate for the adverse impact of this project on the environment and society, or reduce such impact to an acceptable level. The environment management plan (EMP) of the project should include the following contents:

A. Project Description

The subproject shall be described briefly. The contents shall contain the actual investment, geographical location and regional characteristics of the location of the project, etc. For example, is the subproject close to any protected area, or cultural area, or historical or cultural attraction? In addition, the land use characteristics (agricultural land or industrial land) and the nearest residential area from the project site shall also be briefed.

B. Mitigation Plan

Identifying and summarizing all significant adverse environmental impacts and risks that are expected to occur during the project; describing each of the mitigation measures in detail; including technical design, equipment description and operating procedures if necessary.

Project Phase	**Problem**	**Mitigation Measures**	**Mitigation Costs**	**Responsibilities** *	**Starting - Ending Date**
Construction					
Operation					

* Liabilities of the contractor specified in the tender document

C. Monitoring Plan

Describing the monitoring means, including monitoring indicators, monitoring locations, monitoring methods, measurement frequency, etc.

Project Phase	**Monitoring Indicator**	**Monitoring Location**	**Monitoring Method**	**Monitoring Time / Frequency / Duration**	**Budget (yuan)**	**Responsible Agency**	**Starting Date**	**Ending Date**
Construction								
Operation								

D. Institutional Arrangement

Describing institutional and organizational arrangements, i.e., the personnel responsible for taking mitigation and monitoring measures (who should collect the data? Who should analyze data? Who should prepare report? To whom should be report be submitted and how often should be report be submitted once?).

Measure	**Institution Responsibilities**
Data Collection Construction Operation	 Construction Operation
Data Analysis Construction Operation	 Construction Operation
Report Preparation Construction Operation	 Construction Operation
Report Reception / Frequency (who will receive the report / how often should be report be submitted once?) Construction Operation	